A Social History of Rice in Turkey

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Abstract

A Social History of Rice in Turkey

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This dissertation examines the transformation of rice farming before the state, the society, and the economy in Turkey between 1948 and 2018. Rice is one of the most important fields of application of the Green Revolution after the Marshall Plan is examined from a spatial point of view in three basins such as the Meriç Basin, the Lower Kızılırmak-Lower Yeşilırmak Basins and Karacadağ Agricultural Basin. Both the geographical locations of these basins in Turkey and the differences in their agricultural structures and human capital are determinative in their preference as a field study. However, apart from these basins, there has been rice farming culture in South Marmara, Adana, West and Central Black Sea sub regions. In other words, this dissertation both explains the story of agricultural transformation in a historical process and presents a comparative perspective among these basins on a spatial scale. Therefore, this study can be evaluated in the fields of economic history, social history and environmental history.

The main claim of this dissertation is to prove that thanks to the biological and agricultural properties of rice, it is a historical actor that directs the state, society, and the economy. On this basis, this study is far from putting sharp boundaries between nature and society and the anthropocentric historiography. In this context, this study examines the subject by putting the reciprocal relations and interests between the desires of human beings and the biological and agricultural requirement of rice into the center. The main purpose of this study is to explain the bureaucratic, economic and social networks of rice from its cultivation and harvest to its processing in to paddy and consumption.

The main findings of this dissertation are that rice is a social, cultural, economic, artistic and bureaucratic commodity. In this context, rice requires

specialized and intensive labor to collaborate with society, the state and market actors to be able to spread and carry its genes into the future. Besides, acquisition, nutrition and profit underlie in the desire of a human being toward rice. To sum up rice with one word, it can be conceptualized as the crop of controversies. As a matter of fact, it is too difficult to find any other crop that accommodates collaboration and conflict of interest and also the bureaucratic control in the cultivation of rice and free market economy in the sale of rice at the same time.

133441 words

Özet

Türkiye'de Çeltiğin Toplumsal Tarihi

Okan Ceylan, Doktora Adayı, 2020
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Bu çalışma, 1948-2018 arası dönemde Türkiye'deki çeltik tarımının dönüşümünü devletin, toplumun ve ekonominin nezdinde incelemektedir. Marshall Yardımı sonrasında Yeşil Devrimin en önemli uygulama alanlarından biri olan çeltik mekânsal açıdan Meriç Havzası, Aşağı Kızılmak –Aşağı Yeşilırmak Havzaları ve Karacadağ Tarım Havzası olmak üzere üç havza üzerinden ele alınmaktadır. Gerek bu havzaların Türkiye'deki coğrafi yerleri gerekse tarımsal yapılarında ve beşeri sermayelerindeki farklılıklar, bu bölgelerin alan çalışması olarak seçiminde belirleyici olmuştur. Ancak bu havzaların yanı sıra Güney Marmara, Adana, Batı ve Orta Karadeniz Bölümlerinde de çeltik ekim kültürü vardır. Bir diğer ifade ile bu tez çeltik tarımı üzerinden hem tarihsel süreçte bir tarımsal dönüşüm hikâyesini anlatmakta hem de mekânsal ölçekte havzalar arasında karşılaştırmalı bir bakış açısı sunmaktadır. Dolayısıyla bu çalışma iktisat tarihi, toplumsal tarih ya da çevre tarihi alanlarında değerlendirilebilecek bir çalışmadır.

Bu tezin temel iddiası ise biyolojik ve zirai özellikleri sayesinde çeltiğin, bu havzalarda devleti, toplumu ve ekonomiyi yönlendiren tarihsel bir aktör olduğunu kanıtlamaktır. Buna dayanarak, bu çalışma doğa ve toplum arasına keskin sınırlar koymaktan ve insan merkezli bir tarih yazımından uzaktır. Bu bağlamda, bu çalışma insanın arzuları ve çeltiğin biyolojik ve zirai gereksinimleri arasındaki karşılıklı ilişkileri ve çıkarları merkeze alarak konuyu incelemektedir. Bu çalışmanın amacı ise çeltiğin ekiminden ve hasadından, pirince işlenmesine ve tüketilmesine kadar çeltiğin bürokratik, iktisadi ve toplumsal ağlarını açıklamaktır.

Bu tezdeki temel bulgular ise çeltiğin toplumsal, kültürel, ekonomik, sanatsal ve bürokratik bir meta olduğudur. Bu bağlamda, uzmanlaşmış ve

yoğun emek isteyen çeltik, genlerini geleceğe taşıyabilmek ve yayabilmek için toplumla, devletle ve piyasa aktörleri ile işbirliği yapmaktadır. Ayrıca, insanoğlunun pirince duyduğu arzunun temelinde ise kazanç, besin ihtiyacı ve karlılık bulunmaktadır. Çeltiği tek kelime ile özetlemek gerekirse, çeltik zıtlıkların ürünü olarak kavramsallaştırılabilir. Nitekim iş birliğiyle çıkar çatışmasını ve çeltiğin ekimindeki bürokratik kontrol ile satış fiyatındaki serbest piyasa ekonomisini aynı anda barındıran başka bir ürün bulmak çok zordur.

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Glossary of Non-English Terms

Devlet Su İşleri	State Hydraulic Works
Toprak Mahsulleri Ofisi	Turkish Grain Board
Toprak Üstü İşlemesi	Ground Surface Tillage
Kesik Sulama	Intermittent Flow Irrigation

Daimi Sulama	Perennial Irrigation
Çeltik	Rice
Pirinç	Paddy
Trakya Tarımsal Araştırma Enstitüsü	Thrace Agricultural Research Institute
Karadeniz Tarımsal Araştırma Enstitüsü	Black Sea Agricultural Research Institute

Abbreviations and Acronyms

IRRI	International Rice Research Institute
USDA	United States Department of Agriculture
SHW	Devlet Su İşleri (State Hydraulic Works)
TGB	Toprak Mahsulleri Ofisi (Turkish Grain Board)
SAP	Güneydoğu Anadolu Projesi (Southeastern Anatolian Project)
DIS	Doğrudan Gelir Desteği (Direct Income Support)
RPP	Cumhuriyet Halk Partisi (Republican People's Party)
DP	Demokrat Parti (Democrat Party)
SPO	Devlet Planlama Teşkilatı (State Planning Office)

A Note on Translation

In the translation of *çeltik* and *pirinç*, I used rice and paddy respectively. Since this dissertation focuses on the social history of rice, I consider to use the colloquial speech of some terms as to rice in three basins such as *tir, kaş* (the borderline of rice fields), *peçe* (water gate) and so on. Some older words were used in their original forms such as *has, reaya, tımar, mülk and çeltikçi.* In the six chapter, some folklores were written in footnotes in Turkish and their explanations were given in the texts in English. Besides, in general, hectare was 10 times larger than decar as a measure.

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I

Introduction

The strategy of plants to spread and carry their gens into the future is really amazing. This tactic that includes mutual dependency and symbiotic relationship is also the result of the co-evolutionary process with other living creatures for survival. Based on the biological characteristics of rice, this dissertation mainly aims to explain why and how state policies, social relations and economic processes in Turkey are formed around rice in a historical context. In this context, this dissertation claims that there are no clear-cut borders between nature and society. Thus it focuses on both the reciprocal and mutual interests or relations between people and rice from its cultivation to consumption. For example, from the perspective of rice, as an economic, social and bureaucratic commodity, this dissertation claims that rice is an actor in the direction of the state, society and economy. Thus, rice makes use of people and state to spread its genes. However, from the perspective of human beings, the nutritional and the economic desires of people lead to a desire for rice cultivation in the agrarian sector in Turkey in the twentieth and twenty-first centuries.

Methodologically, there is also horizontal spatiality and vertical temporality in this dissertation. In terms of temporality, the reason why the period (1948-2018) is preferred results from the appearance of the Green Revolution with the Marshall Plan and the socio-economic history of rice until today. Furthermore, the Second World War is an important breaking point in rice

agriculture. Due to the destruction of the war in the rice fields in Asia during the war, the partial transformation of chemical war industry into chemical agricultural industry for the production of fertilizer and pesticides[1] as a sign of the Green Revolution and the influence of Marshall Plan, both rice cultivation areas and rice yield have increased. Furthermore, this dissertation claims that rice is one of the most avant-garde crops of the Green Revolution and the Marshall Plan in Turkey.

In general, there are three periods in rice farming culture in Turkey in the 20th and 21st centuries. First, rice had been limited to big farmers who had capital and until the beginning of the 1970s. Second, 1974-1980 is the period when rice cultivation began to spread among small peasants through increasing credit facilities, agricultural equipment and irrigation cooperatives. Third, rice yield, the size of rice cultivation areas and paddy consumption have increased since 1980. Thus, I have a chance to determine transformations, ruptures and continuity in a historical process.

Second, in terms of spatiality, three basins are preferred. The preference of these basins results from their geographical locations in the Turkish map, different modes of productions and agricultural structures in these basins. Thus, I try to understand the development process of rice farming in Turkey in the 20th and the 21st centuries. Geographically, while the Meriç Basin is situated in the northwestern part of Turkey, the Lower Kızılırmak and Lower Yeşilırmak Basins are situated in the middle Black Sea Region and also the Karacadağ Agriculture Basin is situated in southeastern Anatolia. In this context, while Karacadağ is an agriculture basin, the others are river basins. Thus, the different developments of rice cultivation from the economic, social, and political perspectives in a historical process can be seen more clearly. In other words, this offers an inclusive insight on the history of rice in general in Turkey. On the one hand this dissertation deals with the historical transformation and developments in rice farming between 1948 and 2018, it makes some comparisons among these basins in terms of rice farming culture, paddy consumption culture, public investments and socio-economic life on the other.

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1 Jon Betz and Taggart Siegel, *Seed: The Untold Story,* Eye Film Production, 2016.

To determine the borders of river basins, the water flow directions of rivers and the plains around them are taken as references. Since the Ergene river is a branch of the Meriç river, it is not explained separately. Based on the water flow direction of the Ergene river, Ergene Basin encompasses extra lands in Kırklareli and Tekirdağ. Furthermore, this thesis focuses on the eastern part of the Meriç Basin situated in the east of the Meriç River. The western part of this basin is situated in Greece. When it comes to the Lower Kızılırmak and Lower Yeşilırmak Basins, it seems that these basins are situated in Samsun, have had similar rice farming culture and have similar socio-economic situations. Thus, they are regarded as a whole. Furthermore, although the geographical borders of the Karacadağ Agriculture Basin extend from Adıyaman to Siirt, this dissertation mainly focuses on the region around Karacadağ volcanic mountain where there has been intensive rice farming culture such as the western part of Diyarbakır, the northeastern part of Şanlıurfa and northwestern part of Mardin in Karacadağ Basin. In this context, although Viranşehir district of Şanlıurfa and Derik district of Mardin are situated in GAP Basin, they are incorporated into dissertation due to the fact that they have had the same rice farming culture with Karacadağ.[2]

Since this dissertation tries to make history from below, I had done some oral history studies in Edirne, Samsun and Diyarbakır. Especially the professional agriculture engineers of agricultural research institutes in these provinces helped me reach these rice farmers and factory owners. However, due to my hometown, I can reach farmers and factory owners quite easily in Edirne. I did not prepare a questionnaire, they explained their views and experiences about rice cultivation in response to my questions.

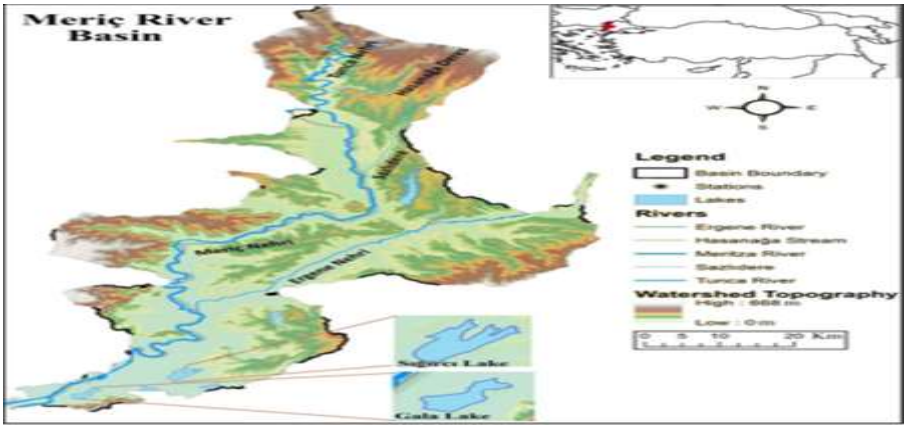
I spent three days in each province. I made several interviews with one or two farmers, one rice factor owners and one or two agricultural engineers in my field study. Since I am a son of a rice grower in the Meriç Basin, I am an insider in Edirne. This provides me with understanding of the rice cultivation easily. Most of the time, I apply to the views of my father and mother. How-

2 T.C Tarım ve Orman Bakanlığı, "Tarım Havzaları Haritaları," accessed November 12, 2019, https://www.tarimorman.gov.tr/Sayfalar/Icerikler.aspx?IcerikId=296c5dc2-2d3f-427d-af9a-70c4a2f131a6

ever, I am an outsider in the other two basins. Especially, the production relations and the modes of production in Karacadağ is quite different. More interestingly, similar to agricultural engineers, prominent rice farmers in all these basins know each other.

Furthermore, in the writing of this dissertation, primary and secondary sources have been used to evaluate the social history of rice in Turkey. First of all, state archives and the parliamentary minutes provide this dissertation by evaluating rice from the eyes of the governments. Second, TUİK reports indicate the numerical and statistical data, means of production and labor force in rice cultivation. Thus, the economic developments of rice cultivation and the socio-economic transformation of rice growers can be indicated more concretely. Third, local newspapers make possible to evaluate rice from the eyes of local intellectuals and ordinary people. Furthermore, the dissertation can reveal both the socio-economic experience of rice growers and the reflections of government policies related to rice in daily social life. Fourth, oral history study method with rice growers, agriculturalists and fabricator provide us with an evaluation of the different parts of the rice sector, their separate economic interests and expectations in a historical process. In addition to these primary sources, many secondary sources also enrich this dissertation from biological, geographical, agricultural, economic, and historical perspectives.

In terms of the availability of these academic sources, the periodical publications, local and national press can be found in the National Library, the Ministry of Agriculture, Edirne Public Library and Beyazıt State Library. Besides, government correspondence can be found in State Archives and on the web site of the Turkish Grand National Assembly. Third, TUİK reports can be found on its web site. I could reach other secondary sources in Boğaziçi University Aptullah Kuran Library and Ege University Library.



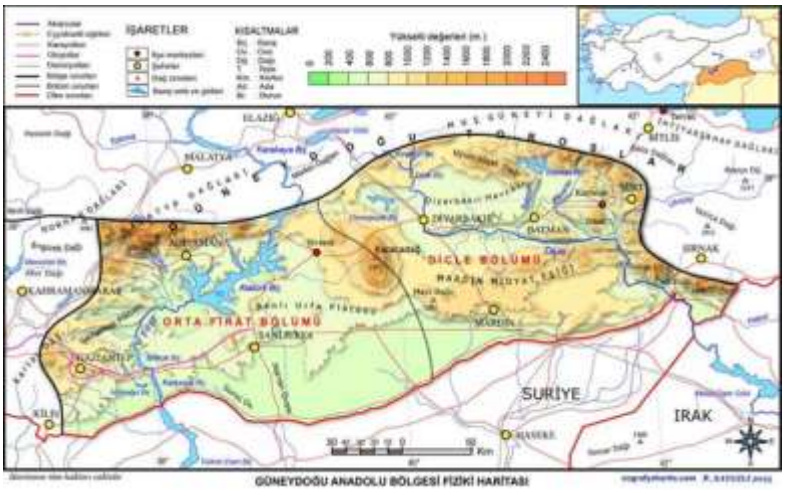
MAP 1.1 The Meriç River Basin (the Meriç Basin)

SOURCE: Tokatlı (2018)



MAP 1.2 The Lower Kızılırmak and Lower Yeşilırmak Basins

SOURCE: https://www.cografyaci.gen.tr/turkiyede-akarsularin-olusturdugu-yer-sekilleri/



MAP 1.3 The Karacadağ Agriculture Basin

SOURCE: https://www.efe.name.tr/guneydogu-anadolu-bolgesi/

More specifically, in the second chapter, this dissertation focuses on both the economic desires of farmers and the biological properties of rice in directing farmers mutually and reciprocally. In this context, the rice growers who try to get higher yield and profit serve the growing of rice in accordance with its biological and agricultural requirements. Therefore, this chapter also explains biological properties, geographical distribution and human labor force in rice cultivation from micro to macro level.

In the third chapter, the dissertation mainly deals with the historical and evolutionary past of rice from international to national dimensions. In this context, it tries to explain how rice has been spread into different parts of the world through trade, migrations, wars, and socio-cultural interactions. Furthermore, it explains how the Ottoman State or other Anatolian principalities had cultivated, taxed and consumed rice in their socio-economic lives. Rice cultivation areas and paddy consumption have been increasing steadily since the 1930s. Therefore, this chapter tries to enlighten how modern agricultural methods, urbanization and liberal economic policies contribute to rice farming during the twentieth century. Actually, the first two main chapters might be regarded as an infrastructure for the dissertation as they give general views.

The fourth chapter of the dissertation is about the reciprocal and mutual relations between rice and state. In this context, the state needs rice cultivation to prevent currency loss through foreign trade and to cultivate stony, salty and acidic soils. In return, the state helps the spread of the rice genes and settlement of rice farming culture with some legal regulations, public investments, scientific projects, fiscal policies and industrialization. This chapter also analyses the implementations of these regulations and their reflections on the socio-economic lives of people in the twentieth and twenty- first centuries.

The fifth chapter of the dissertation mainly observes the reciprocal relations between intensive and specialized human labor and the agricultural characteristics of rice from a socio-economic point of view. Thus, rather than only an anthropocentric perspective, it regards rice as an actor that directs the economic history of society. Although it seems that rice growers consider their own economic gains, actually they help to increase the spread of rice genes. It indicates the settlement of rice culture, the transformation of different modes of rice production, production relations and also rice marketing system in these basins comparatively. This chapter also indicates the strong adaptability of rice to developing technology, new pesticides, different climates, and soil structures. Thanks to the high nutritional value of paddy, the population growth and the urbanization of Turkey have contributed to rice production in Turkey during the twentieth and twenty-first centuries

In the sixth chapter, the dissertation tries to prove that rice is a quite social, cultural and aesthetic commodity that is a subject of novels, cinema, theatre, folklore, public health and cuisine culture in Turkey. It is a prominent cook of social and traditional ceremonies such as weeding, meetings and funeral rites. Thus, it can be said that people consume paddy both in their happy and mournful days. From a sociological point of view, the extent of rice fields or the consumption of more qualified paddy variety indicates the socio-economic status of rice growers and consumers. Since rice cultivation requires intensive, experienced and qualified labor force and as much as capital, it forms a social class among rice growers who have common economic interests. Thus, this chapter says that both the cultivation and consumption of rice are social. This chapter also analyses the changes in the profiles of farmers and prominent people who contribute to the settlement and the spread of rice

farming culture in these basins in the twentieth century. Finally, this dissertation points out that although rice is associated with malaria, the main health problems in these basins are cancer, respiratory tract diseases, and rheumatic diseases. There are some environmental problems such as water pollution, soil pollution, and desertification stemming from unplanned industrialization and the overutilization of pesticides in rice fields.

§ 1.1 Theoretical Discussions about the Relations between Plants and Humanbeings

To understand the mutual relations between human beings and rice and the role of rice in the determination of the course of events in history, a general knowledge about the role of plants for our planet in general, for humans in particular, is essential. Basically, from Democritus to Platon, from Linneaue to Darwin and also from Fenchner to Bose, many intellectuals think that plants have had much more complicated talents than they seem to have. For example, plants can communicate, have social relations, and solve their problems through specific strategies. Furthermore, they award people who help them and punish those who damage them. Based on these properties of plants, Switzerland is the first country to recognize the rights of plants with a special declaration in recent years.[3]

In spite of these characteristics of plants, we do not have adequate scientific knowledge about them. Furthermore, scientific research about botany goes back to only 300 years ago.[4] In this context, under the light of scientific data, Darwin is the first intellectual who specifies that plants are developed, talented, and smarter living creatures. Furthermore, since plants are the basis of the food chain, human beings desperately need the existence of plants. If plants extinct, so do human beings too. On the other hand, if human beings

3 Stefano Moncuso and Alexandra Viola, *Bitki Zekâsı* (İstanbul: Yeni İnsan Yayınevi, 2019): 13.

4 Jean Marie, Marcel Mazoyer and Theodore Monod, *Bitkilerin En Güzel Tarihi,* Translated by Nedret Tanyolaç (İstanbul: Türkiye İş Bankası Kültür Yayınları, 2017): 8.

go extinct, plants survive and even prosper everywhere. Besides, they represent more than 99.5 percent of the bio mass of the planet.[5]

Furthermore, Charles Darwin had mainly studied them and tried to find some proof about the evolutionary theory in plants.[6] As plants have had a longer evolutionary process than human beings, they can develop newer strategies to survive different condition. For example, as a part of their defense mechanism, certain plants have developed different characteristics such as having nutritional values, remedy, poisoning influence, the influence of drunkenness.[7] Namely, they know how to feed, dress and intoxicate people for at least ten thousand years.

Furthermore, people need plants not only for oxygen but also for the consumption of meat. All edible animals consume these plants to feed. Furthermore, thanks to them turning into fossils under – ground, energy sources appear and thanks to their biological characteristics, some plants such as opium or cannabis are used in the medical industry. In this context, plants feed people and people let them grow and protect them from insects.[8] Therefore, so as to make possible the stability and continuity of natural life with their nutrition, remedy, fossil and photosynthesis, they present their products and they annihilate their existence.

Although plants cannot move, they are so intelligent that they made use of insects, and wind for pollination. The pollination of plants can be thought as a huge market where buyers are insects, vendors are plants, products are nectars and pollen. Also the advertisement for this market is the smell and colors of flowers.[9] These indicate the mutual and complicated relationships between a bee and a flower. While bees receive their food requirement, the genes of apple can be transported. All living things consider the increase of

5 Stefano Moncuso and Alexandra Viola, *Bitki Zekası,* 43.

6 Ibid., 120.

7 Michael Polland, *Arzunun Botaniği,* Trans. by Sevin Okyay (İstanbul: İnkılap Yayınevi, 2018).

8 Stefano Moncuso and Alexandra Viola, *Bitki Zekâsı,* 44.

9 Ibid., 97-100.

their copies. In addition to bees, thanks to their sweetness or nutritional values, plants also persuade people to cultivate them as much as people prefer them to cultivate. Therefore, although humans consider plants as an object, they are the subject that direct people at the same time.[10]

From this point of view, Michael Polland focuses on plants in socio-economic life and the desires of people towards these plants. In this context, Polland points out that humans crave an apple for its sweetness, tulip for its beauty, a potato for controlling and cannabis for drunkenness and pleasure. Furthermore, the desires of human beings provide survival strategies for them.[11] Similarly, the desires of human beings for rice are nutrition, status indication and wealth. This might be regarded as a relationship based on mutual interests. For example, while apple had been used to open new lands to settle in the USA, it had gained new habitats and new species.[12] That is to say, during the evolutionary process, quite good and harmonious relations as well as divisions of labor between human beings and plants have developed. This relationship is mutual and beneficiary. In the same way, as a molecular biologist, Ignacio Chapela thinks that farming culture results from the extraordinary good dance between plants and human beings.[13]

Furthermore, Rowen White argues that a sacred and mutual relation between human beings and seeds began together with the cultivation of corn in Central Amerika 10,000 years ago. Thanks to the cultivation of corn, tribes had turned into civilizations and it had spread through migrations. Similarly, in addition to migrations, wars and trade, the rice robbery of Thomas Jefferson also played an important role in the spread of risotto rice in Monticello in the eighteenth century. Then, more than one million tons of risotto rice seeds were distributed to farmers in 1890.[14]

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10 Michael Polland, *Arzunun Botaniği.*

11 Ibid., 125.

12 Ibid., 4.

13 Jon Betz and Taggart Siegel, *Seed: The Untold Story*

14 Ibid.

Actually, with planting seeds, people become a part of this evolutionary process.[15] In other words, as a mediator, human beings have served the spread of seeds that are alive embryo. These seeds have the energy of life. Thanks to the differences in their genetic codes, distinct seeds follow different ways. While some of them spread through winds, fires or the animals who move constantly. Moreover, seeds can be thought as time capsule which both protects the genetic characteristics coming from the past and transfers them to the future. In this context, there are about 300,000 plant species in the world. However, while only 10 percent of them are edible, most of the people mainly consume 10 plants such as wheat, barley, corn, rice and bean.[16]

However, from an anthropocentric point of view, people regard themselves as actors and objectify nature rather than consider their mutual interests. On the other hand, from the standpoints of plants, they make use of people and bees intelligently spread their genes. In this context, it seems that people and bees serve plants.[17] However, together with the beginning of farming and the growth of population, the humans have attempted to enforce their own laws on plants. Furthermore, due to the human factor in agriculture, the borders between natural and artificial selections are not clear.[18] Indeed, the story of the Green Revolution explains this process in detail.

1.1.2 *The Influence of the Green Revolution*

Thanks to the increase of agricultural inputs such as fertilizer, pesticides and mechanization as the signs of the Green Revolution, crop yield and their durableness against diseases have increased since the beginning of the 1950s. This situation has made the nutrition of people guaranteed and the increase of new cultivation areas in the agrarian sector possible. However, today these areas are under the threat of global warming at the same time.[19]

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15 Jess Phillimore, *Seeds of Freedom,* The Gaia Foundation and the African Biodiversity Network, in collaboration with MELCA Ethiopia, Navdanya International and GRAIN, 2012.

16 Jon Betz and Taggart Siegel, *Seed: The Untold Story.*

17 Jean Marie, Marcel Mazoyer and Theodore Monod, *Bitkilerin En Güzel Tarihi*, 10.

18 Michael Polland, *Arzunun Botaniği.*

19 Stefano Moncuso and Alexandra Viola, *Bitki Zekâsı,* 92.

Actually the Green Revolution first began in Mexico in 1945. According to Raj Patel, the Green Revolution was against the red revolution rather than the consciousness of the environment. It aimed to avoid people from communism through the production of cheap food in capitalism. Thus, the Green Revolution developed new kind of seeds for big companies. Namely, it got rid of the traditional experience that had been obtained by farmers for thousands of years and supported the developments of modern industrial or market – oriented farm culture. In this context, Vandana Shiva points outs that the Second World War is an important turning point for the transformation of agricultural structures. In addition to new seed varieties, the chemical industry that produced war technology was transformed into a chemical agrarian industry with the reformulation of some chemical molecules of bombs and gases. Thus they began to produce chemicals such as fertilizer and pesticides for the agrarian sector in these years.[20] Agriculture began to depend upon industry and market in the twentieth century. Traditional experiences and labor force were replaced with modern mechanization. Besides, agricultural lands and plants have become addicted to these pesticides in time.[21] These agricultural inputs cause an increase in production costs of farmers, environmental pollution and the decline of food security.[22]

Furthermore, the Green Revolution transformed seed from an element that vitalizes the commodity for market -oriented production on a global scale. Therefore, with the hybridization of plants farmers lost their control on the seeds and thus, market - oriented seed became widespread. Thus farmers depend on the market economy from seed to the growing and the marketing of their crops. On the one hand international companies have monopolized their profit coming from agriculture and global food system around the world since the 1960s, farmers have tried to gain much more money with less intensive labor force on the other hand. In spite of their increased production costs and debts, farmers still have given up on traditional farming culture. However, some of them may give up cultivating their land in time. Thus, the profits of

20 Jon Betz and Taggart Siegel, *Seed: The Untold Story.*

21 Jess Phillimore, *Seeds of Freedom.*

22 Michael Polland, *Arzunun Botaniği,* 166.

these companies became more important than the living conditions of farmers.[23]

The reports of the United Nations pay attention to the Food Crisis and the negative influence of global warming in 2020. Therefore, to be able to direct the food crisis adequately and to produce raw material for industry, the agriculture sector is an indispensable part of socio-economic life.[24] The genetic variability of plants can prevent the emergence of global scarcity. [25]

All in all, these ideas emphasize the mutual relations between human beings and plants as well as the leading role of plants in the socio-economic life of humans. Thus, rather than their objectification, plants are regarded as an agency in the making of history. However, anthropocentric standpoint has still been widespread today. Therefore, it is also essential to deal with how other authors approach the role of plants in particular to rice in different disciplines.

§ 1.2 Rice from the Eyes of Different Disciplines

In the literature review, there are some academic studies on rice cultivation both in the Ottoman and in Republican periods. The articles and books that focus on rice cultivation in Ottoman period mainly deal with the role of the state in the spread of rice farming, the influence of rice farming on the spread of malaria and the relations between the state- controlled land system and çeltükçi reayas' tax system. In general, historians and economists study the rice cultivation system in Ottoman State.

On the other hand, rice cultivation in the republican period has been studied by academicians, who have various academic disciplines such as agricultural engineering, medicine and social sciences (history, geography and economics). They mainly study rice cultivation in terms of statistical information of rice production and its cultivation areas, the agricultural conditions and the biological characteristics of rice, the influence of government through rice

23 Jess Phillimore, *Seeds of Freedom.*

24 Cem Seymen, "Çeltikten Pirince," *Para Dedektifi Belgeseli,* CNN TÜRK, 2014.

25 Jon Betz and Taggart Siegel, *Seed: The Untold Story.*

codes, and also the discussions on the relationship between malaria and rice in Turkey separately.

1.2.1 *Rice from the Eyes of Agriculturalists*

First of all, rice cultivation has been studied by some professors at Agricultural Faculties. For example, in *Türkiye Çeltik Ekonomisi*, Turan Güneş reveals the general structure of rice cultivation in the 1950s and the 1960s in Turkey. The thesis of this work is to indicate the economic difficulties of rice growing from its cultivation to marketing and discuss some actions to be taken. As field- work, he selected Ankara province in which small peasants were predominant and Adana province in which big landowners were predominant. Based on the mode of production, labor force, and the relations of production, he separated Turkey into eight geographical regions in rice cultivation. In addition to agricultural characteristics of rice, the economic and public dimensions of rice agriculture from its sowing to marketing are explained.[26]

Second, in *Türkiye Çeltik Ziraatinin Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ve Pişme Degerleri üzerine Araştırmalar*, Mustafa Uluöz explains the distribution of rice cultivation areas in Turkey, the varieties of rice cereal at the end of the 1940s, the processing of rice cereal (*çeltik*) to paddy (*pirinç*), rice trade, and the comparisons of Turkish rice and foreign rice in the world. The thesis of this work is to indicate the importance of the high nutritional value of paddy for societies and evaluate the rice farming situation of Turkey from economic, political and agricultural points of view in the early republican period. [27] Third, in *Sıcak İklim Tahılları*, Osman Tosun write on rice, corn and canary grass. From the varieties, economics, biological characteristics to the plant disease of rice are dealt with in this study.[28]

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26 Turan Güneş, *Türkiye Çeltik Ekonomisi* (Ankara: Ankara Üniversitesi, 1971).

27 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar* (Ankara: Gürsoy Basımevi, 1955).

28 Osman Tosun, *Sıcak İklim Tahılları* (Ankara: Teksir, 1969).

Fourth, in *Çeltik*, Ekrem Kün gives information about rice farming from cultivation to harvest technics, rice growing conditions and some rice varieties in the 1970s and 1980s.[29]

In addition to academicians, some professional agricultural engineers have written some books on rice. For example, in *Çeltik Yetiştirme Tekniği*, Nazım Durlu focuses on the general situation of rice cultivation in Turkey, the soil structure of paddy fields, rice irrigation and the techniques of rice growing and harvest.[30] Second, in *Çeltik Ziraati,* Mirza Gökgöl emphasizes the reasons for the preference of rice cultivation, in contrast to other cereals, higher yield characteristics of rice, the distribution of rice cultivation areas and its consumption in an urbanized world.[31] Similarly, in *Çeltik Tarımı*, Halil Sürek in Thrace Agricultural Research Institute explains the agricultural characteristics and economic conditions of rice cultivation. He tries to develop a widespread and analytical perspective on rice agriculture in Turkey. From the growing of rice, the history of rice and its marketing to the breeding of different rice varieties are explained.[32] In general, the explanations that these works offer are limited to the agricultural growing technics of rice. Apart from the works of Güneş and Uluöz, others are descriptive rather than being theoretical. However, almost all of them regard the Rice Cultivation Law of 1936 as a restriction to the development of rice farming in Turkey. Furthermore, they have been against the association of rice with malaria.

1.2.2 *Rice from the Eyes of Medical Experts and Social Scientists*

The relation between rice and malaria has been studied by historians, medical experts and agriculturalists. While agriculturalists cannot associate direct relation between them, historians and doctors claim that there is a connection. One of the first studies was written by Mehmet Şerif Korkut who was a doctor and the Deputy of Burdur province in 1946. He wrote a book in 1950 entitled

29 Ekrem Kün, *Çeltik* (Ankara: Türkiye İş Bankası, 1985), 1-27.

30 Nazım Durlu, *Çeltik Yetiştirme Tekniği* (Ankara: Fon Matbaası, 1966).

31 Mirza Gökgöl, *Çeltik Ziraatı* (Ankara: Güven Matbaası, 1960).

32 Halil Sürek, *Çeltik Tarımı* (İstanbul: Hasad Yayıncılık, 2002).

Sıtma ve Çeltik. As a thesis, he propounded the rise of agrarian capitalism at the end of the 1940s from a Marxian perspective. In this context, there were some impoverished peasants who worked in paddy fields and enriched big landholders thanks to rice cultivation. Korkut also explained the sources, the distribution and the folkloric reflection of malaria. He associated a connection between rice cultivation and malaria.[33]

Kyle T. Evered and Emine Ö. Evered wrote an article in 2016 entitled "A Conquest of Rice: Agricultural Expansion, Impoverishment, and Malaria in Turkey." They mainly developed a theory based on M. Şerif Korkut's study on rice cultivation at the end of the 1940s. Thus they focused on the critique of agrarian capitalism in the early Cold War period. They tried to reveal how rice cultivation led to poverty, malaria and corruption. They also emphasized the relations between big landowners and government in rice cultivation.[34]

In an article entitled *Pilavdan Dönen İmparatorluk: Meclis-i Mebusan'da Sıtma ve Çeltik Tartışmaları*, Chris Gratien explains the distribution of rice cultivation areas, economic and ecological discussions in the Second Constitutional era and their continuity in the early Republican era. As a thesis, he indicates the close relations of ecological problems with the socio-economic and political transformation in the late Ottoman period. In this context, he mainly focuses on the parliamentary discussions about rice between liberals and technocrats and also the measure for the prevention of malaria. He tried to indicate the common political attitudes of the deputies who had different political ideologies in case of having common economic interests. [35]

Fatih Tuğluoğlu wrote an article in 2008 *Türkiye'de Sıtma Mücadelesi 1924-1950.* Tuğluoğlu pays attention to a relation between agricultural activities and the spread of diseases in the world. He regards malaria as a social

33 Mehmet Şerif Korkut, *Isıtma ve Çeltik,* (Ankara: Yeni Matba, 1950).

34 Kyle T. Evered and Emine Ö. Evered, "A Conquest of Rice: Agricultural Expansion, Impoverishment and Malaria in Turkey," *Historia Agraria* 68, (2016): 103-136.

35 Chris Gratien, "Pilavdan Dönen İmparatorluk: Meclis-i Mebusan'da Sıtma ve Çeltik Tartışmaları," In *Osmanlı'dan Cumhuriyet'e Salgın Hastalıklar ve Kamu Sağlığı,* edited by Burcu Kurt and İsmail Yaşayanlar (İstanbul: Tarih Vakfı Yurt Yayınları, 2018), 97-117.

problem that prevents the continuity of a healthy generation and prevents labor productivity and agricultural production. Malaria was the first disease that was dealt with or talked in National Medical Congress in 1925. He discussed the sources of malaria, in what ways this disease spread and what measures were taken against malaria by the state through laws.[36]
Similarly, Ümmügülsüm Candeğer wrote an article in 2016 *Cumhuriyet'ten Günümüze Sıtma ile Savaş*. She specified when and how malaria disease appeared in Anatolia. She emphasized an institutional and legal basis in the campaign against malaria in the twentieth century.[37]Furthermore, Ümit Akagündüz wrote an article *II Meşrutiyet Döneminde Toplumsal Bir Sorun Olarak Sıtma ve Sıtmadan Korunma Çareler,* Akagündüz mainly focused on the perception of malaria by the society and the state at the beginning of the twentieth century. The measures of state in the eradication of the sources of malaria, medical treatment against malaria and the discussions in the Chamber of Deputies about rice cultivation were dealt with in detail.[38]

Besides, rice cultivation was studied from social, economic and political perspectives by historians. For example, Halil İnalcık wrote an article in 1982 entitled *Rice Cultivation and Çeltükçi Reaya System in the Ottoman Empire* in the fifteenth and sixteenth centuries. İnalcık tried to define and systematize a term of *çeltükçi reaya*. He also explained the role of the Ottoman Empire in the rice cultivation in some regions, tax payment, the organization of peasants in rice agriculture and rice consumption culture in the Ottoman Empire.[39] According to İnalcık, since rice required intensive labor force, paddy fields became small. However, this is much more related to cultivation techniques

36 Fatih Tuğluoğlu, "Türkiye'de Sıtma Mücadelesi," *Türkiye Patoloji Dergisi* 32, no. 4 (2008): 352- 356.

37 Ümmügülsüm Candeğer, "Cumhuriyetten Güzünümüze Sıtma İle Savaş," In *International Turkic World Educational and Social Science Congress,* edited by Sinan Demirtürk, (Ankara: Türk Eğitim-Sen, 2016), 411-419.

38 Ümit Akagündüz, "II Meşrutiyet Döneminde Toplumsal Bir Sorun Olarak Sıtma ve Sıtmadan Korunma Çareleri," *Kebikeç* 41, (2016): 95- 124.

39 Halil İnalcık, "Rice Cultivation and the Çeltikçi Reaya System," *Turcica* XIV, (1982),

according to agriculturalists. However, Faroqhi said rice was a modest luxury not a popular, everyday food for the Ottomans.[40]

Feridun Emecen wrote an article in 1993 *Çeltik,* where he explained the rice cultivation in Adana's Kozan region. Sis was the older name of Kozan district and there was a Sis Code that regulated rice cultivation areas and the share of rice production among peasants, states and workers. Emecen also explained how rice was consumed as a diet in festivals, Ramadan, hospitals and hospices.[41]

Zeki Arıkan wrote an article in 1990, *15 ve 16 yy da Anadolu'da Çeltik Üretimi*; Arıkan mainly focused on the spread of rice from its homeland into the world, rice cultivation in the Ottoman from the eyes of travelers such as Ibn Batuta and Evliya Çelebi, and also the rice cultivation in Anatolian beylics.[42]

Mehmet Akif Erdoğru wrote two works entitled *XV ve XVI yy da Aydın Sancağında Çeltik Tarımı* and *Fatih Sultan Mehmet Devri Aydın İli Mufassal Defterleri.* In these studies, Erdoğru mainly points out that in addition to miri lands, there had been rice cultivation in Waqf lands in Aidin Beylics. He explained the names of settlements, and then explained how Aidin Principality controls these places and how it collects taxes for rice cultivation,.[43]

Mehmet Karagöz wrote an article in 2004 *1193/1779 Senesi Rüsum Defterlerine Göre Bazarcık/ Tatarpazarında Pirinç Üretimi*. Karagöz mainly explains what cereals were consumed in the Ottoman Empire. Due to the requirement of the intensive labor force, rice was regarded as a valuable cereal. Karagöz explained rice cultivation and rice consumption in Ottoman Filibe as

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40 Suraıya Faroqhi, "İktisat Tarihi (17. ve 18. Yüzyıllar)" In *Türkiye Tarihi 3 Osmanlı Devleti 1600-1908,* edited by Oğuz Akkan and Sina Akşin (İstanbul: Cem Yayınevi, 1995), 191-215.

41 Feridun Mustafa Emecen, "Çeltik," *TDV İslam Ansiklopedisi* 8, (1999): 265-266.

42 Zeki Arıkan, "15 ve 16 yy da Anadolu'da Çeltik Üretimi" *V. Milletlerarası Türkiye Sosyal ve İktisat Tarihi Kongresi Tebliğler,* (Ankara: Türk Tarih Kurumu, 1990).

43 Mehmet Akif Erdoğru, "Aydın Sancağında Çeltik Tarımı XV-XVI Yüzyıl," In *Tarihin Peşinde Bir Ömür, Abdülkadir Özcan'a Armağan,* edited by Hayrunnisa Alan and Ömer İşbilir (İstanbul: Kronik Yayıncılık, 2018); Mehmet Akif Erdoğru and Ömer Bıyık, *T.T 0001/1 M. Numaralı Fatih Mehmet Devri Aydın İli Mufassal Defteri: Metin ve İnceleme* (İzmir: İzmir Araştırma ve Uygulama Merkezi, 2015).

an administrative part of Edirne Province in the eighteenth century.[44] In addition, rice cultivation takes part in Turkish Literature and Turkish Cinema. *Teneke* novel of Yaşar Kemal, *Kurbağalar* and *Acı Pirinç* films explain social lives around rice cultivation.

There are also three important dissertations about the socio-economic aspects of rice. The first two of them were written by Okan Gaytancıoğlu and Ahmet Şapaloğlu at Namık Kemal University Agricultural Faculty and the third was written by Sermin Kiraz Göloğlu at Middle East Technical University. *Türkiye'de Çeltikte Uygulanan Üretim, Fiyat ve Pazar Politikalarının Değerlendirilmesi* dissertation written by Okan Gaytancıoğlu in 1997 mainly depends upon the questionnaire method with 294 farmers, 32 factories, 8 retailers, and 600 consumers around Turkey. Gaytancıoğlu; tries to develop new suggestions for production, marketing and price policy of rice. He also explained the production process of rice and socio-economic conditions of rice growing in Turkey.[45] However, this thesis both tried to develop new suggestions for the increase of rice production and paddy marketing of Turkey.

Pirinç Üretim – Tüketim Zincirinde Pazarlama Kanallarının Yapısı ve Pirinç Pazarlama Marjları thesis written by Ahmet Şapaloğlu in 2015 tries to explain the economic voyages of rice from seed to pilaf in dinners. He does research on the production, marketing and processing channels of rice, the structure of the rice industry and the profit margins of them.[46]

Finally, *Gender Division of Labor in a Rice Producing Village* written by Sermin Kiraz Göloğlu who mainly explains the influence of the process of rural transformation, production, and reproduction on the gender division of labor. She made her field study in a rice producing village of the Tosya district of Kastamonu. Göloğlu pays attention to the fact that while men specialize in

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44 Mehmet Karagöz, "1779 Senesi Rüsum Defterine Göre Bazarcık- Tatarpazarı'nda Pirinç Üretimi," Fırat Üniversitesi Sosyal Bilimleri Dergisi 14, no. 2, (2004): 275-299.

45 Okan Gaytancıoğlu, "Türkiye'de çeltikte uygulanan üretim fiyat ve pazar politikalarının değerlendirilmesi" (PHD Thesis, Trakya Universitesi Fen Bilimleri Enstitüsü, 1997).

46 Ahmet Şapaloğlu, "Pirinç üretim - tüketim zincirinde pazarlama kanallarının yapısı ve pirinç pazarlama marjları: Edirne ili örneği" (MA Thesis, Namık Kemal University Fen Bilimleri Enstitüsü, 2015).

mechanized works, women specialize in labor- intensive works. Despite of agricultural mechanization, the labor intensity of women increased, the socio-economic status of women has not increased and patriarchal relations have still continued to exist.[47]Actually, all of these works have an anthropocentric perspective in the sense that they exclusively focus on human beings.

§ 1.3 A Critical Survey of Existing Literature

However, this dissertation is different from abovementioned academic studies in terms of attributing an agency role to rice, multidisciplinary perspectives and methodological approach. While all these studies mainly put people at the center and develop more anthropocentric viewpoint in their rice research, this thesis put the agricultural and biological characteristics of rice at the center and deals with the reciprocal and mutual interests between people and rice. While the humans benefit from rice in terms of nutrition, economic wealth and socio – economic prestige, the rice also benefits from people because this way it can pass down its genes. Thus it explains the socio-economic relations, socio-cultural life, and socio-political structures or institutions that revolved around rice cultivation.

In this context, rather than putting the role of people or government policies at the center, rice in its geographical context is mainly thought as the active agent in the making of socio-economic history. Besides, all services of the ordinary people, private - governmental institutions, or fiscal policies are considered as means of the growth of rice. In contrast to the modernist technical perspective of the abovementioned works, we will approach this subject from a more historical and social perspective.

Secondly, while these works in the literature only approached from one side of rice such as health, trade or agriculture in the historical process, this dissertation deals with rice cultivation from more analytical and multidisciplinary perspectives often prioritizing social relations. Especially three books

47 Sermin Kiraz Göloğlu, “Gender division of labor in a paddy/rice producing village” (MA Thesis, ODTÜ Sosyal Bilimler Enstitüsü, 1998).

such as *La Plus Belle Histoire des Plantes, The Botany of Desire, Verde Brillante* and *Bitkiler Düşünür mü?* encourage me to form the theoretical infrastructure of this dissertation. All of these studies regard plants as an actor and emphasize their reciprocal relations with human beings in a historical process. In *Verde Briallante*, Stefano Moncuso and Alexandra Viola mainly explain the secret and complicated world of plants with Darwinian theories. In this context, they also take into account the biological, social, and intellectual properties of plants.[48] Second, the authors of *La Plus Belles Histoire des Plantes* also indicate that plants are actors in the course of the historical process. They deal with the relations of plants with insects, people and other plants in their evolutionary period.[49] Third, in *Botany of Desire*, Michael Polland pays attention to the reasons why people or bees get into relations with these plants and questions the desires of human beings and bees. In this reciprocal and mutual opportunities, he also indicates how plants directs people and bees. Thus, he objects to anthropocentric perspectives and the objectification of nature.[50] Besides, in the article entitled as *Bitkiler Düşünür mü?* in 1976, based on the climate factors Temel Gençtan explains that plants have thinking skills and decision making process in tillering and spikelet process to increase their yield and carry their seeds into future. As an example, he gives wheat, corn, and legumes.[51]

48 Stefano Moncuso and Alexandra Viola, *Bitki Zekâsı,* 13-16.

49 Jean Marie, Marcel Mazoyer and Theodore Monod, *Bitkilerin En Güzel Tarihi,* 7-12.

50 Michael Pollan, *Arzunun Botaniği.*

51 Temel Gençtan, "Bitkiler Düşünür mü?" Bilim Teknik 9, no. 107, (1976): 22-23.

2

Introduction to Rice: Agricultural and Biological Properties

Although, the actions of human beings are mainly put in the center, and the role of plants in the making of history is not seen directly or ignored in the course of history, as an agent, plants have played a vital role in the demographic, the economic and the political developments of many societies and civilizations on a global scale. Furthermore, as if it was an invisible hand, the power of plants that results from their biological and agricultural properties, topography and climate have led to many wars, migrations or commercial activities among societies for centuries. In this context, thanks to their calorific value, carbon hydrate and substance content, especially cereals as staple foods have had a special place in the daily food consumption of people, agricultural production, economics, and trade.

Among cereals, rice is an annually cultivated plant that has the third largest sowing area after wheat and maize around the world.[52] Rice that is a kind of nutrient cereal, regarded as a staple food of more than half of the world population.[53] While our body benefits from 69 percent of wheat, it benefits

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52 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesi Çeltik Tarımı, Bugünkü Durumu ve Geliştirilmesi* (Diyarbakır: Güneydoğu Anadolu Tarımsal Araştırma Enstitüsü Yayını, 1988); 2; "Cereals," *FAOSTAT* accesed November 12, 2019, http://www.fao.org/faostat/en/#data/QC

53 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 11.

from 88 percent of rice. Especially, rice and rice starch are used to treat the stomach ache of babies.[54] Similar to other cereals, rice is an essential store of carbohydrates for people.[55] Moreover, since rice includes phytin and lecithin, it is the most natural digestible and the most productive cereal.[56] It has the highest level of nicotinic acid. However, concerning zinc and iron, rice is poorer than other grains. It results from processing that turns rice into the paddy. In the course of sparkling, pericarp, testa, aleurone, and embryo are got rid of the paddy. Thus, vitamin A, B, and E contents disappear. However, in the protein level of rice, the mineral of irrigated water and soil types are influential.[57]

Especially, from a socio-economic and socio-cultural point of view, rice plays an essential role in the nutrition of the Southeast and Far East Asia. Namely, rice is an Asiatic crop. These regions have had 89 percent of the cultivation area and 91 percent of rice production in the world.[58] However, how these cereals are consumed and cooked differentiate in distinct parts of the world. While wheat has the highest consumed staple food around the world, densely populated Monsoon Asian countries consume rice due to the socio-economic, cultural, and climatic factors in Asia.[59] Therefore 90 percent of rice is produced in Asia where 60 percent of the world population lives. While the Asian community takes 76 percent of their calorie from rice, this is only 21 percent for the rest of the world population.[60] Furthermore, rice cultivation has a special place in India and China where there has been the highest level of production concerning providing self-sufficiency and livelihood security.[61]

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54 Mirza Gökgöl, *Çeltik Ziraatı*, 4.

55 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 11.

56 Rahmi Çeltik, "Türkiye'de Pirinç Ziraatı," *Ziraat Dergisi,* no 15 (March 1941): 26.

57 Halil Sürek, *Çeltik Tarımı,* 146- 150.

58 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi* (Samsun: Karadeniz Tarımsal Araştırma Enstitüsü, 1993), 2

59 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar*, 1-5

60 Yılmaz Kaya, Gülfidan Kuyumcu, Selin Karakütük, and Yunus Emre Arman, "Kır Çeltik Bitkisi," YYÜ Tarım Bilimleri Dergisi 27, no.1 151

61 K.K Tripathi, O.P Govila, Ranjini Warrier and Vibha Ahuja, *Biology of Oryza Sativa L. (Rice),* (New Delhi: Ministry of Environment and Forests Government of India, 2011), 1-2

To be able to understand the socio-economic developments at the macro level, rice that is unique, remarkable, and invaluable needs to be discovered and put in the center with its biological properties at the micro -level. Therefore, this study deals with rice from its germination to turning into a pilaf. Since all struggles of people are to provide higher rice yield and productivity for their economic gain, this chapter mainly tries to explain what the biological and agricultural traits of rice are and how these properties direct peasants or producers in the cultivation, in the preference of rice varieties, the pest control, the fertilization and the harvest of rice.

§ 2.1 The Biological and The Morphological Properties of Rice

At first, biologically, the first study about rice genetic was done in 1908 by Von Der Stok.[62] When the botany of rice is researched, concerning taxonomy, it seems that the kingdom of rice is Plantae, the division of rice is Magnoliophyte, the class of rice is Liliopsida, the order of rice is Cyperales, the family of rice is Poaceae, and the genus of rice is *Oryza*. There are 25 species under the *Oryza* genus. However, Due to their economic and nutritious value, *Oryza sativa* L. and *Oryza glaberrima* L. which were two species of 25 rice species were firstly cultivated in agriculture.[63] While *Oryza sativa* L. is mostly grown in Asia and America, *Oryza glaberrima* L. is grown in Africa.[64] There are more than 40.000 varieties of cultivated rice. With its wild species, more than 90, 000 rice species are stored in Rice Gene Bank of the International Rice Research Institute (the IRRI) founded by Ford, Rockefeller, and

62 Halil Sürek, *Çeltik Tarımı,* 56-84; Mehmet Oğraş, *Çeltik Tarımı,* (İzmir: Ege Bölge Zirai Araştırma Enstitüsü Müdürlüğü, 1987), 5.

63 K.K Tripathi, O.P Govila, Ranjini Warrier and Vibha Ahuja, *Biology of Oryza Sativa L.* (Rice), 3.

64 Halil Sürek, *Çeltik Tarımı,* 56-84; Necla Türkoğlu, "Türkiyede Çeltik Alanlarının Dağılşı" *Ankara Üniversitesi Türkiye Coğrafyası Araştırma ve Uygulama Merkezi Dergisi* 7, no 14 (1992): 209

the government of the Philippines in 1960.[65] However, the number of rice varieties in rice banks of IRRI increased to more than 110,000 in 2017.[66]

Furthermore, the Rockefeller Foundation was the first institution that made financial support to rice studies across the world. Then Henry Ford and Bill Gates Foundations entered into the rice sector. Due to the high nutritional value of rice, it was selected as model cereal for gene research. Thus, Rockefeller made big donations to Cornell University, Stanford University, Purdue University, Ghent University, and Leiden University. More than 700 scientists from 30 countries took place in this research and 500 milliard USD was spent. In addition to Adrian Dubock who is a biotechnologist at Syngenta, with the participation of Ingo Potrykus in Switzerland Federal Technology Institute and Peter Beyer in Freiburg University who studied rice at Biological Science Center in Germany, they found DNA map of rice in 1988. In the end, the first GDO paddy was produced in 1999 and tried to be spread in the 2000s.[67]

Paddy is a product of *Oryza sativa* L. In its processing, cargo rice is obtained through husking but not pearling. Rice is achieved through husking, pearling, and getting rid of its embryo and aleurone layer.[68] Therefore, the starch content of rice is 78 percent, its protein content is 8 percent, its moisture content is 13 percent, and its oil value is 1 percent.[69]

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65 B.P Caton, M. Mortimer, and J.E Hill, *A Practical Field Guide to Weeds of Rice in Asia,* (Laguna: International Rice Research Institute (IRRI), 2004): 1

66 Halil Sürek and Necmi Beşer, tape recorded interview by author, İpsala, Edirne, Turkey. November 21, 2019.

67 Soner Yalçın, *Saklı Seçilmişler* (İstanbul: Kırmızı Kedi, 2019), 63-67.

68 Halil Sürek, "Türkiye'de Üretilen ve Yeni Tescil Edilen Çeltik Çeşitleri, "*Trakya Tarımsal Araştırma Enstitüsü Çeltik Yetiştiriciliği Semineri* Edirne, (May 29-31, 1991): 34

69 Nejat Gamzeli "2015-16 Çeltik Sezonu Değerlendirmesi" *Çiftçi ve Köy Dünyası Dergisi,* (October 2015): 39.

§ 2. 2 Rice Cultivation Methods

Rice is grown under four different ecosystems: irrigated, rainfed lowland, rainfed upland, and flood- prone.[70] Besides, rice is grown under different conditions and production systems but submerged in water. 57 percent of rice is cultivated on irrigated lands, 25 percent on rainfed lowlands, 10 percent on uplands, 6 percent in deep water, and 2 percent in tidal wetlands.[71] Rice is grown in the areas where average annual rainfall is less than 2500 millimeters through the irrigated water. In addition to white grain color, rice might be in different colors such as purple, brown, red and black.[72] Second, in the rainfed lowland ecosystem, rice is not irrigated, and soil surfaces are flooded less than the 50 cm depth of water. It is common in Monsoon Asia. Third, in the upland ecosystem, rice is grown in dry fields that are not flooded or flooded for short periods such as nine days. It is seen in Monsoon Asia. Fourth, in tidal wetlands rice cultivation, rice is grown in the areas which periodically flooded by sea or ocean water source from the tidal cycle. It is seen in New York. Finally, in the deep-water ecosystem, rice is grown in the flooded fields at least 50 cm depth of water. It is seen in India.[73] Due to the lack of enough water sources, there is a search for waterless rice cultivation.[74]

In its vegetation period, concerning the biological equilibrium, rice is a quite sensitive cereal. It requires all of its nutrients, water requirements and environmental conditions, such as humidity, temperature and solar radiation on time and at an adequate dosage. All of these require quite intensive and disciplinary labor force. Since the irrigated ecosystem is widespread in Turkey, this study mainly explains rice cultivation from the perspective of the

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70 K.K Tripathi, O.P Govila, Ranjini Warrier and Vibha Ahuja, *Biology of Oryza Sativa L. (Rice),* 1

71 V.L Chopra, and S. Prakash," Evolution and Adaptation of Cereal Crops" *Annals of Botany,* 91, no.4 (2002):500-501.

72 "Rice and human nutrition"*International Year of Rice,* (Rome: FAO, 2004), 1.

73 D.J Mackill, W.R. Coffman and D.P Garitty, *Rainfed Lowland Rice Improvement,* (Manila: IRRI, 1996), 1-4

74 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey. August 20, 2018.

irrigated rice ecosystem. Rice is the only cereal that uses oxygen soluble in water. Besides, water in rice fields is essential to prevent herbs that influence, the morphological trait of rice, nutrients and the yield of rice. However, water depth should be 15 cm ideally for water- saving and yield: water depth in rice field influences tillering and the number of panicles. On the other hand, in the case of more than 15 cm water level, the temperature of soil and water declines, the robustness of rice root weakens, and rice begins to lodging. To prevent lodging, ammonium sulfate fertilizer should be cut, water flows into rice should be cut at certain intervals, and the panicles of rice should be harvested.[75]

§ 2. 3 The Development and the Growth of Rice

Rice is classified according to its grain size and shape. However, the rice classification in India and the Philippines are different from each other. The classification of rice has been developed by the Ramaiah Committee in 1965 which was appointed by the Government of India. Based on the length and width ratio of the kernel, rice varieties are separated into five groups such as long slender, long bold, short slender, short bold and medium slender.[76]

Similarly, the international classification of rice has been developed by the IRRI.[77] Rice is separated into three groups. These are long length rice varieties that are 7-8 mm, middle length rice varieties that are 6-7 mm and also short length rice varieties that are 5-6 mm. For example, Bersani is a long length, Maratelli and Lançio (*Dervish*) are mid-length grain and also Egypt and *Sarı kılçık* is a short length.[78]

Biologically, rice has three pericarps. These are palea inferior, palea superior, pericarp, and testa. The rest area that is starch part of rice is called

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75 Halil Sürek, *Çeltik Tarımı,* 5-15.

76 K.K Tripathi, O.P Govila, Ranjini Warrier and Vibha Ahuja, *Biology of Oryza Sativa L. (Rice),* 1-2.

77 Ibid, 2.

78 Muzaffer Alap, *Çukurovada Çeltik Ziraatı ve Sulama Tekniği,* (Adana: Yıldız Matbaası, 1957), 11.

endosperm that is rich in potassium, phosphor, and magnesium. Rice is a caryopsis that is composed of one seed, and its length is similar to a boat. The grain of rice is thick with glume, caryopsis, endosperm, and embryo. In stems, mesocotyl is a kind of small stem that develops between the seedling of rice and seed. Mesocotyl also pushes the first leaf into the soil surface. In the other part of the embryo, the seedling of rice begins to vegetate. Then the first leaf grows shaped like a cylinder. The stems of rice are composed of nodes and internodes. The length of the internodes depends upon rice species and environmental conditions. Each internode produces only one leaf. For the growth of leaves, rice needs at least 16 ºC. While the number of nodes differentiates between 13 and 16, the number of upper nodes is 4 or 5. As the water level in the field is raised, the distances among sub-internodes increases.[79]

In this process, tillering begins to be in the period between the holding of rice seedling on to the soil and the beginning of a panicle. Tillering continues for thirty days and it is closely related to weather conditions. Temperature between 25 and 30 ºC is essential to be tillering. Although at first, the new tillers attach to the main stem of rice, they take root by separating from the remaining seedling.[80]

Furthermore, the tillering of rice depends upon plant seed rate, daylight, nutrients, water depth, and growing technique. Based on the rice varieties, the number of tillers is between 3 and 12. Adequate tillering enables uniform maturity and vegetation in rice fields. Due to competition among plants for sunshine and nutrients, the plant seed rate of rice influences tillers. As their seed rate decreases, the number of tillers increases. Irrigation and fertilization with nitrogen and phosphor fertilizers enable the growth of tillering, leaf blade narrow, and long. Averagely, a new leaf is out on the main seedling of rice once a week. Before the period of panicle of rice, low temperatures and long days increase the number of leaves.[81] Although the use of phosphor is suggested before the cultivation of the soil, the rice fields where have been cultivated for an extended period do not need it too much.[82]

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79 Halil Sürek *Çeltik Tarımı,* 10-15.

80 Ibid., 55.

81 Ibid., 11-20.

82 Ibid., 98.

There is a panicle at the top of rice from each internode on parallel to the panicle branch out. The density of the panicle depends upon the number of spikelets that are composed of the grain of rice and the angles between tillers and the main stem. The first tillers have more panicles. If there is not enough water flow, the formation of panicle delays. Besides, in awned varieties of rice, there is an awn develops as the extension of the median vein in the inner glume. The environmental conditions widely influence the awn of rice. However, the length of awns varies among different spikelets on the same panicle.[83]

The vegetation period of rice depends upon climatic factors, varieties, and day length. Therefore, when all rice varieties considered, rice grows between 100 days and 210 days. The generative period of rice takes shape between the panicle and florescence.[84] Based on their vegetation period, rice varieties are grown between 100 and 125 days called as early seasoned varieties, those that are grown between 125 and 150 days called as mid-early seasoned varieties and also those grown between 150 and 180 days called as late seasoned rice varieties that have the highest productivity.[85] Rice needs a calorie between 4000 and 5000 in its vegetation period.[86]

The period of the panicle is a quite significant period concerning high productivity. In this process herbicides should not be used, the water level should remain at the same level, the sunshine duration of rice should be adequate, air temperature should be more than 13 ºC and the last nitrogenous fertilizer should be used. Similarly, during the periods of the tillering, the seedling, and the panicle of rice, herbicides have an adverse effect on the plant. Herbicides should be used in the period between the end of tillering and before the beginning of the panicle.[87]

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83 Ibid., 13-17.

84 Benito S. Vergera, "Plant growth and development." In *Rice Production,* edited by Bor. S. Luh (Laguna: Manual. University of the Philippines, 1970): 13; Halil Sürek *Çeltik Tarımı,* 14.

85 Muzaffer Alap, *Çukurovada Çeltik Ziraatı ve Sulama Tekniği,* 11.

86 Nuran Taşlıgil and Güven Şahin, "Türkiye'de Çeltik Yetiştiriciliği ve Coğrafi Dağılımı," *Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,* 4, no. 6 (June 2011): 184-185.

87 Halil Sürek, *Çeltik Tarımı,* 21-55.

Florescence takes shape shortly afterward of the panicle and continues for five days. Florescence is the most sensitive process to air temperature therefore 22, and 35 °C is essential to be florescence. In this process, spikelet opens almost two hours and closes after pollination that is necessary for the formation of grain. Rice is self-pollinated, and it occurs until midday. Starch begins to be seen in endosperm three days later. However, strong wind and low temperatures widely prevent pollination.[88] After this thirty or forty-five days of the period, the grain of rice matures in almost thirty days. It also coincides with the period when the panicles are out in half. It continues to be until 21 percent of moisture content in rice grain.[89]

As temperature decreases, the maturing time increases. Thus, solar radiation is quite essential for higher productivity. The maturing level of grain and the environmental conditions during the maturing time of grain determines the yield, the grain image, and the cooking quality of rice. The color of grain turns from green to yellow. The sub leaves of rice die and upper leaves are green. The filling of the rice grains based upon the amount of carbohydrate, the number and the size of spikelet and air temperature.[90]

§ 2. 4 The Geographical Distribution of Rice

The borders of rice cultivation are between Amur River between Russia and China on 53 north and central Argentina on 40 south latitudes.[91] Based on the temperature and air conditions, the vegetation period of rice extends, and its competition against herbs declines from Ecuador to polar circles.[92] Rice is the only agricultural product that adapts to different climates, water conditions, and soil types. Concerning altitude and temperature, rice can be sown

88 Ibid, 17-56.

89 W. Stansel, "The rice plant: its development and yield," In *Six Decades of Rice Research in Texas,* edited by J.C. Miller, (College Station: Texas A&M University, 1975): 9-21; Halil Sürek, *Çeltik Tarımı,* 18-56.

90 Halil Sürek, *Çeltik Tarımı,* 18-56.

91 *International Rice Research: 25 Years of partnership,* (Los Banos: IRRI, 1985): 1.

92 Halil Sürek, *Çeltik Tarımı,* 27.

lower than 2500 meters, and it needs air temperature between 18 and 35 °C.[93] For example, rice can be grown in the mountains of Nepal as an upland crop and under irrigation in the hot deserts of Pakistan in different parts of Asia, Africa, and Latin America.[94]

2. 4. 1 *Ecological Factors: Precipitation, Temperature, Winds and Soil Types*

In the historical process, due to its high productivity and high price, rice began to be spread into other parts of the world besides, tropical regions after the Second World War. [95] Although rice necessitates an intensive labor force and agricultural inputs such as fertilizers, modern agrarian equipment, and herbicides, it is quite sensitive to weather conditions such as air temperature, water temperature, moisture, fog and precipitation at the same time. All of them influence both its growing process and its productivity directly.[96] Excessive raining together with high temperature leads to the rise of relative humidity that causes fungus. Similarly, raining also prevents solar radiation adequately delays its harvest, and decreases its productivity. Solar radiation especially is essential 40 days of a process before the maturing of rice. Winds also prevent rice from the filling of grain and cause lodging and yield decrease.[97]

Climate, air temperature, the quality of irrigated water, the amount of herbicide, the amount of fertilizer used in the rice fields affect the growth of rice. Rice needs 20 and 31 °C of air temperature during its vegetation period. Otherwise, low air temperature decreases the seed germination vigor and

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93 Nuran Taşlıgil, Güven Şahin, "Türkiye'de Çeltik Yetiştiriciliği ve Coğrafi Dağılımı," 184-185.

94 K.K Tripathi, O.P Govila, Ranjini Warrier and Vibha Ahuja, *Biology of Oryza Sativa L. (Rice),* 1.

95 Mirza Gökgöl, *Çeltik Ziraati,* 3.

96 Halil Sürek *Çeltik Tarımı,* 56-82.

97 Halil Sürek, "Çeltikte Verim Komponentleri ve Bunlara Etki Eden İklim Faktörler," *Trakya Tarımsal Araştırma Enstitüsü Çeltik Yetiştiriciliği Semineri*, Edirne (May 29-31, 1991): 49; Halil Sürek, Çeltik Tarımı, 58.

seedling growth.[98] While rice growing depends on air condition, on the one hand, it directs peasants in using agricultural inputs on the other.

The quality of water and water temperature are two essential criteria in rice cultivation. Hard water and cold water are not suitable for rice. Water temperature should be ideally between 13 and 23 °C. However, the most suitable degree of water temperature is between 18 and 35 °C. Although water temperature less than 12 °C cannot lead to cold damage in a day, it causes the pale and the death of rice in a week. In the growing of rice, 12 °C and 42 °C of water temperature are critical threshold values. While rice cannot be germinated less than 12 °C, the number panicle declines. While the average water temperature is 24 °C in Edirne, it is lower in Samsun and Diyarbakır.[99]

Indica, Javanica, and Japonica are sub-species of *Oryza sativa* L. differentiate concerning morphology from each other. Indica rice grows in tropical regions such as India, North China, and Malasia, has 75 percent of World rice trade.[100] Indica subspecies have large and light green leaves. They are long long, and they have a narrow, long, and flat grain structure.

On the other hand, Japonica subspecies that grow in the subtropical region have narrow and dark green. They are short, and they have short and large round grain structure.[101] They are grown in subtropical regions such as Southeast Asia, Korea, and Japan.[102] While Japonica subspecies of rice cannot grow under 10 °C, those of Indica cannot grow under 20 °C. Indica sub-species are more sensitive to insolation. Therefore, while the Indica sub-species mature in 90 days in the fields of the IRRI, they grow at least 150 days in the fields of Thrace Agricultural Research Institute in Edirne. In the pollination period, rice is quite sensitive to low temperatures. In this period, 15 and 20 °C are

98 Ibid., 19- 43.

99 Halil Sürek, *Çeltik Tarımı,* 55-83.

100 Yılmaz Kaya, Gülfidan Kuyumcu, Selin Karakütük, and Yunus Emre Arman, "Kır Çeltik Bitkisi," 151.

101 Mehmet Oğraş, *Çeltik Tarımı,* 6.

102 Yılmaz Kaya, Gülfidan Kuyumcu, Selin Karakütük, and Yunus Emre Arman, "Kır Çeltik Bitkisi," 152.

critical temperatures for sterility of rice. Due to cold damage on rice, germination rate decrease, a decline of spikelet and tillering, and also irregular and delayed maturing of rice can be seen. On the other hand, hot wind damage also increases the possibility of sterility. It is seen in Africa, the Middle East, and Pakistan.[103] In case of cold air temperature, as a measure, the water level of rice fields should rise.[104]

Although the low moisture during the growing period of rice decreases the possibility of plant diseases in particular fungus, temperature differences between day and night increases the potential of spikelet sterility in Edirne. In contrast to lower air temperature, due to higher relative humidity, a fungus is more common in the rice fields of Samsun. When the rice fields of Karacadağ in Diyarbakır are considered, it is seen that there are high air temperatures and low relative humidity during summer. Although it decreases the possibility of fungus, high air temperature during florescence and pollination increases spikelet sterility. Namely, the productivity of rice is based on temperature, insolation, relative humidity, precipitation, and wind.[105]

When the distribution of precipitation in Karacadağ is considered, 98 percent of raining is seen between October and May rather than summer.[106] When the average annual precipitation between April and October in Edirne, Samsun, and Diyarbakır have been researched since 1929, it seems that it is 296 mm in Edirne, 351 mm in Samsun, and 149 mm in Diyarbakır.[107] In Samsun, summers are warm, and winters are mild and rainy. The relative humidity is

103 Halil Sürek, "Çeltikte Verim Komponentleri," 44.

104 Mustafa Yıldız, "Çeltik Zararlıları," *Pancar Çiftçi Dergisi,* no. 141 (June 1964): 10.

105 Halil Sürek, *Çeltik Tarımı,* 50-59; T.C GAP Bölge Kalkınma İdaresi Başkanlığı, "GAP Bölgesinde Sulu Tarım Koşullarında Uygun Çeltik Çeşitlerinin Saptanması," *Tarım Araştırma Raporları* 13, (1993): 6.

106 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesi Çeltik Tarımı, Bugünkü Durumu ve Geliştirilmesi,* 6.

107 "İllerimize Ait Genel İstatistiki Veriler," Meteoroloji Genel Müdürlüğü, accessed August 12, 2019, https://www.mgm.gov.tr/veridegerlendirme/il-ve-ilceler-istatistik.aspx?k=undefined&m

quite higher than Thrace and Southeast Anatolia. There is a continental climate in which there are high temperatures and drought in summer in Edirne, Diyarbakır, Şanlıurfa, and Mardin.

According to the research of Tarsus İrrigated Farming Research Institute, salty and alkaline soils that occupy a significant place in Turkey can be reclaimed and used to obtain high yield only through rice cultivation.[108] Furthermore, rice cultivation is regarded as a solution for the drying and improvement of marsh areas. However, rice cultivation was transitory for such lands.[109] The size of salty and sodium lands was 12700000 decars in Turkey in the 1990s. These lands are seen in closed basins and some deep alluvion plains.[110]

Salty soils are seen in dry and hot climate regions. Regarding soil type and climate, rice is the most suitable crop for the reclaimation of these areas and getting a higher yield.[111] In addition to the salty lands of Bafra, Çarşamba and Meriç Plains, the high-level water table in these plains force peasants to involve in rice cultivation.[112] Water filled rice fields decreases the amount of salt in the soil until sixty cm.[113] For the improvement of these lands, farmers spend vast sums for the cleaning and mending of water channels to keep water. These expenses are shared among farmers based on the size of the plain.[114] Peasants have cultivated more profitable crops in time. Although rice can be grown in all types of soils, nonpermeable soils such as clayed soils and vegetal earth, little sandy, and little calcareous soils are the most suitable lands.[115]

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108 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 14.

109 Necla Türkoğlu, "Türkiyede Çeltik Alanlarının Dağılşı" 219.

110 Necmi Beşe, "Tuzlu ve Alkali Şartlarda Çeltik Tarımı," *Trakya Tarımsal Araştırma Enstitüsü Çeltik Yetştiriciliği Semineri,* Edirne, (May 29-31, 1991): 40.

111 Getraud Repp and A. Aras, "Tuzlu Toprakların Çeltik Ziraatı ile Islahı," *Ziraat Dergisi*, no. 109 (September 1951): 31-34.

112 Arzu Özalp, "Trakya'da Çeltik Üretiminin Ekonomik ve İstatistiksel Analizi," (Uzmanlık Tezi: TÜİK, 2003): 25.

113 T.C Tarsus Zirai Araştırma Enstitüsü, "1963 Yılı Araştırma Raporu, Tarsus" (1963): 34-43.

114 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 69- 95.

115 Halil Sürek, *Çeltik Tarımı,* 60.

Rice needs a pH-value between 6.5 and 7.5. However, most of the water has a pH-value between 4.5 and 6 in Turkey. Rice moderately resists to soils that are rich in chlorite, sodium, calcium, and alkali. Rice is especially sensitive to salinity during its germination and tillering stages. This problem is seen primarily in the Karacadağ Agriculture Basin.[116] Salinity also causes a decrease in the number of the tillers, kernel weights and spikelet number. [117]

Besides, the lack of zinc is one of the most critical issues in rice fields. Due to the cultivation of high productive rice varieties, the use of urea fertilizer instead of ammonium sulfate fertilizer and the use of overdose phosphor fertilizer, the zinc of rice decreases. Thanks to the lack of zinc tolerant varieties, cropping systems and the use of zinc, this problem can be solved.[118]

For the growth of plant roots in irrigated farming, the deepness of soil is quite essential. Otherwise, in shallowing soils, plant roots cannot grow adequately. The rate of shallowing soils in Southeast Anatolia is between 57 and 83 percent. Furthermore, it is cultivated in the stony lands of the Karacadağ Agriculture Basin where is located between Diyarbakır and Şanlıurfa in extensive methods.[119]

§ 2. 5 The Preparation of Rice Fields

The first golden rule in rice cultivation is the proper preparation of fields within a fixed time. The cultivation of the soil is necessary for agricultural control, the increasing of the effects of fertilizer and the unearthing of nutrients.[120] Thanks to adequate plowing, new microorganisms come to exist and water holding capacity of soil increases. This process begins with deep plowing in autumn that is necessary for the mellowness of soil during winter. To

116 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesi Çeltik Tarımı, Bugünkü Durumu ve Geliştirilmesi,* 5.

117 Necmi Beşe, "Tuzlu ve Alkali Şartlarda Çeltik Tarımı," 40.

118 Halil Sürek, *Çeltik Tarımı,* 64-65.

119 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesi Çeltik Tarımı, Bugünkü Durumu ve Geliştirilmesi,* 2.

120 Halil Sürek, *Çeltik Tarımı,* 68.

retain water, the land is cultivated by disc-harrow. However, if there is mellowness of soil, peasants should plow their rice fields. However, in dry seasons they should use disc harrow.[121]



Figure 2.1: Rice Cultivation in İpsala in the 1950s
SOURCE: İpsala State Hydraulic Works

On the other hand, in spring, the plowing of rice fields should be more shallowing.[122] Before agricultural mechanization, borderlines among rice fields were made by human labor and rice fields were plowed by oxen or horses.[123] Then, tractor mounted land blade make these bank which is called as *tir* or *manda beli* in Edirne or *kaş* in Samsun. The length of them is between 30 and 50 cm. Their size is between 30 and 40 cm.[124] After the invention of the tractor, peasants only used draught animals while carrying rice bunches in Meriç, the

121 Mirza Gökgöl, *Çeltik Ziraatı,* 4-19.

122 Muzaffer Alap, *Çukurovada Çeltik Ziraatı ve Sulama Tekniği,* 9.

123 Using draught animals in plowing firstly began to be seen in Sumerians, Ahmet Özçelik, *Tarım Tarihi ve Deontolojisi* (Ankara: Ankara Üniversitesi, 2005), 23.

124 Halil Sürek, *Çeltik Tarımı,* 68.

Lower Kızılırmak and Lower Yeşilırmak Basins in the 1970s.[125] In these three basins, tractors have been used by small landholders since the mid-1960s.



Figure 2.2 The Transportation of rice seed in İpsala in 1951
SOURCE: İpsala State Hydraulic Works (DSİ)



Figure 2.3 Land Leveling in rice fields (the Meriç Basin)
SOURCE: https://www.tractorweb.tv/case-ih-155-puma-kaba-tesviye-uygula-masi_1da8f93d8.html

125 Mehmet Topçu and Hasan Topçu, tape-recorded interview by the author, Akçadam, Meriç Edirne, Turkey August 20, 2018.

Land leveling is the necessary second step for the homogeneous spread of adequate water and vegetation in a rice field, the drainage of the soil surface and the control of herbs in rice fields.[126] Furthermore, thanks to land leveling, the size of fields increases, and the number of borderlines between them decreases.[127] But large sized of fields makes it difficult for seeds to hold into the soil. Waves result from winds; seeds may move.[128] Until the land leveling by laser technology in the 1990s, rice fields had been harrowed by draught animals such as horses, oxen, and buffalos or by tractor-mounted leveling blade.[129] Laser technology made larger sizes of rice fields possible. Thanks to harrowing, the pieces of hard soil could be demolished, the permeability of soil decrease and land could be compacted.[130] Thus the spread of water and the growth of rice plants in the rice field could be provided homogenously.

After the plowing, disc harrowing and land leveling, the subsurface tillage in rice fields ends. These are the golden rule of providing homogenous rice quality, higher productivity and yield. These explanations are valid for Edirne where rice has been cultivated in the alluvial valley plain along the Meriç and Ergene rivers since the 1930s. By the same token, Samsun where rice has been grown in the alluvial plains of Kızılırmak and Yeşilırmak since the mid- nineteenth century.[131] While the use of animals in rice cultivation was between 13 and 17 percent in Samsun before the 2000s, many small landowners have used tractor since mid the 1960s in Edirne.[132]

While mechanization has been needed in the rice cultivation of Samsun and Edirne, it has not been the same for Karacadağ. Rice has been cultivated in the method of surface irrigation in stony and salty lands without implementing land leveling, plowing or without making rice fields in Karacadağ

126 Halil Sürek, *Çeltik Tarımı,* 89.

127 Mirza Gökgöl, *Çeltik Ziraatı,* 22.

128 Bülent Kıral, Halil Sürek, A. Kadir Ezer, Mustafa Nergis and İ. Hakkı Yüce, *Çeltik* (Edirne: Zirai Araştırma Enstitüsü Müdürlüğü, 1985):11; Mehmet Oğraş, *Çeltik Tarımı,* 10.

129 Halil Sürek, *Çeltik Tarımı,* 66.

130 Nazım Durlu, *Çeltik Yetiştirme Tekniği*, 5.

131 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) Tarım *İstatistikleri 1928-34 (Agricultural Statistics 1928-1934).* Ankara: 1936, 32-34.

132 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi,* 13.

for centuries.[133] Furthermore, the intermittent flow irrigation method is used in this basin.[134] These lands are called *beyar* colloquially in the Karacadağ Agriculture Basin.[135] This type of cultivation method made rice different from other agricultural products in Southeast Anatolia such as wheat, lentil and cotton.[136] The same rice cultivation method was seen in Kahramanmaraş in the 1960s.[137] Since there was no ground surface tillage in primitive agriculture, the rice fields cannot be cultivated for more than two years.[138] However, thanks to this cultivation method of rice, the use of fossil fuel and the production cost of rice decline.[139] While these lands are named as *beyar,* flat lands are called *kepir* in the Karacadağ Agriculture Basin.[140]

Then, these fields are prepared for sowing. In this context, there are three methods of rice planting. Before the use of rice seed, peasants should control if it is clean regarding red rice and other herbs. The changing of seeds is suggested once every three years. Red rice matures early, needs more pearling in plants and causes a decrease in yield and price. Red rice can be seen in rice fields where a cropping system is not implemented. Both farmers and industrialists do not prefer red rice.[141]

While half of the rice producers left their rice seed or supply it from other farmers, the rest half of them bought it from merchants or cooperatives. Furthermore, while almost 30 percent of Bafra's farmers bought from cooperatives, only 10 percent of Çarşamba's farmer bought it from cooperatives in

133 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesi Çeltik Tarımı, Bugünkü Durumu ve Geliştirilmesi,* 8-9.

134 Şerif Kahraman, Şeyhmus Atakul and Sevda Kılınç, "Diyarbakır Yöresinde Çeltik Tarımının Yapısal Durumu," *Bahri Dağdaş Bitkisel Araştırma Dergisi* 8, no. 1 (2019): 84.

135 Kardaş Ailesi, tape- recorded interview by the author, Yenişehir, Diyarbakır, Turkey. August 09, 2018.

136 M. Adil Kayapınar, Şerif Kahraman, tape- recorded interview by the author, Yalankoz, Diyarbakır, Turkey August 09, 2018.

137 Mehmet Şirin, "Maraş'ta Çeltik Ziraatı," *Pancar Çiftçi Dergisi*, no. 177 (June 1967): 30.

138 Ahmet Özçelik, Tarım Tarihi ve Deontolojisi, 12.

139 Şerif Kahraman, Şeyhmus Atakul and Sevda Kılınç, "Diyarbakır Yöresinde Çeltik Tarımının Yapısal Durumu,", 83.

140 Kardaş Ailesi, tape- recorded interview by author, Yenişehir, Diyarbakır, August 09, 2018.

141 Halil Sürek, *Çeltik Tarımı,* 69.

the 1990s.[142] Peasants leave a fair amount of seed from their fields in Karacadağ. In Edirne, while some peasants use their rice as seed, some of them buy from cooperatives.

2. 5. 1 *The Sowing Methods of Rice*

The sowing of rice depends upon the temperature of the air, water, soil and also the vegetation period of rice varieties.[143] Based on the research of Thrace Agricultural Research Institute in Edirne and Black Sea Agricultural Research Institute in Samsun, to be able to provide the highest yield, the most suitable sowing time of rice in Turkey where is in the mild temperate zone and it is the second week of May. Furthermore, while earlier cultivation might cause cold damage, late cultivation may cause late maturing and harvest. On the other hand, according to the rice research of Çukurova Agricultural Research Institute in Adana and Southeast Anatolia Agricultural Research Institute in Şanlıurfa, the most suitable period for rice cultivation for their regions is between the second week of April and the first week of May.[144] However, due to the limited amount of irrigated water, peasants have lined up for rice cultivation in the Karacadağ Agriculture Basin. Thus peasants cultivate their lands in the period between 15 April and 15 June.[145] Similar to Karacadağ, lack of an adequate amount of water may delay or make difficult rice cultivation in Edirne and Samsun. Besides, as an important criterion, the amount of available water determines the size of cultivable lands of rice. However, as the fields are cleaned from stones, peasants may cultivate wheat, barley and vegetables in Karacadağ.[146] For harvest time, October 15 and 20 is the most suitable date for Meriç, Karacadağ, Lower Yeşilırmak and the Lower Kızılırmak Basins.[147]

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142 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi*, 13.

143 Ibid., 2.

144 Halil Sürek, *Çeltik Tarımı,* 73.

145 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesi Çeltik Tarımı, Bugünkü Durumu ve Geliştirilmesi,* 9-11.

146 Şerif Kahraman, tape- recorded interview by author Yalankoz, Diyarbakır, Turkey. August 09, 2018.

147 Nuran Taşlıgil and Güven Şahin, "Türkiye'de Çeltik Yetiştiriciliği ve Coğrafi Dağılımı," 185.

As is seen, the differences in the period of rice cultivation sources from a geographic altitude of these basins.

There is three weeks' time gap between tillage and sowing. Rice seeds had been germinated in big barrels during 2-3 days before sowing into rice fields. Similar to Turkey, broadcast sowing is the oldest and the most widespread cultivation method of rice in the world. This pre-germination before sowing provides rice with protection against cold damage. Germinated rice grains in water swell out and get heavier. Thus they sink to the bottom quicker and grow in fields in a short period. Since the layer of alluvion sinking over the rice seed provides them with holding into the soil, slightly blurred water is essential for cultivation.[148] Each decar of rice field needs one ton of water per hour.[149]

Although broadcast sowing cultivation encourages tillering, there is a negative correlation between the number of tillering and the length of the panicle.[150] As it can be seen Krosnodarsky-424, and Rocca have much more panicle.[151] The other cultivation methods are the broadcast sowing of rice seeds with the help of fertilizing machine and drilling. However, in drilling, rice seeds are sown in dry soils. Since drilling increases expenses, labor force and the possibility of herbs, it is not preferred. After a week of sowing, the water flow of rice fields is cut. For five days these fields are dried, and thus the roots of rice seedlings hold on to the soil. Otherwise, at least 20 percent of rice (5 kg) seeds go to waste.[152] In this period, the water level of the fields should not exceed the length of rice seedling.[153]

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148 Bülent Kıral, Halil Sürek, A. Kadir Ezer, Mustafa Nergis and İ. Hakkı Yüce, *Çeltik,* 9-16.

149 Mirza Gökgöl, *Çeltik Ziraatı,* 4.

150 Yusuf Şavşatlı, Coşkun Köycü, and Ali Gülümser, "Fideleme ve Serpme Ekim Yöntemlerinin Bazı Çeltik Çeşitlerinde Verim ve Verim Unsurlarına Etkisi," *OMÜ Ziraat Fakültesi Dergisi* 21, no. 1 (2006): 6 -8.

151 Halil Sürek, *Çeltik Tarımı,* 73-75.

152 İlhan Ceylan, tape-recorded interview by the author, Rahmanca, Meriç, Edirne, Turkey, August 20, 2018.

153 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesi Çeltik Tarımı, Bugünkü Durumu ve Geliştirilmesi*, 2.

To be able to germinate, rice seeds in fields need at least 9 °C and at most 42 °C. Except for this gap, rice has difficulty in germinating. The average annual weather temperature has been at 19 °C in Edirne, about 23 °C in Diyarbakır and also 19 °C in Samsun in the months between April and October since 1929.[154]

The other method is transplanting. It is the Japanese method of rice sowing. However, different cultures developed the same technique without being aware of it .[155] The history of the transplanting method goes backs to the 1940s.[156] Apart from rice, transplanting cannot be seen in the cultivation of other cereals.[157] For seedling growing, rice needs the temperature between 25 and 30 °C. If the temperature goes below 12 °C seedlings die.[158] Rice seedling has grown in a month sown into the fields in the deepness of 2 cm as 2 or 5 roots. They can hold on the soil in 5 days, and nitrogen fertilizers are used in this period. The rice varieties that have a higher potential for tillering are more suitable for the transplanting method. This method is implemented in Southeast and Far East Asia where indica subspecies grow in a short period, and the labor force is cheaper and excessive. Thanks to transplanting, herb control, higher yield, 30 percent of water saving and homogenous vegetation can be provided.[159] Furthermore, seedling both increases the resistance of rice to loading and increases the number of tillers. While the rice varieties such as Camolin, Americano, Rocca, Plovdiv and Egypt are more suitable for transplanting, Maratelli is more suitable for broadcasting sowing.[160] However, in

154 "İllerimize Ait Genel İstatistiki Veriler," *Meteoroloji Genel Müdürlüğü,* accessed August 12, 2019.

155 Mirza Gökgöl, *Çeltik Ziraatı,* 43

156 Yusuf Şavşatlı, Coşkun Köycü, and Ali Gülümser, "Fideleme ve Serpme Ekim Yöntemlerinin Bazı Çeltik Çeşitlerinde Verim ve Verim Unsurlarına Etkisi," 6.

157 D. H Giss, "Yarı Dünya'nın Temel Gıdası Pirinç," Translated by, Hatif Öğe, *Ziraat Dergisi,* 102 (July 1950): 31.

158 Halil Sürek, *Çeltik Tarımı,* 55.

159 Ibid., 75-76.

160 Halil Sürek, "Fideleme ile Trakya Bölgesinde Kışlık Tahılardan Sonra İkinci Ürün Çeltik Yetiştirme İmkanı," *Trakya Tarımsal Araştırma Enstitüsü Çeltik Yetiştiriciliği Semineri*, Edirne (May 29-31, 1991): 62.

general, japonica subspecies of rice in Turkey mature in a more extended period and not suitable for transplanting.[161]

Averagely, 15-20 kg seed of rice is used per decar. The number of rice seeds used in the fields depend on the fertility of the land, soil type, rice varieties, the size of rice seeds, thousand kernel weight, and sowing time.[162] Firstly, based on the size of seeds, while 19 kg of Ribe and Rocca were used, 22 kg of Plovdiv and 16 kg of Korosnadarsky-424 were used per decar.[163] Second, the amount of rice seed per decar can be increased under the conditions in which there are rice varieties that have shorter vegetation period and less tillering. For example, the peasants of Samsun uses 24 kg of rice seed per decar.[164] To be able to get higher productivity, the number of rice plants in a square meter should be between 160 and 220. The number of the roots of rice should be at least 300 in a square meter. However, in the case of dense plant spacing, competition among rice for nutrients increases. Therefore, rice plants become more sensitive to lodging and diseases.[165]

§ 2. 6 The Irrigation of Rice Field

Besides, the water depth of rice fields should adjust accordingly to the types of rice, the temperature difference between night and day and also soil types such as permeable, salty, or alkali soils. However, the most critical period for the water requirements of rice is twenty days before and ten days after florescence.[166] The water of rice fields should be drained periodically to ventilate soil, to prevent algae and to increase the tillering of rice.[167]

Based on the Rice Cultivation Law of 1936, there are two irrigation methods in Turkey. The first is intermittent flow irrigation that is implemented for

161 Halil Sürek, *Çeltik Tarımı*, 75-76.

162 Arzu Özalp, "Trakya'da Çeltik Üretiminin Ekonomik ve İstatistiksel Analizi,"7.

163 Bülent Kıral, Halil Sürek, A. Kadir Ezer, Mustafa Nergis and İ. Hakkı Yüce, *Çeltik,* 9.

164 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 102.

165 Halil Sürek, *Çeltik Tarımı,* 70.

166 Nazım Durlu, *Çeltik Yetiştirme Tekniği,* 28.

167 Ferdi Akıncan, "Çeltik Ziraatında Suyun Değeri," *Ziraat Dünyası,* 116 (September 1959): 9.

insect control in particular mosquitos. Besides, thanks to intermittent flow irrigation, the effects of the concentration of carbon dioxide, iron, and organic acid on rice can be decreased. It is quite suitable for salted and alkali soils. In this irrigation method, water is cut once every ten days. However, this irrigation method should be implemented after the tillering to make easy pest control. Peasants should consider irrigation interval, weather conditions, soil structure, and rice varieties.[168]



Figure 2.4 Rice Fields in the Meriç Basin (Edirne)
SOURCE: *Hudut,* September 11, 2015

The second method is perennial irrigation that is envisaged to be implemented 3 km distance from settlements.[169] However, mostly this rule is ignored. According to the result of research in the Kyushu region of Japan in the 1970s, the highest yield and the most effective pest control are provided with this method of irrigation. In the same way, the period when cutting off irrigated

168 Halil Sürek *Çeltik Tarımı,* 83-84.

169 "Çeltik Ekim Kanunu" *Resmi Gazete,* June 23, 1936; *Çeltik Ekim Kanunu* (Ankara: Trak Matbaası, 1964): 1-11

water is influential on rice yield as far as which method of irrigation is implemented. The most suitable period for the cutting of water is after 30 days' later florescence. Otherwise earlier cutting of water causes crocked rice grains and prevention of the filling of grain. On the other hand, in a delayed cutting of water, wetlands make difficult the harvest of rice.[170]

The water requirement of rice fields is drowned by moto-pump from rivers, lakes, and dams built by the government.[171] In Samsun, almost 60 percent of farmers benefited from drilling water, and the rest benefited from underground waters, Kızılırmak and Yeşilırmak.[172] In Edirne, peasants receive 65 percent of their water requirements from the Meriç River and the Ergene River 28 percent from the lakes of villages and 6 percent from artesian spring.[173] Similarly, the rice farmers of the Karacadağ benefit from the river reaches of the Dicle and Fırat and lakes. Notably, the melting snows in winter contribute to these water sources. However, water flows into rice fields are provided with channels. To irrigate rice fields, the pulling of water requires energy consumption. While diesel driven water pumps were used, electrically operated water pumps have been used since the end of the 1980s.[174] There are three types of channels. The first is the main channel that passes above the rice fields should be large and deep. The second is irrigated water that passes along the fields. It moves the water of the main channel into rice fields and discharge channels. The third is discharge channels that move the water of irrigated fields into lakes or rivers.[175] Rice producers also paid an amount of money in return. Perennial irrigation also increases coal gas emissions.[176]

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170 Halil Sürek and Haluk Yakan, *Edirne Yöresinde Çeltik Sulaması,* (Kırklareli: Tarım ve Köy İşleri Bakanlığı Kırklareli Atatürk Araştırma Enstitüsü Yayını, 1990): 2.

171 Halil Sürek, *Çeltik Tarımı*, 87-88.

172 Halis Öz, *Samsun* İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi, 18.

173 Halil Sürek, "Fideleme ile Trakya Bölgesinde Kışlık Tahılardan Sonra İkinci Ürün Çeltik Yetiştirme İmkânı," 62.

174 Mustafa Öden, tape-recorded interview by the author, İpsala, Edirne, Turkey, August 20, 2017.

175 Mirza Gökgöl, *Çeltik Ziraatı*, 25.

176 Fahri Yavuz, *Türkiye'de Tarım,* (Ankara: Tarım ve Köy İşleri Bakanlığı, 2005): 168.

§ 2. 7 The Fertilization of Rice

Fertilizers are kinds of substances that are made of natural stones, coal gas and atmospheric nitrogen in industries. Nitrogen, phosphor, and potassium are the three main elements that enable the growth of plants. While nitrogen provides plants with the development of stem and length, phosphor helps florescence and the filling of grain.[177] In this context, since rice is cultivated in water, fertilizer is used to be regained the loss of nitrogen and organic substance.[178] Fertilization depends upon rice varieties and soil type.[179] Although rice does not consume water much more than other cereals such as maize, the roots of rice need water to absorb nutrients[180] and to compete against herbs. Similarly, flowing water both prevents mossiness and supports the growth of the rice plant. Especially in the periods of bolting and florescence, rice consumes water at the highest level.[181] In this context, ammonium sulfate and urea fertilizer come into prominence.

However, based on the research of the IRRI, urea fertilizer causes the increase of pH degree and the loss of nitrogen through vaporization. Similarly, based on the analysis of Thrace Agricultural Research Institute, ammonium sulfate fertilizer provides the highest productivity.[182] Also based on the reports of Tarsus Irrigated Farming Research Institute, 25 kg -80 kg ammonium sulfate fertilizer and 10-50 kg superphosphate per decar could be used together. Ammonium nitrate fertilizer is directly influential in the obtaining higher productivity in rice. [183] The IRRI suggests that based on the vegetation

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177 Nurettin Baloğlu, "Suni Gübre Nedir ve Nasıl Kullanılır?" *Demokrat Keşan,* October 22, 1955.

178 Halil Sürek, *Çeltik Tarımı,* 92.

179 Halis Öz, Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi, 13.

180 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesi Çeltik Tarımı, Bugünkü Durumu ve Geliştirilmesi,* 2.

181 Bülent Kıral, Halil Sürek, A. Kadir Ezer, Mustafa Nergis and İ. Hakkı Yüce, *Çeltik,* 9.

182 Halil Sürek, *Çeltik Tarımı,* 94.

183 Nazım Durlu, *Çeltik Yetiştirme Tekniği,* 14-17; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 88-92.

period of rice, the amount of pure nitrogen used in rice growing should be between 18 and 21 kg per decar. However, it is between 15 and 18 kg per decar in Turkey. However, while 8 kg of pure nitrogen is used in Çarşamba Plain, 10 kg of pure nitrogen is applied in Bafra. There has been unconscious consumption of fertilizer in its amount and time interval.[184]

However, different organs of rice plant absorb nitrogen at different rates. For example, 10 percent by roots, 50 percent by plant stem, and 40 percent by grains.[185] Superphosphate fertilizer and farm manure are suggested after the first deep plowing. However, ammonium sulfate fertilizer is recommended in sowing, growing time, or in the second drying period when implemented forty days later sowing time.[186] Ammonium sulfate fertilizer receives nitrogen and phosphor needs of rice.[187] Ammonium sulfate and ammonium nitrate are nitrogen fertilizers. Ammonium sulfate is called as sugar fertilizer colloquially.[188] The influence of ammonium sulfate fertilizer on productivity is 100 percent. However, this is 92 percent in ammonium nitrate, 86 percent in ammonium phosphate, 82 percent in urea, and 40 percent in sodium nitrogen.[189] Although it is not implemented in Turkey, edible and fodder legumes, are important fertilizers and organic substances in crop rotation for rice.[190]

In the growing of rice such as tillering, panicle, leaf development, and dark green color tones, the most essential nutrient is nitrogen. For the efficiency of nitrogen, the equivalent amount of potassium and phosphor is necessary.[191] Potassium protects rice from the plant diseases and strengthens the organs of rice.[192] Thanks to potassium, photosynthesis can be increased, and

184 Halil Sürek, *Çeltik Tarımı*, 92-95.

185 Ibid., 95.

186 Nazım Durlu, *Çeltik Yetiştirme Tekniği,* 14-17; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 88-92.

187 Mirza Gökgöl, *Çeltik Ziraatı*, 19.

188 Nurettin Baloğlu, "Suni Gübre Nedir ve Nasıl Kullanılır?"

189 Mehmet Oğraş, *Çeltik Tarımı,* 14-15.

190 Mirza Gökgöl, *Çeltik Ziraatı,* 36; İzzettin Öztunalı, "Tava Usülü Çeltiklerde Gübreleme," *Ziraat Dünyası,* no 109-111 (1959): 15.

191 Halil Sürek, *Çeltik Tarımı,* 92.

192 Mirza Gökgöl, *Çeltik Ziraatı,* 20.

the growth of leaves, the increase of thousand kernel weight, and homogenous vegetation can be provided in the fields. Thousand kernel weights of Japonica subspecies are between 30 and 40 gr. Potassium is a kind of mineral that protects rice from unfavorable weather conditions. However, agricultural lands have plenty of potassium in Turkey.[193]

The fertilizer need for rice directs the producers using the fertilizer at a specific dosage and on time. To prevent the flow of fertilizer into other fields, it is used in the period when water flow is cut and closed the water flow places between rice fields. The time interval in the use of nitrogen can be separated into three periods. Half of the nitrogen should be used a week later sowing time. A quarter part of it should be a month then. The rest should be used at the beginning of the panicle. Rice needs nitrogen especially in periods of tillering and panicle. Furthermore, rice feels the influence of nitrogen 45 days later more and more.[194] Regarding time interval in the use of fertilizer, 55 percent of farmers used nitrogen in one time, about 40 percent of farmers used it two times in Samsun in the 1990s.[195]

Since the biological property of rice depends upon the equilibrium among weather conditions, the dosage of nutrients and sowing time, excessive use of nitrogen and delayed fertilization cause the retardation of the ripening process, lodging, and fungal diseases.[196] However, in the 1950s and the 1960s, there were no manure tests adequately. Although the use of fertilization and the mechanization of Turkish agriculture was related to the Marshall Plan in the beginnings of the 1950s, the use of fertilizer began to be more widespread among small landholders after the mid-1960s.[197] As the use of fertilizer increase and spread among peasant, productivity and yield-oriented rice varieties have developed. While rice productivity from per decar was 250 kg in 1920 and 400 kg in 1960, it rose to 500 kg in 1980 and 800 kg in 2000 averagely in Turkey. While the fertilization rate in the rice fields was averagely 65-70

193 Halil Sürek, *Çeltik Tarımı,* 102.

194 Ibid., 95.

195 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi,* 15.

196 Halil Sürek, *Çeltik Tarımı,* 92-93.

197 Halil Sürek, tape- recorded interview by the author, Edirne, Turkey. August 20, 2018.

percent across Turkey, it was at 91 percent in Thrace or Marmara, in Southeast Anatolia was 46 percent and in Black Sea Region was 42 percent.[198] In contrast, fertilization began to be widespread after the mid-1980s in Southeast Anatolia. Thus rice productivity has been increased from about 190 kg to 468 kg per decar today.[199]

§ 2. 8 Pest Control in Rice Growing

The seeds of herbs arrive in rice fields through irrigation, drainage, floods, winds, rice seeds, and agricultural equipment. Since rice is grown in humid fields, these areas enable herbs to grow. However, the density and the damage of herbs on rice field can be decreased through land leveling that allows the homogeneous spread of adequate water and agricultural pest control on time and at sufficient dosage. If the herbicides are not used before fertilization, the herbs in the fields compete with rice and cause the decline of grain yield, thousand kernel weight, tillering, panicle of rice and its qualification. Thus, agricultural pest control before fertilization is essential for higher rice production.[200] Agricultural pest control is firstly begun almost thirty days later sowing time. The second pest control is made 43 days after sowing time. Two days before the pest control, water flows into the rice field is cut off. In the period of agricultural spraying, rising weather temperature, relative humidity, and soil humidity increase the effectiveness of herbicides on herbs. If there is a wind, its efficiency declines.[201] Furthermore, cutting off irrigated water exempt agricultural spraying and fertilization causes the increase of the density of herbs.

198 Halil Sürek, "Son Yıllarda Ülkemiz Çeltik Üretiminde Ulaşılan Verim Seviyesi ve Geliştirilen Bazı Yeni Çeltik Çeşitleri ve Verim Potansiyelleri," *Hasad Dergisi* 346, (March 2014): 72.

199 Şerif Kahraman, tape- recorded interview by the author, Diyarbakır, Turkey August 09, 2018.

200 Mirza Gökgöl, *Çeltik Ziraatı,* 36.

201 Halil Sürek, *Çeltik Tarımı,* 115.

Marketing conditions and water capacity are two essential criteria in being decided rice cultivation.[202] However, without the implementation of crop rotation, not only agricultural pest control is difficult and expensive but also the productivity and yield of rice decline.[203] The importance of crop rotation in rice cultivation was explained in the Congress of Rice Producers in the USSR in 1937. They dwell on triangular crop rotation to get more qualified rice as it was in Japan, Italy, and Spain. Thanks to the cultivation of forage plants in a crop rotation system, Italy could develop husbandry, increase rice productivity, and get extra- economic gain.[204] High moisture and temperature cause the growth of herbs.[205] Furthermore, short and late bloomer rice varieties are less competitive with herbs than that of long and earlier maturing.[206]

Since there was no significant amount of herbicides in rice cultivation, until the 1970s, pest control had been implemented in a mechanical way which required more labor force and caused more expenditure rather than herbicide that is unhealthy.[207] Neither peasants had had information about how to use herbicide nor had they found when needed these chemicals. While there was 76 percent of chemical ways, there was 23 percent of the mechanical way in agricultural pest control in Samsun in the 1990s.[208] When the case of Samsun is taken account, while the use of herbicides was higher in Edirne, it was lower in Diyarbakır. Many rice cultivators in Edirne firstly began to use pesticides that were used for wheat to annihilate sedges in rice fields in 1969.[209] A study about the use of pesticides for plant protection in 15 villages and three districts of Samsun in 2014 indicates that there is a negative relationship between the educational level and the amount of the use of pesticides. Similarly,

202 Nazım Durlu, *Çeltik Yetiştirme Tekniği*, 5; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 85-86.

203 Halil Sürek, *Çeltik Tarımı,* 111.

204 Mirza Gökgöl, *Çeltik Ziraatı,* 39.

205 Halil Sürek, tape- recorded interview by the author, Edirne, Turkey August 20, 2018.

206 Halil Sürek, *Çeltik Tarımı,* 104-106.

207 Melih Enginsu and Serkan Yılmaz, "Karadeniz Tarımsal Araştırma Enstitüsü Çeltik Islah Araştırmaları," *Çiftçi ve Köy Dünyası Dergisi,* 370 (October 2015): 42-43.

208 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi,* 16

209 Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, Edirne, Turkey, August 20, 2018.

there is a positive relation between loan usage and the amount of the use of pesticides.[210] Furthermore, the use of pulverization increases the amount of used pesticides. Poranil, Monilate, Bensulfuron, Thioben carb, Bentazon, MCPA, Bispyribac Sodium, Chalofob Butyl, Exhoxy Sulfron, propanil, Flint and Malathion have been used as pesticides in rice cultivation since the mid-1960s.[211]

As Aquatic weeds in rice fields, a soft rush, Echinochloa colonum, sairpus maritimus, Cyprus difformis, Alisma Plantagos, couch grass, and buckthorn are seen.[212] Since Echinocla clonum and couch grass grow in water and are not cleaned in selectors or in haymakers, they are mostly seen in fields.[213] However, the peasants of the Karacadağ Agriculture Basin have traditionally cultivated their rice. The use of modern agricultural technics is at a very low level such as tractor, fertilizer, and herbicides. Rice is exposed to competition against herbs. Therefore, the growth of rice slows down, and rice yield declines.[214] Topography and climate conditions determined agricultural technics. In primitive agriculture, productivity is low and ground surface tillage is insufficient.[215] In addition to herbs, there have been 500 pest varieties of 1500 for rice around the world. However, 240 pest varieties are seen in Turkey, and 70 pest variety of them are harmful to rice and decline the yield of rice at 50 percent.[216] For example, in the rice fields of Karacadağ, grasshoppers have been a big problem. The use of fertilizer and agricultural pest began in the

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210 Ahmet Semih Uzundumlu, Göksel Tozlu, and Okan Gedikli, "Çeltik Üretiminde Kimyasal İlaç Kullanımını Etkileyen Faktörlerin Analizi: Samsun İli Örneği," *Tarım Ekonomisi Dergisi* 20, no. 2 (2014):79-85.

211 Halil Sürek, *Çeltik Tarımı,* 114.

212 Hüseyin Gökçora, *Bitki Yetiştirme Islahı,* (Ankara: Ankara Üniversitesi Basımevi, 1969), 488; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 105.

213 Mirza Gökgöl, *Çeltik Ziraatı,* 35.

214 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesi Çeltik Tarımı, Bugünkü Durumu ve Geliştirilmesi,* 8-9.

215 Ahmet Özçelik, *Tarım Tarihi ve Deontolojisi,* 12-13.

216 Ahmet Semih Uzundumlu, Göksel Tozlu, and Okan Gedikli, "Çeltik Üretiminde Kimyasal İlaç Kullanımını Etkileyen Faktörlerin Analizi: Samsun İli Örneği," 81.

1990s.[217] Mole cricket and mice live in humid borderlines of the rice field. To annihilate them, the water level of rice fields can be risen, or Korcide pesticides can be used.[218]

§ 2. 9 Rice Diseases

The first research on the rice diseases was done by Özkan and by Bremer in 1946 and by Gobelez in 1953. Inadequate fertilization or excessive use of nitrogen, environmental pollution, high relative humidity, high air temperature, and plant residues increase the possibility of rice diseases. There are more than seventy rice diseases. They can be collected under three titles such as fungus, nematodes, and mycoplasma.[219]

Pyricularia oryza, *Heminthosporium oryzae* and *Sclerotium oryzae* are the most seen fungal diseases in Turkey. There were no herbicides against fungus in the 1960s. While bacterial diseases dry the leaves of rice, physiological or abiotic diseases cause color change such as red or brown marks. Moreover, Gobelez determined that *Pyricularia oryzae* causes yield loss between 25 and 75 percent in the Black Sea Region. *Pyricularia oryzae* was firstly determined at the beginning of the 1900s. It has been seen more than seventy countries. It was seen that Maratelli was sensitive to pyricularia, Rodina and Krosnadasky-424 were more resistant in 1991.[220] In addition, *Aphelenchoides besseyi* is a kind of nematode disease firstly seen in İpsala, and Gönen in 1955 caused yield loss. *Phytophthora oryzae* was seen in Marmara Region in the 1990s caused yield loss of Baldo variety of rice.[221]

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217 Süleyman Kızılkaya, tape recorded interview by the author, Diyarbakır, Turkey, August 09, 2018.

218 Mustafa Yıldız, "Çeltik Zararlıları," 9.

219 Halim Gümiştekin, "Çeltiklerde Görülen Önemli Fungal Hastalıkları Tarihçesi, Dağılımı ve Zararları," *Tarım, Orman ve Köy İşleri Bakanlığı Trakya Tarımsal Araştırma Enstitüsü Çeltik Yetiştiriciliği Semineri,* Edirne, (May 23-29, 1991): 1-2.

220 Nazım Durlu, *Çeltik Yetiştirme Tekniği,* 31.

221 Halil Sürek, *Çeltik Tarımı,* 116-119.

Excessive use of nitrogen causes *Pyricularia oryzae* that has different color marks on leaves incrementally. Rice is sensitive to this disease, especially at seedling, tillering and panicle stages.[222] Furthermore, plant density, cold irrigation water, the deepness of water in the fields increase the possibility of *Pyricularia oryzae* in mild climate zone. All of them should be at an adequate level. In more detail, since *Pyricularia oryzae* grows up on the leaves, it reduces photosynthesis. Therefore, the production of carbon hydrate declines, filling of rice grain reduces, and the growth of rice slow down. While the agricultural pest control of this disease increases the expenditure, on the one hand, it causes yield loss on the other hand.[223] *Pyricularia Oryzae* especially began to be seen in Edirne from 1996 onwards.[224]

Helminthosporium firstly seen in Bangladesh in 1942 caused starvation source from yield loss in rice fields between 40 and 90 percent. It appears as brown marks on the roots of germinated grains. On the account of humidity and temperature degrees between 20 and 30 °C, it develops. Rather than pathological factors, it results from the lack of nutrients such as potassium, magnesium, iron, and calcium. As measures against it, crop rotation, using an adequate level of nitrogen and cultivating the rice varieties resistant to this disease should be implemented.[225]

Phytophtora oryzae was firstly seen in Japan in 1928. In general, it is seen in the earlier period of graminated rice grain in Asia. It is contaminated from soils, seeds or plant residues. To prevent the rice from it, qualified seeds, crop rotation, an adequate level of fertilizer, and tillage are regarded as important measures.[226]

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222 Ibid., 117; İsmail Sezer and Zeki Mut, "Samsun İlinde Çeltik Tarımının Durumu ve Üretimi Arttırmak İçin Öneriler," *GOÜ Ziraat Fakültesi Dergisi* 21, no. 1 (2004): 64.

223 Halil Sürek, *Çeltik Tarımı,* 124.

224 "Çeltik Yanıklık Hastalığı İlaçlama Zamanı Geldi," *Vatandaş,* July 25, 1998.

225 Halil Sürek, *Çeltik Tarımı,* 125.

226 Ibid., 128-131.

§ 2. 10 Rice Varieties

Scientifically, the first studies on plant breeding began in the 1880s by farmers. Lachow was one of the most famous farmers in this field in the world.[227] However, local rice varieties have been cultivated for centuries in Turkey. These are *Mihallıçık, Tosya, Sarıcakaya, Sarıkılçık, Ak çeltik, Kırmızı Çeltik, Kasım Kırmızısı, Kasım Beyazı, Karakılçık, Kıbrısçık, Karasu, Kılçıklı, Sofraz Sarısı, Yerli Sultan Suyu,* and *Karacadağ.* In general, they have similar morphological and biological properties. Due to different local appellation, their names differentiate.[228] Furthermore, *Trakya, Altınyazı, Meriç, İpsala, and Ergene* were registered by Thrace Agricultural Research Institute in 1979.[229] In addition, foreign rice varieties began to be cultivated after the mid -1930s. Their seeds were imported from Italy, Eygpt, the USA, Iran, and Australia.[230] The first imported rice variety was Ribe.[231] As some foreign origin rice varieties, Ribe, Rocca, Baldo Gritna, Lieto, Plovdiv, Veneria, Krosnadarsky-424, Ranballi, and Rodina can be indicated.[232] The development of rice breeding in particular *Osmancık-97* variety and the use of laser technology increased rice production in Turkey.[233]

2. 10. 1 *Local Rice Varieties*

Ak Çeltik was the oldest rice variety of Anatolia. Since it did not pull out its grain, it was the most widespread and the most demanded rice variety in the 1950s. However, since it was not resistant to plant diseases, it gave way to

227 Ahmet Özçelik, *Tarım Tarihi ve Deontolojisi,* 72.

228 Mehmet Oğraş, *Çeltik Tarımı,* 5.

229 Halil Sürek, "Türkiye'de Üretilen ve Yeni Tescil Edilen Çeltik Çeşitleri," 21-33.

230 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar,* 28.

231 Halil Sürek, "Son Yıllarda Ülkemiz Çeltik Üretiminde Ulaşılan Verim Seviyesi,"72.

232 Bülent Kıral, Halil Sürek, A. Kadir Ezer, Mustafa Nergis and İ. Hakkı Yüce, *Çeltik,* 21- 29.

233 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey August 20, 2018.

Maratelli that was foreign rice variety. The productivity of *Ak Çeltik* was between 200 and 600 kg per decar. Also, its yield (*randıman*)was between 55 and 60 percent. *Akçeltik* was cultivated in Edirne, Sinop, Ankara, Mardin Maraş and Çorum in 1949.[234] Furthermore, *Tosya, Taşköprü*, Native rice, Bulgarian rice, *Abanos, Dağıstan and Kasım Beyazı* had been cultivated in the 1920s and 1930s. The yield of local rice was low and it was not resistant to lodging and diseases. Rice cultivation was far from playing an important role in the agrarian economy in the beginnings of the 1920s. Therefore, M. Civani Sanpiyatro from Italy was invited by the Ministry of Economy to research rice farming in Turkey. Sanpiyatro especially focused on the rice cultivation in Tosya and Boyabat and specified that Tosya was the most suitable area for rice cultivation in his report presented to the Ministry of Agriculture.[235]

Sarıçeltik was cultivated in the regions where there was lower air temperature. It demands plenty of water. Its productivity was between 150 and 450 kg and its yield was between 50 -65 percent. *Sarıçeltik* was cultivated in Eastern Anatolia, Maraş, the Karacadağ Agriculture Basin, Hatay, and Tosya regions.[236] It could compete with Genova rice in Italy regarding taste. Furthermore, regarding productivity and taste, *Sarı çeltik* was more qualified than Plovdiv and *Ak çeltik*. After the 1960s, the cultivation areas of *Sarı çeltik* gave way to cotton fields in Maraş.[237]

There were also semi-annual rice varieties that were cultivated primarily in the Karacadağ and Southeast Anatolia in the 1950s. It grows late, and it was resistant to plant diseases. Its productivity was between 250 and 500 kg per decar. Also, its yield was between 55 and 62 percent. In local varieties, such

234 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar*, 49.

235 Rahmi Çeltik, "Türkiye'de Pirinç Ziraatı," 27; Ufuk Tidim, "Tosya Pirinci 1929'da Anadolu'nun En İyisi Seçildi," *Nasrullah Gazetesi,* May 19, 2018.

236 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar,* 50.

237 Mehmet Şirin, "Maraşta Çeltik Ziraatı," 30.

as semi-annual rice, *Ak Çeltik, Sarı Çeltik,* and foreign rice varieties such as Blue Rose, Cava, and Caroline had the most superior cooking value.[238]

Three-month rice variety was a kind of *Sarı Çeltik* that was cultivated in the Karacadağ Agriculture Basin. It was also called as *Gevran* in this basin. It was resistant to plant diseases and grew earlier. Its productivity was between 200 and 300 kg per decar. Its yield was between 50 and 65 percent. *Kasımbeyazı* was cultivated in the southern Marmara Region. *Termebeyazı* was grown in the Middle and Eastern Black Sea Region. *Karacadağ* was cultivated in Southeast Anatolia. Finally, *Kırçeltiği* was cultivated in Rize in the 1950s and the 1960s.[239]

In addition to these varieties, *İpsala, Meriç, Altınyazı, Ergene, and Trakya* rice varieties have been developed as a result of the hybridization and rice breeding 1979 onwards, and their pedigree seeds were produced in 1989 by Thrace Agricultural Research Institute with their production license. The rice varieties that have been bred in Turkey, can be obtained through introduction, selection, hybridization, and mutation. Furthermore, half of the 50 rice varieties have been bred through hybridization. Since due to the narrowing of the gene pool of rice, most of the new rice varieties are similar to each other.[240] All of them need 80 kg of ammonium sulfate fertilizer and 20 kg of triple superphosphate. Their average yield is 60-65 percent. However, they differ regarding vegetation period, productivity, hybridization, and thousand kernel weight. On the other hand, foreign origin rice varieties required 9-15 kg of pure nitrogen and 8 kg of pure phosphor.[241]

Firstly, *İpsala* rice variety was the hybridization of Rodina and Delta rice varieties. Physically, its height is 105 -115 cm and its thousand kernel weight is 40 gr. Its vegetation period is 130 days. It had averagely 750-800 kg of productivity per decar. Secondly, *Meriç* rice variety was produced as a result

238 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar,* 83-103.

239 Ibid., 28-58

240 Rasim Ünan, Halil Sürek ve ark. "Hibrit Çeltik ve Türkiye'deki Geleceği," *Uluslararası Katılımlı Konuralp Çeltik Çalıştayı* 2015, Düzce (September 2016):13.

241 Halil Sürek, "Türkiye'de Üretilen ve Yeni Tescil Edilen Çeltik Çeşitleri," 21-33.

of the hybridization of *Delta* and *Akçeltik* in 1979. It has almost the same vegetation period, thousand kernel weight, height, fertilizer requirement, and yields with *İpsala* rice variety. Thirdly, *Ergene* rice variety was developed as a result of the hybridization of *Delta* and Zoria. Its vegetation period is 115-120 days. Its thousand kernel weight is 35-36 gr, its height is 115-120 cm, and Its productivity is between 700-750 kg per decar. Fourth, *Trakya* rice variety was developed as a result of the hybridization of Baldo and Komsomolsky rice variety. Its thousand kernel weight is 37-38 gr, its height is 110, its productivity is 800-900 kg per decar. Fifth, *Altınyazı* rice variety was developed as a result of the hybridization of Baldo and Ribe. Its thousand kernel weight is 36-37 gr, its height is 115 cm, its productivity is between 750-800 kg and its vegetation period is 125-130 days.[242]

Nazım Durlu sent N1-41T-1T-OT rice variety to Thrace Agricultural Research Institute in 1976. Its cultivation is more suitable for Mediterranean, Aegean, and Southeast Anatolia Regions. It got a production license in 1986. The agricultural research institutes that were responsible for the conservation of this variety were Edirne and Adana in these years. Its long height grain and has 33-34 gr of thousand kernel weight. Since its height is 90 cm, it is resistant to lodging and suitable for a combine harvester. Its vegetation period is 130-140 days, its productivity is 750 kg, and its yield is between 60 and 65 percent.[243]

2. 10. 2 *Foreign Origin Rice Varieties*

Ribe that was registered in the 1960s was imported from Italy by the General Directorate of Agricultural Affairs. Primarily, it had the largest cultivation area in the Black Sea Region in the 1970s and 1980s. Since its height is 100 cm, it is resistant to lodging. Its vegetation period is 140 days, its average productivity is 550 kg, and its yield is between 55 and 60 percent. Its thousand kernel weight is 32-33 gr. Two institutes that are responsible for the pedigree

242 Ibid., 22- 26.

243 Ibid., 29.

seeds of Ribe are Thrace and Aegean Agricultural Research Institutes.[244] Ribe is moderately sensitive to Pyricularia, and it is somewhat resistant to Helminthosporium and Fusarium.[245] Ahmet Aydın who is one of the prominent rice farmers in Samsun says that Ribe could be introduced by the advertisement brochure of the General Directorate of Soil Water Institution in Samsun.[246]

Secondly, Gritna that was Italian origin rice variety, was registered by Ege University in Turkey. Ribe and Gritna are the same with regard to vegetation period, grain size and yield. Their vegetation periods are averagely 130-140 days. They are long height grain rice. They have 550-600 kg of productivity per decar, and their yield is between 55 and 60 percent. Similarly, Rocca was an Italian origin rice variety registered in 1983 by Thrace Agricultural Research Institute. Rocca that resistant to *Pyricularia* and *Helmintosporium*, but it is moderately resistant to Fusarium. Besides, except for 650-700 kg of productivity per decar, regarding the grain size, the vegetation period and the yield of Rocca have the same values those of Ribe and Gritna.[247]

Karakılçık is resistant to cold weather and diseases. It had a short vegetation period. The seeds of kara kılçık were small and rigid. The quality and productivity of *Kara kılçık* were on medium levels.[248] *Karakılçık* was similar to *Ak Çeltik* regarding productivity and yield. It is sensitive to plant diseases, and it is earlier rice variety.[249] *Karakılçık* is the only foreign rice variety that is not resistant to pyricularia.[250]

Lieto rice variety was registered by the Antalya Agricultural Research Institute. It was regarded as a secondary agricultural product due to its 110 days of vegetation process. Its average productivity is 350 kg per decar.[251] Baldo was an Italian origin rice variety. In general, it was cultivated in the Marmara

244 Ibid., 31.

245 Mehmet Oğraş, *Çeltik Tarımı,* 3.

246 Ahmet Aydın, tape- recorded interview by the author, Bafra, Samsun, Turkey August 6, 2018.

247 Bülent Kıral, Halil Sürek, A. Kadir Ezer, Mustafa Nergis and İ. Hakkı Yüce, *Çeltik,* 21-29.

248 Osman Tosun, *Sıcak İklim Tahılları* 40; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 81-84.

249 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar,* 56.

250 Mustafa Yıldız, "Çeltik Zararlıları," 9.

251 Bülent Kıral, Halil Sürek, A. Kadir Ezer, Mustafa Nergis and İ. Hakkı Yüce, *Çeltik,* 21-29.

and Aegean Regions. Its height is averagely 100 cm, its vegetation period is 125-135 days, its thousand kernel weight is 38 gr, and its productivity is between 550-600 kg.[252] It is resistant to Helminthosporium, moderately resistant to pyricularia, and sensitive to fusarium.[253]

Plovdiv was imported from Bulgaria and registered in 1983 by Thrace Agricultural Research Institute. Its yield is 50-55 percent, and its productivity is 650-700 kg per decar.[254] Its vegetation period is between 110 and 130 days, and also its height is between 105 and 120 cm.[255] Plovdiv that is short- grain rice is well resistant to plant diseases and lodging. However, its cultivation area is limited.[256]

Krosnodarsky-424 was imported from Bulgaria was registered by Thrace Agricultural Research Institute in 1983. It had 700-800 kg of productivity per decar and 60 percent of yield.[257] Its thousand kernel weight is 28-30 gr, its height is between 110 and 115, its vegetation period is between 110, and 115 days, its productivity is between 700 and 800 kg, and also its yield is 70 percent. It is thought to be a secondary product in the Aegean and the Mediterranean Regions. While it is resistant to plant diseases, it is moderately resistant to lodging.[258]

Camolini (Americano-1600), Nerodi Violen and *Pembe Göbek* varieties were grown in the 1950s and they were an Italian origin. *Pembe göbek* grows in fertile lands. Firstly, it was cultivated in 1939. The productivity of *Pembe Göbek* was between 300 and 700 kg per decar in the 1950s. It was grown in Thrace and western Black Sea regions. Besides, Blue Rose and Carolin were grown in the Mediterranean in the 1950s were Australian origin. Camolini was Chinese variety and improved in the USA. Then it was sent to Italy and Turkey. It is resistant to plant diseases and lodging. It grows in all types of soil.

252 Halil Sürek, "Türkiye'de Üretilen ve Yeni Tescil Edilen Çeltik Çeşitleri," 28.

253 Mehmet Oğraş, *Çeltik Tarımı,* 3.

254 Bülent Kıral, Halil Sürek, A. Kadir Ezer, Mustafa Nergis and İ. Hakkı Yüce, *Çeltik,* 21-29.

255 Halil Sürek, "Türkiye'de Üretilen ve Yeni Tescil Edilen Çeltik Çeşitleri," 32.

256 Mehmet Oğraş, *Çeltik Tarımı*, 4.

257 Bülent Kıral, Halil Sürek, A. Kadir Ezer, Mustafa Nergis and İ. Hakkı Yüce, *Çeltik,* 21-29.

258 Halil Sürek, "Türkiye'de Üretilen ve Yeni Tescil Edilen Çeltik Çeşitleri,"30.

Its productivity is 400 kg per decar, and its yield was between 60 and 65 percent. Its vegetation period is 160 days. It was mainly cultivated in Thrace and Mediterranean.[259]

Egypt rice variety was Japan origin and imported from Egypt. Since its plant stem is thin, it tends to lodge. But it is resistant to plant diseases. It was cultivated primarily in Kilikia and Southeast Anatolia in the 1950s and the 1960s. It is spineless and more fertile than *Dervish* and Bersani that are spiny.[260] Its vegetation period is about six months. Its yield is high; it is resistant to lodging and small grains.[261]

Ranballi was imported from Bulgaria, and it registered in 1983. It has 125 days of vegetation period. It has 700 kg of productivity per decar and it had 45-60 percent of yield. Also, Rodina was imported from Bulgaria registered by Thrace Agricultural Research Institute in 1983. It has 125 days of vegetation period and 650-700 kg of productivity per decar. Its yield is 45-55 percent. [262]

Veneria was an Italian origin rice variety. Its vegetation period is between 125 and 135 days. Its productivity differentiates between 600 and 700 kg.[263] It is resistant to lodging and plant diseases. It has medium and long grain. Similarly, Maratelli was an Italian origin rice variety. It is very sensitive to Pyricularia, moderately sensitive to Helminthosporium, and quite resistant to Fusarium. Maratelli was grown in Thrace and West Black Sea region in the 1970s and the 1980s. Its yield is between 55 and 70 percent. Its pilaf is less qualified than that of *Ak Çeltik.* Maratelli had the largest cultivation areas in foreign rice variety in the 1970s. R. Bersani was Italian origin rice variety. Its vegetation period is 140 days and it is long grain rice. Since it grows earlier, its productivity is low. It has 56 percent of yield. Violine is a small grain rice that has almost the same vegetation period with R. Bersani. Also R. 82 rice

259 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar,* 29-80.

260 Mehmet Şirin, "Maraşta Çeltik Ziraatı," 30.

261 Mehmet Oğraş, *Çeltik Tarımı,* 5.

262 Bülent Kıral, Halil Sürek, A. Kadir Ezer, Mustafa Nergis and İ. Hakkı Yüce, *Çeltik*, 4.

263 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar* 29- 103.

variety is called Sessia or *Kulaklı.* It was improved in Vercelli Station in Italy. It was quite a new rice variety therefore; it was rarely known in Turkey. Its vegetation period is the same with R. Bersani and Violine but its tillering is lower.[264] It is resistant to lodging. However, its productivity is lower.[265]

Nerodi Violone was an Italian origin and it is known as Black Rice or Bombay. It is grown in calcareous and clayey lands. Its vegetation period is 150 days. Its productivity is between 400 and 500 kg and its yield is between 50 and 55 percent. It was cultivated in Edirne, Maraş and Boyabat. Similarly, Cava (Giaxo/ ostella) was an Italian origin. It was resistant to plant diseases and lodging. Its productivity is between 350 and 750 kg per decar. It was cultivated in Ankara in the 1950s.[266]

In the 1980s, there were 32 different rice varieties in Turkey. Especially Baldo, Rocco, Ribe, Maratelli, Egypt, and Gritna were six prominent varieties in Turkey. Furthermore, thanks to their resistance to fusarium, their cultivation was encouraged by the Ministry of Agriculture. Thus, one- third of cultivated areas were Baldo and Ribe. Rodiana, Krosnadarsky-424 and Ramballi were registered by Thrace Agricultural Research Institute.[267] Finally, *Dervish* (Lançio) was an Italian origin resistant to lodging and not resistant to plant diseases. Its yield is between 56 and 58 percent.[268] It was cultivated in the-Maraş region, Hatay and Karacadağ in the 1950s and the 1960s.[269]

When the grain sizes of rice varieties are analyzed during the 1960s, it seems that Bersani, Violin, Sezya, Karolin, Yasemin, Java are long grain rice. On the other hand, Egypt rice is short grain rice. Also, Maratelli, *Ak çeltik, Sarıçeltik*, Dervish and Karacadağ are medium grain rice. When the amount

264 Nazım Durlu, *Çeltik Yetiştirme Tekniği,* 4.

265 Mehmet Oğraş, *Çeltik Tarımı,* 5.

266 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar,* 75-79.

267 Erdoğan İndelen, "Türkiye'de Ekilen Çeltik Çeşitlerinin Üretimdeki Payları ve Çeltik Tohumluğu Üretim Programı," *Trakya Birlik* (August 1983): 14.

268 Kemal Kaptan, "Türkiye'nin Planlı Dönemde Ticaret Gübresi Tüketimi ve Bunlardan Elde Edilen Saf Hasıla Tutarı ile İlgili Bir Araştırma", *Ziraat Ekonomisi Dergisi,* no. 4-5 (1971): 38.

269 Nazım Durlu, *Çeltik Yetiştirme Tekniği,* 4.

of rice production based on rice varieties analyzed in the 1960s, Bersani rice had 32 percent, Maratelli rice had 22 percent, Egypt rice had 19 percent, local rice species such as *Ak kılçık, Sarı kılçık,* and *Kara kılçık* had 12 percent in Turkey.[270]

In addition to *Ak kılçık* and *Sarı kılçık,* the cultivation area of R. Bersani had been at 70 percent in Samsun until the 1970s. Although it was nonresistant to lodging, it had very qualified rice. Maratelli had almost 30 percent of the cultivation area due to its short vegetation period and high productivity in the 1970s and the 1980s. Moreover, until the mid-1990s, 74 percent of rice fields in Çarşamba Plain was ribe, 11 percent was Rocca and about 4 percent was veneria. On the other hand, 55 percent of rice fields in Bafra plain was ribe, almost 30 percent was veneria and 14 percent was Rocca.[271] Since the local species of rice is more suitable for making pilaf, they had higher prices in the market. In two years of crop rotation, there were corn and wheat cultivation in Samsun. In Çarşamba and Bafra Plains, polycultural plants such as wheat, corn, barley, rice, sunflowers, tobacco and legumes have been grown.[272]

Before the 1960s, while there had been *Filibe Pembesi* and *Kasım Beyazı* varieties, after the 1960s, Italian origin rice varities such as Bersani, Maratelli, Violone, Camolin, Rialto, Baldo, Australian originated Carolina and Riverto began to be cultivated in Edirne. In these varieties, *Kasım beyazı* was nonresistant to plant diseases. While the rice quality of Camolin was low, its productivity was high. Caraolina that was more resistant to diseases and lodging, had higher productivity. There were the cultivations of wheat, sunflowers, truck garden, and corn in Edirne in crop rotations that were made every other year.[273] Due to the flooding of the Meriç and Ergene rivers, apart from rice, peasants preferred the cultivation of corn that was more resistant to water in plain. In some years, there was sugar beet cultivation.

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270 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 133.

271 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi*, 13-19.

272 Atilla Ocaktan, *Samsun Yöresinde Şekerpancarı, Çeltik, Soya, Domates, Biber, Patlıcan ve Hıyarın Üretimi ve Maliyetleri,* (Samsun: Tarım, Orman ve Köy İşleri Bakanlığı Samsun Tarımsal Araştırma Enstitüsü Yayınları, 1989): 21

273 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 86.

In addition to Violin and Americano, there were 47 percent of R. Bersani, and 22 percent of Maratelli in the 1960s and the 1970s in Edirne. In Black Sea Region, more than half of the production was Bersani and there was at least 25 percent of Maratelli.[274] Although Americano and Camoline have higher yield, tillering and productivity, their rice quality is lower.[275] However, after the 1980s, with the rice research of Thrace Agricultural Research Institute in Edirne, more unified rice has been provided across Turkey. Until the beginning of the 2000s, Rocca, Baldo, *Serhat -92, Sürek 95, Osmancık-97, Ergene* and Veneria, Krasnodarsky-424, *Kıral, Demir and Yavuz* species were spread and cultivated in Edirne and across Turkey.[276] However, Maratelli, Bersani, Rocco and Baldo had been cultivated as prominent rice varieties until the mid-1990s in Edirne.

In the Karacadağ Agriculture Basin, while more than half of the production belonged to local species, there was 30 percent of Egypt rice in the 1970s. In addition, Egypt rice, *Dervish, Kırmızı kılçık, karakılçık, Sarıçeltik*, R. Bersani, *Maraş* rice, *Karacadağ* rice and *Ak kılçık* have been cultivated in this region. Since the altitude of the Karacadağ Agriculture Basin is very high, the rice species that were resistant to the stony soil structure, low water and air temperature can be cultivated. *Ak kılçık* that was the famous rice of Diyarbakır had long-thin seeds and had low productivity but had higher pilaf quality.[277] The productivity of all of these rice species in Karacadağ are very low and they are sensitive to plant diseases due to extensive agriculture. In the Karacadağ Agriculture Basin, the process of crop rotation is almost seven years. These stony fields have been used as grasslands for animals when rice is not sown. Actually, seven years of period is determined based on the irrigation water capacity and the extent of rice cultivation areas by peasants.[278]

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274 Ibid., 133.

275 Nazım Durlu, *Çeltik Yetiştirme Tekniği,* 5.

276 Halil Sürek, *Çeltik Tarımı,* 72.

277 Turan Güneş, Türkiye Çeltik Ekonomisi, 81-133.

278 Şerif Kahraman, Şeyhmus Atakul and Sevda Kılınç, "Diyarbakır Yöresinde Çeltik Tarımının Yapısal Durumu,"83.

Since melting snow water is used in irrigation, the rice varieties of Karacadağ are rich in vitamin, mineral, enzyme and protein. Although other rice varieties cannot grow less than 15 °C of irrigated water, Karacadağ rice varieties, most of which are local varieties has grown at 10 °C.[279]

§ 2. 11 The Harvest and the Storing of Rice

The harvest of rice is in the month of September or October. Its vegetation period shows changes between four or five months. Also, due to the high temperature of Mediterranean and Southeast Anatolia, the vegetation period of rice lengthens out. Therefore, the harvest period of rice changes based on climatic characteristics. Namely, it coincides with 34 days' later florescence in tropical regions and 45 -50 days' later florescence in Turkey. After two weeks of cutting of the irrigated water flows into fields, harvest begin. The harvest of rice should be on time. Otherwise, in earlier harvest, due to immature grains, grains have difficulty in separating and yield loss is seen. In delayed harvest, crocked rice and the pulling out of some grains can be seen.[280]

For a quicker, more qualified and less costly harvest, the drainage of fields is important. In harvest, since a caterpillar truck of combine harvesters had not developed, peasants had reaped matured rice, tied them in bunches and moved them in threshing fields a few days later in Edirne and Samsun until the mid-1990s. 20 percent of the harvest was made by sickle and the 80 percent was made by combine harvesters in Samsun and Edirne. Besides, while 86 percent of Bafra Plain has been completed in September, only half of Çarşamba Plain has been harvested in the 1990s.[281] In contrast to the example of Edirne and Samsun, in general the peasants of Karacadağ still have harvested their rice by sickle. Due to the stony land structure, the use of combine harvester in Karacadağ is less than Samsun and Edirne.

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279 Ebru Baybara Demir, "Karacadağ Pirinci," accessed September 10, 2018, https://ebrubaybarademir.blogspot.com/2017/09/pirinc.html

280 Halil Sürek, *Çeltik Tarımı,* 132-133.

281 İsmail Sezer and Zeki Mut, "Samsun İlinde Çeltik Tarımının Durumu," 64.

Since the rice fields are muddy, carrying the wet and heavy panicles of rice was quite difficult.[282] There, these panicles of rice had been harvested by people and blended by threshing machines or combine harvesters. If the peasants threshed their fields via combine harvesters, they sundried their products.[283] However, rice farming began to be more mechanized in the USA since the 1940s and the 1950s.[284] In this context, combine harvesters have been used.[285] For the first time, Bekir Ünal who lived in Karahüyük village of Kahramanmaraş made use of the caterpillar system in his combine harvester in 1965. [286] However, combine harvester could not be widespread in rice cultivation until the mid-1990s. In these years, Sami Dubacı who has been one of the prominent rice cultivators of İpsala District of Edirne heard the caterpillar technology in Italy. Therefore, Dubacı went to Bafra District of Samsun to buy tank track from artisan Kemal in the mid-1980s.[287] However, as Halil Sürek said, tank truck was firstly used by Sami Dubacı in 1986. It was purchased in İskenderun.[288] It can be said that Sami Dubacı initiated track technology of combine harvesters in rice cultivation. Dubacı has supported the use of technology in rice production since 1979. In the use of laser technology for land leveling, mobile drying machine and combine harvester in the mid-1980s, Dubacı brought innovations to rice cultivation.[289] The origin of technological innovations in rice cultivation is Italy. Since many technological

282 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 106.

283 Hüseyin Gökçora, *Bitki Yetiştirme Islahı,* (Ankara: Ankara Üniversitesi Basımevi, 1969), 488.

284 Pete Daniel, "The Crossroads of Change: Cotton, Tobacco, and Rice Cultures in Twentieth Century," *The Journal of Southern History* 50, no. 3 (August 1984): 452 -455.

285 Orsenigo Mario, "Arkansas'ta Çeltik Ziraatı," Translated by Nazım Durlu, *Ziraat Dergisi,* no. 117-118. (January-February 1954): 77.

286 Ömer Aktürk, "Elbistan'da Çeltik Ziraatı," *Pancar Çiftçi Dergisi,* no. 181 (October 1967): 22.

287 Ahmet Aydın, tape-recorded interview by author, Bafra, Samsun, Turkey August 6, 2018.

288 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey August 20, 2018.

289 Halil Sürek, "Gerçek Anlamda Dubacı," accesed November 20, 2018, dubacı.com/hakkımızda.php

innovations has come from the west, Edirne have used new technical developments more than Samsun and Diyarbakır.[290]

Since rice is grown in watery fields, rice grain includes a high level of moisture. Due to the lodging of rice, plant diseases increase, productivity and yield decreases. In this case, combine harvesters move slowly.[291] In the same way, new rice varieties suitable for the harvest by combine harvester have been bred and encouraged. By the same token, spiny rice varieties that are not suitable for combine harvesters have been left.

While cutting down the rice, the moisture content of rice grains should be between 22 and 24 percent.[292] The moisture content of rice grains in harvest directly determines yield. However, to get higher yield, the moisture content and drying temperature can change based on the rice variety. For example, in Osmancık-97 variety, it should be at 24 percent moisture content in the harvest and dried at 45 ^{O}C. On the other hand, Baldo variety needs 19-21 percent moisture content in harvest and 55 ^{O}C drying temperature. Since rice is grown in wetlands and it is harvested in autumn, it needs to be dried.[293] If the moisture content in rice grain is not decreased to 14 percent, rice spoils, decreases its yields and it cannot be stored.[294] The drying of moisture content of rice grain is quite important to get a higher yield, more qualified products and higher demand in marketing.[295]

In this period the number of rice drying machines was limited and these machines had been mostly used by big landowners until the beginning of the 2000s. In general, rice has been dried on a tarp, blended and winnowed to be dried and cleaned. Therefore, in villages, trashing floors are determined in the high and smooth places for drying under the sun and winnowing in wind. One

290 Rasim Ünan and Melih Enginsu, tape-recorded interview by the author, Bafra, Samsun Turkey August 6, 2018.

291 Halil Sürek, *Çeltik Tarımı,* 135-208.

292 Hüseyin Gökçora, *Bitki Yetiştirme Islahı*, 488.

293 G. Evci and P. Ülger, "Çeltiğin Hızlı Kurutulması Sonucu Maximum Randıman Alabilmek Amacıyla Hasad Nemi-Maximum Randıman Arasındaki İlişkinin Belirlenmesi," *Tekirdağ Ziraat Fakültesi Dergisi* 3, no. 3 (2006): 275.

294 Hüseyin Gökçora, *Bitki Yetiştirme Islahı,* 488; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 107.

295 Halil Sürek, *Çeltik Tarımı,* 132.

of the first drying machines imported from Italy were founded by Çukobirlik in 1960. However, since it was designed according to Italian rice origin, it could not dry spiny rice varieties such as *Sarı Çeltik,* Plovdiv *and Akçeltik*. It could dry 150 tons of rice a day.[296] Similarly, there were drying machines in Osmancık district of Çorum, Samsun, İstanbul and Bandırma district of Balıkesir. These drying machines were run by coal or petroleum as fuel and they were not mobile.[297] The Ministry of Agriculture aimed at founding the second rice dry plants that was 100 tons of capacity in Edirne in 1966.[298] İpsala Municipal council accepted the foundation of rice dry plant that provided 20,000 TL daily income in 1971.[299]

However, rice drying machine technology was not widespread in Turkey. The rice of Yusuf Kiraz who was one of the famous rice cultivators of Bafra was not accepted by the administrator of Soil and Products Office in Samsun. Therefore, he rented a flat and dried his rice through a heating stove.[300] Yusuf Aytin was one of the first rice cultivators in Edirne who used drying machine technology in 1985.[301] The use of drying machines decreased excessive labor force and crocked rice and shortened harvest period but increased expenditure.[302] While drying machines were run on gas or fuel oil in the 1980s, they are run on electiricity or coal in the 2000s.[303] They used at least 800 liters of oil diesel a day. Alaattin Tokatlı invented a new rice drying machine as domestic production in 2003 in Edirne.[304]

296 Mehmet Şirin, "Maraşta Çeltik Ziraatı," 30.

297 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 107.

298 "Çeltik Kurutma Tesisleri Yapılacak," *Edirne Sesi,* June 1, 1965.

299 "İlçemizde Çeltik Kurutma Fabrikası Yapılacak," *İpsala,* October 25, 1971.

300 Osman Kiraz, tape-recorded interview by the author, Bafra, Samsun, Turkey August 6, 2018.

301 Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, Akçadam, Meriç, Edirne, Turkey August 20, 2018.

302 Turan Güneş, *Türkiye Çeltik Ekonomi,* 92-106.

303 Bülent Kıral, Halil Sürek, A. Kadir Ezer, Mustafa Nergis and İ. Hakkı Yüce, *Çeltik*, 20-21.

304 "Uzunköprü'de Çeltik Kurutma Makinesi İmal Edildi," *Vatandaş,* December 9, 2003.



Figure 2.5 Rice Harvest in İpsala
SOURCE: İpsala State Hydraulic Works (DSİ)

With the suggestion of Gürsel Şimşek who was a chairman of İpsala Commodity Exchange, Fehim Karagöz devised a rice drying machine run on coal to decrease the increasing cost of rice at 80 percent in İpsala in 2006.[305] On the other hand, rice drying machine technology has not developed in Southeast Anatolia. Although corn drying machine is found, it burns the rice.[306]

In order to equilibrate homogenous moisture content, the drying of rice should be between at least 10 hours and at most 24 hours. However, they dry rice grain at 30-40 ^{o}C for a length of time between 4 and 8 hours based on the moisture content of rice grain.[307] 40 ^{O}C is an ideal temperature. More than this degree, the germination capacity of rice declines.[308]

305 "Çeltikte Kömürlü Kurutma Devri," *Son Haber,* September 30, 2006.

306 M. Adil Kayapınar and Şerif Kahraman, tape-recorded interview by the author, August 9, 2018, Yalankoz, Diyarbakır, Turkey.

307 Halil Sürek, Çeltik Tarımı, 139; Selim Tahan and Turan Ekmekçi, "Çeltikte Randımana Etki Eden Faktörler ve Alınabilecek Tedbirler," Türk Tarım, (November-December, 2014): 69.

308 İsmail Sezer and Zeki Mut, "Samsun İlinde Çeltik Tarımının Durumu," 65.



Figure 2.6 İpsala Rice Treshing
SOURCE: İpsala State Hydraulic Works



Figure 2.7 Mobil Drying Machine
SOURCE: *Bereketli Topraklarımız,* June 27, 2015

After the harvest of the field, in order to ease its transportation, to prevent its spoiling and to protect it from external factors the grain of rice is filled in linen sacks and hoarded in storehouses. Furthermore, the pilaf of stored rice is better. However, the moisture content of stored rice grain should be at least 12 percent and at most 14 percent. Apart from these percentages, the yield and

the germination rate and vigor of rice seeds decline.[309] Peasants should consider the air conditioning in their storehouses to prevent its spoiling.[310] If the sacks are put on top of each other, more than six sacks should not be put. If rice is kept in bulk, the length of the stack should not be more than 150 cm. Before the 1970s, in the Marmara Region, the conditions of the storehouse were suitable for rice. Rice is stored four or five months there. In Black Sea Region, the conditions of storehouses were not enough. Rice kept waiting for two and four months. In southeast Anatolia, rice was sold immediately. Only those who had their own selling space, had storehouses.[311] Today, rice might be stored or sold based on the economic conditions of peasants in three basins. However, since the peasants of Karacadağ sell their products as paddy rather than rice, they may store their paddy in the storehouses of industrialists by paying rent.[312]

In Turkey, in terms of varieties, cropping systems and the structure and size of agricultural enterprise differs among regions. The preferred rice varieties should comply with the climatic conditions of regions. Similarly, they should be productive and have market demand to provide peasants with a high economic income. However, more qualified rice has lower productivity.[313] Based on their economic gain, the expectation of peasants, industrialists, and consumers differs from each other. Peasants demand higher productivity. Industrialists try to get higher yield. The yield of rice is how much paddy is obtained out of 100 kg of rice. Consumers demand more qualified and delicious rice.[314] Averagely, 60 kg out of 100 kg of rice is paddy. This indicates the yield of rice. Also, 20 kg out of 100 kg of rice is husk. 10 kg out of 100 kg of rice is paddy bran. The rest of it is crocked rice.[315]

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309 Halil Sürek, *Çeltik Tarımı,* 143.

310 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 120.

311 Nazım Durlu, *Çeltik Yetiştirme Tekniği,* 36.

312 Süleyman Kızılkaya, tape-recorded interview by the author, Yalankoz, Diyarbakır, Turkey August 9, 2018.

313 Halil Sürek, *Çeltik Tarımı,* 70

314 Ibid., 145; Selim Tahan and Turan Ekmekçi, "Çeltikte Randımana Etki Eden Faktörler ve Alınabilecek Tedbirler," 68.

315 Nuran Taşlıgil, Güven Şahin, "Türkiye'de Çeltik Yetiştiriciliği ve Coğrafi Dağılımı," 184.

Consumers demand rice that has a better cooking quality and qualified pilaf. However, the qualification criteria are valid for the countries where rice is not consumed as a staple food.[316] The physical properties of grain, its protein and starch content, gelatinization temperature that means the swelling temperature of rice (55 and 79 ° C) and its amylose content determine the qualification of rice. As the protein content and gelatinization temperature of rice increase, the water requirement increases and cooking time of paddy lengthens out. Amylose provides paddy with distribution while cooking. It is the most important factor in determining the quality of rice. The overrun of rice, its water absorption and the brightness depend on amylose. In the case of low amylose, pilaf is mushy.[317] Besides, in the course of cooking, it has aromatic characteristics due to volatile oil acids.[318]

2. 12 Concluding Remarks

In Conclusion, for breeding and the spread of rice varieties, there have been some scientific research since the last quarter of the nineteenth century from Japan to Italy. However, rather than evaluating rice cultivation in the historical process, this chapter mainly focuses on how rice plays a significant or central role in directing farmers and agriculturalists together with its biological and agricultural properties such as cultivation, pest control, fertilization and harvest from micro to the macro level. All struggles of people in rice cultivation is to provide higher yield and productivity for their economic gain. Although rice cultivation or production depends on social entrepreneurship in villages, rice productivity and yield depend on the individual success of farmers and climate. Therefore, it requires working discipline, coherent teamwork, traditional experience and following new agrarian technology. Although some principles are expressed in rice cultivation, the rice production system in the Karacadağ Agriculture Basin is in conflict with Meriç, the Lower Kızılırmak,

316 Halil Sürek, *Çeltik Tarımı,* 145.

317 Halil Sürek, "Türkiye'de Üretilen ve Yeni Tescil Edilen Çeltik Çeşitleri," 37-38.

318 Ebru Baybara Demir, "Karacadağ Pirinci."

and Lower Yeşilırmak Basins. However, it is seen that there is a communication at the level of agricultural research institutes, industrialists and some prominent farmers.

Rice is a cereal that depends upon biological stability in its water requirement, environmental conditions and nutrients at an adequate dosage and on time. On the other hand, rice accommodates some paradoxical biological properties such as growing in different production modes, different ecosystems and in different continents or geographies except for Antarctica. Similar to wheat and corn, rice has been a staple food of densely populated Asian communities. Although rice is Asiatic and tropical cereal, modern technology in rice cultivation spread from west to east and higher productivity is provided in sub-tropical areas. Besides, rice is a unique product that can be grown in salty, alkali and improved lands. Namely, rice has strong adaptability to differents soil types and climates. Similar to fish, rice is the only and unusual cereal that can use soluble oxygen in water.

3

The History of Rice

Agriculture has been an indispensable part of the socio-economic life since the Neolithic period. In addition to the biological properties of agricultural products, it is closely related to politics, society, and economics in the historical process. Furthermore, due to the food requirements of the growing population of society and the economic values of foods, political authorities have tried to control agrarian economics such as production process, trade, prices and taxation throughout the history. Thus, there has been a clash of interest among different states for the fertile agricultural lands and trade roads.

Although foods have directed the fiscal policy of states, individually many people do not have any information about where the homeland of agricultural products is or how these foods have arrived nowadays. The importance of foods is not discussed adequately apart from global climate change or the famine threat, but people need them at least three meals a day. Also, many foods have played an essential role in shaping history. Regarding their nutritional value, cultivation areas and trade, cereal groups such as wheat, rice and corn that have high calorific value are the most important staple foods in socio-economic history. Although starchy foods in particular cereals have been staple foods in distinct geographies, their modes of production, marketing,

and their consumption style have differentiated.[319] The findings related to the first agricultural production were seen in the river banks of Nile, Fırat and Dicle. Firstly, due to their short vegetation period, barley, rye, and oat were domesticated respectively.[320]

However, rice was later adapted to semi-aquatic cultivation which ensured its high yields and popularity. Seventeen out of twenty-five countries where the rice is cultivated are located between Pakistan and Japan in southeastern Asia. While the population of these Asian countries constituted 60 percent of the world population, their rice production constituted 92 percent of all rice production. After Asia, Latin America and Africa have been important regions in rice consumption. By the same token, rice has been an important diet for these Asian societies just like what bread is for the Europeans.[321] As a symbol of fertility, birth, and satiety, rice is regarded as a sacred crop in China, India and Thailand.[322]

In this context, this chapter claims that as a staple food and nutritious cereal, rice is an actor in making history in terms of political, economic, and social dimensions. In other words, due to the food requirements of people, rice has had a central role in determining the course of historical events. Besides, methodologically this study tries to explain the historical importance of rice from macro to micro level. The purpose of this study is to explain the main role of rice from its evolutionary history, its international spread and its historical past in Anatolia to the stories of rice cultivation in the Meriç Basin, the Karacadağ Agriculture Basin and the Lower Kızılırmak and Lower Yeşilırmak Basins in the beginnings of the 1950s. Thus, it aims to be an infrastructure and main source of the relations between rice and state, rice and economics and rice and society from 1948 to 2018.

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319 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar*, 1.

320 Ahmet Özçelik, *Tarım Tarihi ve Deontolojisi*, 6.

321 Fernand Braduel, *Civilization and Capitalism 15thand 18th The Structure of Everyday Life* (London: Collins, 1981), 145.

322 Güzin Yalın, *Mutfaktan Tabaktan Sokaktan* (İstanbul: RGK Yayınları, 2014), 343.

§ 3.1 The Origin and the Evolutionary History of Rice

In human nutrition, rice has an older historical past than many other foods.[323] *Oryza* genus is originated from Gondwanaland where India, Australia, Africa, and South America were located.[324] Apart from 23 rice species, *Oryza sativa* L. and *Oryza glaberrima* independently evolved in the same process in Asia and Africa respectively. *Oryza sativa* emerged as a result of the evolutionary process of *Oryza rufipogon* evolving into *Oryza nivara*. In the same way, *Oryza glaberrima* emerged as a result of the evolutionary process of *Oryza longistaminata* evolving into *Oryza bartii*. In this evolutionary process, there is a transition from perennial wild plant into an annual plant.[325]

Geographically, while the primary center of diversification of *Oryza glaberrima* was the upper delta of Niger River in 1500 BC in West Africa, its secondary diversification center formed 500 years later in Southeast Guinea. The first areas where *Oryza glaberrima* was domesticated were Mali, Sene-Gambia, and Guinea 2000 or 3000 years ago.[326] After the domestication of rice, its morphological properties began to differentiate such as larger leaves, longer stem and longer panicle. However, archeological excavations point out that *Oryza glaberrima* was domesticated later than *Oryza sativa*. Porteres thinks that there were two central origins such as the East of Sudan and the Casemance River Valley in Senegambia in Africa goes back to 1500 BC. Rice cultivation in Africa developed independently from Asia.[327]

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323 Halil Sürek, *Çeltik Tarımı,* 24.

324 TE- TZU, "The Origin, Evolution, Cultivation, Dissemination and Diversification of Asian and African Rices," *Euphytical* 25, no. 1 (1976), 425-441.

325 Halil Sürek, *Çeltik Tarımı,* 25; D. Robert Huggan, "Co-Evolution of Rice and Human," *Geo Journal* 35, no. 3 (1995), 262.

326 R. Porteres, "Taxonomie Agrobotanique des Riz Cultivés O. sativa L. et O. glaberrima," *S. J. Agric. Trop. Bot. Appl,* no. 3 (1956): 341–384.

327 R. Porteres, "Taxonomie Agrobotanique des Riz Cultivés O. sativa L. et O. Glaberrima," 161; Halil Sürek, *Çeltik Tarımı*, 26- 27.

The exact time and the development of rice will perhaps never be known. Some geographical studies on rice cultivation indicate that the origin of rice is the foothills of the Himalaya Mountains in Southeast Asia. The cultivation lands of *Oryza sativa* extend to Burma, Thailand, and Indochina. It was spread into different regions thanks to migrations and commercial activities. As a result of distinct ecotypes, *Oryza sativa* separated into three sub species such as Indica, Japonica, and Javanica. Among these sub-species or ecotypes, Indica is the oldest one. It has a long length, weak stem and large open green leaves. Geographically, *Oryza sativa* was spread into tropical areas such as India, Malesia, Central China, Sri Lanka, and Thailand. The Japonica subspecies spread from China to Korea, Russia, and Japan. Second, the origin of Japonica is Southeastern Asia and in time, it spread into mild climate zones such as the lower basin of the Yangtze River in Northeastern China, Korea and Japan. It has a shorter length, fewer tillers, and narrow green leaves. Finally, Javanica subspecies are grown in tropical climates such as Indonesia, Taiwan and Japan. It has thick stems, long length, fewer tillers. While Japonica and Javanica subspecies are more resistant to pulling out of grain, Indica is not resistant.[328]

§ 3. 2 The First Archeological Findings about Rice

Concerning *Oryza sativa*, in the archeological excavations, some rice grains that belongs to 7000 BC were found in the Chekiang province of China.[329] However, the oldest archeological pieces of evidence are found in the middle and lower Yangtze River and upper Huia river of China. Its history goes back to 11.000 and 12.000 BC.[330] Rice cultivation goes back to at least 2800 BC. Rice has been a staple food for densely populated Monsoon Asian and the Far Eastern societies. Since it is a staple food, it has had a special place in long

328 Halil Sürek, *Çeltik Tarımı*, 25-29; J.L. Maclean, D.C. Dawe, B. Hardy, and G.P. Hettel*, Rice Almanac,* (Wallingford, Oxon: CABI Publishing, 2002), 1.

329 Halil Sürek, *Çeltik Tarımı,* 24.

330 R. Porteres, "Taxonomie Agrobotanique des Rizcultivés O. sativa L. et O. glaberrima," 341–384.

distance international trade between east and west for centuries.[331] On the other hand, the most reliable archeological pieces of evidence concerning the domestication of rice were found in Southeastern Asia in 1966 by Wilhem G. Solheim. Thanks to puddling and transplanting, rice could be domesticated in China and cultivated in river valleys or deltas for the first time. The findings as to rice grain and husk were discovered at Non Nok Tha in the Korat region of Thailand. Thanks to these research, the historical past of rice is determined as more than 4000 years. Furthermore, based on the residues of rice in the Spirit Cave where it is close to the frontiers between Thailand and Mymmar indicates that the cultivation of rice goes back to 10.000 BC.[332] More interestingly, as some intellectuals claim, although the history of agriculture goes back to 10,000 years before, that of rice goes back to 3,000,000 years ago. The southwestern part of China and Assam region of India are the regions where rice had been first seen millions of years ago.[333]

§ 3. 3 International History of Rice

In the spread of rice cultivation, political, socio-cultural and socio-economic interactions among societies such as trades, migrations, the Age of Explorations, colonialization, and wars have been influential. However, rice is cultivated under dry lands in uplands. Wetland rice cultivation was firstly carried by the migrant people of Southern China and northern Vietnam to the Philippines in the second millennium BC. Similarly, this type of cultivation was carried to Indonesia about 1500 BC by Deutero Malays, it was implemented in Sri Lanka and Western India in 1000 BC, and it was introduced to Japanese society from Koreans and Chinese in 100 BC.[334] Furthermore, due to the moderate climate, the cultivation of rice began in southern China. However, due

331 Turan Güneş, Türkiye *Çeltik Ekonomisi,* 11.

332 J.L. Maclean, D.C. Dawe, B. Hardy, and G.P. Hettel, *Rice Almanac,* 25.

333 Güzin Yalın, *Mutfaktan Tabaktan Sokaktan*, 343.

334 J.L. Maclean, D.C. Dawe, B. Hardy, and G.P. Hettel, *Rice Almanac,* 25.

to the cold climate, the spread of rice cultivation into northern China and Korean had been slower. Since the dryland rice farming method had been exercised in Korean in the earlier stages, rice yield was lower.[335]

On the other hand, it is thought aquatic rice firstly was seen in India and reached to Southern China overland or by the sea in about 2000 BC. Then rice settled and spread slowly in Chinese cuisine as a diet. Although rice was seen in the Japanese cuisine in the first century AD, it had not been essential food in Japanese diet until the seventeenth century. Thanks to the development of agricultural infrastructure, the increase of agricultural production, and growing trade under the Tokugawa Dynasty in the seventeenth century, the Japanese population grew. On the other hand, rice or only other cereals were not adequate for the nutrition of people in India in the eighteenth century thus the increasing population led to starvation.[336]

Rice can be thought of as a miracle food that feed the densely populated Manson Asian population thanks to its high productivity. As rice cultivation spread into distinct areas, it had distinct local names such as *ladang* in Malaysia and Indonesia, *ray* or *rai* in Vietnam, *djoung* in India and *tavy* in Madagaskar in the tenth century.[337] In the spread of rice into distinct parts of the world, natural conditions such as water sources, climate, and topography had been influential.[338]

Furthermore, apart from Monsoon Asia and the Far East, rice was spread into the Mediterranean basin by the members or soldiers of the Alexander the Great who made the Indian expedition in 344-324 BC. In this context, Sicily and Greece were two central origins in the spread of rice into southern Europe and North Africa.[339] Although rice came to the Mediterranean in the early period, it had not been cultivated until the seventh century. Rice spread from

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335 Jared Diamond, *Tüfek, Mirop ve Çelik,* Translated by Ülker İnce (Ankara, TUBİTAK, 2002), 1044.

336 Fernand Braudel*, Civilization and Capitalism 15thand 18th The Structure of Everyday Life,* 147-158.

337 Ibid., 147-152.

338 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar,* 12.

339 J.L. Maclean, D.C. Dawe, B. Hardy, and G.P. Hettel, *Rice Almanac,* 2.

Nile Delta to Camargue delta in France, Po Plain in Italy, and Spain.[340] Firstly, Europe introduced rice in 300 BC.[341]

Rice was also carried to the Middle East and spread by the Arabs into North Africa, Spain and the southern parts of France.[342] It is regarded that rice came to Turkey before the fifth and sixth centuries from Egypt.[343] According to Sürek, there was no exact information about where rice came to Anatolia. However, most of the local rice varieties are spiny thus; they are similar to the rice varieties in Egypt.[344]

Rice was cultivated on the coast of the Caspian Sea in Sassanians in the sixth and seventh centuries. Thanks to trade on Silk Road, rice, species, and porcelain were carried from east to west. Based on the Chinese sources, some Turkic tribes had cultivated rice in the Fergana region in the Second BC. According to Kaşgarlı Mahmut, Turks had cultivated rice and they called rice *tuturkan* in Central Asia. When Turks came to Anatolia, they called paddy as *birinç* that is Persian origin vocabulary.[345]

With the beginning of the Age of Explorations, early European settlers such as Portuguese and Spanish introduced rice cultivation to New Worlds. For example, while Portuguese introduced it to Brazil, Spanish carried it to Central and South America through African slaves.[346] Rice was cultivated in the Virginia province of the USA for the first time in 1647. It was taken by Dutchmen and Englishmen.[347] Based on the mechanization in agriculture, it

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340 U. Ramseyer, "The Origin and History of Rice: From Shifting Agriculture to Wet Rice Cultivation" *Swissair Gazette* 2, no. 17–19 (1989); Halil Sürek Çeltik Tarımı, 26.

341 Necla Türkoğlu, "Türkiye'de Çeltik Alanlarının Dağılışı," 209.

342 S. Göney, "Sıcak Bölgelerde Ziraat Hayatı," *Coğrafya Enstitüsü,* no. 116, (1980); NuranTaşlıgil and Güven Şahin, "Türkiye'de Çeltik Yetiştiriciliği ve Coğrafi Dağılımı," 183.

343 Halil Sürek *Çeltik Tarımı,* 26.

344 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 10, 2018.

345 Feridun Mustafa Emecen, "Çeltik," 265-266.

346 J.L. Maclean, D.C. Dawe, B. Hardy, and G.P. Hettel, *Rice Almanac, 2*.

347 Abdullah Türkoğlu, Gıda Maddeleri, (İstanbul: İstanbul Matbaası, 1979); Necla Türkoğlu, "Türkiye'de Çeltik Alanlarının Dağılışı" 209; Nuran Taşlıgiland Güven Şahin, "Türkiye'de Çeltik Yetiştiriciliği ve Coğrafi Dağılımı," 183.

was spread into the southwest of Louisiana in the eighteenth century, California's Sacramento Valley, Mississippi, and Missouri. Rice was spread into the east of Arkansas, and the southeast of Texas in the first quarter of the twentieth century.[348] Thanks to water sources, large cultivable plains, soil structure, and weather conditions, rice cultivation was quite suitable in Arkansas. There was a Stuttgart Rice Breeding Station in Arkansas.[349] Furthermore, Rice Experience Stations were founded in Louisiana, Texas, and California in 1909.[350]

With the advent of the short and medium rice grain that complied with the climatic conditions of Sacramento and came from Japan in 1908, rice production increased.[351] Furthermore, the British had taken some slaves from Senegal, Gambia and Sierra to South Caroline in the USA between the seventeenth and the nineteenth centuries. These slaves, who knew rice agriculture, began to cultivate rice with the African rice cultivation technics. Since the workmanship of rice required ingenuity, experience and intensive labor, and the rice industry depended upon slave labor, the population rate of slaves to natives increased incredibly and reached 78 percent in the last quarter of the eighteenth century. However, with the banning of slavery, the labor force decreased. The building of the Suez Channel, the trade between North Europe and Asia increased and they began to receive their rice needs from India rather than South Caroline. After the emergence of the American Civil war in the 1860s, rice production was carried to western provinces such as Texas, Arkansas, and California.[352]

In the spread of rice, cultural exchanges result from colonialization was also influential. In this context, rice was taken to the Solomon Islands by travelers and missioners in the nineteenth century. The inhabitants of Solomon Islanders got their first taste of rice at missionary schools and institutions. As

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348 Halil Sürek, *Çeltik Tarımı,* 26; Pete Daniel, "The Crossroads of Change: Cotton Tobacco, and Rice Culture in the Twentieth century," 436.

349 Mario Orsenigo, "Arkansas'ta Çeltik Ziraatı," Translated by Nazım Durlu, *Ziraat Dergisi,* (January, February 117-118, 1954), 72-77.

350 Mario Orsenigo, "Arkansas'ta Çeltik Ziraatı," Translated by Nazım Durlu, *Ziraat Dergisi,* (June 122, 1954), 56-57.

351 Kassim Alkbatib," Rice Production in California: Past, Present and Future," *Uluslararası Katılımlı Konuralp Çeltik Çalıştayı* (September 2016), 20.

352 Betty Joyce Nash, "Economic History Rice to Riches," *Region Focus*, (Winter 2008), 36-38.

rice has been consumed in meals, it displaced traditional starch staples such as cassava, sweet potato, taro, and yams. Rice began to be consumed in public institution and plants as a meal in the 1920s and it was distributed by the American Army to people with rations during the Second World War. Also, it was consumed in festivals, funeral rites, and social organizations. The consumption of rice and its localization as one of the main foods were the indication of the transformative influence of globalization on local cuisine culture. Rice has been taken as a prestigious gift in house visits. Since the availability and the cooking of rice were easy and it was nutritious, rice was quite practical for the people who lived in urban areas. Similar to cities, rice consumption began to be widespread in rural areas in the 1970s.[353]

Ramseyer thought that a Japanese migrant cultivated rice in irrigated conditions in New South Wales in Australia in 1914.[354] However, its cultivation has become widespread since 1952.[355] Furthermore, While China and India have had the highest level of rice production for being self-sufficient in staple food requirements; California and Australia have had the highest level of productivity in rice around the world.[356] Based on population growth, rice consumption has increased since the 1950s.[357]



353 Christine Jourdan, "The Cultural Localization of Rice" *University of Pittsburg, of the Commonwealth System of Higher Education* 49: 4, (Fall 2010), 263-270.

354 J.L. Maclean, D.C. Dawe, B. Hardy, and G.P. Hettel, *Rice Almanac,* 2.

355 U. Ramseyer, "The Origin and History of Rice: From Shifting Agriculture to Wet Rice Cultivation"; Halil Sürek *Çeltik Tarımı,* 27.

356 Serkan Yenal, "Çeltik Üretim ve Ticareti Etkinlik Verimlilik Çözümlemesi," *Türk Tarım Dergisi,* no. 208 (December 2012), 83

357 Hatıf Öge, "Dünya'nın Yarı Temel Gıdası Pirinç" 30.

Map 3.1 The Spread of Rice Cultivation in the World

SOURCE: Anthony Scott and Kyra Anzola" Rice as a Commodity" accesed January 10, 2020 https://ecohisf12rice.wordpress.com/globalization/

3. 3. 1 *The Importance of Rice in the Nutrition of Asian Population*

While rice has been a staple food for Manson Asia, bread has been for the Europeans. Chinese made 80 percent of their expenditure on food went on cereal, about 16 percent on vegetables and spices, and 3 percent on meat. They have taken 2000 cl in daily nutrition since the seventh century. Besides, rice was evaluated as a new sign of civilization.[358] Furthermore, a major part of the Asian population received between 30 and 57 percent of their calorie requirement from rice. 94 percent of World rice production had been realized and this production hardly received the requirement of Asian societies until the beginning of the Second World War in Asia where half of the world population lived. After the war, both rice productions were tried to be increased and wheat was imported. Although the size of the rice fields was 1500000 hectares larger, its production was 5400000 tons lower. This situation resulted from the destruction of rice fields and water channels during the war.[359]

While the World population had taken averagely 20 percent of its calorie from rice, it was 36 percent in Asia, 11 percent in South America, and 5 percent in Africa in the twentieth century. Although the largest rice cultivation areas

358 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar,* 12.

359 Ibid., 5-7

are in Asia, Africa and South America, the highest productivity is in Europe.[360] Similarly, due to a decline in rice production and the rise of population, rice consumption decreased exempt Brazil, Portuguese, and Egypt after the Second World War.[361]

3. 3. 2 *The Institutionalization of Rice Production at International Level*

Before the Second World War, wheat and barley had been more prominent cereals concerning cultivated areas and production. However, thanks to the higher productivity of rice, the amount of rice production in Western Block exceeded that of its wheat production. Due to its nutritional value, the higher productivity and economic gain, rice ceased to be the only product of tropical climates, it spread into mild temperature zones and there was market- oriented rice production in these areas after the 1960s.[362]

In contrast to the growing Asian population, the decline of rice production and rising rice prices created starvation in Asia. The decline of international rice trade was 66 percent. However, rice cultivation began to spread outside of Asia after the 1950s. Thus, it is claimed that the Second World War was an important turning point in the expansion of rice farming, rice production and the consumption of paddy. The mechanization of agriculture, the increase in the use of herbicides, and fertilization after the Marshall Plan in 1948 contribute to rice production. Namely, the expansion of rice can be regarded as a gift of the Green Revolution.

Moreover, the insufficient production of rice became an international and social issue across the World. Thus, the International Rice Commission was founded in 1947. The first meeting was realized with the participation of 19 states and 8 organizations. They mainly dealt with rice cultivated land, the

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360 Tarım ve Köy İşleri Bakanlığı, *Trakya Tarımsal Araştırma Enstitüsü Çeltik Yetiştiriciliği Semineri* (Mayıs 23-29, 1991), 1.

361 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar,* 26.

362 Mirza Gökgöl, *Çeltik Ziraatı,* 3.

increase of rice productivity and quality, and also the marketing conditions of rice. The commission regulated second meeting in Rangoon (Yangon) in Myanmar, the improvement of rice was talked to increase rice production.[363] To distribute paddy equitably around the world, the International Food Control Commission was involved in the foundation of a subsidiary commission in Singapore in 1946. Similarly, the conference organized by the international rice commission in Baguio in 1948 provided the required infrastructure to increase rice production.[364]

Based on the population growth, the increase of cultivable lands and productivity, and essential infrastructure for the increase of rice production was talked in the conference held by the International Rice Commission.[365] Also, the International Rice Research Institute (the IRRI) was founded by Ford, Rockefeller and the government of the Philippines at the University of Philippines in Los Banos in 1959. The IRRI aimed at the environmental sustainability of rice production, the rice requirement of people and improving the life quality of rice cultivators.[366]

3. 3. 3 *The History of Rice in Anatolia and Rumelia*

Although there is no exact date about the advent of rice in Anatolia, it is well known that rice cultivation had not been widespread and influential in the agrarian economy until the beginnings of the 1950s. However, it is supposed to have come from the south, the southeast and the east through trade, wars and migrations. The advent and the spread of rice cultivation in Anatolia were parallel to the routings of the Spice Road that origin from Calcutta city in India and arrived in Cairo in Egypt and the Silk Road that origin in Lo-Lang city of China and the Cambay City of India had a special place.

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363 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar,* 7-12.

364 Hatıf Öge "Dünya'nın Yarı Temel Gıdası Pirinç," 39.

365 Ibid., 35-36.

366 International Rice Research Institute- the IRRI-Rice Science for a Better World accessed on November 12, 2018, irri.org

There are distinct views about what time it came and which geographical route map it followed coming to Anatolia. Since rice is a Southeast Asia origin cereal, it most probably came to Anatolia through Silk Road either from the East or south. However, another view is that rice spread to Rumelia from Greece or Sicily after the expedition of Alexander the Great. Besides, it is claimed that rice was taken to Anatolia from Central Asia by Turks.[367] Due to limited transportation and communication, people might have cultivated rice without being aware of each other.

Rice was taken to Iraq in the period of the caliphate Omer in the seventh century. Rice had been spread into Islamic countries based on climatic and environmental conditions. Although the exact date of the beginning of rice cultivation in Anatolia is not known, there are historical records such as wakf documents concerning rice production in Anatolian Principalities in the thirteenth century. Famous traveler Ibn Battuta mentioned rice trade in the markets of İstanbul and Ayasulug in the fourteenth century. [368]

It is thought that rice came to Anatolia from Egypt and cultivated in Tosya, and in İzmir by Aydınoğulları Principality in the fourteenth century. Furthermore, the vicinities of Kastamonu, Maraş, Diyarbakır, and Edirne were the first important centers for rice cultivation.[369] Besides, there were some similarities in rice cultivation, rice varieties and irrigation technics between Maraş and Diyarbakır. The labor force in rice irrigation and harvest in the Karacadağ Agriculture Basin has been received from Maraş.[370]

According to Ottoman land registry books and the research of Halil İnalcık, rice had been cultivated in the plains of Bursa, Bolu, and Beypazarı irrigated by the reaches of Sakarya Rivers and belonged to Havass-ı Hümayun in the fifteenth century. Besides, grand vizier Sokullu Mehmet Pasha and

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367 Mehmet Karagöz, "1779 Senesi Rüsum Defterine Göre Bazarcık- Tatarpazarı'nda Pirinç Üretimi," 277.

368 Yaşar Yücel, *XIII and XV Yüzyıllar Kuzey-Batı Anadolu Tarihi Çobanoğulları Candaroğulları Tarihi*, (Ankara: Türk Tarih Kurumu Yayınları, 1980), 191; Zeki Arıkan, "15 ve 16 yy da Anadolu'da Çeltik Üretimi," 477.

369 Nurhan Taşlıgil and Güven Şahin, "Türkiye'de Çeltik Yetiştiriciliği ve Coğrafi Dağılımı," 184; Mehmet Akif Erdoğru, "Aydın Sancağında Çeltik Tarımı XV-XVI Yüzyıl," 522.

370 Mehmet Şirin, "Maraşta Çeltik Ziraatı," 28-30.

good shot Ahmet Pasha had rice fields. However, from Bursa to Antalya and Adana there was rice cultivation in distinct parts of Western Anatolia and Mediterranean. In the period of Suleiman, the Magnificent, there were thirteen rivers used in the irrigation of rice fields. Due to drought, rice was cultivated sexennial and there were 924 out of 4031 rice producers in Aydın district in the same period. The history of rice cultivation in southeast Anatolia goes back to Mamelukes in the fourteenth and fifteenth centuries.[371]

As Korkut explains, since merchants who made a trade of snuff and chewing tobacco between Anatolia and Egypt could have a chance to see the profit of rice, they had tried to carry it to Anatolia. However, Mehmet Ali Pasha had struggled to protect the monopoly of rice cultivation in the Mediterranean Basin. Therefore, a person who was known as Üdürgücü in Maraş had carved reed walking stick and filled rice seed in Egypt. Thus he had brought rice from Egypt to Maraş fugitively and secretly at the end of the eighteenth century.[372] But this date is too late for rice cultivation in Anatolia.

§ 3. 4 The Role of the Ottoman State in Rice Cultivation

Although the state had a central role in rice production, rice cultivation among Ottoman State, Karamanids, Akkoyunlu (White Sheep Turcomans) and Mamelukes had some common and distinct features. Furthermore, being exempt from extraordinary taxes and paying less *çift resmi* were common principles on the one hand, the providing of rice seed, modes of production, the division of labor and the share of rice were different on the other. There was a sharecropping system in Karamanids. The rice cultivators were completely exempt from extraordinary tax, *çift resmi* and sheep tax in Karamanids. In this context, half of the seed was provided by the state or owner and the rest was provided by sharecropper. Therefore, the production of rice was shared equally between them.[373]

371 Zeki Arıkan, "15 ve 16 yy da Anadolu'da Çeltik Üretimi," 480.

372 Mehmet Şerif Korkut, *Isıtma ve Çeltik,* 37.

373 Halil İnalcık, "Rice Cultivation and the Çeltikçi Reaya System," 87-93.

As Braudel claims, in China between the eleventh and the fourteenth century, rice cultivation has increased state control, the number of population and strict social discipline.[374] In the Ottoman Empire, there was a scarcity of labor force in contrast to plenty of cultivable lands and rice cultivation required water. Thus, the state controlled rice which was a precious product firmly and also the state regulated its modes of production, production process, water sources, and prices elaborately.[375] Furthermore, to prevent the reduction of the quality of rice, rice seeds were supplied by the state.[376] Rice was cultivated mainly in fief rather than in the manorial system (*tımar*) to prevent the labor exploitation of peasants who were called *çeltikçi reaya*. These people were recorded in the Ottoman land registry book separately and their *çeltikçi* status passed from father to son. Since the Ottoman Empire regarded rice cultivation as public service that required ingenuity and experience, *çeltikçi reaya* were exempt from extraordinary tax.[377] Their community was also called as *cemaat – i çeltikçiyan* in the Ottoman land registry books. To be headman in rice fields, people paid a price called *pişkeş* to state. Therefore, some other reayas had demanded this status in the end of the sixteenth century.[378]

The basic features of *Çeltikçi reaya* came from the sharecropper slave system.[379] In the same way, due to heavy work load, health problems and the intensive exploitation of labor, peasants avoided rice cultivation. Thus state applied a special status and privileges to rice cultivators.[380] After Sultan II. Mehmet, rice growing areas extended in different parts of regions particularly

374 Fernand Braudel, *Civilization and Capitalism 15th and 18th The Structure of Everyday Life,* 149.

375 Gül Akyılmaz, "Osmanlı Devleti'nde Yönetici Sınıf Reaya Ayrımı," *Gazi Üniversitesi Hukuk Fakültesi Dergisi* 1-2, no. 239 (2004), 8.

376 İbrahim Solak, "XVI Yüzyilda Güvercinlik Kazası," *Osmanlı Tarihi Araştırma ve Uygulama Merkezi Dergisi* 18, no. 16 (2005), 370.

377 Halil İnalcık, "Rice Cultivation and the Çeltikçi Reaya System,"80-92; Gül Akyılmaz, "Osmanlı Devleti'nde Yönetici Sınıf Reaya Ayrımı," 8.

378 Ömer Lütfi Barkan, *XV ve XVI Asırlarda Osmanlı İmparatorluğunda Zirai Ekonominin Hukuki ve Mali Esasları*, (İstanbul: İstanbul Üniversitesi, 1943), 205-208.

379 Halil İnalcık, "Rice Cultivation and the Çeltikçi Reaya System," 103-107.

380 Ibid., 84.

in Rumelia. In this context *mulk, tımar* and wakf lands were taken under the control of the state and infrastructural investments such as water channels and ways were built. *Çeltikçi reaya* status was regarded as essential to provide continuance in rice production. The water requirement and the sowing time of rice fields were controlled by the *reis* who was the head of waterman who is called *saka* in Cilician Plain[381] *yamak* in Rumelian, *cenan* in Diyarbakır, and *sucu* in Samsun.

Since Tatars who migrated from Crimean in 1418 were settled in Bazarcık situated near the Meriç Basin, its name was called Tatarpazarı. The first findings of the rice cultivation in Tatarpazarı and Edirne province go back to the mid-fifteenth century. After the conquest of Rumelia after the mid-fourteenth century, Lala Şahin Pasha who was an advisor of Sultan Murat had taken rice cultivation to Filibe, Tatarpazarı, Semizce and Harmanlı.[382] Besides, the rice fields in Filibe, Drama, Serez and Burgaz were public lands and rice was produced through land tenure to receive the requirement of the Ottoman Palace.[383] Thus Ottoman State had earned four million of akçe annually. In addition to the Balkans, rice has been cultivated in the vicinity of Maraş, in some regions on the coast of the Black Sea, in Southeast Anatolia and Iraq since the fourteenth and the fifteenth century.[384] Similar to tulip that was introduced to Europe by Ogier Ghieslain de Busbecq who was an Austrian ambassador in İstanbul in the mid-sixteenth century,[385] rice was quite a bureaucratic commodity.

In the Ottoman State, there was a relation between the share- cropper and slave that was regulated by the state in rice production. In rice cultivation, captives, paid workers, free peasants, nomads and slaves worked in rice

381 Ibid., 93-98.

382 Ibid., 70.

383 Tayyip Gökbilgin, *XV ve XVI Asırda Edirne ve Paşa Livası* (İstanbul: İşaret Yayınları, 2007), 10-128; Mehmet Karagöz "1779 Senesi Rüsum Defterine Göre Bazarcık- Tatarpazarı'nda Pirinç Üretimi," 278-280; Feridun Mustafa Emecen, "Çeltik," 265-266.

384 Chris Graten, "Pilavdan Dönen İmparatorluk: Meclis-i Mebusan'da Sıtma ve Çeltik Tartışmaları," 99.

385 Michael Polland, *Arzunun Botaniği,* 64.

fields. As a result of the changes in their servile status, slaves as a sharecropper disappeared in the II. Beyazıd. However, the central authority of the Ottoman State in rice cultivation had continued until the seventeenth century. With the emergence of tax farming, rice growing lands turned into areas where exploitation of reaya labor and the public sources of revenue were present. As a dominant group, nomadic Turks involved in rice cultivation in Cilician Plain. Rice production in Çukurova regions was similar to Mamelukes. Rice came to Çukurova from Mamelukes.[386]

The revenue of 24 rice rivers out of 27 belonged to Sultans in Sis Sanjak (Kozan-Feke) and the administration of these rice fields and rivers was regulated. The total *has* revenues of these rivers were 144,900 akçes in the sixteenth century. Rice seed was supplied by the state before the cultivation of rice but in harvest this seed was paid to the state. Kınık sub district had the largest rice cultivated areas in Adana. Their total income was 740,000 akçe. While 50,000 akçes was paid to *Ramazanoğlu* Halil Bey, the rest was paid to the Ottoman Sultan.[387]

In Agriculture, thanks to *miri* land system and *çifthane* system that had been inherited from Byzantium and Anatolian Seljuk to the Ottomans, traditional modes of production in which a pair of oxen was used, there were small scale enterprises and there was a scarcity of labor force that had continued until the 1950s. From the conservation of a socio-economic order perspective, the Ottoman state always controlled the production of cereal. Therefore, *Miri* lands were public lands where only cereals were cultivated to receive the food requirement of military and cities under the conditions of limited transportation and to prevent any food scarcity or famine. In this system, since small scale enterprises could be taxed easily and their labor was scarce, the Ottomans not only tried to control production, price and consumption process to regulate the economy but they also tried to guarantee both lands and the labor

386 Halil Inalcık, Rice Cultivation and the Çeltikçi Reaya System," 93-100.

387 Yılmaz Kurt, "Sis Sancağı (Kozan-Feke) Mufassal Tahrir Defteri Tanıtım ve Değerlendirmesi. Ekonomik Yapı," *OTAM*, 2 (1991), 151-199.

of peasants for the continuation of production. This case was seen more explicitly in villages where rice was cultivated.[388]

Family- owned small scale enterprises had between 60 and 150 decars of land.[389] The size of the rice fields was based on the amount of rice seed. In addition to bushel and sieve, mud was used as a basic unit of measure. To define the size of rice fields, furrow (*evlek*) was used as a term.[390] In addition to the scarcity of labor force, the insufficient amount of water source limited the size of rice cultivated lands in Miri and Wakfs lands. The income of rice production was assigned to the banner lord. In addition to the labor of peasants, due to irregular water regime in rivers, state regulated water rights of cities and rice cultivators. Water sources and the irrigation system were the most essential condition in determining rice cultivation.[391] Apart from an inheritance from father to son, *miri* lands could not be sold or transferred to other people. Thus the state tried to prevent the emergence of feudal authorities based on land.[392] Furthermore, apart from *miri* and wakf lands, the Ottoman State gave a letter of conveyance to support individual entrepreneurship in rice cultivation. In this context, İsa Bey who was a frontier lord in Üsküp, Sokullu Mehmet Pasha and Feridun Ahmet Bey in Bursa were prominent rice cultivators as statesmen.[393]

388 Halil İnalcık, "Köy, Köylü ve İmparatorluk," In *V. Milletlerarası Türkiye Sosyal ve İktisat Tarihi Kongresi Tebliğler,* 1-3; Mehmet Genç, "Osmanlı İmparatorluğunda Devlet ve Ekonomi,"In *V. Milletlerarası Türkiye Sosyal ve İktisat Tarihi Kongresi Tebliğler,* 21.

389 Ibid, 19.

390 Halil İnalcık, "Rice Cultivation and the Çeltikçi Reaya System in Ottoman Empire," 122-123; ZekiArıkan, "15 ve 16 yy da Anadolu'da Çeltik Üretimi," 480.

391 Halil İnalcık, "Rice Cultivation and the Çeltikçi Reaya System in Ottoman Empire," 80-83.

392 Mehmet Genç, "Osmanlı İmparatorluğunda Devlet ve Ekonomi," 19.

393 Halil İnalcık, "Rice Cultivation and the Çeltikçi Reaya System in Ottoman Empire," 70-73.

§ 3. 5 The Consumption and Marketing of Rice in the Ottoman Period

In the consumption process, due to intensive labor force in rice agriculture and expenses, paddy prices were high-priced and its consumption was limited. Paddy consumption began to be widespread in the Ottoman palace and on special days such as festivals, weddings and Islamic memorial services from the mid -seventeenth century onwards.[394] Paddy was consumed as rice soup, saffron and rice dessert and also rice pilaf in meals of rich families.[395] In addition to the Ottoman Palace, rice had been consumed in the institutions and almshouses in festivals, Ramadan and weddings. According to H. Dernschwan who was from the embassy of Austria, Turks consumed rice with meat. While one kg of Anatolian and Rumelia rice was between 13 and 17 coins, one kg of Egypt rice was 33 coin in the fifteenth century.[396] Namely, the paddy price was higher than that of meat.

Rice was mainly consumed by urban people who had higher economic income.[397] On the other hand, Turks received their carbohydrate requirements from bulgur in daily meals; paddy consumption was closely related to economic income level, urbanization and social ceremonies. While paddy consumption was higher in the meals of urban areas, *bulgur* was consumed in rural parts of the Ottoman Empire. However, since the urban population could not find paddy during the First World War (1914-1918), the consumption of *bulgur* increased in İstanbul. Thus the people of İstanbul called *bulgur* as the paddy of Enver Pasha.[398]

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394 Feridun Emecen, "Çeltik," 265; Mehmet Karagöz, "1779 Senesi Rüsum Defterine Göre Bazarcık- Tatarpazarı'nda Pirinç Üretimi," 276-280.

395 Suraıya Faroqhi, "İktisat Tarihi (17. ve 18. Yüzyıllar)" 191-215; Mehmet Karagöz, "1779 Senesi Rüsum Defterine Göre Bazarcık- Tatarpazarı'nda Pirinç Üretimi,"280.

396 Feridun Emecen, "Çeltik," 265-266.

397 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar,* 16.

398 Soner Yalçın, *Saklı Seçilmişler,* 62.

Hans Dernschwam who was one of the famous German travelers mentioned that he saw the rice fields and sesame fields in his İstanbul trip in the mid- sixteenth century. These two products were taken to Rumelia by Turks.[399] Thrace was the cereal store of İstanbul after the fifteenth century.[400] Due to high rice productivity in Rumelia, the Ottoman State had made some legal arrangements that were called *Kanun-ı Çeltükçiyan* since II. Murat.[401] Evliya Çelebi wrote that since there was a big trade network, the number of the members of rice artisan was 400 in İstanbul in the mid-seventeenth century.[402] Furthermore, after the loss of a major part of Rumelia in the Ottoman Russian War in 1878, the Ottoman Empire began to import rice.[403] After the agricultural exhibitions in Paris in 1855 and London in 1862, the third agricultural exhibition was organized in Sultan Ahmet Exhibition Building in İstanbul on February 27, 1863.[404] In the rice exhibition of İstanbul in 1863, 42 rice varieties were exhibited. Especially Kızılca, Taşköprü and Biga rice were drawn attention.[405]

§ 3.6 Rice Cultivation in the Early Republican Period in A Contradictory Discussion: Rice Cultivation and Malaria Threat

In the early republican period, the Rice Cultivation Law of 1936 had a negative effect on rice production. Since rice cultivation was regarded as a source

399 Hans Dernschwam, *İstanbul ve Anadolu'ya Seyahat Günlüğü* (Mersin: Kültür ve Turizm Bakanlığı,1992), 41-42; Zeki Arıkan, "15 ve 16 yy da Anadolu'da Çeltik Üretimi" 477-478.

400 Fernand Braudel, *II. Phillip Döneminde Akdeniz ve Akdeniz Dünyası,* Translated by Mehmet Ali Kılıçbay, (İstanbul: Eren,1989), 150; Ömer Lütfi Barkan, *XV ve XVI ıncı Asırlarda Osmanlı Imparatorluğunda Zirai Ekonominin Hukuki ve Mali Esasları,* 54.

401 Ahmet Akagündüz, *Osmanlı Kanunnameleri ve Hukuki Tahlilleri* (İstanbul: Osmanlı Araştırmaları Vakfı, 2006) 402-406.

402 Zeki Arıkan, "15 ve 16 yy da Anadolu'da Çeltik Üretimi" 478.

403 Feridun Emecen, "Çeltik," 265-266.

404 Ahmet Özçelik, *Tarım Tarihi ve Deontolojisi,* 61

405 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar,* 12.

of malaria, it caused a psychological effect on people and the state. However, big capitals did not comply with the requirements of this law. The rice economy could not be ruled correctly in Turkey. Therefore, the technical aspect of rice cultivation, the scientific studies of imported rice seed, and the breeding of rice varieties complied with the climate conditions of Turkey were not handled properly. Therefore, the productivity of rice and its consumption were low but it was imported expensively. Rather than rice cultivation, marsh areas and waterholes where anopheles lived were the sources of malaria. After the reclaimation of marsh areas, rice cultivation was a solution to decrease the rate of saltiness and prevent swamp. To deal with malaria, DDT disinfection, the use of quinine, and the regulation of rice irrigation were necessary.[406]

The Ottoman Empire was firstly involved in irrigation works that included river reclamation and the building of irrigation networks in the last quarter of the nineteenth century. However, due to the outbreak of the First World War, these works failed.[407] In the republican period, in 1924, Waterworks Organizations in Turkey was founded.[408]

After the codes of Rumelia and *Çeltikçiyan* that regulated labor and production in the fifteenth and the sixteenth centuries, agricultural chambers were charged with the regulation of rice cultivation in the Code of Rice Cultivation on May 8, 1910. However, since this code had not regulated the use of water and the conflicts among farmers, the Rice Cultivation Law of 1936 was enacted.[409] Similarly, a code on rice cultivation on May 6, 1928 had aimed to regulate the division of water and the protection of rice cultivation.[410] Due to the malaria threat, the Ministry of Health put forward at necessary code that regulated rice cultivation. The malaria threat in rice fields that had been discussed since the Second Constitutional Monarchy, malaria was one of the most important reasons in the enactment of this law. Besides,

406 Ibid, 13-15.

407 Ahmet Özçelik, *Tarım Tarihi ve Deontolojisi*, 56.

408 Ibid, 101.

409 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar*, 16.

410 Rahmi Çeltik, "Türkiye'de Pirinç Ziraatı," 26.

the Rice Cultivation Law of 1936 was taken example from the Rice Cultivation Law in Italy of 1905. While there was pest control in particular to mosquito and health control in Italian Rice Cultivation Law, the Rice Cultivation Law of 1936 focused on the irrigation technics, the role of local administrators in the regulation of rice cultivation, and the duties of the Ministry of Agriculture and the Ministry of Health in this process.[411]

However, intermittent flow irrigation had been implemented until 1943.[412] The Code had been accepted as a result of two years of labor. It was enacted in 1937. Furthermore, the first intermittent flow irrigation method was implemented in testing fields of the Ministry of Agriculture in Tosya and Maraş in 1937. Although Civani Sanpiyetro determined Tosya as the best area for rice cultivation, he found the rice productivity inadequate. This resulted from the drought of Devrez River irrigated rice fields at that time.[413]

After the research of Sanpiyetro in Anatolia, three Turkish youths who graduated from university were sent to Vercelli Rice Institute in Italy to research by the Ministry of Agriculture. Vercelli Rice Institute had done the technical and scientific research on rice since 1908.[414] Harun Aziz Bey was one of these youths that were charged in the testing fields of Tosya. He did a field study on rice cultivation in Tosya. Among 44 rice varieties, Italian rice varieties had the highest productivity. Thus Harun Aziz Bey solved the problems of lack of rice seed and specialist. Inebolu port was the opening door of Tosya rice into the world and it was transported by Italian ships that came from Marseilles.[415]

Although there were no adequate studies on the breeding of rice varieties until the 1950s, some studies on rice cultivation had been done in Antalya Summer Growing Plants Station until 1941.[416] This institution focused on rice

411 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar*, 16-17.

412 Ibid, 32.

413 Ufuk Tidim, "Tosya Pirinci 1929'da Anadolu'nun En İyisi Seçildi,"

414 Rahmi Çeltik, "Türkiye'de Pirinç Ziraatı," 26.

415 Ufuk Tidim, "Tosya Pirinci 1929'da Anadolu'nun En İyisi Seçildi."

416 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar* 30.

cultivation and the imports of high productive rice varieties from Italy. Karolina and Blue Rose rice varieties were imported from Australia by this institute. The quality and the amount of irrigated water in rice cultivation were determined in the 1930s. The most suitable rice varieties were determined according to different regions. Agricultural and sanitary measures were determined. Increasing the rice cultivable lands was tried [417] Besides, some local rice studies on seed testing were done in Kızılcahamam District of Ankara and Tosya District of Kastamonu. However, there was a requirement of new rice seed testing stations in Central Anatolia to test the suitability of local and foreign rice varieties in the climate conditions of Turkey and distribute them to peasants.[418]

However, the sources of malaria were swamp lands and, water holes and inefficient pest control against anopheles rather than rice cultivation. While the size of swamp lands was 4920000 decars across Turkey, it was 151000 decars in Diyarbakır, 80,000 decars in Edirne, 15000 decars in Samsun at the beginning of 1950s. Similarly, while the rice cultivable lands were 1299950 decars, rice cultivated lands were 250000 decars across Turkey at that time. The rate of rice cultivated lands to rice cultivable lands was 14 percent.[419] When the rice cultivable lands and rice cultivated areas are considered in 1950, 17000 out of 226400 decars in Diyarbakır, 20530 out of 185000 decars in Edirne, and 6780 out of 10,000 decars in Samsun.[420]

Malaria disease was mainly seen in periods of war, military mobilization and low agricultural production. This was seen in Italy during the Second World War. Since the Rice Cultivation Law of 1936 controlled the rice cultivated lands and its production strictly, it was to the detriment of the national economy rather than fighting malaria. In this context, area studies about

417 Rahmi Çeltik, "Türkiye'de Pirinç Ziraatı," 29.

418 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar* 30.

419 Ibid., 21-22.

420 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Zirai Bünye ve İstihsal 1946-1953 (Agricultural Structures and Production 1946-1953).* Ankara: 1954, 70- 134.

fighting malaria had been done effectively in the periods between 1940 and 1955.[421]

Citrus trees, cotton, and banana were prominent agricultural products of Antalya in the beginnings of the 1950s. Since there were anopheles that caused malaria, rice cultivation had been forbidden in Antalya in 1940. However, with the collaboration of the Ministry of Health and the Ministry of Agriculture, the field was disinfected with DDT through the machines that had been developed by Ankara Machinery and Chemical Industry Corporation. Thus, the farmers of Antalya could have a chance to cultivate rice on condition that they paid a royalty as three Turkish Liras per decar. Due to deaths related to malaria, rice had been called the bloody agriculture by the peasants of Antalya in the 1940s. Therefore, farmers owed their lives and rice productions to DDT in the 1950s. Antalya had 100000 decars of rice cultivable lands and 40000 tons of potential production. There were 20000 decars of rice cultivated lands and more than 5000 tons of production.[422]

§ 3. 7 A Short Story of Rice Cultivation in Three Basins in the first half of the Twentieth century

Edirne, Samsun, Şanlıurfa, Mardin, and Diyarbakır where this dissertation focuses on have had rice farming culture for at least five hundred years. Topographically, while rice has been cultivated in river valleys, plains and river delta in Edirne and Samsun such as Meriç Plain, Çarşamba and Bafra Deltas, it has been cultivated in volcanic and stony lands of Karacadağ in Diyarbakır, Mardin, and Şanlıurfa.

3. 7. 1 *The Meriç Basin*

Although rice has been cultivated since the fifteenth century in the vicinity of Edirne, the Ottoman Russian Wars, the changes of political borders and forced migrations in the nineteenth century led to the loss of hinterlands and changes

421 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişme Değerleri Üzerinde Araştırmalar* 18-22.

422 "DDT Antalya'da Pirinç Ekilmesine Yeniden İmkân Verdi" *Demokrat Keşan*, July 22, 1953.

in the farming culture of Edirne. After the proclamation of the republic, rice was cultivated in the northern parts of Edirne along the Tunca Rivers. These areas were closer to Filibe where rice has been cultivated since the fifteenth century and at least 20 percent of Meriç and Ergene Plain had been marsh areas until the 1950s. However, apart from the marsh lands in Meriç and Ergene Plain, some areas were used as tile kiln and also cultivated lands such as mulberry gardens for silkworm breeding, bean, corn, and sugar beet.

It is quite interesting that the first rice cultivation of Edirne began in the northern part of Edirne where it is located closely to Filibe by Bekir Kara at the end of the 1920s. He was a member of the Committee of Union at the beginnings of the twentieth century. Bekir Kara goes under the name of Kara Bekir. This fame was given to him by Fuat Balkan who had important duties against Bulgarian, Greek and Serbian bands in Thrace between 1908 and 1923. He not only played an important role in defending of Edirne but also contributed to the agrarian economy of Edirne with rice cultivation.[423]

According to the declaration of Ahmet Göksoy, Ataturk visited Edirne and held a meeting in the Turkish Heart in 1930. In this visitation, the peasants of Kemal Village complained about the marsh areas, land conflicts and mosquitos resulted from the rice cultivation of Bekir Kara. The next day, with his committee, Ataturk went to rice fields of Bekir Kara in the plain of the Kemal Village. Ataturk asked Bekir Kara whether rice was cultivated in elsewhere. As a response, Bekir Kara said that the İpsala and Enez plains were suitable for rice cultivation. Ataturk said that he had to cultivate rice in these plains.[424] After the proclamation of the Republic, for the first time, Bekir Kara cultivated rice in Enez in 1934. The water channels of Bekir Kara could be seen until the 1980s.[425] Bekir Kara, Vizeli Hüseyin Bey, Hasan Buğdaycı, Hasan

423 Hilmi Dinçer "Kara Bekir, *Önder,* September 6, 2017.

424 "Mütehassir Trakya Halkı Çoşkun ve Emsalsiz Tezahuratla Büyük Kurtarıcısını Bağrına Bastı," *Edirne Postası,* December 12, 1930; Hilmi Dinçer," Kara Bekir" *Devrim,* September 5, 2017.

425 "Çeltik Üretim Projesi İlk Olarak İlimizde Uygulandı," *Vatandaş,* January 29, 1979.

Deniz, Ali Çakırlar, Yusuf Aytin and Mustafa Öden were prominent rice cultivators in the 1950s and 1960s. They had been cultivating the plains of villages in Meriç Plain through land tenure or sharecropping.[426]

3. 7. 2 *The Lower Kızılırmak and Lower Yeşilırmak Basins*

There has been rice cultivation in the vicinity of Samsun since at least the fifteenth century. *Çeltikçi reaya* was working in charge of the head of rice in has lands that belonged to Sultan. In the sixteenth century, the revenues of rice were sent to Sultan's son in Amasya, however the fiefs and imaret of II. Beyazıd were sent to Sultan. The rice cultivation in Terme, Ünye and Arım (the vicinity of Çarşamba and Tekkeköy) was abolished and the *çeltikçi reaya* of these districts began to involve in cannabis cultivation. On the Other hand, the rice cultivation in Samsun, Bafra and Satılmış districts continued.[427]

Moreover, tobacco was taken by British and Venetian merchants to the Ottoman State between 1601 and 1605. After the eighty years ban on the cultivation of tobacco and the use of tobacco products, tobacco cultivation began in 1687 in Syria and Macedonia[428] and in 1788 in Bafra. The Greek and Armenian peasants of Bafra took a leading part in the spreading of tobacco cultivation in Samsun. Tobacco cultivation began to spread in Muslim villages in this period. Bafra tobacco was sent to the markets of İstanbul and abroad by the ships of British and Austrian merchants in 1835. Since the tobacco trade boosted the market economy of Bafra and 80 percent of people involved in tobacco cultivation, Bafra Trade and Industry Chamber was founded in 1903. Furthermore, to make tobacco transportation easy which was made by camels and mules, the roads were used that was marshland between Bafra and Samsun port was mended in the beginnings of the twentieth century.[429]

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426 Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, Akçadam, Edirne, Turkey, August 20, 2018.

427 Mehmet Öz, "Tahrir Defterlerine Göre Canik Sancağında Nüfus (1455-1643)," *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi,* no. 6 (1991): 173-205.

428 Ahmet Özçelik, *Tarım Tarihi ve Deontolojisi,* 55.

429 Turgut Demir, "Bafra Tütün Tarihi," HyeTert accessed March 06, 2015 https://hyetert.org/2015/03/06/bafra-tutun-tarihi/

However, tobacco was more suitable for family farms. Based on the soil structure, the peasants of Samsun cultivated rice, tobacco and vegetable in the plain. The story of rice cultivation began in the Bafra Plain with the water melon trade of Yusuf Kiraz in Boyabat District of Sinop. Yusuf Kiraz saw rice fields and learned information about it. Then he loaded 4 sacks of rice seeds on two mules and took them from the Boyabat districts of Sinop. He arrived in Bafra by truck. Kiraz firstly cultivated rice in Karıncak village of Bafra in 1952. Due to the complaints of some peasants regarding the anxiety of malaria and unauthorized rice cultivation, he was taken into custody. With the help of the village headman, Yusuf Kiraz got out of prison. After the harvest of rice, he sold his product in Boyabat. Nowadays, rice is cultivated in 110000 decars and 90000 tons are produced by 2400 farmer families in 42 villages.[430] To irrigate his rice fields, Yusuf Kiraz purchased moto pumps from Ömer Sabancı in Adana.[431]

Boyabat and Tosya were one of the oldest areas in rice cultivation. The history of rice in Boyabat and Tosya goes back to the fifteenth and the sixteenth centuries.[432] Rice had been cultivated in the areas where the water of Kızılırmak could arrive in Bafra Plain in the 1950s. Vegetables and rice have been cultivated in Bafra Plain. However, in the years when Kızılırmak has been flooded, rice has not been cultivated. However, agricultural lands were virgin in the 1960s, in addition to draught animals such as horses and oxen, tractors started being used in rice cultivation. While one- fourth of Bafra Plain was rice, the rest was corn, wheat, vegetable garden and tobacco. However, tobacco cultivation was more widespread in mountain villages. Tobacco was more suitable for small sized family enterprises. On the other hand, rice has been the most advantageous and profitable crop.[433] Apart from rice and tobacco; wheat, corn, vegetable and hazelnut are other prominent products of Samsun.[434]

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430 "Protokol Çeltik Ekti," *Milliyet,* May 10, 2016.

431 Osman Kiraz, tape-recorded interview by the author, Samsun Turkey August 6, 2018.

432 Murat Tanrıkulu, "Tosya'da Pirinç Üretiminin Dünü, Bugünü ve Geleceği," *Akademik Bakış Dergisi*, no. 71, 2019, 244.

433 Ahmet Aydın, tape-recorded interview by the author, Bafra, Samsun Turkey August 6, 2018.

434 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi,* 8.

3. 7. 3 *The Karacadağ Agriculture Basin*

Rice has been cultivated in the Karacadağ Agriculture Basin which is situated in the intersection of provincial borders of Diyarbakır, Şanlıurfa and Mardin for at least 500 years. It is believed that rice came to this agriculture basin from the southern regions such as Egypt and Iraq. Rice has been cultivated in the mountainside of volcanic Karacadağ and irrigated with the melting snow water. Although other rice varieties cannot grow less than 15 Celsius of irrigated water, Karacadağ rice varieties most of which are local varieties has grown at 10 Celsius.[435] Therefore, the paddy of Karacadağ draws in much more water while cooking.[436]

In the second Constitutional Monarchy period, Pirinççizade Fevzi Bey was specifying that Diyarbakır had the highest level of rice production with 2700 tons across the Ottoman state.[437] *Sarı çeltik* is called as *Karacadağ* rice in Diyarbakır. This rice variety had been cultivated in Maraş and Adıyaman. In the development of rice cultivation in Karacadağ, Armenian craftsmen taught this rice farming culture to Turkish and Kurdish peasants in 1915. Pirinççizade family who are the relatives of Ziya Gökalp were prominent rice cultivators in Diyarbakır in the beginnings of the twentieth century. Furthermore, although the family of Cahit Sıtkı is from Pirinççizade family, Bekir Sıtkı who is the father of Cahit Sıtkı took *Tarancı* rather than *Pirinççioğlu* as surname in Surname Law of 1934 as a reaction to low productivity of rice. *Tarancı* means farmer in Uyghur Turkish.[438] Besides, Hacı Haşim Özkahraman and Hacı Ali Demiroğlu have been two prominent rice cultivators in Diyarbakır since 1948.[439]

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435 Ebru Baybara Demir, "Karacadağ Pirinci."

436 Kardaş Ailesi, tape-recorded interview by author, Yenişehir, Diyarbakır, Turkey August 10, 2018.

437 Chris Graten, "Pilavdan Dönen İmparatorluk: Meclis-i Mebusan'da Sıtma ve Çeltik Tartışmaları," 103.

438 Mehmet Mercan, "Cahit'in Özlediği Memleket," *Tigris,* October 12, 2014.

439 İlhan Avcı, tape-recorded interview by the author, Diyarbakır, Turkey, August 09, 2018.

3. 7. 4 *The Changes of Rice Cultivated land in Three Basins Between the 1930s and the 2000s*

While Southeast Anatolia and Cilician Plain had been more prominent in rice cultivation until the 1960s, and the 1970s, Edirne, Samsun, and Balıkesir have been more prominent provinces since the 1960s. Due to drought and water problems, rice cultivation decreased and cotton and lentil have become more popular in the agriculture of Southeastern Anatolia. In Cilician Plain, instead of rice that required intensive labor force and water, peasants were involved in profit -making products such as cotton, citrus trees, and corn cultivation. Due to the geographical position, the Mediterranean climate is suitable for a few crop rotations in a year. However, since there has not been ground surface tillage in stony lands of Karacadağ, in general rice has been cultivated in a limited level for centuries. On the other hand, due to the geographical position, the floods of rivers, salty lands and groundwater tables in plains in Edirne and Samsun, peasants have demanded rice cultivation. Therefore, rice cultivated lands have been seen in northern, northwest, and southeastern regions in Turkey since the 1980s.[440]

3. 8 Concluding Remarks

All in all, from macro to a micro level, rice is one of the oldest crops that has directed international trade, political acts of state and societies in the world in the historical process. Since Silk Road and Spices Roads had a special role in its spread and introduction, rice cultivation and its consumption were a result of socio-cultural and socio-economic interactions among different civilizations. Therefore, its advent to Anatolia is closely related to the geographical position of Anatolia which is located at the intersection of important trade roads.

While migrations, wars, expeditions, colonialization, and trade had played an important role in the spread of rice until the last quarter of the nineteenth century, the scientific research of agricultural research stations of different

440 Necla Türkoğlu, "Türkiye'de Çeltik Alanlarının Dağılışı,"219.

states such as the institutions in the USA and Italy and international institutions such as the IRRI in the Philippines contributed the improvement of rice quality for preventing starvation, the development of rice trade and economy in the twentieth century.

Since rice is a staple food that feeds the societies, states have always played a central role in rice farming such as in its cultivation, marketing, prices, trade and breeding. For example, while the rice was cultivated in public lands under the control of the Sultan in Ottoman to regulate scarce labor force and to receive rice needs of the Ottoman Palace, it was cultivated with the permission of the state to prevent potential malaria threats in the republican period.

Although rice has been cultivated for centuries, its consumption had been limited with the consumption of richer families, palaces, public institutions and social organizations such as festivals, carnivals, weddings and religious ceremonies until the end of the nineteenth century. Rice cultivation began to be more expensive in the conditions of the post- Second World War, to receive the food requirement of countries. In this process, after the Marshall Plan, the reclamation of soils, the scientific research of the IRRI, agricultural mechanization, the use of fertilization and herbicides increased its cultivable lands in the process of the Green Revolution. However, rice became a more important staple food of a growing population after the 1980s under the conditions of the liberal marketing economy of Neo-liberalism. Rice turned into daily consumed meals of ordinary people in societies.

Specific to Turkey, rice cultivation areas have changed since the fifteenth century. This chapter enables us both to evaluate the special places of rice cultivation in the Meriç, Karacadağ, Lower Kızılırmak, and Lower Yeşilırmak Basins in the historical process and understand the advent and the spread of rice cultivation in the World from broader perspectives.

However, statesmen, sultans and bureaucracy played an important role in its cultivation and spread in Anatolia and Rumelia. In addition to receiving food requirements and economic revenues, rice that was a quite delicious and precious cereal was an indication of socio-economic prestige. Rice farming requires ingenuity, experience, and background. These three basins have had rice farming culture for at least six hundred years. However, this study focuses

on the story of rice cultivation in the republican period after the mid- twentieth century when rice cultivation began to be widespread after the Second World War. In this context, the role of people, states and institutions were explained in the historical period. Thus it aimed at being infrastructure of the next chapters.

4

Rice and the State in Turkey

Thanks to their distinct characteristics such as intoxication, nutritiousness, adaptation, and high economic values, foods have a secret power that creates demand in the agricultural policies of states. Thus, the state takes part in agrarian economics with its codes, agricultural subsidies, investment projects, and institutions. Furthermore, although the reasons of state intervention into the cultivation of various agricultural products such as cereals, medicinal plants, and cash crop differs, the political agenda of states aims at receiving the food requirement of increasing population, the protection of public health, the benefiting ideally from the cultivated lands and the controlling of food prices.

In this context, due to their nutritiousness and economic values, cereals such as wheat, rice and corn have had special importance in the agricultural policies of the state in distinct geographies throughout history. Furthermore, to understand better the directive role of the secret powers of cereals in the formation of government policies, this chapter mainly focuses on rice farming that requires infrastructural investments, the organization of public institutions, agricultural supports, legal regulations that lay a burden on state and its producers mutually and scientific research. Therefore, this study claims that rice is an agency in directing state policies and also quite public and a bureaucratic commodity that requires the support of the state to generate its genes. In other words, in the development of rice farming, there has been a mutual

interaction between the political acts of the state and the biological and agricultural properties of rice. In this context, the study aims to deal with the role of state policies between 1948 and 2018 in the development of rice farming in three different regions of Turkey such as the Meriç Basin in Edirne, the Lower Kızılırmak and Lower Yeşilırmak Basins in Samsun, and the Karacadağ Agriculture Basin located in the western part of Diyarbakır, the eastern part of Şanlıurfa and northwestern part of Mardin.

This chapter is constituted of two parts. The first part includes the role of the government in the legal basis and the infrastructural investments of rice farming and also the settlement of rice culture in these basins such as the influence of the Rice Cultivation Law of 1936, the Land Reform and Irrigation investments. The second part comprises the agricultural, institutional and economic infrastructure in the development of rice in three basins such as Agricultural Research Institute, Turkish Grain Board (TGB), Agricultural Supports, Cooperatives, and Fertilizer Industry.

Furthermore, in a historical process, while rice cultivation was under state control in the Ottoman period due to excessive labor force and ingenuity, it has been controlled in the Republican period due to malaria threat. Similarly, as Braudel says the increase in the number of rice fields necessitates the increase of state control in China. Therefore, rice cultivation requires bureaucratic and political regulations in the presence of the state.[441]

Agricultural policies of the government aim to improve the socio-economic welfare of farmers, to increase agricultural production, and to protect the consumers from excessive price increases.[442] Legal, institutional, and social regulations in the agricultural policies have been seen since the Tanzimat Reform Era in 1839. Similarly, Abdulhamid II supported the development and the spread of the agricultural credit cooperatives, the education of farmers, the reclamation of soil, use of the high fertile seed, agricultural pest control, and irrigated farming. Furthermore, in the era of the Committee of Union and

441 Fernand Braudel, *Civilization and Capitalism 15th and 18th The Structures of Everyday Life,* 149.

442 Okan Gaytancıoğlu, *Türkiye Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli*, (İstanbul: İstanbul Ticaret Odası, 2007), 16-17.

Progress, the foundation of the Department of Agriculture, the chamber of Agriculture, and the regulation of agricultural education were present.[443]

Since 80 percent of the Turkish population lived in rural areas in the early Republican period, animal production and plant production were the main economic sectors of Turkey at that time. Furthermore, although the population rate of urban areas firstly exceeded that of rural areas in the mid-1980s, the migrants in urban areas continued their socio-economic and socio-cultural ties with their villages. Moreover, with the production of food, state investments and the influence of food prices on the increasing inflation, agrarian politics influences the lives of all citizens nowadays directly. Therefore, by taking into account the importance of geographical and topographical differences in three basins, this study also deals with the development of the relations between government policies and agricultural sectors in rural areas around rice farming through history from below methods between 1948 and 2018.

§ 4. 1 Legal Regulations: The Role of the Rice Cultivation Law of 1936 in the Rice Farming of Turkey

In the legal and institutional regulations of rice farming in Turkish agriculture, the period between the Second Constitutional Era in 1908 and the Early Republican Era (between the 1920s and the 1950s) is quite a remarkable and important period. The foundation of the Ministry of Agriculture, Agricultural Research Institutes, Agricultural Combines Administrations, State Hatcheries, Agricultural Credit Cooperatives, and State Hydraulic Works that contributed to the development of rice farming could be seen.

The Ottoman government accepted a code that tried to standardize rice farming country- wide such as the direction of rice fields, measures against increasing malaria threat, and rice cultivation in 1910. Since this law regarded rice farming as the source of malaria disease and environmental pollution, it

443 Ahmet Özçelik, *Tarım Tarihi ve Deontolojisi,* 58.

laid a burden on rice growers to maintain ecological balance.[444] According to the declaration of the Ministry of Health on June 9, 1936, the Rice Cultivation Law on May 8, 1910, could not prevent the spread of malaria in rice cultivated regions.[445] As a result of the biennial working period,[446] the Rice Cultivation Law and Malaria Defense Organization were enacted in 1936. Also, their enactment coincided with the ban on rice importation and the increase of rice production between 1934 and 1936.[447]

Furthermore, this code brought responsibility to local administrators, rice cultivators and workers mutually. Similarly, it charges governor in provinces and district governor in districts as the head of rice commission. Furthermore, the president of the chamber of agriculture and directors of agriculture and government doctor, and the rice cultivator who is elected by farmers are charged as the members of the commission. This commission is obliged to reply to the letter of application of farmers in two months. Similarly, they have had the authority on the permission of rice cultivation in specified areas, determining the distribution and the use of water, the types of irrigation, and pest control. Rice cultivation commission also roughs out the rice fields.[448]

There is also a *mutemed* committee that is composed of local directors to control the implementation of the code and to deal with water control and the disagreements among farmers in rural areas. While the travel allowance and daily wages of the members of the commission in their visiting is determined by the Ministry of Agriculture, the annual wage of watermen (*sucu, cenan, saka* or *yamak*) are determined by the rice commissions.[449] Also, rice commissions follow cultivation, the irrigation, pesticides, and the fertilization period of rice fields.[450]

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444 Chris Gratien, "Pilavdan Dönen İmparatorluk: Meclis-i Mebusan'da Sıtma ve Çeltik Tartışmaları," 100.

445 BCA. Z.V. 22/185-8, (August 19, 1939)

446 Rahmi Çeltik, "Türkiye'de Pirinç Ziraatı," 27.

447 Mehmet Uygun, "Türkiye'de Çeltik Üretimi ve Tüketimi," *Çiftçi ve Köy Dünyası*, no. 260 (2006), 56.

448 "Çeltik Ekim Kanunu," *Resmi Gazete,* June 23, 1936.

449 Ibid.

450 Turan Güneş *Türkiye Çeltik Ekonomisi,* 25.

In return of these, rice cultivators pay royalty and some amount of price for consumptive water in rice fields. Rice cultivators specify the region of their rice fields, their land size, their rice varieties, their water sources and the distance of their fields from settlements three months before their rice cultivation.[451] However, the amount of royalty is under the initiative of the governor or district governors.[452]

4. 1. 2 *The Debates of the Ministry of Health and the Ministry of Agriculture on Rice Farming in the Rice Cultivation Law of 1936*

Due to its sanitary problems, economic and nutritious values, rice is a product that is in the center of conflicts of interest and collaboration not only in socio-economic life but also in public institutions. Although distinct public institutions look out for public welfare, the rice policies of the Ministry of Health and the Ministry of Agriculture clash with each other.[453] While the Ministry of Agriculture primarily regarded rice cultivation as the contribution to the national economy, the Ministry of Health principally considered the public health and the eradication of malaria.[454] Due to the malaria threat, rice is regarded in the intersection between the economic development and public health of Turkey. Although there were different modes of rice production around Turkey in the 1950s, the rice codes of developed countries and the use of modern technics are suggested to be analyzed.[455]

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451 T.C. Tarım Bakanlığı, *Çeltik Ekim Kanunu,* 1-11; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 25-31.

452 Çorum Milletvekili Cahit Angın ve 11 arkadaşının, çeltikçiliği geliştirmek, verimi artırmak ve maliyeti düşürmek yolunda gerekli tedbirleri saptamak amacıyle bir Meclis Araştırması açılmasına ilişkin önergesinin görüşülmesi (TBMM Tutanak Dergisi, February 9, 1977). https://www.tbmm.gov.tr/tutanaklar/TUTANAK/MM__/d04/c023/mm__04023043.pdf

453 Çeltik üretimi ruhsata tabii olduğu için Avrupa Birliği Uyum sürecinde Çiftçi Kayıt Sisteminin uygulanmaya başlamlmasıyla birlikte çiftçilerimiz bir takım zorluklarla karşı karşıya kalmışlardır. (TBMM Tutanak Dergisi, June 23, 2005) https://www.tbmm.gov.tr/tutanalar/TUTANAK/TBMM/d22/c088/tbmm22088116.pdf

454 BCA B.M.U. M. 26/1108 (March 9, 1953).

455 Behçet Hazar, "Çeltik Ziraatı ve Sivri Sinek," *Çiftçi* 10, no: 117-119 (1955), 364.

Such debates have continued since the Ottoman period. Chris Graten separated them as technocrats and liberals in the Ottoman Parliament in 1910. While the technocrat politicians most of whom were doctors defended the implementation of strict regulations in the process of rice production to eradicate malaria, liberal groups some of whom were rice growers and agricultural experts emphasized the economic interest of rice growers and economic goals of the Ottoman State.[456]

The Rice Cultivation Law that was prepared by the Ministry of Agriculture and the Ministry of Health with the worry of malaria, ordered the distances of settlements from the rice fields where intermittent flow irrigation is implemented. While it was 50 meters from villages and 100 meters from districts, it was 1000 meters from provinces. However, if there was perennial irrigation, rice fields were regarded to be 3000 meters of distances from all settlements[457] due to the flight distance of mosquitos.[458]

Although the Ministry of Health and the Ministry of Agriculture agreed on intermittent irrigation that had no influence on rice fertility and led the death of larva, the Ministry of Health especially insisted that rice farming had to be 3000 meters away from settlements. This would cause the decline of rice production ten times, the increase of expenses for rice importation, and the disadvantage of the economic development of peasants. On the other hand, thanks to rice irrigation, the extent of irrigable lands, vineyards, and orchards and the economic value of fields could be increased.[459] However, the Ministry of Health thought that a 3000-meter distance of rice farming from the settlements could not be associated with the financial hardships of peasants.[460]

There were some discussions about the perennial irrigation in 1948 in İpsala District of Edirne. Thus, eight farmers submitted a petition to Edirne Governorship about the cultivation of 5900 decars out of 7000 decars of rice

456 Chris Gratien, "Pilavdan Dönen İmparatorluk: Meclis-i Mebusan'da Sıtma ve Çeltik Tartışmaları," 102.

457 "Çeltik Ekim Kanunu," *Resmi Gazete,* June 23, 1936.

458 BCA. S.İ.M.V.184/ 268 -14 (June 18, 1943).

459 BCA. Z.V. 22/185-8, (August 19, 1939).

460 BCA. S.İ.M.V. 184/268-14, (June 18, 1943).

according to 20. Article of the Rice Cultivation Law of 1936, although it did not comply with 19. Article. In the response of Edirne Governorship on May 11, 1948, their application was accepted by the public works engineer and director of agriculture except for the provincial health director and the president of malaria control.[461] Not only the Ministry of Agriculture but also the scientists in Agricultural Faculties in Ege and Ankara Universities, such as Mustafa Uluöz and Turan Güneş thought that the Rice Cultivation Law caused a negative influence on rice production in Turkey. Since rice cultivation was targeted as the source of malaria, it created a psychological influence on the state and people.[462]

Similar to the rice growers of Meriç, Lower Kızılırmak and Lower Yeşilırmak, many rice growers in the Karacadağ Agriculture Basin regard the Rice Cultivation Law as an obstacle.[463] Therefore, as professional agricultural engineers, Şerif Kahraman in Diyarbakır and Halil Sürek in Edirne supported the abolishment of the Rice Cultivation Law. Furthermore, Sürek said that although there is no rice farming in Ödemiş district of İzmir, there is intensive mosquito population due to corn farming. Therefore, Sürek and Kahraman say that the Law causes bureaucratic obstacles for rice farming and there is no similar law in the world.[464] On the other hand, the professional agricultural engineers Melih Enginsu and Rasim Ünan in Samsun who are against the limitation of rice farming express that the existing law is better than the alternative rice legislative proposals. The Law only considers the existence of adequate water. It does not consider the distance of rice cultivated lands from

461 Edirne Milletvekili Fethi Erimçağ'ın, İpsala İlçesindeki çeltik ekimi hakkındaki sorusuna Tarım Bakanı Cavid O rai'm sözlü cevabı (TBMM Tutanak Dergisi, November 10, 1948). https://www.tbmm.gov.tr/tutanalar/TUTANAK/TBMM/d08/c013/tbmm08013004.pdf

462 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişirme Değerleri Üzerine Araştırmalar*, 12; Turan Güneş, *Türkiye Çeltik Ekonomisi*

463 Süleyman Kızılkaya, tape-recorded interview by the author, Yalankoz Village of Diyarbakır, Turkey, August 09, 2018.

464 Şerif Kahraman, tape-recorded interview by the auther author, Yalankoz, Diyarbakır, Turkey, August 09, 2018; Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 13, 2018.

the settlements in practice. If a new code is prepared, the geographical conditions and the views of rice growers and specialists have to be evaluated.[465] However, almost all rice growers and engineers think the updating and revision of the Law to comply with the requirements of the contemporary age. In general, they compared the rice cultivated lands of Turkey with those of Japan and Italy.[466]

4.1. 3 *The Implementation of License Tax and Sanitary Tax of the Rice Cultivation Law: the Case of Edirne (the Meriç Basin)*

In rice cultivation, the position of water is the main determinant factor. This might be thought in terms of a flood, drought, and the physical conditions of rice cultivable lands. On the one hand, due to the lack of adequate water, the Edirne rice commission did not permit rice cultivation in Tayakadın and Sazlıdere villages in 1963.[467] On the other hand, due to the flood threat, rice commission in İpsala banned rice cultivation in Fere bridge and Dipçikada positions where located in dead lands between levee and the Meriç River in 1968.[468] Due to the work of State Hydraulic Works (SHW) rice cultivation in the positions around Kızkapan and Vakıf Lakes was banned by the rice commission of İpsala in 1970 and 1971.[469]

Farmers have responsibilities for the building of water channels, the payment of license tax, and sanitary measure that changes per decar year by year.[470] Besides, the rice commission has demanded the expense of the discharge channel from farmers based on their extent of rice field.[471] In general,

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465 Rasim Ünan and Melih Enginsu, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 06, 2018.

466 Şükrü Derebey and Temel Kaya, tape-recorded interview by the author, Bafra, Samsun, Turkey, April 30, 2019; Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 13, 2018.

467 "Tayakadın ve Sazlıdere Köylerinde Çeltik Ekilmeyecek," *Vatandaş,* March 6, 1963.

468 "İpsala Çeltik Komisyonu Başkanlığından," *İpsala,* March 7, 1968.

469 "İpsala Çeltik Komisyonu Başkanlığından," *İpsala,* March 2, 1970.

470 Ibid.

471 "İpsala Çeltik Komisyonu Başkanlığından," *İpsala*, February, 26 1971.

people who have been influential in local politics try to be a farmer member in these rice commissions.[472]

However, there is no connection between the distribution of rice cultivated areas and malaria. Rather than preventing rice cultivation areas, a planned program for sanitary measures and insect control discard the sources of malaria disease. Furthermore, the size of rice cultivated areas extended in the Lower Kızılırmak and Lower Yeşilırmak Basins and the malaria threat declined. The size of rice cultivated areas in the Karacadağ Agriculture Basin decreased, however, in the 1950s and the 1960s, malaria epidemics increased. It resulted from inadequate insect control and malaria epidemics that came from Syria and Iraq.[473]

In the case of unlicensed rice cultivation, the first penalty fine has been imposed. If it is repeated, the water of the rice field is cut. Rice cultivators have a right to apply for their objection to minor courts.[474] However, since the necessary controls of plains were not made, unlicensed rice cultivation continued, the discussions and combats among rice growers for the use of water continued and the Law could not be implemented comprehensively in the 1950s.[475] For example, the district governor of İpsala and the head of the rice commission ignored that one of the prominent rice growers closed the arch of the big bridge between İpsala and Sarıcaali village and prevented water flow. Therefore, the peasants of İpsala applied to the Edirne governor. According to the local press, although the Edirne governor ordered the opening of the arch of the bridge, the district governors disobeyed the order of Edirne governor in 1953.[476]

The other case occurred in Kızkapan Plain where some villages of Keşan and İpsala are located in 1976. According to a report prepared by the agricultural officer under the head of district governors, water leakages between

472 "Çeltik Komisyonunun Çeltikçi Üyeliğine Eski AP'li Hamit Uysal Getirildi," *İpsala,* March 24, 1971.

473 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 39.

474 "Çeltik Ekim Kanunu," *Resmi Gazete,* June 23, 1936.

475 Mehmet Şerif Korkut, *Isıtma ve Çeltik,* 45.

476 "İpsala Kaymakamı Valinin Emrini Tatbik Etmiyor," *Demokrat Keşan,* June 10, 1953.

fields and inadequate water levels in Kadıköy Dam created conflicts among peasants. First, due to unlicensed rice cultivation in Kızkapan village of Keşan, the water leakage of rice fields damaged the dry farming products of adjacent fields such as sun flowers, bean, or wheat. Secondly, the inadequate water level of Kadıköy Dam caused some debates on rice irrigation between big landowners and small land owners.[477]

Since it did not rain and the water level of Kadıköy Dam declined, big landowners in Yapıldak village kept the water for their own rice. Thus unlicensed rice fields started to dry. In the end, all of the rice fields dried in Akhoca and 2000 decars out of 2500 decars of rice in Orhaniye village dried. Although the rice was cultivated illegally in Kızkapan, 11. Regional Directorate of SHW charged Mustafa Bezbaş who worked in Keşan District Directorate of Agriculture and gave an order on July 9, 1976 for the irrigation of these fields. Due to the criticisms of Keşan Press, the district governor said that the rice fields in the southern of Karahisar Bridge were unlicensed, but to relieve the peasants, gendarmerie was charged there to prevent the social conflicts based on the use of irrigation water. Furthermore, he especially emphasized that he was not the advocate of the rich.[478]

In addition to rice commissions and big landowners, those who cultivate their rice unlicensed also had conflicts with sunflower growers due to the leakages of water in water channels to sunflower fields.[479] İpsala Rice commission under the head of the district governor decided that rice growers who cultivated rice in the position between Karahisar Bridge and the Lake of Akhoca village in Kızkapan Plain levied a fine since they built water channels that damaged their adjacent fields.[480] The state held a mediatory position in the solution to this debate. Under the decision of the Rice Commissions of

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477 "Keşan ve İpsala İlçeleri Arasında Doğan Çeltik Anlaşmazlığı Yerinde İncelendi," *Vatandaş,* June 16, 1976.

478 "Keşan Kızkapan Çeltiklerinin Kurtarılmasına Çalışılıyor," *Vatandaş,* July 15, 1976.

479 "Kaçak Çeltikler Zararlı Oluyor," *Vatandaş,* June 4, 1977.

480 "Kızkapan Ovasında Çeltik Ekenler Zarar Verdikleri Köye Para Ödeyecekler," *Vatandaş,* May 12, 1980.

İpsala and Keşan, the irrigation would be made under the control of gendarmerie to prevent the drying of unlicensed rice. This event was also important in terms of reflecting the manner of bureaucracy in the conflict of economic interest between landlords and peasants.[481] In contrast to Edirne, since the adjacent fields have been used as a pasture in Diyarbakır, the leakage of water from the rice fields lead to the growth of herbs at that time. Thus, it is regarded as pleasing in the Karacadağ Agriculture Basin where livestock breeding is widespread.[482]

Since there was no sufficient water level in Kadıköy Dam, rice could not be cultivated in the large parts of Çamlıca plain. Similarly, small family enterprises in Karahisar, Kızkapan, Orhaniye, Akhoca, Gündüzler and Yapıldak demanded the irrigation of their rice from Dokuzdereler, Kocadere, Musalı and Katırcı ponds.[483] Those who involved in unlicensed rice cultivation would pay a penalty of 45 TL (52 USD) to SHW in Meriç, Uzunköprü and İpsala. Furthermore, those who insisted on repudiating their debt would be sent in the debt enforcer in 1987.[484] Since there was not sufficient amount of water in Kadıköy Dam and the Meriç River due to lack of rainfall, the rice cultivation in Kızkapan, Orhaniye and Türkmenli plains were forbidden. Kadıköy Dam that had 65 million m^3 capacities only could irrigate 42000 decars of rice fields and provide the potable water requirement.[485]

In contrast to the case in Kızkapan Plain of Edirne, there has not been a common share of water in the Karacadağ Agriculture Basin except for Ergani, Derik and Çınar in the 1980s. Since every sharecropper has had a rain- fed pond, bore water and natural fountains for irrigation, the water level of these

481 "Kızkapanı Ovasında Çeltiklere Sıra İle Su Verilecek," *Vatandaş,* July 5, 1976.

482 Süleyman Kızılkaya, tape-recorded interview by the author, Yalankoz Village of Diyarbakır, August 09, 2018.

483 "Keşan ve İpsala'da İzinsiz Ekilen ve Kavrulmaya Başlayan Çeltikler Su Bekliyor," *Vatandaş,* June 22, 1984.

484 "DSİ XI Bölge Müdürlüğü'nün Üreticilerden Alacağı Su Parası 450 Milyona Yükseldi, DSİ bunun Ancak Şimdiye Kadar % 20'sini Tahsil Edebildi," *Vatandaş,* July 28, 1987.

485 "DSİ'den Çeltikçilere Alarm," *Vatandaş,* May 28, 1988.

ponds determines the extent of rice farming in Karacadağ.[486] There have been some disputes between some rice growers in the villages of Çınar and those of Derik in Şerifbaba Pond for rice irrigation since 1998.[487] However, due to large rice cultivable lands, there is a demand for water transportation from Dicle Dam to the rice fields of Karacadağ to increase rice production today.[488] Since Kızılırmak, Yeşilırmak, dams and artesian wells have been adequate in rice irrigation, the rice growers of Lower Kızılırmak and Lower Yeşilırmak could not experience big disputes on the use of water.

The rice cultivation commission has directed the distribution of water and the determination of rice cultivatable lands. Thus, since there was no adequate water, 35000 decars of land was left for death in the Meriç Basin in 1973.[489] While 89863 decars of lands were cultivated legally, 97021 decars was cultivated illegally by 919 rice cultivators in Edirne. While 46978 decars of lands were irrigated from the Meriç River and Kayalı Dam, 50043 decars of lands were damaged due to drought. Except for private banks, their debts were delayed in 1990.[490] Namely unlicensed rice farming had been a routinized activity in the Kızkapan Plain of Keşan in the 1970s and 1980s.

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486 Süleyman Kızılkaya, tape-recorded interview by the author, Yalankoz Village of Diyarbakır, Turkey, August 09, 2018.

487 Ferat Önal and Mübarek Kavan, tape-recorded interview by the author, Derik, Mardin, Turkey, June 18, 2019.

488 Şerif Kahraman, tape-recorded interview by the author, Yalankoz Village of Diyarbakır, Turkey, August 09, 2018.

489 Çorum Milletvekili Cahit Angın ve 11 arkadaşının, çeltikçiliği geliştirmek, verimi artırmak ve maliyeti düşürmek yolunda gerekli tedbirleri saptamak amacıyla bir Meclis Araştırması açılmasına ilişkin önergesinin görüşülmesi (TBMM Tutanak Dergisi, February 9, 1977).

490 Edirne milletvekili Fuat Erçetin'in Edirne, Meriç, tpsala Uzunköprü tlçelerinde ve bağlı köyleri çeltik ekimi ile uğraşmaktadır. Nehirlerdeki suyun kurumuş olması, bu yöredeki köylerimizi büyük bir facia ile karşı karşıya getirmiş, tahmini 170 bin dekar çeltik arazisi kurumuştur. Ayrıca, Enez ilçesine bağlı köylerde yağış düşmemesi nedeni ile kuraklık, netice itibarı ile tarlalardan ürün almak mümkün olmamıştır. Bu köylerimizdeki, çiftçi açlıkla karşı karşıyadır. Bu köylerde yaşayan çifçilerin T.C. Ziraat Bankası ve öteki Bankalardaki borçları ertelenecek midir? Sorusuna Tarım Orman ve Köyişleri Bakanı Lütfullah Kayalar'ın cevabı. (TBMM Tutanak Dergisi, September 18, 1990) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d18/c048/tbmm18048008.pdf

In addition to the irrigation water problem, within the scope of the EU harmonization process, farmers had some bureaucratic difficulties with the advent of the farmer register system during the application to the cultivation license of rice in the 2000s. Since public lands and the lands given to farmers within the scope of land reform could not be hired or sold, 200000 out of 650000 decars of rice cultivated lands could be taken into the scope of the farmer register system. Thus, since these farmers could not get rice cultivation license, this situation caused a penalty of 5 TL per decar in 2005 in Edirne. Therefore, the Ministry of Agriculture sent a report to provincial directorates of agriculture about the licensing for rice cultivation on February 30, 2005. In this report, it was emphasized that the license had to be regulated according to title deeds and tenancy agreement.[491] Since there is a great number of title deeds problems in the Bafra Plain, rice growers could not benefit from agricultural supports. However, they could get a license for rice farming in practice.[492] Despite these bureaucratic procedures at a micro level, rice growers have continued rice farming. State investments in soil, irrigation water and seed play an important role in the development of rice farming at a macro level in three basins.

§ 4. 2 The Role of the Government in the Settlement of Rice Farming Culture

Before the spread of rice cultivation culture in the Meriç Basin, there were corn, soy bean, and mulberry gardens for silkworm breeding of many towns and villages along the Meriç River. However, with the advent of rice cultivation, farmers neither could cut their mulberry, that was fruit trees according to 1528 numbered law nor could prevent the negative influence of standing water. Thus some rice cultivators had difficulty obtaining certificates in the

491 İpsala'daki 200,000 dekar arazinin ÇKS ye henüz dahil edilmemesinden doğan zorluklar hakkında Edirne Milletvekili Rasim Çakır'ın Tarım ve Köyişleri Bakanı Mehmet Mehdi Eker'e soru önergesi ve cevabı. (TBMM Tutanak Dergisi, June 25, 2005) https://www.tbmm.gov.tr/tutanalar/TUTANAK/TBMM/d22/c088/tbmm22088116.pdf

492 Yahya Temiz, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 06, 2018.

1950s and the 1960s.[493] Due to sanitary reasons, there had been no permission for rice cultivation since the 1930s in the villages of central district Edirne. However, some prominent people and a private agricultural company made an application in 1952 to cultivate rice in Paşaçayırı, Kemalköy and Hamza Farms.[494] In addition to private entrepreneurship, the medical advances, technological innovations in agriculture, the infrastructural investments of state and the organization of farmers in cooperatives forced the government to amend the Rice Cultivation Law especially about the removal of the limitations on the extent of rice cultivation. Therefore, the Ministry of Agriculture demanded a change in the second article of the Law that regulated the rice cultivation process while preventing the debilitation of rice cultivated soil. It had necessitated rotation of crops and banned rice cultivation in the same field in two consecutive years in the 1950s. [495] However, this could not be implemented by all farmers due to difficulties in pest control until the mid-1960s in Uzunköprü districts of Edirne,[496] in the rice fields of Samsun where other cereals and vegetable were cultivated and in the rice fields of Karacadağ which were cultivated septennial without ground surface tillage and used as pasture lands. However, with the spread of chemical fertilizer, pesticides and no alternative agricultural products apart from rice in wetlands, rotation of crop had begun to be regarded as unnecessary. The demand of the Ministry of Agriculture from the Ministry of Health would be realized in time. [497]

Secondly, the accessibility of antimalarial drugs such as Larvicide and Kuliside led to the spread of rice cultivation. Therefore, the limitations on rice cultivation were removed in 1951 and 1952.[498] Since June 25 was determined as the final date for rice cultivation, the application for rice cultivation was

493 Edirne Milletvekili Fahir Giritlioğlu'nun, Edirne'nin Meriş ilçesinde çeltik ekimine müsaade edilmemesi sebebine dair yazılı soru önergesi ve Tarım Bakanı Cavit Oral'ın yazılı cevabı (7/120) (TBMM Tutanak Dergisi, June 11, 1962) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/MM__/d01/c005/mm__01005100.pdf

494 "Edirne'de Çeltik Ekilebilecek," *Edirne Postası,* August 06, 1952.

495 BCA Z.V 74-41, 1762, 4/ 5080, (April 25, 1955).

496 Hayati Tuncalı, "Çeltik Ziraatı- Zirai ve İktisadi Önemi," *Pancar,* no: 137 (1964): 14.

497 BCA Z.V 74-41, 1762, 4/ 5080.

498 BCA S.S.Y.B. 26/1108 (March 09, 1953).

regarded as necessary at least three months before in Turkey. Under the chairmanship of the minister of Agriculture Nedim Ökmen, a meeting was organized about the determination of rice cultivated regions countrywide. In this conference, the Minister of Health, 12 deputies as farmer's representative and some bureaucrats of the Ministry of Agriculture and the Ministry of Health took part in. These attempts increased rice production during the 1950s.[499] On the other hand, due to the abolishment of import barriers on rice in neoliberal economic conditions and the lack of enough irrigable water in drought periods during the 1980s, rice cultivated lands decreased. However, after the partial solution of the water problem and the use of modern technology rice production and rice cultivated areas have increased steadily from 1990 onwards.[500] Technical inadequacies, environmental pollution, and the lack of clear cut and programmed state policy in rice agriculture have continued in Turkey since 1948. However, in the spread of rice farming, the government has continued its support through land reform, irrigational infrastructure such as the building of ponds, dams, and channels and also seed distribution and debt relief in some periods when there are natural disasters.

4. 2. 1 *The Seed Assistance of Government in Case of Natural Disasters*

In the case of natural disasters and the impossibility of the cultivation of other products, the Ministry of Agriculture could distribute rice seeds under the law no 5254 on July 8, 1948 to provide the sustainability of agricultural production. In this context, since 56 villages of Edirne experienced drought, Agricultural Bank sent seed to them in 1949.[501] Similarly, the Council of Minister authorized the Ministry of Agriculture to extend the application period of farmers for rice farming until June 25 in some years.[502] Thus with Agricultural Banks collaboration, the Ministry of Agriculture distributed 200 tons of rice

499 "Çeltik Ekim Sahaları Tespit Edildi," *Samsun Postası,* December 28, 1951.

500 Mehmet Uygun, "Türkiye'de Çeltik Üretimi ve Tüketimi," 56.

501 "Kuraklıktan Zarar Görenlere Yardım Edilecek," *Edirne Postası,* August 10, 1949.

502 BCA. B.K.K.T.D. 6/4759 74-16/720, (May 28, 1965).

seed to farmers in these years.[503] By the same token, due to excessive precipitation, the same case was seen in 2014.[504]

In contrast to excessive precipitation and the flood in the Meriç Basin, since drought is one of the biggest threats in the rice farming of the Karacadağ Agriculture Basin, the government sent cereal seeds such as wheat, rice and barley some years.[505] Furthermore, the cultivable lands between Ergani and Diyarbakır could not be cultivated due to the lack of mechanization and seed supply in the 1960s.[506] Thus, Agricultural Equipment Institution that had been responsible for the supplement of agricultural inputs such as seed, machines, pesticides and fertilizer distributed 1185 tons more qualified rice seed imported from Italy to rice cultivated areas.[507]

4. 2. 2 *The Contribution of Land Reform to Rice Farming*

At a macro level, to get the political support of peasants, Prime Minister Demirel demanded the determination of public lands and landless peasants around Turkey in 1967. While there were 501,000 landless families in 1952, there were 308,899 landless families, most of whom lived in internal, eastern and southeastern Anatolia in 1968. Thus, the distribution of 700000 hectares of public lands had been decided to be distributed until 1969.[508]

Land Reform first began to be implemented by a commission that was assigned by the Ministry of Agriculture in Sırpsındığı (Sarayakpınar) Village of Edirne in April 1948 and completed it in Köşen and İskender Village of Edirne in June 1949. Although the process of expropriation and land distribution were estimated as two months, it continued for more than one year.[509]The Minister of Agriculture Cavit Oral thought that the integration of peasants into

503 BCA. Z.V. 01-186- 31- 11 (January 23, 1963).

504 "Çeltik Ekim Müracaatları 25 Hazirana Uzatıldı," *Adalet,* June 5, 2014.

505 "Urfa Kuraklığı ve Ekincilere Yapılacak Yardım," *Yenilik*, June 21, 1947.

506 "Ziraatımızın Gelişmesinde Ciddi Çalışmak Gereklidir," *Diyarbakır,* June 3, 1963.

507 "ZDK 1185 Ton Çeltik Tohumluğu Dağıtıyor," *Yeni Zaman,* April 30, 1974.

508 "Yurdumuzda Toprak Tevzi," *Edirne Sesi,* September 16, 1967.

509 "Toprak Kanunu Tatbikatı," *Edirne Postası,* April 22, 1948; "Toprak Kanunu Tatbik Ediliyor," *Edirne Postası,* May 12, 1948; "Toprak Dağıtımı," *Edirne Postası,* June 29, 1949.

the production process through land reform and providing credit opportunities were quite necessary.[510] 15 numbered Land commission distributed 33630 decars of lands to 1838 families in 45 villages and distributed 48163 decars of meadow in 16 villages in Edirne.[511] Çöpköy sub-district of Uzunköprü had a crowded population and limited cultivated lands. Therefore, 3000 decars of lands were distributed as 28 decars per household in Çöpköy. However, although the wives of 10 household heads who worked in rice fields of Karacabey in Bursa applied to land commission, their petitions were not accepted. Thus, rice workers came to Çöpköy and applied to the Prime Ministry in 1953.[512] The cadastral survey continued in the villages of Keşan and İpsala such as Karpuzlu, Orhaniye and Koyuntepe in the 1960s.[513]

Edirne Board of Settling and 15 numbered Land Distribution Commission distributed some public lands between 10-33 decars to 93 landless peasant households.[514] Similarly, land commission let 20495 decars of public lands out in Paşaköy, Olacak, Türkmen, Yolageldi, Uzgaç, Demirhanlı and Karpuzlu. Furthermore, 3672 decars of public lands in Paşaköy, and Karpuzlu villages of İpsala was irrigated land for rice cultivation. Their hire purchase was between 75 and 100 TL per each decar.[515]

However, since İpsala Plain have had large rice cultivable wakf lands, the Regional Directorate of Foundation let them out to farmers. However, there was a conflict of interest between small and big landowners on the hiring of the foundation lands. While rich merchants hired 2 TL per decar, small landholders hired 30 or 40 TL per decar in Karpuzlu village of İpsala and Adasaranlı village of Meriç district in Edirne in the 1960s and the 1970s when the rice farming began to be more widespread, popular and profitable.[516]

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510 "Tarım Bakanının Trakya Gezileri," *Edirne Postası,* August 20, 1948.

511 "Toprak Dağıtımı," *Edirne Postası,* December 13, 1952.

512 "Toprak Dağılımı," *Edirne Postası,* December 21, 1953.

513 "Keşan ve İpsala'da Arazi Kadastro Çalışmaları," *Vatandaş,* June 7, 1963

514 "Akhoca Köyünde Toprak Dağıtıldı," *Vatandaş,* June 11, 1976.

515 "15 Nolu Toprak Komisyonunun 1976 Programı Belli Oldu," *Vatandaş,* June 25, 1976.

516 "Köylünün Davaları Öne Alınmalıdır," Vatandaş, July 29, 1964.

Similarly, since 32000 decars of wakf lands in Yeni Karpuzlu, Paşaköy and Esetce villages of İpsala were put out to tender to be cultivated rice by big landowners, the people of these villages who had cultivated rice these lands before, prepared to submit a common petition to the government. They demanded the distribution of these lands to landless peasants.[517] 15000 decars of land conflict in Karpuzlu village that was the burning issue in the Land Registration Court goes back to the Ottoman Period. The people of Karpuzlu claimed that these lands belonged to the Ottoman state therefore they had to be distributed to peasants. Village headman Basri Atalay said that although this fact was known, these lands were cultivated rice by some prominent rice growers. Although the peasants applied to the court, the opponents appealed against this situation. *Uysallı* Case had continued for six years.[518] Even worse, since the controls of public lands use could not be made by fiscal directorate which was not financed by the Ministry of Finance, these lands were trifled away by a couple of big landowners.[519] Therefore, land reform was not limited to land distribution; it was thought to be supported by the regulation of sharecropping, the increase of agricultural production and the mechanization of agriculture.[520]

Furthermore, 2137 decars of lands as a result of the drainage of Kızkapan Lake in Keşan Plain were distributed to 193 landless farmers in four villages. 42 farmers got 500 decars in Çelebi, 85 farmers got 860 decars in Akhoca, 23 farmers got 307 decars in Orhaniye, and 42 farmers got 420 decars in Barağı villages. Under the head of Fiscal director of a district Hilmi Tanır, agricultural specialist Ergün Gürbüz and settlement director Kenan Erk took part in land distribution in 1965.[521] Furthermore, the Ministry of Finance issued eleven circular letters about land distribution in 1968.[522] The distribution of

517 "İpsala'da 32,000 Dönümlük Vakıf Arazisi İcara Verilecek," *Vatandaş,* February 24, 1979.

518 "Karpuzlu'daki Arazi Sorunu 6 yıldır çözülemedi," *Vatandaş,* March 15, 1984.

519 "Maliye Bakanlığı Cevap Versin," *İpsala*, October 31, 1975.

520 "Toprak Reformu Esasları Tespit Edildi," *Vatandaş,* January 24, 1964.

521 "Kızkapan Gölünden Kazanılan 2137 dekar Arazi Dağıtıldı," *Edirne Sesi,* December 5, 1965.

522 "Topraksız Vatandaşlara Dağıtılacak Topraklar İçin Kaymakamımız Orhan Haraççı Başkanlığındaki Komisyon Aralıksız Çalışıyor," *İpsala,* March 7, 1968.

public lands solved social conflicts between Karpuzlu and Sarıcali villages.[523] Most of these lands would be used in rice farming.

On the other hand, since the southeastern Anatolia was ignored, there was no adequate infrastructural investment and cadastral survey in agricultural lands.[524] Southeastern Anatolia is the region with the most inequitable land distribution in Turkey. Thus, there are big landowners in the region. Furthermore, since many peasants have not had agricultural equipment or organization, large parts of their rice fields have been cultivated by share croppers.

Land reform had begun to be implemented again in the 1970s. Therefore, Viranşehir and Akçakale districts of Şanlıurfa were determined as pilot areas. Public lands were decided to be distributed to farmers.[525] It was expected to be completed in 122 villages of Akçakale on June 1, 1975. Also, the building of sixty fertilizer stores and 333 km road, irrigation infrastructure, and electrification were considered.[526] According to under secretariat of the Land Reform, for the successful implementation of land reform in Şanlıurfa, the government paid almost one milliard TL. For example, 630 million total subsidies were thought for the surveying projects of investments, 200 million TL would be distributed as a credit to peasants and 90 million would be paid to the farmers whose lands were publicized.[527]

When it comes to Samsun, there has not been big landownership due to topographical, geographical and socio-economic reasons. Some of the population of this region settled there through migrations from Balkans, Crimean and Caucasia. The title deed problems have not been solved in Çarşamba and Bafra Plains in Samsun. However, the government proposal for land reform was criticized in Ankara University Faculty of Language and History, Geog-

523 "Sarıcaali ve Karpuzlu Köylerindeki Vatandaşlara Toprak Verildi, "*İpsala,* March 18, 1968.

524 M. Kemal Özer, "Köy Kalkınması," *Vatandaş,* June 12, 1963.

525 "Toprak Reformunun İlk Hedefi Hazine Topraklarını Kiraya Vermek," *Bizim Karakoyun,* April 27, 1974.

526 "Toprak ve Tarım Reformu Eylülde Başlıyor," *Yeni Zaman,* September 1, 1974.

527527 "Urfa'da Reform İçin 1 Milyar TL Ayrıldı," *Yeni Zaman*, April 15, 1974.

raphy by Behram Öcal who was the head of the chamber of Agricultural Engineers. He claimed that the state could not expropriate and big landowners extended their lands.[528]

4. 2. 3 *The Irrigation Infrastructure Investments of Rice Farming in Three Basins*

The General Directorate for State Hydraulic Works (GDSHW) was founded in 1954. However, the legislation of Rice Cultivation Law of 1936, the foundation of Water Works Chairship of 1929, The Protection Law from Flood of 1943, and the Drain Swamp Land Reclamation Law of 1950 were related to the Establishment Law of GDSHW of 1954. GDSHW has been responsible for the administration and development of all water sources in Turkey such as the building of big dams, village ponds, and water channels that are required for irrigation infrastructure and rice cultivation. GDSHW has 26 regional directorates in certain provinces of Turkey. For example, there are regional directorates of SHW in Edirne, Samsun, Şanlıurfa and Diyarbakır provinces.[529]

Historically, Thrace Chief Engineering of SHW was founded in İpsala with the suggestion of American experts in 1943. This chief engineering was organized under the direction of the First Regional Directorate of SHW in Bursa in 1955. However, with the foundation of 11 Regional Directorate of SHW in Edirne in June 1960, this institution became responsible for the administration of the water sources of Thrace such as Edirne, Kırklareli and Tekirdağ.[530]

However, before the institutionalization of 11 Regional Directorates of SHW in Edirne in 1960, the issue of preventing the floods of Meriç and more productive use of Meriç Plain had been one of the prominently negotiated

528 "Ziraatçılar Toprak Reformu Tasarısını Tenkit Ettiler," *Vatandaş,* February 18, 1965.

529 Devlet Su İşleri Genel Müdürlüğü (DSİ) aceesed May 18, 2019, http://www.dsi.gov.tr/kurumsal-yapi/bolgelerimiz

530 Ibid.

subjects between Turkey and Greece since the 1930s.[531] Therefore, there was the Meriç Water Works Department that built some levee in İpsala and Bosnaköy of Edirne along the Meriç River. However, it was closed in 1948.[532] Thus the reclamation of Meriç was aimed to be completed more quickly in the 1950s and the 1960s.[533]

Second, although 7 Regional Directorate of SHW was founded in Samsun in 1954, this institution had been one of the five field services of Water Works Chairship in 1929. It is responsible for the administration of the water sources of Samsun, Sinop, Amasya, Ordu, and Tokat. Third, 10 Regional Directorate of SHW was founded in Diyarbakır in 1954 and it is responsible for the administration of the water sources of Diyarbakır, Siirt, Şırnak and Batman. Finally, 15 Regional Directorate of SHW was founded in Şanlıurfa in 1976 and it is responsible for the administration of the water sources of Şanlıurfa and Mardin.[534]

4. 2. 4 *The Reclamation of the Meriç River and Plain*

After the Marshall Plan, as a result of the meetings held in İstanbul on July 20, 1950, Turkey and Greece demanded Marshall Technical Assistance. Turkey assigned Nahit Alper and Greece assigned Costas Caranicas to financial affairs consultancy in Washington for this project in 1951. They did research on flood protection, the potential of hydroelectric energy production, the potential of agricultural production, and estimated economic income in the future. Their work plan that consisted of the report, the ultimate project, and conditions of contracts were thought to be completed in six months.[535]

Furthermore, a meeting was held in Athens about the reclamation of the Meriç River between May 12 and 16, 1952. As a result of the mutual covenant,

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531 BCA H.V. 030-18- 01-02/ 18-17-8, 31 (March 11, 1931).

532 "Meriç Su İşlerinin Lağvı," *Edirne Postası,* August 25, 1948.

533 "Şimdiye Kadar DSİ Bölgesine Bağlı Bulunan Trakya Mıntıkası Merkezi Edirne Olmak Üzere Ayrı Bir Müdürlük Haline Geliyor," *Trakya,* May 12, 1960.

534 Devlet Su İşleri Genel Müdürlüğü (DSİ).

535 "Trakya'da Meriç Nehri Mecrası Marshall Yardımı ile Tanzim Edilecek," *Edirne Postası,* October 3, 1951.

it was decided that the American Harza Company would fulfill this project. For the reclamation of the Meriç River, the council of minister let the delivery and the exportation of the plan, maps and photomosaic of the Meriç and Ergene Rivers that were regarded as necessary for the USA by the Ministry of Public Works on May 6, 1952. With the influence of the Ministry of Foreign Affairs, Selahi Demirbilek who was one of the certified engineers of the Ministry of Public Works was appointed to Meriç– Evros Permanent Committee. This committee conducted the reclamation project of the Meriç River and determined the common borders between Turkey and Greece. Turkey, Greece, and the USA took part in the process of deciding on this project. Thus, the American Economic Cooperation Administration sent 160,000 Dollars as a free grant to governments and Harza Firms in Chicago conducted this project.[536]

Since the Meriç River shaped the political borders between Turkey and Greece, the Ministry of Public Works wrote an official letter that specified the official permission of the Ministry of Domestic Affairs and the Ministry of National Defense for 11 foreign specialists who examined geological, agricultural and hydrologic surveying in the second forbidden zone in Edirne for the reclamation project of Martisa River on May 15, 1952 and accepted by the council of the minister on May 20, 1952. The specialists who participated in this project were C. Kett Willen, Richard D. Harza, Ulfford Willia, Driving Joseph, Lev Boggis, Roger Anderson, Paul Jacopson, H. R. Me Brney, George T. Blane, Kenneth E. Sorensen, and Nile Z. Dimitriyadis.[537]

However, due to the floods of the Meriç River, the exchange of Turkish and Greek borders became a current issue. Therefore, a map was prepared and a protocol was organized in Edirne. The head of Turkish committee was Cani Günver, agricultural engineer Süleyman Gül, architecture Arif Onat, squadron leader Sabri Ozan, chief of police Enver Yanıker, and lieutenant colonel Hüseyin Akalın. In the Greek committee, the head of the committee was Vani

536 BCA DİB. M.E. İ.D.U.M. 22 55 17076 21 79, (December 1, 1951).

537 BCA B.M.U. M, 030 18 01 129 42 13, (May 20, 1952).

Yenimates, Colonel Vasil Georkilokoz, lieutenant colonel Yordan Dimitriyatis, engineer Histos Popotomis, agricultural engineer Kostas Sinopulos in 1959.[538]

There was no dispute and they had a common sensibility for the areas between Kapıkule and the south of Adasarhanlı Village. To protect Edirne from floods, Greece would build a levee 500 meters behind the Meriç River. Turkey demanded the reclamation of the Ergene River to complete the Meriç Project. Thus Harza Company had focused on this project until September 1952. After the building of levee and bridges, the borders would be discussed between Turkish and Greek governments. 22,440,000 Dollar subsidy of this project would be received from the foreign financial aid of Marshall. While 12,730,000 of the sum of money were received by Turkey, 9,710,000 Dollar was received by Greece. In addition to the building of roads, bridges, and levees, the wetlands of Meriç Plain would be drained.[539] For the building of levees, construction materials, and the service charge, there were some technical problems in the collaborations with Greece. For example, 70 million instead of 27 million caused the dissolutions of the reclamation of the Meriç River at the end of the 1950s.[540]

The cleaning of Meriç would begin in Enez in 1955 and expected to continue six years.[541] A month later, Turkey and Greece signed a treaty for the reclamation of Meriç for the amount of 90,000,000 TL. According to common expressions of the Public Work Ministers of two countries, the reclamation of Meriç would protect Meriç Plain and settlements from floods and wetlands, open newly cultivated lands, and develop irrigation facilities. It also required the opening of three river beds in the Meriç River.[542]

Furthermore, the Turkish and Greek governments would spend 70 percent of Marshall Aid to local expenses. Both of them would assure the necessary

538 "Meriç Nehrinin Taşkınlıkları ve Mecra Değişikliği Sebebiyle Yunanistan Sınırında Düzeltmeler Yapılıyor," *İpsala Doğuya Sesleniş,* July 9, 1959.

539 BCA S.İ.R. 030 01 61 375 3, (July 6, 1952).

540 "Meriç ve Kollarının Islahı," *İpsala Doğuya Sesleniş*, January 6, 1960.

541 "Tunca Meriç Nehirleri Temizleniyor," *Demokrat Keşan,* January 29, 1955.

542 "Meriç Nehri Islah Ediliyor," *Demokrat Keşan,* February 25, 1955.

amount of subsidy from their counter party fund. The control of the flood was required to prevent fertile soil and agricultural product loss. Thus 82000 hectares' lands in total between two states could be won. While 32000-hectare soil was won and 16400 hectares could be improved in terms of agricultural production, 18000 hectares where had been not cultivated could be turned into cultivable lands thanks to irrigation in 1951.[543]

For the Meriç River reclamation, a commission came to Edirne to discover more about lands' geography. They said that they could complete their project in two years at most. In the project, both floods and droughts could be prevented through the building of water channels.[544] In the same way through shaft sinking in various parts of the Meriç River, 300,000,000 m^3 water could be kept and thousands of decars of lands could be irrigated. For the protection of 81000 hectares' land, the land leveling of 200 km^2 lands were needed. Therefore, 12 million dollars' investment was required. However, for the determination of required buildings, the Turkish and Greek commission needed 20 million dollars in 1953.[545]

The building of levee along two banks of Meriç River and the building of Ferre Thirian water tank would be begun in April 1960.[546] The reclamation of İpsala Plain as a part of the Meriç Plain was begun in 1961. The SHW İpsala branch office under the head of Selahattin Ayçelik struggled to dry the wetlands in the plain.[547] However, due to contradictive political issues, the reclamation of the Meriç River that determines the borders between Turkey and Greece had not been handled until 1962.[548] Therefore, a committee under the presidency of vice general director of the SHW Arif Onat would represent the Turkish government in the negotiations with Greece to solve the issues on January 8, 1962. They had difficulty in dealing with the exchange of terrain.

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543 "Trakya'da Meriç Nehri Mecrası Marshall Yardımı ile Tanzim Edilecek," *Edirne Postası,* October 3, 1951.

544 "Meriç Mecrasının Islahına Doğru," *Edirne Postası,* June 13, 1953.

545 "Meriç Nehri'nin Temizlenme İşi," *Edirne Postası,* June 24, 1953.

546 "Meriç," *Trakya,* March 19. 1960.

547 "Selahattin Ayçelik Edirne'ye Tayin Edildi," *İpsala,* October 27, 1969.

548 BCA B.K.K.T.D. 030 18 01 168 1 3, (January 7, 1963).

Therefore, apart from this, the Turkish Council of Minister authorized the Ministry of Foreign Affairs to put technical provisions into force with the exchange of notes.[549] The sowing of poplar trees was decided along the Meriç River to protect fertile lands in 1974.[550] The Meriç River flows into the Aegean Sea both emptied 10 decars of lands into the sea and exchange its riverbed every ten years. Therefore, Turkey lost 500 decars its land to Greece in the last 5 years.[551]

However, since Greece spent their budget of the Marshall, the reclamation of the Meriç River with Turkish and Greece collaboration could not be begun in May 1954.[552] For the building of the water channel in İpsala, each decar of lands were expropriated between 200 and 250 TL in 1959.[553] Since Greeks closed one reaches of Meriç that separated into two in Çatal position, İpsala Plain submerged and rice fields were damaged.[554] Turkish bureaucrats went to Athens for making some negotiations with the Greek government that caused the floods in İpsala Plain as a result of the demolition of levees in 1960.[555]

The people of Kadıdondurma village suffered from the fact that the SHW did not pay expropriation due to the building of levee in 1964.[556] Although the soils of Subaşı and Küplü were not expropriated, the SHW was uncontrolled. Also the problems of people were not solved in Edirne governorships in 1964.[557]The building of reclamation levees between Edirne and Enez along 150 kilometers was decided in 1956. Thus, the floods in the Meriç River could be prevented and the plain could be irrigated regularly. Juristically Council of Minister enacted 6862 numbered law was ambiguous which authorized about

549 BCA B.K.K.T.D, 030 18 01 119 19 14, (April 5, 1963).

550 "Orman Bölge Şefliğince Meriç Nehri'nin Kapıkule'den İpsala'ya Kadar Olan Bölüm Ağaçlandırılacak," *Vatandaş,* January 29, 1974.

551 "Meriç Nehri Sürekli Yatağını Değiştiriyor," *Vatandaş,* June 30, 1976.

552 "Su Taşmasıyla Her Yıl Zarar Açan Meriç Nehri Mecrasının Temizlenme İşi Ne Olacak," *Edirne Postası,* May 17, 1954.

553 "İlan," *İpsala Doğuya Sesleniş,* June 25, 1959.

554 "İpsala Ovasında Yunanlıların Sebep Olduğu Su Baskını," *Bizim Köy,* October 1, 1960.

555 "Yunanistan'a Bir Heyet Gönderiyoruz," *Bizim Köy,* October 12, 1960.

556 "DSİ Bu Paraları Neden Ödemez," *Vatandaş,* September 11, 1964.

557 "Meriç'te DSİ'nin Yersiz Müdahaleleri Vatandaşı Üzüyor," *Vatandaş,* October 18, 1964.

the changes of political borders between Turkey and Greece. The tender of this project was gotten by Harza Firm. Within the scope of this project, the flow direction of Meriç that determined Turkey and Greek borders would change. It would flow straight. This means the interchange of some lands between the two countries. Therefore, in 8 eight years, while Greece would give Turkey 8000 decars of Kavakkoru and 1600 decars of the Gavurada positions near Enez, Turkey would give Çatal, Dikili and 1600 decars of the Sarıcaali positions near İpsala. However, when the soil quality is considered, the Sarıcali plain was one of the most fertile lands of Edirne on the contrary, Gavurada position was a salty and arid land. Similarly, Çatal and Dikili position were obtained with the drainage of wetland where only rice had been cultivated for ten years. Furthermore, Kavaklıkoru was stony land. Arif Hikmet Onat who was the minister of public work said the differences were regulated by the bureaucrats of the Ministry of Agriculture.[558]

A meeting was held in Dedeağaç to discuss the building of levees. When the levees of the two countries were not built regularly, the other side may have been exposed to floods. However, Greeks demanded the demolition of levee around the Telemeni and Adaağzı.[559] The levee of Turkey damaged the plains of Greece along the Meriç River. Since the Greek economy could not deal with their building, Greece took a loan from the USA and Germany.[560] Within the scope of bank and drainage, 992638 m^3 filled land and 267846m^3 the cleaning of drainage channel and stream bed were built between 2006 and 2008. The flood influenced rice fields negatively the plains around the rivers of Tunca, Meriç and Ergene.[561]

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558 Edirne Milletvekili Fahir Giritlioğlu'nun, Meriç nehri üzerinde yapılmakta olan seciler sebebiyle Yunanlılarla mübadele edilen Türk topraklarına dair Dışişleri Bakanından soru önergesi ve Bayındırlık Bakanı Arif Hikmet Onat'ın sözlü cevabı (TBMM Tutanak Dergisi, January 08, 1964) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/MM__/d01/c024/mm__01024028.pdf

559 "Yunanistan Meriç'le İlgili Teklifimizi Kabul Etmedi," *Edirne Sesi,* October 15, 1965.

560 "Yunanlılar Meriç Boyuna Mahmuzlar Yapacak," *Edirne Sesi,* November 8, 1965.

561 Edirne Milletvekili Cemaleddin Uslu 'nun, Edirneli çiftçilerin bazı sorunlarına ilişkin sorusu ve Çevre ve Orman Bakanı Veysel Eroğlu 'nun cevabı (TBMM Tutanak Dergisi, December

The illegal build of levees by Greece along the bank of the Meriç River in Küplü, Kadıdondurma and Adasarhanlı created potential flood risk. [562] Similarly the cutwaters of Greece in the Kofçalı region caused the loss of Turkish soils and inadequate water for rice growers in 1974.[563] Besides, by virtue of continuing rainfall for two weeks, 25000 decars of rice and 10000 decars of sunflower field were damaged from the flood in Edirne. Thus, farmers demanded a new credit facility and moratorium.[564] To prevent soil erosion, the building of cutwater continued in 1986.

For centuries, Edirne has experienced flood disasters due to precipitation regime, the unsuccessful attempts of the reclamation of the Meriç River and Meriç Plain. Furthermore, the floods in Edirne have been closely related to the infrastructural investment in Greece and Bulgaria. Every winter the floods in Edirne results from the opening of dam shutters in Bulgaria. Thus peasants cannot cultivate their fields except for summer growing plants such as rice, corn, sun flowers, bean and some vegetables in the Meriç Plain. Furthermore, with the decline of water level in the Meriç River, news about the building of a dam on Meriç in Bulgaria was made a current issue in the Turkish Grand National Assembly in the 1980s and 1990s. If it was realized, the reclamation of the Meriç Plain could have contributed to agricultural product ranges due to irrigation infrastructure, the prevention of floods and the solution to the

16, 2008), https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d23/c034/tbmm23034028.pdf

562 Edirne Milletvekili Fahir Gtiritlioğlu'nun, Meriç nehri sahillerinde Yunanlılar tarafından yapılan sedlerin su basmasına sebeholup olmıyacağına dair sorusuna Bayındırlık Bakanı Emin Paksüt'ün yazılı cevabı (TBMM Tutanak Dergisi, February 22, 1962), https://www.tbmm.gov.tr/tutanaklar/TUTANAK/MM__/d01/c003/mm__01003053.pdf

563 "Yunanlılar Meriç Nehri'nin Akıntısını Kendi Taraflarına Çekiyorlar," *Vatandaş*, February 27, 1974.

564 Edirne Milletvekili Mustafa İlimen'in, Edirne İlinde aşırı yağışların neden olduğu ürün kayıpları ve çeltik üreticilerinin sorunları ile alınması gerekli önlemlere ilişkin gündemdışı konuşması ve Turizm Bakanı İbrahim Gürdal'ın cevabı (TBMM Tutanak Dergisi, November 5, 1998) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d20/c065/tbmm20065015.pdf

water problem of rice. The conflict of interest on soil quality and other political issues such as 6-7 September Events in 1955, Cyprus Issue, Aegean Islands and the continental shelf have made the negotiation between Turkey and Greece difficult since the mid-1950s.

Edirne has 6275950 decars square measure. 3802620 decars are cultivated land, 1043280 decars are forest, and 81270 decars are meadow.[565] Although the reclamation of the Meriç Project could not be completed, SHW was founded in 1960 in Edirne, built 110 km levee along Ergene and Meriç. Thus 250000 decars of lands were saved from floods and prevented coastal erosion in the Meriç River.[566] The building of levees was negotiated in 1935 and discussed and projected in the 1950s.[567] However, the building of the levees along Meriç had begun in 1964 by 11. Regional Directorate of SHW and reached to 150 km in 1984. According to the project of SHW, their building would be completed until 1988. The total prices of this project were 1,143,000,000 TL.[568] Similarly, there were irrigation, protection from floods, mending in its 512,000,000 TL investment program.[569] The building of these levees along Meriç was completed in 2000.[570]

4. 2. 5 *The Building of Dams, Village Ponds and Water Channels for Rice Farming*

Thanks to the 5, 5 milliards of TL investments, 250000 hectares' land had been irrigated, 400000 hectares of lands had been protected from floods, and the potable water need of 2425 villages had been solved until 1964 in Turkey.[571] The water channel projects of this institution in plains contribute to

565 Arif Semerci, "Trakya'da Tarımsal Yapı, Verimlilik ve Gelişmişlik Düzeyi," *Tarım ve Mühendislik,* no. 76-77 (2006): 64.

566 "DSİ'nin Bu Yıl 512 Milyon Liralık Yatırımı," *Edirne,* October 21, 1986.

567 "Seddeler Olmasaydı Edirne'nin Hali Ne Olurdu," *Vatandaş,* July 20, 1995.

568 "Meriç Nehri Kenarında Bu Yıl 17 km Daha Set Yapılacak," *Vatandaş,* January 17, 1984.

569 "DSİ'nin Bu Yıl 512 Milyon Liralık Yatırımı, "*Edirne,* October 21, 1988.

570 "Baraj ve Göletler Sulama Kooperatiflerine Devredildi," *Önder,* January 7, 2000.

571 "DSİ 1964 Yılında 1963'e Oranla % 46 Daha Fazla Yatırım Yapacak," *Vatandaş,* December 17, 1963.

the increase of rice cultivation areas. However, in contrast to these irrigation projects, the rate of rice cultivated lands to irrigable lands was about 14 percent in the 1960s country wide. Therefore, to benefit from the irrigation project of the GDSHW, to enlarge rice cultivated areas, irrigation cooperatives and irrigation unions played an important role. [572] The GDSHW opened 14 percent of the cultivation areas to irrigation between 1955 and 1965.[573] 30262370 decars out of 239336141 decars cultivated lands could be irrigated in 2015 and 2016.[574] However, the extent of rice cultivated land in total irrigated land was only 1158561 decars in Turkey in 2015 and 2016.[575]

4. 2. 5. 1 Dam Projects in the Meriç Basin

First of all, Altınyazı Dam that was aimed to irrigate 65000 decars of lands in Ergene and Meriç Plains in Uzunköprü and İpsala had been built between 1965 and 1970 by the contractor Sinan Kocasinan as a government investment was transferred to SHW.[576] The Altınyazı Dam began to service in 1973 and increased the agricultural productivity in Ergene plain three times. Although the plains of Balabankoru, Balaban village, Karaağaç, Altınyazı and Tevfikiye were wetlands, thanks to the dam, peasants began to cultivate especially rice, sugar beet, and sun flower that were very profitable crops.[577] To irrigate the 63000 decars of İpsala Plain, it was decided to pump water from the Meriç

572 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 43.

573 Ibid., 202.

574 "2016 Yılı Tarım Alanları İstatistikleri Açıklandı," Sözcü, September 21, 2017; TÜİK accessed March 20, 2019, http://www.tuik.gov.tr/UstMenu.do?metod=temelist; Toprak ve Su Kaynakları accessed March 20, 2019, http://tarim.kalkinma.gov.tr/toprak-ve-su-kaynaklari

575 T.C TÜİK, Çeltik, accessed March 20, 2018, http://www.tuik.gov.tr/PreTabloArama.do; Tarım Ürünleri Piyasaları Çeltik, TAGEM, 2, accessed March 20, 2019, https://arastirma.tarimorman.gov.tr/tepge/Belgeler/PDF%20Tar%C4%B1m%20%C3%9Cr%C3%BCnleri%20Piyasalar%C4%B1/2019-Temmuz%20Tar%C4%B1m%20%C3%9Cr%C3%BCnleri%20Raporu/2019-Temmuz%20%C3%87eltik.pdf

576 "Altınyazı Barajı," *İpsala* July 16, 1970.

577 "Altınyazı Barajı Suladığı Ovada Üretimi Üç Misli Arttırdı," *Vatandaş,* May 4, 1973.

River between 1972 and 1978. The price of this project was 120,000 TL. Thanks to this project, the water of Altınyazı Dam could be used in summer when the water level of the Meriç River declined. This project encompasses some villages of Meriç, Uzunköprü and İpsala such as Altınyazı, Adasarhanlı and Balabancık and so on.[578]

Kadıköy Dam that was built between 1965 and 1973 irrigated 38500 decars of lands in Keşan and Kadıköy Plains. Thus, both irrigation problems could be solved and rice and vegetable cultivation was increased in Bahçe, Çamlıca, Seydi, Mercan and Büyükdoğanca villages in the 1970s. Thanks to this dam, the economic income of peasants and the appreciation of their lands increased.[579] Until the 1960s, rivers and underground water had been used in rice irrigation in Edirne. However, Altınyazı and Kadıköy Dams were the first two big infrastructure investments for the productive use of water and rice farming in Edirne. However, these dams and village ponds continued to be used together with the Meriç and Ergene Rivers.

The water position of Ergene and the Meriç Rivers has been considered for rice cultivation in agrarian economics by local administrators such as the governor, director of agriculture and the administrators of SHW in Edirne since the 1950s.[580] Since the Meriç River rises in Bulgaria and determines Greco- Turkish borders except for Karaağaç, the irrigation projects of Edirne agriculture were also closely related to Greece and Bulgaria. Due to the hydraulic plant of Bulgarians, they cut the flow of Meriç to produce electricity. Therefore, the water level declined one meter. As a result, both dirty wetlands appeared and the salty water of the Aegean Sea proceeded 30 kilometers into the north. Rice growers of İpsala used salty water without realizing it in 1993.[581] Furthermore, as a measure to protect rice fields from the flow of sea

578 "Meriç Nehri'nden Altınyazı Barajına Su Pompalanacak," *Vatandaş,* June 4, 1977.

579 "Keşan'daki Çeltiklere Barajdan Su Verilmeye Başlandı," *Vatandaş,* May 10, 1976; "Kadıköy Barajı Keşan Ovasına Bereket Getirdi," *Vatandaş,* June 21, 1976; "Kadıköy Barajı Sayesinde Bir Mevsimde Üç Mahsul Alınıyor," *Vatandaş,* August 17, 1976.

580 "Edirne'nin Zirai Kalkınması ve Çeltik Ziraatı Hakkında Bazı Yeni Kararlar Alındı," *Edirne Postası,* April 1, 1953.

581 Edirne Milletvekili Hasan Basri Eler'in, son günlerde meydana gelen üzücü olaylara, çiftçilerimizin Bağ-Kur primine ve Edirne'deki çeltik üreticilerinin sorunlanna ilişkin gündem dışı

water into the Meriç river, the building of levee was discussed in 1992.[582] Since the rice growers of Hasırcıarnavut village of Meriç district attempted to cut the flows of the Meriç river with sandbags from the Turkish side to the Grek side, this also caused the decline of the water level of the Meriç River more and more in lower courses. However, as a head of the rice commission, the Meriç district governor objected to the attempts of the peasants of Hasırcıarnavut due to water problems and the prevention of international water.[583] Due to the water crises with Bulgaria, local directors considered the water requirement of rice fields in Edirne. Annually the Meriç River has 9 milliard m^3 water. Therefore, local directors tried to keep 1 milliard of the Meriç River.[584]

In order to prevent the 200 milliards of economic loss, to solve the water problem of farmers as it was in 1985 and 1990, to irrigate Meriç and Ergene Plains which have been prominent rice stores of Turkey, to decrease rice import, and to collect the excessive water of Meriç, both the completion of the building of big dam projects such as Çakmak, Hamzadere, Sultanköy, Karpuzlu and Koyuntepe and the signing of five-year water protocol with Bulgaria were regarded as necessary in 1993. The water price can be paid by the rice cultivators.[585] Turkey paid 48 billion TL to Bulgaria to get 32, 6 million m^3 of water in 1993. Thus 96446 decars of rice fields were saved and 174 milliard income was obtained.[586]

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konuşması ve Devlet Bakanı Necmettin Cevheri'nin cevabı, (TBMM Tutanak Dergisi, July 08,1993),https://www.tbmm.gov.tr/tutanak-larr/TUTANAK/TBMM/d19/c038/tbmm19038125.pdf

582 "Meriç Nehrine Deniz Suyu Tepmesi için Erken Tedbir Alınmalı," *Edirne,* March 26, 1992.

583 İlhan Ceylan, tape-recorded interview by the author, Rahmanca, Meriç, Edirne, Turkey, April 22, 2019.

584 "Bu Yıl Sulama İçin Su Bol," *Vatandaş,* March 28, 1996.

585 Edirne Milletvekili Erdal Kesebir'in, Trakya Bölgesindeki çiftçilerin sorunlarına ilişkin gündem dışı konuşması ve Sanayi ve Ticaret Bakanı Mehmet Tahir Köse'nin cevabı (TBMM Tutanak Dergisi, September 22, 1993) https://www.tbmm.gov.tr/tutanak-lar/TUTANAK/TBMM/d19/c040/tbmm19040006.pdf

586 "Trakya'da Barajların Durumu," *Edirne Haber,* January 15, 2001.

By the way, the evaluation of the 12 million m^3 water potential of the Meriç for the building of dams was made in 1960. Therefore, the building of Suakacağı Dam was discussed between Turkish and Bulgarian statesmen. However, in the case of its building, a large part of lands in Bulgaria would remain under water, thus the project lengthened out. Therefore, the intensive project about the building of these irrigation dams remained in the 1990s and the 2000s.[587]

In addition, the Minister of Agriculture Refaiddin Şahin said that the Ministry of Agriculture proposed a project on Turkish Rice Development in the amount of 63, 200,000 TL.[588] The drought in 70000 decars of rice field in 1985 resulted from the ignorance of the SHW, the political debates with Bulgaria, and the unproportioned situation between rice cultivated lands and the amount of water. Thus to solve this issue, the water release from Altınyazı Dam, Süleoğlu Dam and Karaidemir Dam to the Meriç and Ergene rivers could be made for a short amount of time.[589]

Apart from Kadıköy and Altınyazı Dam, Sultanköy Dam was aimed to store 27 million m^3 of water utilizing the Sarıcaali water pump from the Meriç River and irrigate 10641 hectares of lands.[590] 11. Regional Directorate of SHW projected the building of Sultanköy Dam on the Manastır stream that had 27 million m^3 water capacities in 1986. Thanks to this dam, the water could be pumped from the Meriç River and the irrigation of 80000 decars of rice in the Ergene Plain could be provided easily.[591] The tender of Sultanköy Dam was

587 "Hamzadere Barajında İnşaat Devam Ediyor," *Son Haber,* December 2, 2006.

588 Edirne Milletvekili Erdal Kesebir'in, Trakya çiftçisinin sorunlarına ilişkin gündem dışı konuşması ve Tarım ve Köyişleri Bakanı Refaiddin Şahin'in cevabı (TBMM Tutanak Dergisi, June 21, 1994) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d19/c063/tbmm19063120.pdf

589 Edirne Milletvekili Muhittin Yıldırım"in, İpsala ve çevresindeki çeltik üreticileriyle ilgili alınması gereken acil tedbirler konusunda gündem dışı konuşması (TBMM Tutanak Dergisi, September 24, 1985) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d17/c019/tbmm17019007.pdf

590 "Hamzadere Barajında İnşaat Devam Ediyor."

591 "DSİ XI Bölge Müdürlüğü Ergene Havzasındaki Çeltik Üreticilerinin Su Sorununu Ortadan Kaldıracak İpsala Sultanköy Barajını İhaleye Çıkardı," *Vatandaş,* July 15, 1986.

given to Antalya Canalette Construction Company in 1987. They specified that the building of the dam would be completed until 1990.[592] Therefore, 11 Regional Directorate of SHW allocated 276 million TL for the building of Sultanköy Dam.[593] Sultanköy Dam was begun to be used in rice irrigation in 1995. Thus, rice cultivated rice was expected to increase from 120000 decars to 160000 decars.[594]

When the dam projects of Koyuntepe and Hamzadere are completed, 335640 decars of land would be irrigated and 9750 decars of land would be protected from floods in Edirne in the 2000s.[595] Thus the rice cultivated lands would be 1400000 decars. Although 56 trillion was required for the building of Hamzadere Dam, only one trillion funds were allocated in 2005.[596] Yenikarpuzlu Irrigation Dam could store 44 million m^3 of water from Meriç to irrigate 4642 hectares of land. Moreover, the Hamzadere Dam that is located in the east of Koyuntepe village of İpsala was projected in 1962. However, its construction ended in 2012. Therefore 181 construction equipment and 263 personals worked in the building of Hamzadere Dam.[597] Hamzadere Dam that went out to tender in 1998 could store 213 million m^3 of water. It was aimed to irrigate 33564-hectare land and would protect 975 hectares from floods.[598] Thanks to Hamzadere Dam, 273350 decars of land would be irrigated in 28 villages of Keşan, İpsala and Enez. 50 percent of the project was completed in 2017.[599]

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592 "İpsala Sultanköy Baraj İhalesi Yapıldı," *Vatandaş,* September 11, 1987.

593 "DSİ'den Çeltikçilere Alarm,"

594 "Barajların Doluluk Oranı % 51," *Vatandaş,* March 31, 1995.

595 Işık Ocaklı, *Edirne İli Çeltik Sektörü Raporu,* (Edirne: Trakya Kalkınma Ajansı, 2012), 84.

596 Okan Gaytancıoğlu, "Türkiye'de çeltikte uygulanan üretim fiyat ve pazar politikalarının değerlendirilmesi" 84.

597 "Hamzadere Barajında İnşaat Devam Ediyor."

598 "Uzunköprü'de Yapılacak Çakmak Barajı 50,000 Dönümü Sulayacak," *Vatandaş,* April 25, 1994.

599 "Edirne Hamzadere Barajı Sulaması İle 273 Bin Dekar Zirai Arazi Sulanacak," DSİ Haber, June 29, 2017; accessed March 20, 2019, http://www.dsi.gov.tr/haberler/2017/06/29/edirne-hamzadere-baraj%C4%B1-sulamas%C4%B1-i-le-273-bin-dekar-zirai-arazi-sulanacak

Çakmak Dam has had 220 million m^3 of water and irrigates 52200-hectare land in 67 villages of Edirne named as the Southeastern Anatolian Project of Thrace. If the subsidy of the Çakmak project is not cut, it is expected to be completed.[600] The building projects of Hamzadere, Koyuntepe and Çakmak were dealt in 1995 due to water problems in the Meriç River and high rice production potentials of the region.[601] For the building project of Koyuntepe Dam, the buildings of roads that provide transportation to the dam were built with 24 milliard and 30 milliard subsidies in 1998 and 1999. MAPA Building Trade Joint Stock Company did not just complete the building of Koyuntepe Dam in 2000.[602]The Çakmak Dam project that required 65 million TL was planned. Thanks to these dam projects, the water of the Meriç River could be used more productively.[603]

All of these eight big dams in Thrace could store 618,971 m^3 of water in 2000.[604] However, the president of the Thrace Natural Resources and Energy Association Hüseyin Erkin said that only 25 percent of Thrace soils can be irrigated, the rest waited in hope irrigation farming in 2009. While 70 percent of Hamzadere Dam that has about 31126 hectares irrigation capacity completed, 30 percent of Çakmak Dam that was taken into the program and has had 52206 hectares irrigation capacity completed in 2009.[605] For their building, a 17,920,300,000 TL fund is required.[606] However, its building process continued slowly, only 30 percent of the dam could be completed between 2000 and 2009.[607]

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600 "Uzunköprü'de Yapılacak Çakmak Barajı 50,000 Dönümü Sulayacak," "DSİ'den Erdin Bircan'ın Çakmak Barajı ile ilgili açıklamalarına cevap," *Gündem,* February 09, 2016

601 "Barajların Doluluk Oranı % 51."

602 "Hamzadere Barajı Unutuldu mu?" *Önder,* November 13, 2000.

603 "Çakmak Barajı ve Meriç İletim Kanalı Projeleri Unutuldu mu?" *Adalet,* August 1, 2014.

604 "Trakya'da Barajların Durmu," *Önder,* January 15, 2000.

605 "Tarımsal Sulamada Sıkıntılar Yaşanıyor," *Son Haber,* January 17, 2009.

606 Edirne Milletvekili Cemaleddin Uslu'nun, Hamzadere Barajı'nın tamamlanmasına ilişkin sorusu ve Çevre ve Orman Bakanı Veysel Eroğlu'nun cevabı, (TBMM Tutanak Dergisi, June 5, 2009) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d23/c046/tbmm23046100.pdf

607 "Evren Bulut'un 8 Yıllık Rüyası Gerçekleşiyor," *Önder,* August 7, 2000.

Table 4.1 Dams in the Meriç Basin

Dams	Building Period	Launch Date	Irrigation Areas (Ha)	Capacity Million m^3
Altınyazı	1965-1970	1973	6500	33
Kadıköy	1965-1973	1975	4200	65
Sultanköy	1986-1990	1995	10064	27
Hamzadere	1999-2003	2019	34356	207
Çakmak	1995	-	52200	220

SOURCE T.C Tarım ve Orman Bakanlığı, DSİ, https://www.tarimziraat.com/ barajlar/edirne/

In rice irrigation, thanks to soil water cooperatives, there have been quite strict organization and division of labor in Edirne since the mid-1960s. The foundation of irrigation cooperatives also goes back to the 1960s in Turkey. They were established by the farmers who required the irrigation of their products from artesian wells, ponds, rivers, and dams. Thus, irrigation cooperatives that were established according to 1163 numbered law have been responsible for the building and organizing of irrigation infrastructures such as channels, the use of irrigation water and the providing of a waterman in cultivated lands.[608]

4. 2. 5. 2 Village Ponds in the Meriç Basin

Since irrigation water is one of the first preconditions for rice cultivation, rivers, lakes, village ponds, artesian wells, and dams are the water sources of rice fields. However, the building of village ponds in Edirne began to be seen in the 1970s. Artesian wells, boreholes, the Meriç, and Ergene Rivers had been mainly used in rice or sugar beet irrigation in the 1950s and 1960s.[609] Thanks to village ponds, 100000 decars of lands could be irrigated and opened to rice

608 T.C Gümrük ve Ticaret Bakanlığı, *Türkiye Kooperatifçilik Raporu (2016),* 42-43, accessed March 20, 2019, http://koop.gtb.gov.tr/data/592ea2dd1a79f514ac499aae/TKR-2016-2017%200804-BASIM.pdf

609 Nadir Türkel, "Trakya'da Yeraltı Sularından Faydalanmanın Önemi," *Pancar Çiftçi Dergisi,* (Mart 1967): 15.

cultivation. The dams or ponds in Edirne provided the use of water with balance and productivity. They both have prevented floods and provided water stock in periods when there have been droughts. While 93 villages of Edirne had sufficient water sources, 172 villages did not have sufficient water. 178 out of 266 villages of Edirne did not have electricity until 1978. Therefore, water pumps would be run with electricity rather than oil diesel from the mid-1980s onwards.[610]

The Minister of Village Affairs Lebit Yurtoğlu made a statement to the Anatolian Agency in 1964 that irrigation projects granted to peasants who aimed at founding a soil water cooperative. The expenses of irrigational infrastructural investment would be received by the state and conferred to the cooperatives.[611]

Thanks to its agricultural potential and suitable topography, 10, 000, 000 TL investments were allocated for the building of ponds and dams in Edirne in 1976.[612] In addition to the spread of soil water cooperatives, the project for the development of state irrigations of the Provincial Directorate of Agriculture and Thrace Agricultural Research Institute was implemented in the 23 villages of Edirne for five years to increase the extent of irrigable land and agricultural productivity in the 1970s.[613] Four irrigation projects that had 2,856,000 TL estimated cost and providing 1,500,000 TL incomes were implemented in 7500 decars of rice cultivated lands in Akçadam and Rahmanca villages of Meriç, Çöpköy sub-district of Uzunköprü, and Necatiye village of Havsa. Furthermore, they were four projects out of seven that would be implemented by Edirne Soil Water Chief Engineer in 1974.[614]

The prices of these pond projects were 2,000,000 TL. While the water capacity of Çöpköy pond had 750,000 m^3 Akçadam and Rahmanca ponds had 1,500,000 m^3. These ponds would be mainly used for agricultural irrigation

610 "Edirne İli Sorunları," *Vatandaş,* August 6, 1974.

611 "Küçük Sulamalar İçin Kooperatifler Kurulacak," *Vatandaş,* December 4, 1964.

612 "İlimizde Özellik Gösteren Gölet Yapımı Hızlandı," *Vatandaş,* May 24, 1976.

613 "İlimizde Devlet Sulamalarını Geliştirme Proje Çalışmaları," Vatandaş, February 12, 1976; "Sulama Kooperatifleri," *Vatandaş,* April 10, 1976.

614 "2,856,000 TL Keşif Bedelli 4 Sulama Projesi İhale Edildi," *Vatandaş,* June 8, 1974.

such as rice, vegetables, sugar beet, and potable water.[615] By the same token, Paşayenice pond in Meriç District was built by SHW in 1976 within the scope of Soil Water infrastructure with 453,000 TL investments.[616] Soil Water Chief Engineering built 15 ponds, drainage, and soil reclamation at the end of 1976. In the investment program of 1976, 15000 decars cultivated lands of 1110 farmer households benefited from a total of seven projects. This institution proposed eight projects for the 17000 decars of 1200 farmer households. 25,000,000 TL subsidies were allocated for the investment such as in Hıdırağa, Subaşı, and Karayayla villages in 1977.[617] SHW built 56 ponds and dams with 540,000,000 TL investments until the end of 1979. While Altınyazı Dam that had 33 million m^3 capacities irrigated 56000 decars, Süleoğlu Dam that had 34 million m^3 capacities irrigated 32000 decars and protected 6000 decars from floods. Furthermore, with the building of levee between Kapıkule and İpsala, 200000 decars of land in Meriç Plain could be irrigated and protected from floods. Thus, 90 percent of agricultural irrigation and potable water projects could be completed in Edirne at the end of the 1970s.[618]

615 "Uzunköprü Çöpköy, Meriç'in Akçadam ve Rahmanca Göletlerinin İnşaası Tamamlanıyor," *Vatandaş,* September 3, 1974.

616 "Paşayenice Göleti İnşaatı Sona Erdi," *Vatandaş,* January 10, 1976.

617 "Edirne Toprak Su Ekip Başmühendisliği 1977 Yılı İçin 26 Milyonluk Proje Teklifi yaptı," *Vatandaş,* July 10, 1976; "Toprak Su 3. Bölge Müdürler Toplantısı Dün Başladı," *Vatandaş, July 14, 1976.*

618 "DSİ XI Bölge Müdürü İlha Yükseloğlu Sulama ve Gölet Çalışmaları Konusunda Açıklamalarda Bulundu," *Vatandaş,* October 9, 1979; "DSİ'den Sulu Tarım Yapacak Trakya Çiftçisine Müjde Var," *Edirne,* January 18, 1992.



Figure 4.1 The Building of Kurtbey Pond
SOURCE: İpsala State Hydraulic Works (DSİ)

Edirne Soil Water Chief Engineering concentrated on the building of ponds, the reclamation of water channels, land leveling, and irrigation facilities to open 14300 decars of lands to irrigation with 90,000,000 TL investment price in Tayakadın, Dereköy, Subaşı, Enez, and Havsa in Edirne in the 1980s.[619] Four pond projects in Nasuhbey, Sığırcılı, Naipyusuf, and Alibey villages put out to tender. Their total prices were 158,701,389 TL.[620] Thanks to the irrigation projects of Village Services in Nasuhbey village of Meriç, both agricultural productivity and the varieties of agricultural products increased in 3000 decars in Meriç Plain in 1986. In addition to 32 village ponds, there were Altınyazı, Karaidemir, and Kadıköy, that could be used in the rice irrigation in Edirne. The building projects of Hamzadere, Sultanköy, and Çakmak Dams waited to be completed Therefore, 309500 decars of lands could be irrigated.

619 Toprak Su 1980 Yılı Çalışmalarını Bölgemizde Yoğunlaştırdı," *Vatandaş,* June 17, 1980.

620 "Köy Hizmetleri Müdürlüğü İlimizde Toplam 158,701,389 liralık 4 Baraj Projesini İhaleye Çıkardı," *Vatandaş,* July 28, 1986.

Since the farmers organized under Soil Water Cooperatives, they did not experience water problems in irrigation in 1992.[621] The water storing capacities of these dams were 556 million m^3 in Edirne in the 1990s.[622] 30 village ponds have been built since 2003. Similarly, the building of 30 village ponds as a project is thought to be built in Edirne in 2014.[623]

However, SHW demanded to transfer these ponds to irrigation cooperatives. The irrigation of rice required an organization of meeting among the governor, district governors, village headmen, and the bureaucrats of SHW in Edirne in 1996. They talked about the building of 13 underground irrigation projects, one dam, and four ponds in Edirne.[624] In addition to 39 village ponds, Altınyazı Dam, Kadıköy Dam, and Süloğlu Dam that had been built between 1965 and 1981 were transferred to irrigation cooperatives or village legal entity between 1998 and 2000.[625] Since the water capacities of Süleoğlu and Kadıköy Dams were used for the potable water requirements of Edirne and Keşan, the irrigation of rice fields became more difficult.[626] Due to the irrigation of rice, rice growers may experience bureaucratic obstacles. For example, when rice growers in İpsala demanded the building of culvert on the levee to irrigate their 80000 decars of rice fields, some public authorities made opposition. Thus, rice growers thought this opposition was detrimental to rice that was national wealth.[627]

621 "DSİ'den Sulu Tarım Yapacak Trakya Çiftçisine Müjde Var."

622 "Trakya'da Bu Yaz Su Sıkıntısı Yok," *Vatandaş,* July 7, 1997.

623 T.C Orman ve Su İşleri Bakanlığı, "Edirne," accessed March 10, 2018, 9-17; http://basinhaber.ormansu.gov.tr/osb/Files/GuncelHaberModulu/Edirne%20Bask%C4%B1.pdf

624 "Bu Yıl Sulama İçin Su Bol."

625 "DSİ Bölgede 41,000 Hektarı Suluyor," *Vatandaş,* November 21, 1998; "Baraj ve Göletler Sulama Kooperatiflerine Devredildi."

626 "Edirne ve Keşan Suya Kavuşurken Sulama Kanalları Boş Kalacak," *Vatandaş,* May 30, 1988.

627 "Çeltikçiler Sedden Bir Menfez İstiyor," *Vatandaş,* May 3, 1974.

4. 2. 5. 3 The Irrigation Projects of the Lower Kızılırmak and Lower Yeşilırmak Basin

The square measure of Samsun is 957888 hectares and 47 percent is agricultural land, 40 percent is forest and 5 percent is a meadow. The extent of cultivated lands is 4882090 decars. 811150 decars of lands out of 3212210 irrigable lands can be irrigated. While 619090 decars were irrigated by people, 192060 decars were irrigated by SHW. As a result of the projects of SHW and the General Directorate of Rural Services, 150000 hectares will be opened to irrigation. Namely 14.8 percent of lands are irrigated.[628] Almost 60 percent of rice growers had used bore water and 40 percent of them had benefited from the Kızılırmak and Yeşilırmak until the 1980s. Drought made rice irrigation difficult in this period.[629] With the building of Suat Uğurlu and Derbent Dam, 694740 decars of land in Çarşamba Plain and 407910 decars of land out of 900,000 decars in Bafra Plain would be opened to irrigation in the 1980s. Thus, the size of rice cultivated land increase two or three times. This means the increase of the share of rice in Çarşamba Plain from 6.7 percent to 28.5 and in Bafra Plain from 6.9 percent to 12 percent.[630] There have been polyculture farming in these plains such as wheat, bean, rice, tobacco, water melon fields, sunflowers, vegetables, and sugar beet.[631]

The water measurement of Yeşilırmak for dam planning firstly began in 1939 and continued about thirty years. When the building of dams on Yeşilırmak was decided, the projects and technical control were given to Consortium of Engineers Electric Power Development Cooperation in Tokyo in Japan in 1969. SHW tendered the building of Hasan Uğurlu Dam to Doğuş Building and Trade Cooperation and Ercüment Sevgen Firm Group in 1971.[632]

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628 İsmail Sezer and Zeki Mut, "Samsun İlinde Çeltik Tarımının Durumu," 58-59; Atilla Ocaktan, *Samsun Yöresinde Şekerpancarı, Çeltik, Soya, Domates, Biber, Patlıcan ve Hıyar Üretimi ve Maliyetleri*, 10.

629 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi,* 19.

630 "Suat Uğurlu Baraj İnşaatı Tamamlandı," *Mücadele,* May 9, 1982.

631 Atilla Ocaktan 21.

632 İbrahim Balaban, "Hasan Uğurlu Barajı, *Sivas Postası,* April 5, 2019.

Thanks to the building of Hasan and Suat Uğurlu Dams were between 1971 and 1982, the building of Altınkaya Dam was between 1980 and 1989 and the building of Derbent Dam was between 1984 and 1990, Kızılırmak and Yeşilırmak were used to produce electricity and agricultural irrigation. The first drainage etudes and the reclamation of the Bafra Plain began in the 1960s. There were main channels connected to Kızılırmak to irrigate the plain.[633] However, the altitudes of 75 percent of the cultivated lands are lower than 2 meters, drainage of water has been a big problem.[634] After the drainage of 16.000 km in 1970, irrigation projects were begun to be talked as a necessity for higher agricultural production.[635] Thus the irrigation and drainage of Bafra and Çarşamba Plains began at the end of 1980s as surveying.[636]

Suat Uğurlu Dam has a 36,100 km² drainage area and Yeşilırmak has 4,6 milliard m^3 water capacity. Thanks to the building of Hasan and Suat Uğurlu Dam, 67000 hectare lands could be protected from floods.[637] Hasan Uğurlu Dam that was the second biggest dam in Turkey would produce 1,040,000,000 kilowatt electricity.[638] Thanks to Hasan Uğurlu Dam, it was expected to be two harvests yearly in Çarşamba Plain that was irrigated by Yeşilırmak. Moto pumps were used in this irrigation.[639] Besides, the cultivated lands could be

633 H. Arslan, M. Güler, B. Cemek, Y. Demir, "Bafra Ovası Yeraltı Suyu Kalitesinin Sulama Açısından Değerlendirilmesi," *Tekirdağ Ziraat Fakültesi Dergisi* 4, no. 2 (2007): 221.

634 Abdulveli Sürat, İsmail Sezer and Hasan Akay, "Kızılırmak Deltasında Organik Çeltik Tarımı," *GÜFBED* 2, no. 2 (2012): 78.

635 "Bafra Ovası Sulama Projesi," *Hürsöz,* September 1, 1976.

636 Samsun Milletvekili Sayın Ali Eser, Samsun'un, Türkiye genelinde, yerine mütenasip hizmet alamadığı; özelde, Bafra ve Çarşamba ovalarının ihmali, havaalanı ihtiyacı, üniversitenin sorunları, ziraî üretimle ilgili konuları hakkında gündem dışı konuşması, (TBMM Tutanak Dergisi, November 23, 1989) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d18/c034/tbmm18034037.pdf

637 Samsun Milletvekili Hasan Altay' in, Aşağı Yeşilırmak Ovası sulama projesine ilişkin sözlü sorusu ve Enerji ve Tabiî Kaynaklar Bakanı Sudi Türel'ın cevabı, (TBMM Tutanak Dergisi, April 10, 1986) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d17/c027/tbmm17027091.pdf

638 "Türkiye'nin 2. Büyük Barajı 20 Kasımda Enerji Üretimine Başlıyor," Vatandaş, November 2, 1979.

639 "Çarşambadaki Ekili Araziler Motopompla Sulanıyor," *Hürsöz,* August 12, 1976.

saved from floods in Çarşamba Plain in the mid -1970s.[640] Furthermore, with the building of the Kumköy Regulator in 1986, the irrigation of 83313 hectares was predicted. The expenses of these investments in Çarşamba Plain was 76 milliard 700 million TL in 1986.[641] In total sum spent on the irrigation project in Çarşamba and Bafra Plain was 140,045 trillion TL. The building of the Kumköy Regulator was about to be completed. Since Çarşamba and Bafra plains are delta, their annual irrigation water requirement can be received from the dams. Although the first land reclamation projects began slowly in the 1960s, they were mainly implemented in the 1980s. In the case that the subsidies are paid, the irrigation and drainage that were begun in the 1980s by SHW in Bafra could be completed in 2007, and those of Çarşamba could be completed in 2010. The land reclamation in the western part of the Bafra Plain ended but the eastern parts have continued.[642]

Although an expropriation was determined in 1952 according to the general rules of international law in the Paris Protocol that was the supplement of the European Convention on human rights, during the expropriation of lands for the building these dams, some people experienced unjust treatment such as late payment and short change in Samsun. Due to these expropriations, many peasants migrated to cities and unemployed. The World Bank warned the SHW to comply with human rights since there have been 40000 legal cases since 1989.[643] In addition to Kızılırmak, Yeşilırmak and big dams

640 "Hasan Uğurlu Barajı Yılda 1 milyar 250 milyon kw Saat Enerji Üretecek," *Hürsöz,* August 25, 1976.

641 Samsun Milletvekili Hasan Altay' in, Aşağı Yeşilırmak Ovası sulama projesine ilişkin sözlü sorusu ve Enerji ve Tabiî Kaynaklar Bakanı Sudi Türel'ın cevabı, (TBMM Tutanak Dergisi, April 10, 1986)

642 Samsun Milletvekili Sayın Mustafa ÇAKIR'ın Enerji ve Tabi Kaynaklar Bakanı Hilmi Güler'e tevcih ettiği, 7/1813-4260 esas no'lu yazılı soru önergesi T.B.M.M. İç Tüzüğünün 99 maddesi gereği DSİ Genel Müdürlüğünde alınan yazılı bilgiler doğrultusunda cevabı (TBMM Tutanak Dergisi, January 27, 2004) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d22/c039/tbmm22039047.pdf ; Şükrü Derebey and Temel Kaya, tape-recorded interview by the author, Bafra, Samsun, Turkey, April 30, 2019

643 Samsun Milletvekili Ali Eser ve 22 arkadaşının, baraj projeleri nedeniyle gerçekleştirilen toplu kamulaştırmaların neden olduğu sorunları tespit etmek amacıyla Meclis araştırması

such as Hasan Uğurlu, Suat Uğurlu, Derbent, and Altınkaya, some artesian wells have been used in rice irrigation. In contrast to Edirne, neither there are adequate numbers of villages' ponds nor have they been used in a rice irrigation in Samsun. However, rather than soil water cooperatives, rice growers have organized under irrigation unions. However, the administrations of these irrigation unions were transferred to SHW in Samsun in 2018.[644] For example, while 60 percent of lands are irrigated by bore water, 40 percent of the lands were irrigated by rivers in the 2000s.[645] SHW Irrigation unions from 1994 onwards are regarded as more autonomous and controllable in Samsun. On the contrary, sometimes irrigation cooperatives might be under the arbitrary treatment of their chief or village headmen.[646] Although the rice cultivated lands in Samsun increased about two times, irrigation unions of Samsun have still implemented twenty years of irrigation projects since 1980. Thus, some rice growers of Samsun think that their irrigation system is not productive.[647] In contrast to Edirne, there is not a strict and detailed organization in Samsun in rice irrigation.

açılmasına ilişkin önergesi, (TBMM Tutanak Dergisi, March 13, 1990) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d18/c042/tbmm18042088.pdf

644 "Bafra'da Sulama Birlikleri DSİ'ye Devredildi," *Samsun Gazetesi,* May 29, 2018.

645 İsmail Sezer and Zeki Mut, "Samsun İlinde Çeltik Tarımının Durumu," 63.

646 Önder Çırak, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 06, 2018.

647 Şükrü Derebey and Temel Kaya, tape-recorded interview by the author, Bafra, Samsun, Turkey, April 30, 2019.



Figure 4.2 Altınkaya Dam in Samsun

SOURCE: *Gazete Gerçek*, June 11, 2018

Table 4.2 Dams in the Lower Kızılırmak and Lower Yeşilırmak Basins

Dams	Building Period	River	Irrigation Areas (Ha)	Capacity m^3
Hasan Uğulu	1981-1991	Kızılırmak	-	1018360000
Suat Uğurlu	1985-1991	Kızılırmak	83312	182461000
Derbent	1984-1990	Yeşilırmak	4772	212500000
Altınkaya	1984-1990	Yeşilırmak	47727	5673000000

SOURCE T.C Tarım ve Orman Bakanlığı, DSİ https://www.tarimziraat.com/barajlar/samsun/

4. 2. 5. 4 The Irrigation Projects in the Karacadağ Agriculture Basin

There is drought, low fertility and poverty in the Karacadağ Agriculture Basin where agriculture and livestock breeding are means of living. Since this basin is located in the eastern part of Şanlıurfa such as Siverek and Viranşehir and the western part of Diyarbakır such as Çermik, Ergani and Çınar, and also the northwest district of Mardin such as Derik. The rice fields in Karacadağ have been irrigated with water sources or fountains in the mountainsides of Kara-

cadağ in the 1950s and the 1960s. While perennial irrigation has been implemented in the rice fields of Siverek,[648] intermittent flow irrigation is also implemented in Diyarbakır.[649]

In general, Diyarbakır has 6015635 decars of cultivated land. 4190000 decars of these lands are suitable for irrigation. However, only 15 percent of these irrigable lands could be irrigated in 2014.[650] Şanlıurfa has 11071140 decars of cultivated lands and 390000 decars could be irrigated today.[651] However, these irrigation facilities increased cotton rather than rice farming in the region.

The projects of SHW first started to be seen in the 1960s with the opening of artesian wells in the Karacadağ Agriculture Basin and the building of village ponds, such as Gözegöl pond, Nusaybin Çağ pond and Ortaviran pond.[652] 10. Regional Directorate of SHW moved from Elazığ to Diyarbakır in 1957.[653] Furthermore, SHW tried to use underground water to increase agricultural production in the Karacadağ Agriculture Basin. In this context, the first works began in the Derik districts of Mardin.[654] Therefore, as water sources of Karacadağ rice have been mineral water, boreholes and the reaches of the Dicle River for centuries. Furthermore, the village ponds which the peasants of Karacadağ mainly used in rice irrigation were built in the mid-1980s. Due to being snow-fed water sources in Karacadağ, the water temperature is both

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648 "Urfa İli Çevresi İçinde Yapılan Çeltik Ziraatı," *Yenilik,* June 8, 1949.

649 *Resmi Gazete,* December 21, 2014.

650 GAP Uluslararası Tarımsal Araştırma ve Eğitim Merkezi, *Tarımsal Veriler,* (Diyarbakır: Furkan Matbaa, 2015).

651 "Ekilebilir Alanlar ve Sulamalı Tarım," http://www.investsanliurfa.com/karacadag-kalkinma-ajansi--582 March 20, 2019.

652 "DSİ'nin Faaliyetleri Başlamak Üzeredir," *Diyarbakır,* January 24, 1963.

653 "DSİ 10. Bölge Müdürlüğü Teşkilatı," *Dicle,* October 11, 1957.

654 "DSİ Teşkilatı Faaliyete Geçmek Üzeredir," *Diyarbakır,* June 1, 1963.

low and rich in mineral.[655] Although there is no adequate rain-fall, the Karacadağ Agriculture Basin is rich in water sources.[656]

In the development of rice cultivation in Karacadağ, the building of Devegeçidi Dam between 1965 and 1972 years was the first prominent project. Devegeçidi Dam had firstly 187 million m^3 water capacity and could irrigate 110000 decars of lands.[657] However, the final construction work of the Devegeçidi Dam was completed in 2010. While 62 percent of the water of this dam was used in rice cultivation in 1973, 85 percent of its water was used for cotton irrigation in the 2000s. Due to plant diseases in Cilician cotton, the building of dams in Karacadağ, and working as seasonal workers in the cotton fields of Çukurova, cotton farming began to be more widespread in Southeastern Anatolia from the mid-1980s onwards. Therefore, the irrigation for rice farming from Devegeçidi Dam ended in 1989 completely.[658] Besides, the agricultural supports of the government are influential in the development of cotton farming.[659] Rice growers irrigated their fields through electrical water pumps and they shared water for a length of time in Ergani in the 1980s.[660]

Karakaya Dam had been built between 1976 and 1988 on the Fırat River that has 30 milliards m^3 annual water capacity near Çüngüş. It had 9,5 milliard

655 Diyarbakır Milletvekili Mahmud Altunakar'ın, Güneydoğu Anadolu'da meydana gelen kuraklık ile bunun sebep olduğu kıtlık ve yokluk tehlikesi ve alınması gerekli önlemler konusunda gündem dışı konuşması (TBMM Tutanak Dergisi, May 21, 1987). https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d17/c041/tbmm17041109.pdf; Resmi Gazete, December 21, 2014: 25; İlhan Avcı, tape-recorded interview with the author, Diyarbakır Turkey August 10, 2018.

656 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesinde Çeltik Tarımının Bugünkü Durumu*, 11.

657 "Devegeçidi Barajı Dolup Taştı," *Yeni Zaman,* April 15, 1974.

658 Nazime Demir, "Diyarbakır Devegeçidi Sulama Şebekesinde Sulama Sorunları," (M.A Thesis, Selçuk Üniversitesi Fen Bilimleri Enstitüsü, 2008), 28-29; Hüseyin Başal, "Türkiye'de Pamuk Tarımı," *Türktob* (Nisan 2017), 7.

659 Lale Taş, tape-recorded interview by the author, Şanlıurfa, Turkey June 26, 2019.

660 Kardaş Ailesi, tape-recorded interview by the author, Yenişehir, Diyarbakır, Turkey, August 09, 2018.

m^3 water capacity and the total cost was 99,2 milliards TL in 1987.[661] However, at the beginning of its building 55 million was spent in 1974.[662] However, its total cost was expected as 6,5 milliards and it had 9 milliard m^3 water capacity.[663] The building of Devegeçidi and Kralkızı Dams would be important water sources in the irrigation of Hoşot and Gevran Plains which has almost 30000 hectares.[664]

While Devegeçidi Dam had been built between 1965 and 1972 on Devegeçidi reach of Dicle, Kralkızı Dam was built on Maden reach of the Dicle River between 1985 and 1997. It has 520 million m^3 water capacity. To irrigate 300000 decars of land, the Regional Directorate of Road, Water and Electricity decided to implement nine projects in Siverek, Viranşehir and Halfeti. Its value was 41 million.[665] Similarly, the Regional Directorate of SHW opened some irrigation wells in Ergani to irrigate 1500 decars of land. For this project, 350 billion TL was spent. While 35 percent of cultivated lands could be irrigated around Turkey in the 1970s, it was only 5 percent in Diyarbakır.[666] The water sources and hydroelectric plant of Southeastern Anatolia can irrigate 687000 hectares and have 19 milliard kilowatts of electricity potentially. On the contrary, only 66000 hectare of lands that corresponds to 8 percent of total lands can be irrigated and 39 percent of electricity is received from Southeastern Anatolia in the beginnings of the 2000s.[667] Çınar Göksu Dam that had been built between 1987 and 1991 completed in 1996. This dam was projected for agricultural irrigation in the western part of Diyarbakır.[668] Şerifbaba Dam

661 Savaş Uşkay, "Güneydoğu Anadolu Projesi DSİ Çalışmaları," *Türkiye İnşaat Mühendisliği 9. Teknik Kongresi, Bizim Büro Basımevi* 2 (16 November 1987), 9.

662 "Karakaya Barajına Bu Yıl 55 Milyon Lira Harcanacak," *Yeni Zaman,* June 1, 1974.

663 "Karakaya Barajı İnşaatına Gelecek Yıl Başlanacak," *Yeni Zaman,* October 4, 1974.

664 "Ergani Tarihçesi 3" *Ergani Söz,* 11 November 2004.

665 "Diyarbakır ve Urfa'da Sulama Projesi Gerçekleşiyor," *Yeni Zaman*, November 11, 1974.

666 "Bereketli Köyünde Su Sevinci," *Ergani Söz,* August 5, 2004.

667 Diyarbakır Milletvekili Nurettin Atik'in Çiftçi Sorunları, Tarımsal Sulama ve Ekonomi hakkındaki konuşması (TBMM Tutanak Dergisi, February 13, 2001). https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d21/c054/tbmm21054057.pdf

668 DSİ 10. Bölge Müdürlüğü, http://bolge10.dsi.gov.tr/isletmedekitesisler/sulama accessed March 20, 2019.

between Çınar and Derik districts has irrigated 1300 decars of rice fields since 1998.



Figure 4.3 Rice Irrigation Pond in Karacadağ
SOURCE: *Şanlıurfa Olay*, May 13, 2015

Table 4.3 Dams in the Karacadağ Agriculture Basin

Dams	Building Period	Irrigation Areas (Ha)	Capasity Million m^3
Devegeçidi	1965-1972	11000	187
Karakaya	1976-1987	-	9.5
Kralkızı	1985-1997	30000	520
Göksu	1987-1995	3582	1.6
Dicle	1986-1997	126080	585

SOURCE T.C Tarım ve Orman Bakanlığı, DSİ https://www.tarimziraat.com/barajlar/diyarbakir/

4. 2. 5. 5 Southeastern Anatolian Project (GAP) and Agricultural Irrigation

GAP was first planned as the development of water and soil sources in the 1970s such as agricultural irrigation and hydro-electrical power. It would be implemented in the 70,000 km² areas between Fırat and Dicle where Şanlıurfa, Gaziantep, Diyarbakır, Mardin, Siirt and Adıyaman provinces were located.[669]

Although the elementary idea of GAP was the water use,[670] it was turned into multi directional regional development plan that includes agrarian, education, and health transportation and industry sectors in 1989.[671] However, since the expropriated prices were determined 2 or 3 times higher by valorization commission, the State Hydraulic Works did not accept and demanded a revision.[672] These can be regarded as a part of Southeastern Anatolian Projects which has been an integrated regional development project of hydro-electric power in the Dicle and Fırat Rivers, agricultural irrigation, socio-economic welfare and infrastructural investment.

With the development of irrigation infrastructure, the cultivation of cotton, lentil and sesame developed rather than rice in this region.[673] Therefore, GAP is a project that can be transferred from generation to generation and similar to the international reflections of water issues in the Meriç River, the GAP created political tensions with other Middle Eastern countries. It has

669 Savaş Uşkay,"Güneydoğu Anadolu Projesi DSİ Çalışmaları," 7.

670 "Her Ay Bir Baraj," *Diyarbakır'daki GAP,* (Mart 1990): 15.

671 T.C Sanayi ve Teknoloji Bakanlığı, GAP Bölge Kalkınma İdaresi Başkanlığı, accessed June 18, 2019, http://www.gap.gov.tr/gap-nedir-sayfa-1.html

672 T.C. Enerji ve Tabiî Kaynaklar Bakanlığı 9.4.1997 Devlet Su İşleri Genel Müdürlüğü Emlâk ye Kamulaştırma Dairesi Başkanlığı Sayı: B. 15.1. DSİ.0.18.02.00/510 Konu: Kamulaştırma bedellerinin belirlenmesi (TBMM Tutanak Dergisi, December 2, 1998) https://www.tbmm.gov.tr/tutanalar/TUTANAK/TBMM/d20/c066/tbmm20066027.pdf

673 "Bismil," *GAP'ta Diyarbakır,* (Adana: Kemal Matbaası 1990), 20.

been implemented since 1983 and 15 percent of investment funds were allocated to GAP in the 1990s.[674]

§ 4.3 The Contribution of the Government to the Agricultural, Economic and Institutional Development of Rice Farming

Legal regulations and public investments in rice cultivated lands support the settlement of rice culture and regulate the method of rice farming. Besides, Agricultural Research Institutes contributes to the agricultural and biological development of rice. Agricultural Credit Cooperatives, Irrigation Cooperatives, and the Fertilizer industry contributed both the agricultural and the institutional development of rice. The Agricultural supports of the government and TGB contributes to the development of the rice economic sector.

4. 3. 1 *The Role of Agricultural Research Institutes in the Development of Rice in Turkey*

The contribution of the government in research and development has become influential in the development and the spread of rice farming in Turkey. Therefore, as public institutions, the rice variety breeding and the production of certified seed projects of some Agricultural Research Institutes give idea about the development of rice agriculture in the historical process.

The first rice variety breeding was begun at the beginning of the twentieth century in the rice varieties selected for local adaptation by farmers who had no knowledge about genetic principles. In the first decade of the twentieth century, agricultural experiment stations were founded in every rice -growing country of tropical Asia. The rediscovery of Mendel's Law of inheritance in 1900 has set back selection activities. This led to the attention of researchers

674 "GAP'ın Sosyal ve Ekonomik Boyutları Diyarbakırda Tartışıldı," *Diyarbakırdaki GAP Dergisi,* (June 1990), 5.

and workers in India and Indonesia to the study of the inheritance of qualitative characteristics of rice.[675]

The work of rice variety breeding was begun at General Agricultural Research Station in Bogor of Java in Indonesia in 1905. While the first selection works had been relating the purification of rice varieties until 1926, the mass selection was made through varietal collection in lowlands in Monsoon Asia. Although the work of rice variety breeding began in 1902 in the Philippines, it had been limited until the Second World War. Immediately after the war, food scarcity and the increasing population of Monsoon Asia led to the supply of staple foods.[676] It was preferred in terms of grain quality and more adapted to Tropical Asia through selection. Hybridization was made through the different characteristics of distinct rice varieties.[677]

In India, rice breeding works were firstly begun in East Bengal by economic botanists at Dacca research station in 1911. These works continued in Madras and Coimbatore. Furthermore, the Indian Council of Agricultural Research has sponsored and aided rice variety breeding projects since 1929.[678] The rice variety breeding aims of India were to research on vegetation period, yield potential, grain quality, and the toleration of rice varieties to salinity and flood.[679]

After the International Rice Research Institute was founded by Ford and Rockefeller waqfs in the Philippines in 1960, highly productive rice varieties were bred and spread into the different parts of the world. Thus, rice production increased around the world two times.[680] The first rice variety breeding works that aimed at developing new rice varieties complied with 12 ecological regions began in Japan in 1927. In these breeding works, new rice varieties that were highly productive, resistant to diseases and had more qualified grain

675 N. Parthasathy, "Rice Breeding in tropical Asiaup to 1960," In *Symposium on Rice Breeding,* Los Banos, (IRRI, 1972), 6.

676 Ibid., 7-24.

677 Halil Sürek, *Çeltik Tarımı,* 200.

678 N. Parthasathy, "Rice Breeding in tropical Asiaup to 1960," 14.

679 Halil Sürek, *Çeltik Tarımı,* 200.

680 Ibid., 201.

were developed. There were 16 breeding stations in Japan. While seven of them were national institutions, the rest was prefectural.[681]

Finally, the first rice breeding works initiated in the Crowley Station of Louisiana Province in the USA in 1909. Furthermore, the breeding programs of Agricultural Research Services, the United States of Agriculture, and the State Agricultural Experiment Stations in Louisiana, California, Texas, and Arkansas opened in 1931.[682] The aims of breeding works in the USA were to develop small, middle, and long-grain rice varieties.[683]

When it comes to Turkey, rice breeding works started to be seen exactly in the beginnings of the 1980s. Since Turkey had imported rice from abroad until 1927,[684] rice cultivation was limited; the development of rice farming and scientific studies were not to seen. After the enactment of the Rice Cultivation Law of 1936 and the rice testing fields in Tosya and Maraş in 1937, the studies on the growth of different rice varieties, their water quality, the sanitary, and agricultural measures of rice farming were done. Furthermore, according to the report of Italian rice specialist M. Civani Sanpiyetro in the 1930s, Tosya was the most suitable region for rice farming in Anatolia. Then Harun Aziz Bey who had training on rice in Italy solved an expert problem in the field and tested 44 rice varieties in the testing fields of Tosya in the 1930s and the 1940s.[685]

Institutionally, Antalya Summer Growing Plants Station was opened in 1937 to develop higher yield rice varieties and import Italian rice varieties such as Carolina and Blue-Rice.[686] Apart from Antalya Summer Growing

681 Shiro Okabe, "Breeding for High Yielding Varieties in Japan," In *Symposium on Rice Breeding,* Los Banos (IRRI, 1972): 47-49.

682 T.H Johnston, N. E Jodon, C. N. Bollich, and J. N. Rutger, "The Development of Early Maturing and Nitrogen-Responsive Rice Varieties in the United States," In *Symposium on Rice Breeding*, (Los Banos: IRRI, 1972): 61.

683 Halil Sürek., 201.

684 Fuat Soydan," Türkiye'de Çeltik Ekim Mıntıkları," *Dönüm,* no: 11 (September 1940): 461.

685 Ufuk Tidim, "Tosya Pirinci 1929'da Anadolu'nun En İyisi Seçildi."

686 Rahmi Çeltik," Türkiye'de Pirinç Ziraatı,"; 28-29; Zafer Toprak, "Türkiye Tarımı ve Yapısal Gelişmeler," In Türkiye'de Tarımsal Yapılar (1923-2008), Edited by Şevket Pamuk and Zafer Toprak (Ankara: Tarih Vakfı Yurt Yayınları, 2008), 27.

Plants Institute, there had not been any institute that researched on rice until the 1950s. When the rice cultivation was forbidden in 1941 in Antalya, the rice studies of the institute in Antalya stopped. Therefore, some local studies about rice were realized in the Tosya District of Kastamonu and Kızılcahamam District of Ankara to do research on local rice varieties and to determine the foreign rice varieties that were suitable for the climate conditions of Turkey.[687]

While scientific rice research studies began in the USA in 1915 and Japan in 1930,[688] these studies began in Tarsus Irrigated Farming Research Institute in İçel and Yeşilköy Agricultural Research Institute in İstanbul in the 1960s. Institutionally, Tarsus Irrigated Farming Research Institute was firstly founded with the name of Alifakı Irrigated Farming Trying Station in 1947. Its name was changed in 1956 to Tarsus Irrigated Farming Research Institute. Then it would be Tarsus Research Institute in 1971, Rural Services Tarsus Research Institute in 1985, and finally took the name of Soil and Water Sources Research Institute in 2005.[689] Since Tarsus Irrigated Farming Research Institute had separated from the Ministry of Agriculture and began to work under the Ministry of Village Affairs influenced its rice research. In this context, the activities and the policies about the production of qualified rice seed were limited.[690] State Hatcheries were not interested in the production of pedigree seeds of rice in the 1950s and the 1960s.[691]

Tarsus Irrigated Farming Research Institute did research on the reclaimation of salty and alkali soils through rice cultivation, sowing methods of rice, the water requirement of rice, the influence of fertilization and irrigation on rice yield, and the yield testing of distinct rice varieties. In the spread

687 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişirme Değerleri Üzerine Araştırmalar*, 30.

688 Halil Sürek, tape-recorded interview by the author, , Edirne, Turkey August 13, 2018.

689 T.C Tarım ve Orman Bakanlığı, Tarımsal Araştırma Enstitüleri Tarihçe accessed December 12, 2018, https://arastirma.tarimorman.gov.tr/alata/Sayfalar/Detay.aspx?TermStoreId=368e785b-af33-487d-a98d-c11d5495130b&TermSetId=de3f1ff9-4643-427d-8d7f-f87522399d79&TermId=7f477a6a-a8ea-4497-9ddb-173030b5be42&UrlSuffix=22/Tarihce

690 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişirme Değerleri Üzerine Araştırmalar* 96.

691 Halil Sürek, *Çeltik Tarımı,* 202.

and popularity of Egypt rice and IR-8 rice varieties, this institute had a special place.[692] Furthermore, since rice seeds degenerated, the Ministry of Agriculture imported 20000 sacks of rice seed from Egypt in 1961.[693]

Yeşilköy Agricultural Research Institute started rice research in the testing fields of the institute in Edirne in 1965. Yeşilköy Agricultural Research Institute mainly dealt with the lodging of rice, vegetation, kernel weights, fertilization, rice varietal purity the grain pulling out, and the yield conditions of 51 varieties in its testing fields. They found that 19 rice varieties out of 51 complied with the climate conditions of Turkey such as Maratelli, R. Bersani, and Sezya Therefore, 20543 tons of pedigree seeds were obtained from these varieties. In order to protect the varietal purity of rice, elite and original seed production program were begun. In this context, the elite and original seeds of R. Bersani, Maratelli, and Sezya were produced and the yield testing of these rice varieties was successful in 1967-1968. Furthermore, the production of Italian origin rice varieties such as Rialto, Roma, Arberio and Baldo were begun in 1969. The yield testing of rice variety in Yeşilköy focused on resistance to lodging, vegetation period, grain pulling of rice varieties, and laboratory analyses about paddy yield and kernel weights.[694]

For rice variety breeding, new rice varieties were imported from Italy and the Philippines. With the equipment and adaptation studies, yield and agronomy testing were done. Rialto rice variety was presented as a member for registration in 1976.[695] Yeşilköy Agricultural Research Institute opened a branch to cultivate rice farming in 500 decars of lands in the position of Meriç and Domuzbucağı in Karpuzlu Village of İpsala in 1957.[696] Besides, to receive the rice seed needs of farmers, Sezya, Maratelli, and R. Bersani rice varieties were cultivated in 500 decars in Sarısazlık position of İpsala in 1963.[697]

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692 Ibid., 201; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 93-95.

693 "Pirinç Tohumu İthal Ediliyor," *Bizim Köy,* January 24, 1961.

694 Halil Sürek, *Çeltik Tarımı,* 202; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 96.

695 "Edirne Zirai Araştırma Enstitüsü Yeni Araştırma Projeleri Üzerinde Çalışıyor," *Vatandaş,* May 15, 1976.

696 "Zirai Araştırma Enstitüsü Bir Şube Açtı," *İpsala Doğuya Sesleniş,* April 10, 1957.

697 "Edirne Deneme İstasyonunun Verimli Çalışmaları, "*Vatandaş,* July 18, 1963.

Fikret Sezen who was one of the specialists of Yeşilköy Agricultural Research Institute and a Chinese agricultural specialist from FAO said that İpsala Plain was the most suitable position for rice cultivation in Meriç Plain and Europe in 1958. However, since only one-tenth of the Meriç Plain could be used, they emphasized the building of levee and discharge channels along the Meriç River to enlarge rice cultivated lands. Since rice was a staple food and a medicinal plant in pharmacy, some measures had to be taken to rice production. Furthermore, the people of İpsala demanded the building of a paper mill to produce paper from the stem of rice.[698] However, Yeşilköy Agricultural Research Institute transferred rice studies to Thrace Agricultural Research Institute in 1965.[699] Although scientific studies were done on the foreign rice varieties in agricultural bureaucracy, the credit mechanism, the financial and economic system of the Agricultural Bank influenced the spread of new foreign rice varieties in the socio-economic life of rice growers.

4. 3. 2 *State Bureaucracy and Rice Farming: The Leading Role of Rice Growers*

While local rice varieties were used in the 1930s, foreign rice varieties were cultivated in the 1960s in Turkey.[700] In the importation of foreign rice seeds, farmers experienced bureaucratic problems in Uzunköprü in 1962. Since Uzunköprü Agricultural Bank provided a 10,000 TL loan instead of 40,000 TL, many rice cultivators gave up imported rice seed from Italy and paid 70 TL price gap to buy it from Agricultural Equipment Institution.[701]

Moreover, even though there was a list of credit demanders, Agricultural Banks in Keşan and İpsala rejected the demand of farmers for import rice seed because their rice seed did not degenerate and they could buy imported seed

698 "Çeltik Ekimine En Müsait Ova İpsala'dır," *İpsala Doğuya Sesleniş,* November 12, 1958.

699 T.C Gıda Tarım ve Hayvancılık Bakanlığı, Trakya Tarımsal Araştırma Enstitüsü *2012 Yılı Araştırma Projeleri Raporu*, Edited by Adnan Akcan, (2012): 40; accessed March 20, 2019. https://arastirma.tarimorman.gov.tr/ttae/Belgeler /FaaliyetRaporlari/2012 faaliyet_raporu.pdf

700 Arzu Özalp, "Trakya'da Çeltik Üretiminin Ekonomik ve İstatistiksel Analizi," 21.

701 "Enez'de Ziraat Bankası Açılması Kararlaştırıldı," *Vatandaş,* March 19, 1963; "Ziraat Bankası Enez'de," *Vatandaş,* April 12, 1963.

without credit. The rice growers of İpsala obtained import rice seed by means of Agricultural Equipment Institution and importer companies. Thus, the Ministry of Commerce commanded the loan of rice seed and an inspector was sent to İpsala on April 11, 1962. In the end, while the rice cultivators of Uzunköprü bought the required rice seed in Turkey, those who were in Keşan organized a rice grower association in 1955 bought rice seed two years in a row from Italy. Therefore, since rice seed degenerated in 4 years, they had more seed than their needs.[702]

According to the explanation of İzmirlioğlu who was the Minister of Commerce, for the purpose of the providing of rice seed in Thrace, hundreds of thousands of dollars were paid to foreigners. Therefore, the representatives of the Rice Growers Association in Thrace went to Ankara to negotiate a rice seed production program with the specialists of Yeşilköy Agricultural Research Institute in the National Seed Consultation Committee on December 25, 1961. Thus rice seed production program was determined and the rice growers' associations in Uzunköprü, İpsala and Keşan would import 2000 tons of rice seed from Italy for the last time through Agricultural Bank. In this context, since some of the 186 rice growers who were the partners of Agricultural Credit Cooperative and were also in difficult economic conditions, they applied to import rice through Agricultural Credit Cooperatives. Therefore, Agricultural Banks were declared innocent.[703]

The rice grower committee that was composed of 29 people and represented thousands of rice growers visited Prime Minister İsmet İnönü. They demanded that the TGB opened eight bureaus in rice cultivated regions to buy Turkish rice and sell them to hospitals, schools, and military units to develop rice production. İnönü said that both the TGB would involve in this process and rice would be taken part in state planning programs in 1963.[704] Although

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702 Edirne, Milletvekili Fahir Giritlioğlu'nun, İpsala, Kesan ve 'Uzunköprü çeltiklerine, rcliik ithali irin, T.C Ziraat Bankası eliyle verilmesi kararlaştırılan kredi esaslarında kanunsuz bir işlem yapılıp yapılmadığına dair yazılı soru önergesi ve Ticaret Bakanı Muhlis Ete'nin yazılı cevabı, (TBMM Tutanak Dergisi, September 28, 1962). https://www.tbmm.gov.tr/tutanaklar/TUTANAK/MM__/d01/c007/mm__01007122.pdf

703 Ibid.

704 Çeltik Konusu Acele olarak Ele Alınıyor," *Vatandaş,* October 23, 1963.

Italian rice varieties were used in Edirne and Samsun in the 1960s, the rice growers of Diyarbakır used local rice varieties.

4. 3. 3 *The Law about the Registration, Control and Certification of Seeds*

In addition to the institutional works of the institutes in Antalya, Yeşilköy, and Tarsus, seed variety breeding was supported by legislation by the government in the 1960s. This has determined the legal framework and the legal infrastructure of rice variety breeding works, the registration and certification of rice seeds that have been fulfilled by people or public institutions such as Agricultural Faculties, Thrace Agricultural Research Institutes, and Black Sea Agricultural Research Institute.

For the breeding of one rice variety, morphological, physiological, cytological differences from other varieties are essential. Homogenous and uniform vegetation in the field has to be provided.[705] Since rice seed that was comply with the climate conditions of Turkey had not been developed technically until the 1960s, the Ministry of Agriculture and private entrepreneurs imported rice seed from Italy, Egypt, and the USA and distributed them without testing.[706]

The meaning of seed is the vegetative and generative parts that make possible the reproduction of plants. The seed of rice is its grain. The grain of rice should be purified from all foreign matters such as soil, herb seeds, red rice and straw. The size of the grain should be homogenous. Otherwise, the small size of the grain is less resistant to diseases. Based on the numbered 308 Law that was enacted on August 21, 1963, while certificated and controlled seeds can be produced by people or the institutions, pedigree and original seeds can be produced only by Agricultural Faculties and Agricultural Research Institutes. The rice cultivators who want to produce seeds have to get a seed growing certificate regulated by the provincial directorates of agriculture. In addition to a determination of breeding works of rice variety, these institutions

705 Hail Sürek, *Çeltik Tarımı,* 172.

706 Mustafa Uluöz., *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişirme Değerleri Üzerine Araştırmalar*, 30.

applied to the Ministry of Agriculture to be registered officially. Essential cultivation areas and stores for rice variety breeding, adequate agricultural equipment, and qualified personnel are important criteria for the determination of rice variety breeding. Within the concept of this law, pedigree, original, and certificated seeds are developed.[707]

Furthermore, before the application of the registration of new rice variety to the Ministry of Agriculture, the statistical information about technological properties and the resistance of new rice variety to diseases have to be tested. The rice variety that has a superior economic value such as the quality of paddy, storing and vegetation period are preferred for registration.[708] Rice variety breeding research is done to get new rice varieties that have higher yields, shorter vegetation period, and more resistant to lodging are quite limited.

To take part in the registration testing of rice variety, an application is made to the Directorate of Registration and Certification. In this process, testing has to be made and reported, the document of rice variety property and the translation of foreign varieties are required. Rice variety protection breeding is required to protect its genetic. As a result of breeding, crop plants get higher yield and are more resistant to diseases. In contrast, without the breeding of rice varieties, these varieties lose their agronomic properties in time. Thanks to the breeding of rice varieties that are more adapted to different climates, higher sensitivity to fertilization, and more developed growing technics, rice production has increased since the mid-1960s. Rather than the increase of the land size, the breeding of rice varieties has increased the rice production. Agricultural products are tried in three years in trying fields of Agricultural Research Institutes, Agriculture Colleges, and Agricultural Faculties. These tests are called as the performance tests. If rice variety is tested in two distinct locations, this period has to be one year.[709]

Seed certificate determines the genetic, physical, and biological conditions of seeds. While certified seeds are registered as a result of the testing or controlling in laboratory and testing fields, controlled seeds are tested only in

707 Hail Sürek, *Çeltik Tarımı,* 171- 180.

708 Ibid., 173-174.

709 Ibid., 170-195.

laboratories. Second, pedigree seeds are the varietal purity of rice that has just bred is protected and continued by the experts. Pedigree seeds are regarded as the first step of original and certificated seeds. Third, original seeds that continue the varietal purity of the pedigree seeds are developed and controlled by certification and seed control organizations in Agricultural Research Institutes.

Similarly, certificated seeds carry the characteristics of the varietal purity of original seed and foundation stock are developed and controlled by seed control and certification organization in Agricultural Research Institutes. Based on the seed growing certificate, the production of breeding rice varieties, the cleanness of stores, combine harvesters and harvest, the annihilation of herbs from rice fields, and the compliance with the measures about the genetic protection of rice varieties are regulated.[710]

4.3.4 *The Production of Contract Rice Seed and the Rice Projects of Thrace Agricultural Research Institute and Black Sea Agricultural Research Institute*

Since the paddy prices increased and the amount of rice in the stocks of TGB decreased, the Ministry of Agriculture decided to support rice cultivation through the project of contract rice seed production.[711] Before the experience of foreign exchange bottleneck, to prevent currency loss, the production of rice seed had been first thought as a project by the Provincial Directorate of Agriculture in Edirne in 1974. The main aims of this project were to increase rice yield, to get more qualified rice production, and to receive the paddy consumption requirement. Within the scope of this project, provided that rice seed, fertilizer and agricultural extension activities were supplied by the government, 2000 tons of Baldo, Rocco and Ribe rice varieties that were in the amount of 35,400,000 TL were imported from İtaly.[712]

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710 Ibid., 185-188.

711 "Sözleşmeli Çeltik Tohumu Üretim Projesi İlimizde Tatbik Edilecek," *Vatandaş,* February 7, 1977.

712 "Çeltik Üretim Projesi İlk Olarak İlimizde Uygulandı," *Vatandaş,* January 29, 1979.

The project was accepted by the Ministry of Agriculture, the General Directorate of Agricultural Affairs, TGB, and Agricultural Equipment Institution was implemented in 50000 decars of land in twelve provinces of Turkey in 1977. These provinces were Edirne, Diyarbakır, Samsun, Adana, Ankara, Bursa, Çorum, İçel, Kastamonu, Kahramanmaraş, Malatya, and Sinop. Therefore, 10000 decars of fields in Meriç and 4000 decars of fields in İpsala in Edirne were set aside. TGB would distribute the imported rice seed to farmers through a bill without advance payment and interest-free. In return, the farmers would sell their products to TGB in the harvest.[713] 427 farmers cultivated 6150 decars rice in five villages of two districts of Edirne. As a result of the cultivation of 44700 kg Ribe, 39834 kg Baldo and 47150 kg Rocca, 3351 tons of rice seed could be produced. Some amount of the rice seed was bought by the Ministry of Agriculture; the rest was presented to free sale.[714]

To extend irrigated lands and to increase yield, the Provincial Directorate of Agriculture and Thrace Agricultural Research Institute in Edirne under the guidance of the Ministry of Agriculture supported five years' soil irrigation project that was conducted by SHW, Soil Water Cooperatives and Village Development Cooperatives in four districts and thirty villages of Edirne from 1976 onwards. In this context, six conferences, twenty-five village talks, and three field days were organized. 2500 letters that explained this project were distributed to peasants.[715] Similarly, in order to develop rice farming in Samsun, the Provincial Directorate of Agriculture bought 38 tons of rice varieties that had higher germination power such as Rocca and Baldo from Thrace Agricultural Research Institute. Furthermore, these seeds were cultivated in rice testing fields such as 200 decars in Çarşamba, 100 decars in Bafra, 75 decars in Terme ad 50 decars in Alaçam in 1976.[716]

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713 "Sözleşmeli Çeltik Tohumu Üretim Projesi İlimizde Tatbik Edilecek,"; "Pirinç Üretiminin Arttırılması Kararlaştırıldı," *Vatandaş,* February 13, 1977; "Sözleşmeli Çeltik Üretimi Yapılacak İler Belli Oldu," *Vatandaş,* February 20, 1977.

714 "Çeltik Üretim Projesi İlk Olarak İlimizde Uygulandı,"

715 "Merkez Keşan, Uzunköprü, Meriç İlçelerinde Uygulanan 2. Yıllık Toprak Sulama Projesi Çalışmaları Başladı," *Vatandaş,* April 11, 1977.

716 "Samsun'da Bu Yıl Artan Çeltik Rekoltesi," 30000 tonu Bulacak, *Hürsöz,* September 22, 1976.

Although programmed works on rice began in the Thrace Agricultural Research Institute in 1970, they had been limited with regional projects until 1982. Historically, the Institute that was founded in 1924 became the project center of rice variety breeding and has been spread at the national level since 1980.[717]This institute was a research and development center for the breeding, development, education, and spread of rice.[718] The aim of research and development support was to increase breeding works, to increase competitiveness and to provide added value.[719] There had not been adequate scientific research and specialist in rice farming until the end of the 1970s. Then, the projects about rice variety breeding, rice technology, and cultivation technics began in Thrace Agricultural Research Institute in 1979.

Although Thrace Agricultural Research Institute produced between 70 and 80 original rice seeds and distributed them to farmers, certified seeds were imported from Italy in the 1970s.[720] The amount of rice seed production in Thrace Agricultural Research Institute between 1970 and 2006 was 87 tons of elite seed, 18266 tons of original seed, 7.4 foundation stock, 579 tons of certified seed, and 2345 tons of controlled seed.[721] The rate of certified rice seed was too low level and it was 15 percent in total cultivated lands in Turkey in 2013. Since there has been no long run and programmed rice production policy, there are some fluctuations and unbalanced situation both in rice seed production and the demand of farmers for it. For example, while 144 tons of rice seed was produced and 1836 tons were sold in 1988, 1034 tons of rice seed

717 Erdoğan İndelen, "Türkiye'de Ekilen Çeltik Çeşitlerinin Üretimdeki Payları ve Çeltik Tohumluğu Üretim Programı," 14.

718 Işık Ocaklı, *Edirne İli Çeltik Sektörü Raporu,* 70.

719 Ibid., 84.

720 Çorum Milletvekili Cahit Angın ve 11arkadaşının, çeltikçiliği geliştirmek, verimi artırmak ve maliyeti düşürmek yolunda gerekli tedbirleri saptamak amacıyle, Anayasanın 88nci, Millet Meclisi İçtüzüğünün 102 nci maddeleri uyarınca bir Meclis Araştırması açılmasına ilişkin önergesi üzere Edirne Milletvekili Cevat Sayının Konuşması (TBMM Tutanak Dergisi, February 9, 1977).

721 T.C, Gıda Tarım ve Hayvancılık Bakanlığı, Trakya Tarımsal Araştırma Enstitüsü *2012 Yılı Araştırma Projeleri Raporu,* 50.

was produced and 194 tons were sold in 1990.[722] To increase both native rice production and rice quality, the director of Thrace Agricultural Research Institute Ahmet Bülbül said that they sold their rice seeds to contractual companies and farmers directly.[723]

As Halil Sürek specifies, there was no national seed production program and Turkey had had some problems in rice seed import until the 1980s.[724] With the supply of materials from the USA, Italy, the Philippines, and Bulgaria, some adaptation testings were realized. In order to increase rice research at the national level, a rice research project under the guidance of Thrace Agricultural Research Institute began with the participation of agricultural research institutes in Samsun, Diyarbakır, Adana, Antalya, and İzmir.[725] These comprehensive rice studies were about the breeding of more fertile rice varieties, the enlargement of adaptation areas and the development of more resistant rice varieties to drought and cold air in the 1980s.[726] Hybridization breeding was done in 1979 and mutation breeding was done in 1996. Thanks to transduction, Osmancık 97 and Halilbey varieties resisted to *pyricularia oryza* could be developed in 1997. [727] In the development story of the Osmancık 97 rice variety, Osmancık 97 district governor demanded the development of a rice variety that was called Osmancık 97 from Thrace Agricultural Research Institute. Thus, Osmancık 97 had been developed between

722 Samsun Milletvekili Cemalettin Şimşek ve 19 milletvekilinin, çeltik üreticilerinin sorunlarının araştırılarak alınması gereken önlemlerin belirlenmesi amacıyla Meclis araştırması açılmasına ilişkin önergesi (TBMM Tutanak Dergisi, February 28, 2013), https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d24/c044/tbmm24044072.pdf

723 "Türkiye'nin Çeltik Tohumluğu Edirne'de Yetişiyor," *Vatandaş,* January 20, 1997.

724 Mehmet Reis, "2010 Yılında Pirinç Fiyatlarında Artış Olmayacak," *Hasad Tarım Dergisi*, no. 301 (2010): 62.

725 Halil Sürek, *Çeltik Tarımı,* 202.

726 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesinde Çeltik Tarımının Bugünkü Durumu*, 2.

727 Adnan Tülek, "Çeltikte Islah Çalışmaları Yeni Geliştirilen Çeşitler ve Çiftçilerin Bu Çeşitleri Kullanımı," *Çiftçi ve Köy Dünyası,* no. 370, (2015): 44.

1982 and 1997. Osmancık 97 is cultivated in Russia, Bulgaria, and Italy nowadays.[728]

The requirement of rice seed was received by Thrace Agricultural Research Institute, Agricultural Equipment Institution and State Hatcheries by means of production and importation in 1981. However, since this was not an adequate and qualified project, the Ministry of Agriculture began to implement a rice seed production program in 1982. Thus 1778 tons of certified rice seed such as Rocca, Ribe, Krosnodarsky- 424 and Plovdiv were produced for the first time. However, 586 tons could be sold.[729] In rice variety breeding works, seed- time, harvest period, high grain yield, resistance to lodging, irrigation methods, the amount of seed in sowing, and high paddy yield were studied.[730]

With the implementation of the Southeast Anatolian Project, irrigable lands increased. Thus rice cultivation can be encouraged as an alternative product to clean the salty lands that appeared after cotton cultivation in Şanlıurfa, Diyarbakır, and Mardin.[731] These projects were important guidance for rice cultivators. However, since the gene pool of rice becomes narrow, new rice varieties have almost gained the same fertility level. Otherwise hybrid rice variety breeding is quite expensive.[732] Thrace Agricultural Research Institute spent 277,500 TL for the breeding of new rice, barley, and wheat varieties in 1980 and sent them to the Regional Directorate of Variety and Testing in Ankara in 1980.[733] Furthermore, rice farming in 300000 decars in southeastern Anatolia became a current issue.[734]

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728 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 13, 2018; Ahmet Aydın and Osman Kiraz, Bafra, Samsun, Turkey August 06, 2018.

729 Erdoğan İndelen, "Türkiye'de Ekilen Çeltik Çeşitlerinin Üretimdeki Payları ve Çeltik Tohumluğu Üretim Programı," 15.

730 Halil Sürek, *Çeltik Tarımı,* 202.

731 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesinde Çeltik Tarımının Bugünkü Durumu*, 11.

732 Rasim Ünan, Halil Sürek, Melis Seidi and Mevlüt Şahin. "Hibrit Çeltik ve Türkiye'deki Geleceği," *Uluslararası Katılımlı Konuralp Çeltik Çalıştayı,* Düzce (September 2016): 13.

733 T.C Gıda Tarım ve Hayvancılık Bakanlığı, Trakya Tarımsal Araştırma Enstitüsü *2012 Yılı Araştırma Projeleri Raporu,* 4.

734 "Türkiye'nin Çeltik Tohumluğu Edirne'de Yetişiyor."

Thrace Agricultural Research Institute had registered and taken a production license of 37 rice varieties until 2012. These are Rocca, Plovdiv, Krosnadarsky-424, Ranballi, Rodina and Veneria. Firstly, Rocca, Krasnodarsky-424, Plovdiv, Rodina, Ranballi, and Veneria rice varieties had been registered between 1983 and 1986. On the other hand, the first Turkish rice varieties such as Ergene, Trakya, Meriç, İpsala, and Altınyazı were produced in 1990. Similarly, Serhat was produced in 1992, Sürek was produced in 1995 and also Osmancık 97 was produced in 1997 in Thrace Agricultural Research Institute in Edirne.[735]



Figure 4. 4 Rice Breeding Works of Halil Sürek in Thrace Agricultural Research Institute

SOURCE: *Anadolu Ajansı*, March 10, 2017

735 ğük, "Son Yıllarda Ülkemiz Çeltik Üretiminde UlaşılanVerim Seviyesi ve Geliştirilen Yeni Çeltik Çeşitlerinin Verim Potansiyelleri,"72-73.

Table 4.4 Local Rice Varieties in Turkey

Years	Rice Varieties developed by Thrace Agricultural Research Institute
1990	Meriç, Trakya, Altınyazı, Ergene, İpsala
1992	Serhat-92
1995-1997	Serhat-95, Osmancık-97
2000-2002	Kral, Yavuz, Demir, Gönen,Nergiz, Kargı,Neğiş
2004	Edirne, Kırkpınar, Halilbey, Ece
2006	Şumnu, Beşer
2007	Durağan, Kızıltan, Aromatik-I
2009	Gala, Tunca
2011	Çakmak, Hamzadere, Paşalı, Efe
2013	Biga İncisi, Tosy Güneşi, Manyas Yıldızı, Yatkın, Küplü, Mis-2013, Sürek M711, Kale
2015	IMI 2521, IMI 2554, Balaban, Sarıhan, Ülfet

SOURCE Sürek (2016).

Similarly, the Field Crops Department of Agricultural Faculty at Ege University registered the TOAG-92 rice variety in 1992 as a secondary product.[736] Despite of these studies, with 1289 kg of seed production, Thrace Agricultural Research Institute received only 3 or 4 percent of seed requirement in 2005.[737] However, this rate increased to 49 percent in 2017.[738] While the amount of

736 Halil Sürek, *Çeltik Tarımı,* 203.

737 Okan Gaytancıoğlu, "Türkiye'de çeltikte uygulanan üretim fiyat ve pazar politikalarının değerlendirilmesi" 93.

738 T.C TİGEM *Tohumculuk Sektör Raporları (2017)* accesed March 20, 2019, https://www.tigem.gov.tr/WebUserFile/DosyaGaleri/2018/2/a374cc25-acc1-44e8-a546-63b4c8bce146/dosya/2017%20TIGEM%20TOHUMCULUK%20SEKTOR%20RAPORU.pdf

certified seed used in cultivation was 188 tons in 1997,[739] it increased to 10491 tons in 2016.[740]

General Directorate of Agricultural Research began runing a project about National Rice Research and Variety Development between 1996 and 1998. This project was continued under the name of Thrace and Marmara Region Rice Variety Breeding Projects between 1999 and 2006. Finally, it continued under the name of Thrace Marmara Region Rice Variety Breeding Research between 2007 and 2012. In the end, 14 rice varieties out of a total of 37 were developed in these studies. Within the scope of this project, 21 farmer meetings and 7 field days were organized in Edirne, Samsun, Sinop, Balıkesir Çanakkale, and between 2007 and 2012.[741] In general, in contrast to the agricultural research institute, provincial directorates of agriculture do not regulate training and extension activities in villages due to bureaucratic reasons. However, since many rice growers are open- minded, they can communicate with the professional agricultural engineering in rice farming through farmer groups on social media or telephone in Edirne and Samsun. They also inform farmers in the conferences and meetings about new rice varieties and pesticides.[742]

Seed production projects were run in the Thrace, Aegean, and Cilician agricultural research institutes. In the beginnings of the 2000s, almost 60 tons of elite and original rice seed of 10 rice varieties were produced in Thrace Agricultural Research Institute. Similarly, 6 tons of elite and 204 tons of original seeds out of 22 rice varieties were produced in 2014. All of these new pieces of research are explained to peasants in field days activities.[743] Thanks to the high yield property of Osmancık-97, rice production increased and rice

739 Fahri Yavuz, Türkiye'de Tarım, 158.

740 T.C TİGEM *Tohumculuk Sektör Raporları (2017).*

741 Republic of Turkey, Gıda Tarım ve Hayvancılık Bakanlığı, Trakya Tarımsal Araştırma Enstitüsü *2012 Yılı Araştırma Projeleri Raporu* 40- 64.

742 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 13, 2018, 2018; Rasim Ünan and Melih Enginsu, tape-recorded interview by the author, Bafra, Samsun, Turkey August 06, 2018.

743 Halil Sürek, *Çeltik Tarımı,* 202-205; Adnan Tülek, "Çeltikte Islah Çalışmaları Yeni Geliştirilen Çeşitler," 44.

imports decreased. 80 percent of rice cultivated lands are constituted of Osmancık-97 rice variety in the 2000s.[744] Thus, it stimulated the rice economy in Turkey. Thanks to the development of rice variety and seed production of Thrace Agricultural Research Institute, they could sell their seed to seed firms directly or by means of tender. In return, these firms pay research and development prices to the circulating capital of the institute. In addition to 18 rice varieties that are in the registration phase, Halil Sürek said that they have developed 53 rice varieties so far.[745]



Figure 4.5 Osmancık 97 Rice Variety

SOURCE: Halil Sürek, *Trakya Tarımsal Araştırma Enstitüsünde Geliştirileri Çeltik Çeşitleri.*

In addition to Thrace Agricultural Research Institute, Black Sea Agricultural Research Institute has done some research on rice breeding. The Institute was founded in 1944 in Samsun with the name of Samsun Regional Station of Seed Improvement. However, it has been called as Black Sea Agricultural Research

744 Melih Enginsu and Serkan Yılmaz, "Karadeniz Tarımsal Araştırma Enstitüsü Çeltik Islah Araştırmaları," 41-43.

745 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey August 13, 2018.

Institute since 1987.[746] As a result of the studies, irrigation water, *pyricularia oryza,* and weed problems are regarded as three big problems in the rice cultivation of the Black Sea. Within the context of the testing of variety registration, Black Sea Agricultural Research Institute developed four rice varieties such as *Karadeniz, Kızılırmak, Bafra Yıldızı,* and *Mevlütbey* between 2005 and 2012. Thanks to meetings with farmers in field days, Black Sea Agricultural Research Institute determines potential problems of rice cultivation and also introduces certified seeds and new technologies in rice cultivation. Thus, coordination could be provided among researchers, educators and producers.[747] In addition to 4 rice varieties, Black Sea Agricultural Research Institute researched the amount of fertilizer in rice farming, rice variety breeding, and crop rotation in rice. The institute is responsible for the development of rice farming in the Black Sea Region such as Samsun, Çorum, and Sinop.[748]

Similarly, for the economic development of Southeastern Anatolia and the solution of agrarian problems, Southeastern Anatolian Project (SAP) International Agricultural Research Research, and Training Center was founded in Kıtırbil Diyarbakır in 1962 with the name of Regional Agricultural Research Institute. Since there was a limited number of agricultural experts in the districts of Diyarbakır, and there was no sufficient number of vehicles, they could not arrive at villages at that time. Therefore, the yields of rice were low in Karacadağ in the 1960s.[749] It took an existing name in 2011. This institute mainly focused on product ranges, soil analyses, and agricultural production.[750] However, the farmers continued to use local rice varieties. Furthermore, thanks to institutionalization in all eastern provinces, this institute

746 T.C Tarım ve Orman Bakanlığı, Karadeniz Tarımsal Araştırma Enstitüsü, Tarihçe, accessed March 20, 2019, https://arastirma.tarimorman.gov.tr/ktae/Sayfalar/Detay.aspx?SayfaId=8

747 Melih Enginsu and Serkan Yılmaz, "Karadeniz Tarımsal Araştırma Enstitüsü Çeltik Islah Araştırmaları," 41-43.

748 Rasim Ünan and Melih Enginsu, tape- recorded interview by the author, Samsun, Turkey, August 06, 2018.

749 "Ziraatta Kalkınmamız," *Diyarbakır,* March 8, 1963.

750 "Şehrimize Bir Zirai Araştırma Enstitüsü Kuruldu," *Diyarbakır,* January 25, 1963; T.C GAPUTAEM, accesed March 15, 2019 https://arastirma. tarimorman.gov.tr/gaputaem/Iletisim.

would increase agricultural production and yield in other products.[751] With the support of this institute, Diyarbakır Governorship applied to the Turkish Patent Institute for the geographical indication of the Karacadağ rice variety in 2010 and their application was accepted in 2014. However, the production of certified seed of Karacadağ rice variety is almost nonexistent in any public or private institute.[752]

Furthermore, Southeastern Anatolian Agricultural Research Institute was founded in Şanlıurfa in 2007 with the combinations of Soil Water Resources and Agricultural Research Institute in Şanlıurfa in 1976 and the Directorate of Southeastern Anatolia Training, Extension and Research Center in 1977. There are training projects on agricultural irrigation, agricultural technology, agricultural input, and seed variety breeding at the regional, national, and international levels.[753] However, the rice growers of Karacadağ have used their local rice varieties such as *Sarıçeltik, Ak kılçık, Karacadağ, Kırmızı kılçık* and *Siirt çeltiği*. There are no rice variety breeding works in the institutes of Şanlıurfa and Diyarbakır.

4. 3. 5 *The Role of the Turkish Grain Board in Rice Economy*

In addition to research and development projects, the government has been influential in the economic sector of rice such as pricing, marketing, and consumption. Therefore, the council of minister, the Ministry of Agriculture, and TGB have been important actors.

Historically, the economic influences of the Great Depression in the 1930s were influential in the foundation of TGB in 1938. First, with the decline of wheat prices, Agricultural Bank was charged with wheat purchasing. Then, TGB was charged with the regulation of the supplying of cereal and the market prices of cereals. However, based on the cabinet decision, the first rice

751 "Zirai Araştırma Enstitümüz Faaliyete Geçmiş Bulunuyor," *Diyarbakır,* April 18, 1963.

752 *Resmi Gazete,* December 21, 2014.

753 T.C Tarım ve Orman Bakanlığı, GAPUTAEM, Tarihçe, accesed March 20, 2019, https://arastirma.tarimorman.gov.tr/gaptaem/Menu/7/Tarihce

purchasing of TGB was in 1941.[754] TGB had got into the rice market two times in 1960-61 and 1966-67. As a state economic enterprise, TGB implements an influential price policy in Turkey to protect the interests of both producers and consumers.[755] Based on the rules of the TGB, rice has to be not musty, heated, and more than 17 percent of humidity. The yield rate has to be between 51 and 66 percent. Besides, the rate of crocked rice grain has to be not more than 8.[756] The TGB has provided its credit from Central Bank. For example, the TGB got 450 million TL credit in its 1966 company.[757]

The TGB used two systems in its purchasing. They were rating the system and technical purchasing scale. First, the rating system was implemented for the first time in 1967. In this system, rice was separated into twelve degrees and the control of foreign matter; humidity, and yield were made for each degree. Since separated pricings were made for each degree based on the results, this system influenced the profit of farmers. Second, in the technical purchasing scale, the factors that influenced the prices of rice were determined one by one and the physical properties and the content of rice such as grain size, humidity, and foreign matter were evaluated separately. This system was more beneficial for the profit of farmers.[758]

In addition to water capacity, rice prices are the main factor in deciding on rice cultivation.[759] In the course of application to rice cultivation commissions, some peasants declare less amount of rice cultivated lands to pay less

754 T.C Tarım ve Orman Bakanlığı Toprak Mahsulleri Ofisi (TMO), Tarihçe, accesed March 10, 2019, http://www.tmo.gov.tr/Main.aspx?ID=13 Turan Güneş, Türkiye Çeltik Ekonomisi, 170-188.

755 İpek Atılgan Helvacıoğlu, Tuna Şener, Cem Tokatlı and Alpay Balkan, "Socio-Economic Conditions and Behaviors of Rice Producers in Meriç Plain," *Tekirdağ Ziraat Fakültesi Dergisi* 13, no. 4, (2016): 21.

756 T.C Tarım ve Orman Bakanlığı, Toprak Mahsülleri Ofisi (TMO) Çeltik Alım ve Depolama İşleri Hakkında Genelge, TMO Genel Müdürlüğü 033/ 06-101 ve 8.10.1966; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 170-188.

757 "TMO'ya Kredi Verildi," *Edirne Sesi,* July 17, 1965.

758 T.C Tarım ve Orman Bakanlığı, Toprak Mahsülleri Ofisi (TMO) 1968/69 *Çeltik Kampanya Raporu,* 12; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 188.

759 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 203.

license tax and in the course of sales some of them declare less fertility rate with the worry of paying higher tax. Therefore, to prevent unlicensed rice cultivation, TGB demands the documentation of sanitary license tax in the course of the sale.[760] However, since the TGB did not announce a fee description of rice on time, rice cultivators cannot predict the rice market and sell their products cheaper to merchants.[761]

4. 3. 6 *The Agricultural Support Policies of Government in Rice*

The Government has been also influential during the production process of rice with its support. There had been statist economic policies in the agricultural sector between 1914 and 1980. The government provided low interest rate loans and subsidized the prices of agricultural inputs such as fertilizer, pesticides, and machines that were sold in Agricultural Equipment Institutions.[762] However, Turkey was integrated into the neoliberal economic conditions after the Decisions of January 24, 1980. Agricultural inputs, the prices of agricultural products, and credits began to comply with the rules of the neoliberal economy.[763] Especially, agricultural subventions had been abolished apart from fertilizer and populist policies that had been implemented through market price support between 1980 and 2000. However, since the government liberalized the agricultural market, farmers have been exposed to high interest rate loans, high cost of agricultural inputs, and low prices of their agricultural products in the liberal market economy since 1980.[764]

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760 Okan Gaytancıoğlu, "Türkiye'de çeltikte uygulanan üretim fiyat ve pazar politikalarının değerlendirilmesi" 30.

761 Edirne Milletvekili Erdal Kesebir'in, Trakya Bölgesindeki çiftçilerin sorunlarına ilişkin gündem dışı konuşması ve Sanayi ve Ticaret Bakanı Mehmet Tahir Köse'nin cevabı (TBMM Tutanak Dergisi, September 22, 1993).

762 Okan Gaytancıoğlu, "Türkiye'de çeltikte uygulanan üretim fiyat ve pazar politikalarının değerlendirilmesi" 130.

763 Çağlar Keyder and Zafer Yenal, *Bildiğimiz Tarımın Sonu* (İstanbul: İletişim Yayınları, 2013), 37.

764 Okan Gaytancıoğlu, "Türkiye'de çeltikte uygulanan üretim fiyat ve pazar politikalarının değerlendirilmesi" 131.

There have been agricultural supports that mean state interventionism in agricultural sectors in many countries to provide the sustainability of production, national food security, contribute to the national economy, and to get a competitive advantage in foreign trade.[765] These supports can be collected under four titles as Market Price Support, Direct Income Support (DIS), General Services Support, and Indirect Income Support.

First, Market Price Support that is producer oriented support is the means of the regulation of agricultural production and the distribution of income. It was firstly implemented in 1932 by the Agricultural Bank and by the TGB[766] in the conditions of the Great Depression in the 1930s.[767] TGB tried to deal with potential economic risks by balancing the prices for producers and consumers, to support and regulate the market of agricultural products such as cereals, legumes, and oilseeds.[768] Second, Direct Income Support (DIS) aims to increase the income of producers and protect market balances. DIS is not associated with the production of farmers. Its finance is provided from the budget of the state. It is closely related to Farmer Registration System and independent from agricultural production.[769] On the other hand, indirect Income Support is oriented to decrease the expenditure of producers. For example, it is a support that is implemented to agricultural inputs such as fertilizer, diesel oil, pesticides and seed. Finally, the General Services Support is related to education, research, publication, and taxation. However, the price levels of support are formed based on the Standby Treaty with the IMF.[770]

According to the criteria of the OECD, since regular purchaser and vendor mechanism was not formed, Turkey had been one of the countries that intervened in free trade wrongly until 2001. However, after the Standby Treaty with the IMF, the intervention of the state such as agricultural supports and purchases of the TGB, the prices of agricultural products, and the income of

765 Gökhan Günaydın, "Türkiye Tarım Sektörü," *Tarım ve Mühendislik,* no. 76-77 (2006): 20.

766 Ibid., 20-21.

767 Fahri Yavuz, *Türkiye'de Tarım Politikası,* 11.

768 Işık Ocaklı, *Edirne İli Çeltik Sektörü Raporu*, 67.

769 Okan Gaytancıoğlu., "Türkiye'de çeltikte uygulanan üretim fiyat ve pazar politikalarının değerlendirilmesi" 47-63.

770 Gökhan Günaydın "Türkiye Tarım Sektörü," 20-23.

peasants have decreased. The rules of foreign trade in rice and paddy are determined by the Under Secretariat Foreign Trade. Similar to Market Price Supports, Agricultural Input Supports were eliminated. While there is no block for the export of paddy, sometimes the import of the paddy is prevented. Under Secretariat Foreign Trade supports free rice trade rather than paddy trade for the creation of added value, and the removal of agricultural supports based on the international developments in agriculture.[771] Furthermore, General Services Supports decreased day by day. In the determination of the price level of agricultural products, the prices of commodity exchange in the USA is taken as a reference to comply with the international price. However, since neoliberal policies have caused the decline of the acquisition of peasants in the face of increasing costs of agricultural inputs, the peasants left the agricultural sector.[772]

Turkey signed the Agricultural Reform Implementation Program with the World Bank since the reform of the IMF was supported in accordance with the Structural Adjustment Loans of the World Bank in 2001. This treaty has four projects such as Direct Income Support (DIS), Alternative Product Project, the Restructure of Agricultural Sale Cooperatives, and Project Support Services.[773] DIS requires an application to the Provincial or District Directorate of Agricultures. It was though that 28 TL was given per decars in 2003. The indications in the Farmer Registration System are considered as basic criteria.[774] However, the extent of land that could be supported was limited to 500 decars.[775]

Although the supports of the Ministry of Agriculture have increased rice production in Turkey since 2002, Turkey is not self-sufficient in rice production.[776] Furthermore, due to high water consumption in rice fields, high cost

771 Ibid., 47-54.

772 Gökhan Günaydın, "Türkiye Tarım Sektörü," 20-23.

773 Ibid., 21.

774 "Doğrudan Gelir Desteği," *Vatandaş,* May 3, 2003.

775 "Çiftçiye Destek," *Ergani Söz*, July 7, 2005.

776 Ömer Faruk Ekmekçi and Hikmet Özkan, "Türkiye'de Çeltik Üretimi ve Destekler," *Türk Tarım,* no. 199, (2011): 64-66.

of production, and the difficulties in the competition with imported rice, the Ministry of Agriculture prefer corn and sunflower cultivation rather than rice. Similar to the Ministry of Agriculture, the State Planning Organization supports rice import to nourish the increasing population and to balance rice prices in the domestic markets of Turkey.[777] However, when the rice consumption needs of the growing population and increasing foreign trade deficit are considered the prevention of rice import with the balanced policy between production and consumption or production planning becomes more of an issue. Furthermore, the state knows the cultivated lands of rice since it is subject to license.[778]

However, firstly, after the decision of January 24, 1980, the retail prices of fertilizer increased between 41 and 67 percent in 1981. In this context, the price of fertilizer was marked up and 100,000 milliard TL government support or subvention on fertilizer was abolished.[779] While fertilizer support was 50 percent in 1993, it decreased to 10 percent in 1994.[780] However, Agricultural Credit Cooperative paid 30 percent of fertilizer price and the rice growers in Thrace used 187000 tons of fertilizer in 1993.[781] However, thanks to premium subsidies, rice variety breeding projects, and the use of modern technology in rice, 23.000 rice cultivators in Turkey grow rice about 100.000 hectares of land in the 2000s. Similarly, premium subsidies control rice production through the direction of rice production, the protection of the income level of rice growers, and the maintenance of rice production.[782]

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777 Okan Gaytancıoğlu, "Türkiye'de çeltikte uygulanan üretim fiyat ve pazar politikalarının değerlendirilmesi" 55-56.

778 Çorum Milletvekili Cahit Angın ve 11 arkadaşının, çeltikçiliği geliştirmek, verimi artırmak ve maliyeti düşürmek yolunda gerekli tedbirleri saptamak amacıyle bir Meclis Araştırması açılmasına ilişkin önergesinin görüşülmesi (TBMM Tutanak Dergisi, February 9, 1977).

779 "Gübreden de Devlet Desteği Kalktı," *Vatandaş,* January 2, 1984.

780 "1995 Tarımda Felaket Yılı Olabilir," Vatandaş, October 21, 1994.

781 "Tarım Kredi Kooperatifinden Çiftçiye Destek," *Vatandaş,* October 21, 1994.

782 Ömer Faruk Ekmekçi and Hikmet Özkan., "Türkiye'de Çeltik Üretimi ve Destekler," 64-66.

Table 4.5 Agricultural Supports in Rice Farming (2001-2017) (Per Ton/TL)

Years	DIS	Premium	Diesel Oil	Fertilizer	Soil Analyse
2001	16	-	-	-	-
2003	28	-	-	-	-
2005	14	30	2,4	2	-
2007	10	90	4	3	-
2009	-	100	4	5	3
2011	-	100	4	5	3
2013	-	100	4.3	5,5	2,5
2015	-	100	4,85	6,6	2,5
2017	-	100	37,36	4	40

SOURCE TGB; The Ministry of Agriculture; *Ziraat Dünyası,* no. 543, (April 2015):62

While the DIS that is given to the owner of the lands rather than its cultivator provides a commercial competitive advantage with farmers in developed countries, it is not influential in developing countries.[783] This support was ended in 2007. Thanks to the Diesel Oil Support the agricultural production came into force in 2003, peasants used 40 percent cheaper.[784] According to the Official Journal on July 6, 2015, Diesel Oil Support was determined as 8 liters for each decar. 2005/8872 numbered decision about the payment of support premium for cereal producers were taken on May 30, 2006.Thus, as long as the rice producers present their sale notes, they benefit from this support. The payments are made per each kilogram as 0,1 TL in 2010-2011. It has continued as price support from 2012 onwards. Besides, seed support had been implemented as 8 Turkish Liras per each decar between 2006 and 2011.[785] Furthermore, due to the first good agricultural practices in rice farming in Turkey, the Ministry of Agriculture has paid agricultural support as 135 TL per decar in

783 Gökhan Günaydın, "Türkiye Tarım Sektörü," 22.

784 Karaman Milletvekili Mevlüt Akgün'ün, tarımsal kalkınma kooperatiflerine destek uygulamalarının etkilerine ilişkin gündem dışı konuşması ve Tarım ve Köyişleri Bakanı Mehmet Mehdi Eker'in cevabı, (TBMM Tutanak Dergisi, February 7, 2007). https://www.tbmm.gov.tr/tutanalar/TUTANAK/TBMM/d22/c146/tbmm22146060.pdf

785 Serkan Yenal, "Çeltik Üretim ve Ticareti Etkinlik Verimlilik Çözümlenmesi," 86-87.

Samsun under the name of Environment Purpose The Protection of Agricultural lands since 2010.[786] The aim of this agricultural support is to protect soil and water quality, to sustain natural sources, to prevent soil erosion, and to decrease the negative influences of agriculture.[787]

Although, a specific part of the population is employed in the agrarian sector, the agrarian economy concerns closely all nations. Since Turkey ignored the agrarian sector between the 1960s and 1980s, a long-term policy could not be formed in agriculture. While only 6 agricultural products such as wheat, tea, and sugar beet had been supported in the 1960s, their number reached 24 in 1980 and decreased to 3 products in 1994. The subvention of the Agricultural Bank and Agricultural Credit Cooperatives are not adequate to overcome the economic problems of peasants. In this context, Edirne Deputy Şimşek suggests that agricultural supports should be directly given to peasants through the implementation of the farmer register system. Especially, the premium system that means the price difference in markets should be paid to peasants. Şadan also suggested the legislation of crop insurance, agriculture, and environment, land survey, and also the use of soil and terrain.[788]

The General Directorate for Agricultural Production and Development in the Ministry of Agriculture has not developed sufficient policy for the rice requirement of Turkey. However, the rice production and processing potential of Turkey are sufficient to receive the paddy needs of Turkey. For example, Since the Southeastern Anatolian Project developed the irrigated farming opportunity, many farmers are involved in cotton production. However, to clean the salt in soil that remained from cotton, rice can be cultivated.[789]

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786 Hasan Toker, tape-recorded interview by the author, Bafra, Samsun, Turkey, April 30, 2019.

787 T.C Tarım ve Orman Bakanlığı, "Bitkisel Üretim," May 20, 2019, https://www.tarimorman.gov.tr/Konular/Bitkisel-Uretim/Tarla-Ve-Bahce-Bitkileri/CATAK

788 Edirne Milletvekili Şadan Şimşek 'in, tarım kesiminin sorunlarına ve alınması gereken önlemlere ilişkin gündemdışı konuşması ve Tarım ve Köyişleri Bakanı Hüsnü Yusuf Gökalp'in cevabı (TBMM Tutanak Dergisi, February 13, 2001) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d21/c054/tbmm21054057.pdf

789 Okan Gaytancıoğlu, "Türkiye'de çeltikte uygulanan üretim fiyat ve pazar politikalarının değerlendirilmesi" 52- 53.

From a political point of view, due to periodical changes of undersecretaries in their duty and lack of sufficient financial support, planning in cultivated lands and production cannot be developed.[790] Furthermore, since there has been no production planning and well directed policy, while some agricultural products have been overproduced, some of them have been produced inadequately.[791]

4. 3. 7 *The Role Agricultural Credit Cooperatives in the Development of Rice Farming*

Agricultural Credit Cooperatives contributed to the agricultural and economic development of Rice farming through the supplement of credit and agricultural inputs. The development of cooperatives can be separated into two periods as the pre-planned period (1923 and 1960) and post-planned period (1962 onwards).[792] Historically, the Turkish cooperative system movement was firstly begun with the Sovereign Wealth Funds founded by Mithat Pasha in the Pirot District of Serbia where it was located in the Macedonian region of the Ottoman State in November 1863. Mithat Pasha tried to unite credit cooperatives and producer cooperatives with each other.[793] Similarly, Sovereign Wealth Funds that aimed to receive the credit needs of farmers were spread country wide and played an important role in the institutionalization of both Agricultural Credit Cooperatives and Agricultural Bank.[794]

More specifically, both increasing the credit needs of farmers and inadequate measures in the modernization of Sovereign Wealth Funds led to the foundation of Agricultural Bank instead of *Menafi Sandığı* formed as a result

790 Ibid., 53-54.

791 Edirne Milletvekili Şadan Şimşek 'in, tarım kesiminin sorunlarına ve alınması gereken önlemlere ilişkin gündemdışı konuşması ve Tarım ve Köyişleri Bakanı Hüsnü Yusuf Gökalp'in cevabı.

792 Reyhan Toplu, "Tarımsal Kooperatiflerin İktisadi Analizi: Diyarbakır Örneği," (M.A Thesis, İstanbul Üniversitesi Sosyal Bilimler Enstitüsü, 2014): 57.

793 Necdet Bilgin and Şaban Tanıyıcı, "Türkiye'de Kooperatif ve Devlet İlişkilerinin Tarihi Gelişimi," *KMU İİBF Dergisi,* no. 15 (2008): 140.

794 T.C Gümrük ve Ticaret Bakanlığı, *Türkiye Kooperatifçilik Raporu (2016),* (Mayıs 2017): 3-4.

of increasing 1 percent of the tithe in 1883.[795] Furthermore, at first, cooperatives were thought as a solution for the Ottoman economy and industry to compete with foreign capitals by Turkish intelligentsia.[796] As a state economic enterprise, Agricultural Bank has provided a loan with farmers directly or through Agricultural Credit Cooperatives and Agricultural Sale Cooperatives since 1863.[797]

Before the proclamation of the Republic, although the government proposal about Cooperative Association Law was partially accepted, it could not be a law in course of the National Independence War. However, the importance of cooperative association was made a current issue after the socio-economic conditions of the Great Depression on agriculture in 1929 and 1930 during parliamentary speeches and the nationwide tours of Atatürk and İnönü to obtain finance and marketing. Furthermore, the first legal regulation of Agricultural Credit Cooperative Law was made in 1929.[798] Şükrü Kaya was charged with the foundation of the Turkish Cooperation Society at İstanbul University in 1931. Agricultural Sale Cooperatives and the Agriculture Credit Cooperative entered into force in 1935. In this context, the first Agricultural Credit Cooperative was established in the Tekir village of Mersin on June 30, 1936.[799] In the case of natural disasters such as drought, frost and hail, the Democrat Party (DP) government provided farmers who became indebted to Agricultural Credit Cooperatives or Agricultural Bank with an opportunity of debt relief in 1951.[800] Agricultural Credit Cooperatives also generalized the use of credits among small family enterprises in the 1950s. Thus, the number of Agricultural Credit Cooperatives, the amount of credits and the number of the partners of these cooperatives began to increase visually.[801]

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795 Ruşen İlmen, "Tarım Kredi Kooperatifleri," *Karınca Kooperatif Postası,* no: 168 (1950): 6.

796 Ahmet Özçelik, *Tarım Tarihi ve Deontolojisi,* 58.

797 M. Kemal Özer, "Mithat Paşa ve Ziraat Bankası'nın 100. Yılı," *Vatandaş,* February 21, 1963.

798 Nurettin Hazar, *Kooperatifçilik Tarihi,* (Ankara: Türk Kooperatifçilik Eğitim Vakfı Yayınları, 1990); T.C Gümrük ve Ticaret Bakanlığı, *Türkiye Kooperatifçilik Raporu (2016),* 4-7.

799 Ahmet Özçelik, *Tarım Tarihi ve Deontolojisi,* 98-99.

800 Duygu Yılmaz, "Demokrat Parti Döneminde Aydın'da Tarım," *Atatürk Yolu Dergisi,* no. 62 (Spring 2018): 368.

801 Korkut Boratav, *Türkiye İktisat Tarihi (1908-2007),* (Ankara: İmge Kitabevi, 2008),

When it comes to the 1960s, with the increase of unemployment, social and economic issues, the governments implemented a planned economy to increase agricultural production in rural areas and employment creation in urban areas. Therefore, in the historical process, cooperative provisions took part in the 1961 Constitution Act, Cooperative Law was enforced in 1969, and the duties of state in the development of cooperatives were emphasized in the 1982 Constitution Act.[802]

There were 1600 agricultural cooperatives in the villages and districts of Turkey. These cooperatives were founded according to 2836 numbered Law and they worked as a branch of Agricultural Bank and provided cash credit facilities with farmers in Turkey. On the other hand, agricultural credit cooperatives supply the pesticides, fertilizer, and agricultural machines need of their partners in Europe.[803] According to 1581 numbered Law about agricultural credit cooperatives in 1972, these institutions began to receive the agricultural inputs of peasants such as fertilizer, pesticides, diesel oil, agricultural machines, which rice growers need and animal feed as well as provided short or long term credit facilities.[804] In this context, Koyuntepe Agricultural Credit Cooperative in İpsala District sold the first Fiat tractor out of 5 tractors which had been booked before to partners Ömer and Mehmet Ersan in 1975.[805] However, with the collaboration of the Ministry of Agriculture, Agricultural Bank and Agricultural Equipment Institution, agricultural machineries had been supplied to peasants with five years' maturity in the 1950s and 1960s.[806]

While Agricultural Credit Cooperatives had been worked within the structure of Agricultural Bank until May 17, 1977, it has worked as an independent farmer enterprise with the foundation of the Agricultural Credit Cooperative Union since the end of the 1970s. While the administrative obligations of the Agricultural Bank ended, it has still continued the role of being a finance bank of these cooperatives. There were sixteen regional directorates of this union

802 T.C Gümrük ve Ticaret Bakanlığı, *Türkiye Kooperatifçilik Raporu (2016),* 5-6.

803 M. Kemal Özer, "Tarım Kredi Kooperatifleri," *Vatandaş,* February 5, 1963.

804 Reyhan Toplu, "Tarımsal Kooperatiflerin İktisadi Analizi: Diyarbakır Örneği," 66.

805 "Koyuntepe Tarım Kredi Kooperatifi İlk Traktörü Verdi," *İpsala,* June 4, 1975.

806 "Beş Sene Vade ile Çiftçiye Makine," *Bafra,* August 15, 1955.

around Turkey.[807] While Agricultural Credit Cooperatives provided a working capital loan in the short run, they provided farmers with agricultural equipment credit in the medium term. The prices of agricultural types of machinery were liberalized in 1986.[808]

Table 4.6 The Number of Agricultural Credit Cooperatives and Members in Turkey (1930-2016)

Years	Cooperatives	Members
1930	191	20170
1950	900	438410
1970	2021	1305461
1990	2459	1579208
2010	2489	1083041
2016	1625	1001418

SOURCE T.C Gümrük Bakanlığı *Türkiye Tarım Kredi Kooperatifleri Raporu*

The numbers of farmer households were 1751239 in 1927,[809] 2322391 in 1950,[810] 3376587 in 1970,[811] 3434 163 in 1980,[812] 4091530 in 1991,[813] 3069535

807 "Tarım Kredi Kooperatifleri Ziraat Bankasından Ayrıldı," *Vatandaş,* October 18, 1977; Türkiye Tarım Kredi Kooperatifleri, accsed March 20, 2019, http://www.tarimkredi.org.tr/index.php/hakkimizda/tarihcemiz

808 İsa Kayacan, "Tarım Kredi," *Edirne,* January 3, 1992.

809 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK)*Tarım Sayımı 1927 (Agricultural Census 1927).* Ankara: 1970, 19- 20.

810 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK)*Tarım Sayımı Neticeleri 1950 (Agricultural Census Results 1950)*. Ankara: 1956, 130.

811 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK)*Tarım Sayımı 1970 (Agricultural Census 1970).* Ankara: 1979, 3.

812 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK)*Tarım Sayımı 1980 (Agricultural Census 1980).* Ankara: 1982, 8.

813 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK)*Tarım Sayımı 1991 (Agricultural Census 1991)*. Ankara: 1992, 12.

in 2001[814] and 2176000 in 2016 in Turkey. Based on these numbers, there were 20170 members in 1930, 438410 members in 1950, 1305461 in 1970, 1 579208 members in 1990, 1083041 members in 2010 and 1001418 members in 2016. While the partner numbers of these cooperatives had increased steadily until the 1990s, their number began to decrease from 2000 onwards.[815]

Table 4.7 The Number of Farmer Households in Three Basins by Years

Provinces	1950	1991	2001	2017
Edirne	27362	42318	37816	27472
Samsun	53395	103329	86127	65615
Diyarbakır	30339	65099	50743	33735
Şanlıurfa	24747	72567	51647	58438
Mardin	28984	40375	38370	23658

SOURCE T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Tarım Sayımları 1950-, 2001 (Agricultural Census 1950-2001)*; Çiftçi Kayıt Sistemi (ÇKS- 2017-2018)

Agricultural Credit Cooperatives are influential in the direction of agricultural policies. They provide farmers with the organization and the supplement of agricultural inputs at affordable prices and credits.[816] 227 numbered Edirne Agricultural Credit Cooperative was founded in the beginnings of the 1930s. Lack of adequate storing was one of the main problems.[817] While the number of agricultural credit cooperatives in Edirne decreased from 101 to 28, between

814 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Tarım Sayımı 2001. (Agricultural Census 2001).* Ankara: 2004, 32.

815 T.C Gümrük ve Ticaret Bakanlığı, *Türkiye Kooperatifçilik Raporu (2016),* 40; "Türkiye'de Tarımı 5,4 Milyon Kişi Sırtlıyor," *Hürriyet,* May 13, 2016.

816 Okan Gaytancıoğlu, "Türkiye'de çeltikte uygulanan üretim fiyat ve pazar politikalarının değerlendirilmesi" 61.

817 *Vatandaş,* April 22, 1988.

2005 and 2016. However, the number of partners increased from 13,040 to 15,752 between 2005 and 2016. Secondly, the number of Agricultural Credit Cooperatives declined from 71 to 33 and there were 30.229 partners in Samsun in 2016. There are 5 agricultural cooperatives in Diyarbakır, 13 cooperatives in Şanlıurfa and 5 cooperatives in Mardin. There were 5,072 partners in Diyarbakır, 10,074 partners in Şanlıurfa, and 4,139 partners in Mardin in 2016.[818]

Due to the fear of natural disasters such as hail, storm and flood, the rice growers of Karacadağ do not prefer to use a bank or cooperative credits. For example, Süleyman Kızılkaya who is one of the prominent rice growers that cultivates the rice fields of Yalankoz village in Diyarbakır through sharecropping specified that he could not harvest his rice by reason of hail in 2017. Thus, Agricultural Credit Cooperatives have not developed in the region[819] due to traditional, conservative and tribal life style in rural areas. In contrast to Karacadağ, rice growers in Edirne and Samsun began to use such credits from Agricultural Cooperatives, public and private banks especially in the last 20 years more and more.[820] Rice growers need to use credits due to the difficulties of retrenching in small agricultural enterprises, slow capital turnover, changing technological needs, price fluctuations of agricultural products, and risk and uncertainties.[821]

4. 3. 8 *Agricultural Irrigation Cooperatives*

For the development, the organization and the spread of rice farming among small agricultural enterprises, irrigation cooperatives have been important. Since 70 percent of the Turkish population lived in rural areas and employed in the agricultural sector in the 1960s, irrigation cooperatives that aimed to

818 T.C Gümrük ve Ticaret Bakanlığı, *Türkiye Kooperatifçilik Raporu (2016),* 40.

819 Süleyman Kızılkaya, tape-recorded interview by the author, Yalankoz Village of Diyarbakır, Turkey, August 09, 2018.

820 Ahmet Aydın and Osman Kiraz, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6, 2018.

821 Okan Gaytancıoğlu, "Türkiye'de çeltikte uygulanan üretim fiyat ve pazar politikalarının değerlendirilmesi" 58.

develop agricultural technology, increase fertility and increase welfare were founded. To benefit from the state irrigation network, the organization of irrigation cooperatives was stipulated. Furthermore, while there were only 13 irrigation cooperatives in 1964, their number increased to 979 in 1971,[822] 1382 in 1976,[823] and 2523 irrigation cooperatives at the national level in 2016. Similarly, there were 303586 partners across Turkey in 2016. They took over the management of irrigation services from the SHW.[824] The number of irrigation cooperatives decreased from 16 to 13 in Diyarbakır, from 12 to 4 in Şanlıurfa, and decreased from 15 to 12 in Samsun between 1970 and 2016. While there were 6 irrigation cooperatives in Mardin in the 1970s, their numbers decreased to 2 in 2016. On the other hand, due to intensive rice cultivation, the number of irrigation cooperatives increased from 16 in 1970 to 26 in 1980, 56 in 1984, and to 90 in 2016 in Edirne.[825] For example, 81 irrigation cooperatives have 12,047 partners in Edirne in 2005.[826] Although their numbers increased to 90, their partners decreased to 11,226 in 2016 in Edirne.[827]

Table 4.8 The Number of Irrigation Cooperatives in 5 Provinces (1970-2016)

Provinces	1970	2016
Edirne	16	90
Samsun	15	12
Diyarbakır	16	13
Şanlıurfa	12	4
Mardin	6	2

SOURCE Zeren (1972); *Türkiye Kooperatifçilik Raporu* 2016.

822 Halil Zeren, "Türkiye'de Toprak ve Su Kooperatifleri ve Sorunları," *Türk Kooperatifçilik Kurumu,* no. 16 (Nisan- Haziran 1972): 3-6.

823 "Türkiye'de Bugüne Kadar 23, 735 Kooperatif Kuruldu," *Vatandaş,* March 8, 1976.

824 T.C Gümrük ve Ticaret Bakanlığı, *Türkiye Kooperatifçilik Raporu (2016),* 42.

825 Ibid, 43; "Kooperatifler İl Müdürlüğü İlimizde Çeltik Kurutma ve Depolama Tesisi ile Mandıra Yapılacağını Bildirdi," *Vatandaş,* July 12, 1980; "Edirne'de Kooperatif Sayısı 203'e Yükseldi," *Vatandaş,* January 16, 1984.

826 Arif Semerci, "Trakya'da Tarımsal Yapı, Verimlilik ve Gelişmişlik Düzeyi," 68.

827 T.C Gümrük ve Ticaret Bakanlığı, *Türkiye Kooperatifçilik Raporu (2016),* 43.

Furthermore, rice farming and the foundation of these cooperatives contributed to their developments mutually. For example, village headman Hüseyin Taşkın took a leading part in the foundation of Irrigation Cooperative in Akçadam village of Meriç district in 1967. In the foundation story of Rahmanca Irrigation Cooperative, the teachers in the primary school of Rahmanca were the pioneers in the 1970s. In general, these teachers graduated from Kepirtepe Village Institute. Thanks to irrigation cooperatives in Edirne, small agricultural enterprises have cultivated rice in their own fields rather than share- croppers since the 1970s.[828] Furthermore, thanks to irrigation cooperatives, farmers could be more organized in rice irrigation and farming. However, before the foundation of them, rice growers had supplied the irrigation water of rice through their own means.

Irrigation cooperatives also provide the spread of new agrarian equipment such as combine harvester, digger, and rice drying machine in villages. Although irrigation cooperatives play an important role in the production, they have not been involved in marketing.[829] The foundation of cooperatives took part in Land Reform that was prepared by the Ministry of Agriculture both to increase the economic welfare of small peasants and to develop agriculture. Since rice farming required expense, specialization, and mechanization, it had been carried out by big landowners until the beginnings of the 1970s. Small landowners let their fields out to big landowners. However, thanks to cooperatives, both rice farming would develop and the welfare of farmers would increase.[830] While there has been a strict organization in the level of irrigation cooperative in every village of Edirne where rice is cultivated, this organization weakens and appears at the level of irrigation union in Samsun. On the other hand, there are hardly any irrigation cooperatives in the Karacadağ Agriculture Basin and every rice grower irrigate their fields from their ponds. Therefore, the rice irrigation of Karacadağ in the 2000s is similar to that of

828 Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, Akçadam, Meriç, Edirne, Turkey, September 01, 2018.

829 Halil Zeren, "Türkiye'de Toprak ve Su Kooperatifleri ve Sorunları," 7-12.

830 M. Kemal Özer, "Toprak Reformu ve Kooperatifçilik," *Vatandaş,* May 8, 1963.

Edirne in the 1950s. Namely, there is distinct historicity at the same history in rice farming.

The General Directorate of Soil and Water Organization played a role not only in the foundation of irrigation cooperatives but also in their administrative works and organizations. To be a member of these cooperatives, having land was necessary. Legally, there are five people who are elected biennially in the board of directors. In addition to control the activities of these five people quarterly, three auditors are elected biennially. Also, the Ministry of Commerce can inspect these cooperatives.[831] Due to institutional and legal reasons such as insufficient management, capital, and legal restrictions and human sources such as dishonest managers, low education, and political or ideological disintegration, agricultural cooperatives have not been developed sufficiently.[832] Experienced directors, keeping the regular accounts, and accountability mechanisms are three important criteria for the success of the cooperative.[833] To receive the expenses of oil and electricity, the Agricultural Bank and the General Directorate of Soil and Water Organization signed a protocol on November 15, 1969, to provide a working capital loan with a one-year maturity.[834]

The foundation of Irrigation Unions was seen in 1989. There are two approaches. The initiative and activity under the control of the public sector, farmers are regarded as responsible for the institutionalization. While there were 2 irrigation unions in 1989, their number increased to 237 in 1997[835] and 392 in 2017.[836] Furthermore, after the first foundation of irrigation cooperatives in 1966 and the enactment of 1163 numbered cooperative laws in 1969,

831 Halil Zeren, "Türkiye'de Toprak ve Su Kooperatifleri ve Sorunları," 8-11.

832 İpek Atılgan Helvacıoğlu, Tuna Şener, Cem Tokatlı and Alpay Balkan, "Socio-Economic Conditions and Behaviors of Rice Producers in Meriç Plain,"23.

833 Halil Zeren, "Türkiye'de Toprak ve Su Kooperatifleri ve Sorunları," 11-12.

834 Ibid., 13.

835 Reyhan Toplu, "Tarımsal Kooperatiflerin İktisadi Analizi: Diyarbakır Örneği," 71-72.

836 Sulama Birlikleri Listesi accesed March 15, 2019, http://www.tbb.gov.tr/storage/catalogs/birliklerin-listesi.pdf

they developed and completed their higher organization. Thus, Irrigation Cooperative Union of Turkey was founded in Ankara in 2001.[837]

4. 3. 9 *A Role of State Policy in the Use of Fertilizer*

Biologically, since rice is grown in wetlands, it needs fertilizer in its vegetation period. Thus, the historical development of the fertilizer industry is directly related to the yield, the production and the spread of rice. Furthermore, since the cultivated lands of Turkey are not rich in nitrogen and phosphor, chemical fertilizer has been needed. The raw materials of fertilizer such as natural gases, phosphate stones, sulfur; intermediates such as ammoniac, ammonium sulfate, and sulfuric and phosphoric acids are imported.[838]

According to Austrian specialist Steniner, the use of chemical fertilizer was low and it began late in Turkish agriculture since agricultural specialists were far from using programmed and long- term agricultural policies.[839] The use of chemical fertilizer began to become widespread in the mid- 1960s among small agricultural enterprises. Turkey is self-sufficient in the production of fertilizer about 50 percent in 1967,[840] 70 percent in 1998, and 53 percent in 2007.[841] Besides, the fertilizer industry developed in the 1960s. However, there were differences in the amount of the used fertilizers among different regions of Turkey. Averagely while it was 65 kg in the world, 5 kg of fertilizer was used per each hectare in Turkey in the 1960s.[842]

In general, in contrast to big land-owners, small rice producers do not prefer soil analyses. While DAP, urea and composed fertilizer are used in the

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837 Türkiye Sulama Kooperatifleri Birliği, accesed March 15, 2019 http://tuskoopbir.org/hakkimizda/

838 Nuran Taşlıgil and Güven Şahin, "Türkiye'de Gübre Sanayi," 13.

839 "Bir Konferans Dinledik," *Vatandaş,* September 2, 1964; Suphi Rıza Doğukan, "Toprağın Bereketi İçin," *Vatandaş,* August 8, 1964.

840 Ahmet Özçelik, *Tarım Tarihi ve Deontolojisi,* 120.

841 Nuran Taşlıgil and Güven Şahin, "Türkiye'de Gübre Sanayi," 2.

842 "Bir Konferans Dinledik,"; Suphi Rıza Doğukan, "Toprağın Bereketi İçin,"

Lower Kızılırmak and Lower Yeşilırmak Basins, ammonium nitrate and ammonium sulfate is used in the Meriç Basin. [843] Similarly, due to saline soils resulted from lack of rainfall; the use of ammonium sulphate has been suggested in the rice farming of the Karacadağ Agriculture Basin.[844]

Turkey firstly laid the foundation of the fertilizer industry in Karabük Iron and Steel Plant with the production of ammonium sulfate and superphosphate in 1939. Some iron and steel plants produced ammonium sulfate, sulfur, and sulfuric acid that were intermediate of fertilizers. For example, Karabük Iron and Steel Plant was a state economic entrepreneur had worked under Sümer Bank until 1955.[845]

However, there had not been any entrepreneurship in the fertilizer industry until the beginnings of the 1950s. The first production of chemical fertilizer began in İskenderun in 1953 and continued in Yarımca in 1961 by the Turkish Fertilizer Corporation. While the plant in İskenderun started the production of the triple super phosphate in 1968, the plant in Yarımca started its production in 1974. After the first fluid fertilizer testing in İskenderun, it was begun to be produced in 2006. İskenderun Iron and Steel Plant was founded to produce fertilizer in the 1970s. However, it was privatized in 2002. Karadeniz Copper Enterprise was founded in 1968 and has produced sulfuric acid since then. The institutions in Kırıkkale, Aliağa and İzmit Turkish Petroleum Refineries Corporation have produced sulfur as an intermediate of fertilizer since the 1970s.

With the foundation of the Turkish Nitrogen Industry Corporation as an economic enterprise in 1954, the industrial plants of Kütahya, Gemlik, and Elazığ began fertilizer production. This institution that has the highest level of fertilizer production of Turkey. Annually, it used only 26 percent of its total production capacity. The fertilizer production oriented investments increased

843 Okan Gaytancıoğlu, "Türkiye'de çeltikte uygulanan üretim fiyat ve pazar politikalarının değerlendirilmesi" 109.

844 "Kimyevi Gübrenin Türkiye'de Kullanılmasına Dair," *Urfa,* May 6, 1952.

845 Nuran Taşlıgil and Güven Şahin, "Türkiye'de Gübre Sanayi," 2-12.

in the 1970s and new plants were opened in the 1980s. It was taken within the scope of privatization in 1998.[846]

Gemlik Fertilizer Industry Corporation was founded with 665,273 TL in 1973. It began its productive activity in 1978 and 1700 technical workers were employed.[847] However, it was privatized in 2004. Samsun Fertilizer Industry Corporation has two plants. The first was founded in 1967 began to produce compound fertilizer after the 1990s with 300000 tons of annual production capacity. The second plant of Samsun Fertilizer Industry Corporation was founded in 1971 produced di-ammonium phosphate and it started to produce compound fertilizer after 2001 with the 264000 tons of annual production capacity. All of these two plants were privatized in 2005. Kütahya Fertilizer Industry Corporation has two plants the first was founded in 1955 with 1,500,000 capitals and began to productive activity in 1961. The other plant in Kütahya was founded in 1966 and started to produce in 1968. It was closed down in 1993.[848] 3800 workers were employed in these plants. They produced 478500 tons of fertilizer and prevented 446,000,000 currency losses in 1975.[849] However, rather than the foundation of new plants and the increase of fertilizer production, the modernization of existing plants has been seen at the end of the 1980s. [850]

Second, Urea fertilizer that is concentrated fertilizer is produced only by the İstanbul Fertilizer Industry Joint Stock Company in Turkey. Thanks to the partnership of the Turkish Petroleum Corporation and İzmit Tüpraş Refinery, İstanbul Fertilizer Industry Joint Stock was founded in İzmit Gulf in 1974 and began its productive activity. This institution firstly started to produce urea in 1977 and fertilizer in 1993. It was privatized in 2004. It has had 250000 tons of production capacity from 2008 onward.[851]

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846 Ibid 2-13.

847 "Gemlik Azot Fabrikası 1977 Yılında Tamamlanacak," *Adalet,* March 25, 1975.

848 Nuran Taşlıgil and Güven Şahin, "Türkiye'de Gübre Sanayi," 8-9.

849 "Kütahya Azot Fabrikası Günde 1320 Ton Kimyevi Gübre Üretiyor," *Adalet,* May 1,1975.

850 Nuran Taşlıgil and Güven Şahin, "Türkiye'de Gübre Sanayi," 2.

851 Ibid., 7-8.

Third, TEGESAN Thrace Fertilizer Industry was founded with 4,000,000 capitals to produce composed fertilizer by 40 farmers and businessmen in Tekirdağ on August 1, 1973. It was expected to produce 20-20-0 and 18-46-0 fertilizer. Its participation shares were sold by 1000 TL in 1974.[852]

Fourth, Aegean Fertilizer Industry Corporation was firstly founded in 1973 and passed to productive activity in 1978. This institution produced mono ammonium phosphate that is the intermediate of compound fertilizer. Its annual production capacity was 155680 tons in 1998, and 159844 tons in 2008. Similarly, Bandırma Fertilizer Industry Corporation was founded in 1969 produced compound fertilizer, di-ammonium phosphate (DAP), and ammonium sulfate. However, this institution has mainly produced DAP fertilizer since 2007.[853]

Taurus Fertilizer Industry and Trade Corporation was founded in 1974 and started various kinds of chemical fertilizer production also in Ceyhan in 1981. This institution spread into seven geographical regions that has 38 percent of fertilizer production and 25 percent of market share in Turkey with 1781000 tons of production. The Mersin Fertilizer Plant that was founded with the partnership of Turkish and Kuwaiti in 1968 and started chemical fertilizer production in 1972 participated in Taurus Agriculture in 1990 and took the name of Taurus Farming Mersin Manufacturing Facilities in 2005.[854]

Table 4.9 Fertilizer Industry in Turkey

Industry/ Founding Date/Locations	
Karabük Iron and Steel Plant (Karabük – 1939)	Ammonium Sulfate and Sulfur
Turkish Fertilizer Cooperation (İskenderun -1953/Yarımca-1961)	Triple Super Phosphate
Karadeniz Cooper Enterprise (Samsun-1968)	Sulfuric Acid
Turkish Petroleum Rafineries (Kırıkkale,İzmit, Aliağa-1983)	Sulfur

852 "TEGESAN Trakya Gübre Sanayi Kuruluyor," *Adalet,* January 21, 1975.

853 Nuran Taşlıgil and Güven Şahin, "Türkiye'de Gübre Sanayi," 10.

854 Ibid., 2-12.

Industry/ Founding Date/Locations	
Turkish Nitrogen Industry (Kütahya, Gemlik, Elazığ-1954)	Chemical Fertilizer
Gemlik Fertilizer Industry Coop. (Gemlik/ Bursa- 1973)	Chemical Fertilizer
Samsun Fertilizer Industry Coop. I-II (Samsun-1967/ 1971)	DAP, Compound Fertilizer
Kütahya Fertilizer Industry I-II (Kütahya -1955/1966)	Chemical Fertilizer
İstanbul Fertilizer Industry (İstanbul -1974)	Urea
Thrace Fertilizer Industry (Tekirdağ-1973)	20-20-0 and 18-46-0

SOURCE Taşlıgil and Şahin (2012)

§ 4. 4 Fertilizer İmportation

Sugar Beet Company and Agricultural Equipment Institution were important institutions in the supply of fertilizer needs of farmers. Thanks to these institutions, both fertilizer importation and its spread among rice growers increased in Edirne in the 1960s and the 1970s. Agricultural Equipment Institution imported 240000 tons nitrogenous, 400000 tons of phosphates and 25000 tons of potassium. With the increase of the use of fertilizer, the institutionalization of Agricultural Equipment Institutions increased in Edirne. The number of regional directors increased from 14 to 21, the number of agency chiefdom increased from 87 to 122, the number of sellers increased from 406 to 1000, and the number of factorships was 20 in Edirne in the 1960s.[855]

While the fertilizer production was less than 500000 tons in the 1970s, it increased to 2610398 tons in 1990, 2627986 tons in 2001, and 2960929 tons in 2008. However, six fertilizer plants used 50 percent of their production capacity in fertilizer production. Especially while some amount of nitrogenous and

855 Edirne Milletvekili Fahir Giritlioğlu'nun, Meriç nehri üzerinde yapılmakta olan seciler sebebiyle Yunanlılarla mübadele edilen Türk topraklarına dair Dışişleri Bakanından soru önergesi ve Bayındırlık Bakanı Arif Hikmet Onat'ın sözlü cevabı

phosphorous fertilizers is produced in Turkey, almost all of the potassium fertilizers were imported.[856]

The annual budgetary cost of the import of fertilizer is about 1.3 billion TL. The major part of the import of Turkey is composed of energy, fertilizer, and the raw material of fertilizer. Turkey imported fertilizer from Ukraine, Russia, Romania, Tunisia, Egypt, Belgium, Lithuania, Libya, Italy, and Belarus. Turkey began to export Triple Super Phosphate and some fertilizer intermediate from 1982 onward. However, with the decline of the fertilizer prices and the supports of fertilizers around the world, the rate of exportation decreased between 1996 and 2000. While Turkey exported 32760 tons of fertilizers in 1996, 207852 tons of fertilizers were exported in 2008 to Italy, Romania, Brazil, Cyprus and India.[857]

Due to the problems of fertilizer production and the prices of fertilizers, the amount of imported fertilizer changes. For example, the importation of fertilizer was 1398183 tons in 1990, 2709875 tons in 2004 and 2078145 tons in 2008.[858] The production of fertilizer began to decrease 69 percent towards the end of the 1970s due to insufficient services in the domestic trade of fertilizer and difficulties in the supplement of raw materials. In this period, although there were 5130000 tons of production capacity, only 1654000 tons of fertilizer could be produced. Based on the increase in the raw material prices, fertilizer prices increased three times. The government was involved in this situation through subventions.[859] Furthermore, in the period between 2008 and 2018, the average use of fertilizer was 5.2 million tons. However, 2.5 million tons out of 5.2 million tons of fertilizer were imported.[860]

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856 Nuran Taşlıgil and Güven Şahin, "Türkiye'de Gübre Sanayi," 13.

857 Ibid.., 13-14.

858 Ibid., 13.

859 "Gübre Üretiminde % 69 Oranında Düşüş Var," *Vatandaş,* February 20, 1977.

860 Türkiye Gübre Sektörü accessed March 25, 2019 http://www.etb.org.tr/media/raporlar/G%C3%BCbre%20Sekt%C3%B6r%C3%BC%20K%C3%BCresel%20Bak%C4%B1%C5%9F.pdf

4. 5 Concluding Remarks

In conclusion, the agency of this study is the directive function of rice in state policies in three basins between 1948 and 2018. On the one hand, all these indicate that rice directs the legal regulation, the public investments, the fiscal policies, scientific projects and public expenditure of the government. On the other hand, it seems that rice collaborates with the government to generate its genes. To receive the food requirement of the population, to prevent currency loss through rice import and to benefit from stony lands, salty lands and wetlands more productively, the encouragement of rice and the collaboration with it are regarded as necessary for the government.

The first part of the chapter includes the role of the government in the legal regulations, the public investments for rice farming and also the settlement of rice culture in these basins such as the influence of the Rice Cultivation Law, government assistance, the Land Reform, and İrrigation investments. The use of water requires the control of the government and well-disciplined organization during the vegetation period of rice. In this context, the legal basis of the Rice Cultivation Law determines rice cultivable lands, the division of labor, bureaucratic process, social organization, and mutual responsibilities between rice growers and statesmen. However, these legal regulations had been made between 1908 and 1950. Therefore, despite the development of rice variety breeding works, rice cultivation technology, and paddy consumption in society throughout the twentieth century, the Rice Cultivation Law appears to be stagnant, restrictive and far from responding to the needs of today. Furthermore, the Law is far from considering the topographical, the socio-economic, the water sources, and the rice farming culture of these basins. Similarly, the scientists in agricultural faculties and the bureaucrats of the Ministry of Agriculture think that the Rice Cultivation Law of 1936 poses an obstacle for the development of rice farming in Turkey. Similar to these bureaucrats and scientists, rice growers demand the abolishment of the articles of the Law which restrict rice cultivated lands. In this case, they usually compare the rice farming of Turkey and that of Japan and Italy. However, in practice, the rule of a certain distance between rice fields and settlements is not implemented completely. Furthermore, although the government

knows the extent of rice cultivated lands based on the Rice Cultivation Law and Turkey is not self-sufficient in rice, there is no planning in rice production policy.

Furthermore, this study not only analyses the governmental acts in rice cultivation but also indicates the reflection of these policies into the daily socio-economic lives of rice growers. Since rice is located in the center of conflict of interest, the relation between rice and state includes different interest groups. This conflict of interest can be seen between public institutions such as the Ministry of Agriculture and the Ministry of Health or the officers of these ministries on the articles of the Rice Cultivation Law. While medical experts regard rice as the sources of malaria, agricultural experts regard it as the national food that nourishes the army and citizens. Although medical experts emphasized certain conditions and strict rules in rice cultivation, the medical advances and the advent of antimalarial drugs such as Larvicide and Kuliside contributed to the spread of rice farming. Second, conflict of interest can appear between big landowners and small landholders who cultivate rice for the use of land and the share of irrigation water. In this case, as the head of the rice commission the bureaucrats of the Ministry of Internal Affairs such as district governors and governors are involved in the process as an intermediator.

In the settlements of rice farming culture, public investments such as the distribution of land through Land Reforms, land reclamation the legal regulations in title deed problems, and the building of irrigation infrastructure have to be emphasized. However, while title deed problems in the Lower Kızılırmak and Lower Yeşilırmak Basins has still continued, the problems between big landholders and small landholders who cultivate rice have continued in the hiring of foundation lands in İpsala in the Meriç Basin. On the other hand, in addition to some small agricultural enterprises in Siverek, in general rice has been cultivated through sharecropping by some sharecroppers who have the rice farming culture. They mainly experience inadequate water levels in their ponds and bore water. Since rice is grown in wetlands, irrigation water is the most prominent issue, the building of irrigation infrastructures such as village ponds, dams and water channels solve the water requirement of rice growers. Thanks to these irrigation infrastructures, both the rivers can

be used productively and the possible drought or water shortage are prevented in rice farming in three basins. While the irrigation water needs of the Karacadağ Agriculture Basin, the Lower Kızılırmak, and Lower Yeşilırmak Basins at the national level, the irrigation water of rice fields in the Meriç Basin is closely related to the water position of Bulgaria and Greek. Since the Meriç River has been used as the main water in rice irrigation, the Turkish government usually has made some negotiations with Bulgaria for water supplies. However, while all these irrigation infrastructures directly have developed rice farming in the Meriç, Lower Kızılırmak and Lower Yeşilırmak Basins, they contributed to the development of cotton farming in the Karacadağ Agriculture Basins. As a public institution, SHW has been responsible for the fulfillment of irrigation infrastructures in these basins since the 1950s. Except for Mardin, there are regional directorates of SHW in Edirne, Samsun, Diyarbakır, and Şanlıurfa.

The second part mainly focuses on the agricultural, institutional, and economic infrastructures in the development of rice in three basins such as the Agricultural Research Institute, TGB, Agricultural Supports, Cooperatives, and Fertilizer Industry. First, TGB and Agricultural Supports of the Ministry of Agriculture are related to the economic sector of rice such as the marketing and pricing of rice. While the agricultural subventions had contributed to the decline of agricultural inputs in the statist period, they have only contributed to the income of rice growers since 2000. The subvention of state in agricultural sectors ended in the 1980s and the 1990s. However, new supports such as diesel oil, fertilizer, premium and DIS appeared in the 2000s. However, these supports are low, independent from production, and cannot be paid on time.

In addition, the scientific projects of some Agricultural Research Institutes are related to the biological part of rice such as yield, the breeding of new rice varieties, and their agricultural extension. The agricultural and scientific projects of rice began in the testing fields of Tosya and Maraş in the 1930s. Institutionally, Antalya Summer Climate Plant Station between 1937 and 1941, Tarsus İrrigated Farming Research Institute and Yeşilköy Agricultural Research Institute in the 1950s and the 1960s focused on the development of high yield rice varieties, new rice cultivation methods, and the reclamation of salty and

alkali lands. Although the rice studies of Thrace Agricultural Research Institute firstly began in the mid-1960s, thanks to the production of rice seed this institute became the most prominent national rice research center. Based on the Seed Law of 1963, tens of rice varieties have been bred, registered, and certified with the Rice Research and Variety Development Projects since the 1980s. These projects aim at developing more qualified and fertile rice varieties that have a short vegetation period. Similarly, Black Sea Agricultural Research Institute has developed four rice varieties. GAP International Agricultural Research and Training Center in Diyarbakır took the geographical indication of Karacadağ rice or Sarı Çeltik in 2014.

Third, irrigation cooperatives are related to the social and organizational part of rice farming. Thanks to irrigation cooperatives, small agricultural enterprises began to rice farming in the Meriç Basin. However, the organization of small agricultural enterprises in Turkey decreases from the west to the east. Fourth, Agricultural Credit Cooperatives are related to the economic part of rice during its vegetation periods such as the supply of agricultural inputs and credit. Finally, Fertilizer Industry supplied an important agricultural input for rice that need nitrogen, phosphor or potassium. The economic policies of Turkey also influenced the development of the Fertilizer Industry.

5

Rice and the Economy

Thanks to their economic added values, nutritional values, employment creation and international marketing networks, cereals such as wheat, corn and rice have had an important place in the socio-economic lives of people. For example, 85 percent of paddy production, 60 percent of wheat production and also 25 percent of corn production are used in human food around the world. Therefore, many people take an average of 50 percent of their calories from these three kinds of cereal in their daily nutrition.[861] Furthermore, there are 12 food variety consumed by people in modern societies. Although cereals are not rich in protein, people receive their protein needs through the consumption of legumes. Together with the cultivation of cereals and legumes, food production has increased remarkably.[862]

In this context, when paddy consumption is regarded, it seems that as the economic welfare of people and urbanization increase, paddy has become more popular and less luxury food at lunches and dinners in Turkey for the last sixty years. Furthermore, paddy consumption per capita has steadily increased during the twentieth century. While annual paddy consumption was between 2.5 kg per capita in 1949, it increased to 4.2 kg per capita in 1969[863]

861 Halil Sürek, *Çeltik Tarımı,* 31- 32.

862 Jared Diamond, *Tüfek, Mikrop ve Çelik,* 284

863 Turan Güneş, *Türkiye Çeltik Ekonomisi*, 165.

and 5.6 kg per capita in 1989, and 9.5 kg per capita in 2016.[864] Thus, how it has been produced and marketed need to be answered.

However, to gain a different standpoint, this study puts rice into the center and pays attention to the reciprocal relations and interactions between the economic lives of people and rice. In other words, rather than an anthropocentric standpoint, this study emphasizes that rice has been an agent or actor in the making of socio-economic history. In this reciprocal relation, the desires, the expectations or the motivations of people about rice production or consumption differentiates. For example, it is higher production and economic income for farmers, it is making of more profit and yield for fabricators and also it is taste and statue indication for consumers. Although it seems that people consider their self-interest, actually they promote the generation of rice genes and contribute to the increase of paddy production indirectly. This study mainly explains how farmers, merchants, and fabricators in the rice sector serve rice from its production to marketing in the Meriç, Karacadağ, Lower Kızılırmak, and Lower Yeşilırmak Basins in Turkey between 1948 and 2018. Therefore, a short history of rice in Turkey might give a general idea about the development of rice production and consumption.

§ 5.1 A Short Historical Past of Rice Farming in Turkey

In a historical process, the development of rice farming in Turkey during the twentieth century might be separated in three different periods. First, rice farming had limited to some big landowners or patrons in the early republican periods. Since rice production was low and it was luxurious, the consumption of paddy in daily meals was not widespread. Furthermore, due to the malaria threat, the Ministry of Health and the Ministry of Agriculture enacted a legal infrastructure of rice cultivation in 1936. More interestingly, although many intellectuals have dwelled on the bureaucratic hardships of the Rice Cultivation Law of 1936 and the relations between malaria and rice cultivation in the

864 T.C Gıda Tarım ve Hayvancılık Bakanlığı TEPGE, Durum ve Tahmin Pirinç 2017/2018, Edited by Ebru Yazıcı (Ankara: TEPGE, 2018), 9.

1930s and the 1940s, the first attempts in the spread of rice farming began slowly, soon afterward the Second World War

Second, the instruments of the Green Revolution, modern agricultural technologies and the organization of farmers in the cooperatives contributed to the spread of rice farming culture among small peasants in the 1960s and 1970s. Besides, with the increasing economic welfare of citizens, the growing urban population preferred paddy consumption rather than boiled and pounded wheat in Turkey in this period.[865] In addition to these, together with road transport infrastructure and the foundation of rice factories, many farmers or rice growers turned into commodity producers and have done market oriented production in all of these basins since the 1950s and the 1960s.[866] Furthermore, on a global scale, due to the destruction of the Second World War in the rice fields of Asia, rice that has been identified with tropical regions and regarded as luxury began to be a more popular staple food in different parts of the world such as Turkey, the USA and Europe from 1950 onwards.[867]

Third, with the rice variety breeding works of Thrace Agricultural Research Institute such as Osmancık-97 and Black Sea Agricultural Research Institute, the use of advanced technology such as combine harvester, laser driven land leveling[868] and drying machine and also the growth of paddy markets in the neoliberal economy from 1980 onwards, both rice cultivation and paddy consumption have steadily increased in Turkey.[869] By the same token, while the importation of rice or paddy had been limited until the 1980s[870] and many people could have consumed substitute goods such as bulgur and pasta,[871] free trade has also increased paddy importation and consumption from 1984 onwards. Therefore, due to this uptrend in rice production and

865 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi*, 2.

866 Çağlar Keyder and Zafer Yenal, *Bildiğimiz Tarımın Sonu,* 27.

867 Mirza Gökgöl, *Çeltik Ziraatı,* 3.

868 Halil Sürek, tape-recorded interview by the author, Trakya Tarımsal Araştırma Enstitüsü, Edirne, Turkey, August 13, 2018.

869 Halil Sürek, *Çeltik Tarımı,* 39-40; İsmail Sezer and Zeki Mut, "Samsun İlinde Çeltik Tarımının Durumu," 62.

870 Okan Gaytancıoğlu, *Türkiye Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli,* 23.

871 Arzu Özalp, "Trakya'da Çeltik Üretiminin Ekonomik ve İstatistiksel Analizi," 28.

paddy consumption, rice farming in Turkey need to be analyzed at a geographical level and historical context.

§ 5. 2 The Development of Rice Farming Culture in Turkey in the Twentieth Century

Rice farming is an economic culture that requires the planning of suitable physical infrastructure, labor discipline, intensive and specialized labor from its cultivation to harvest, and marketing. Since it accommodates economic risks, rice farming culture requires both traditional experiences and considering current conditions in the decision- making process. However, the regions where rice is cultivated have changed since the 1930s. For example, while Kahramanmaraş, Şanlıurfa, and Kastamonu had the largest rice cultivation areas in the 1930s, Edirne, Adana, and Samsun began to be more prominent from 1960 onwards. However, while the rice production in Edirne, Samsun, Balıkesir has continued so far, many rice fields were turned into cotton and corn fields with the government supports in Adana in the 1980s.

Especially, the conditions of water sources, the cultivation of other profitable products, the economic conditions of farmers, agricultural policies and the infrastructural investments of the state led to the moving of rice culture to different regions.[872] For example, while inadequate water sources influenced negatively rice yield in the Aegean region, the liberalization of paddy importation caused the decline of the profits of farmers in the Mediterranean Region and Central Anatolia.[873] Especially suitable water sources and rice prices are two determinant criteria in decision making for rice cultivation in next year. However, there is an inverse proportion between rice yield and rice prices. Therefore, potential rice production is not stable in Turkey.[874] Furthermore, Kahramanmaraş that had been the largest rice cultivation area in the 1930s, had the least rice cultivation areas with 30 decars in 2017.[875] On the other

872 Nejla Türkoğlu, "Türkiye'de Çeltik Ekim Alanlarının Dağılışı," 209- 216.

873 Halil Sürek *Çeltik Tarımı* 39- 40.

874 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 43.

875 T.C Tarım ve Orman Bakanlığı, Toprak Mahsülleri Ofisi Genel Müdürlüğü, *2017 Hububat Raporu,* Ankara: 2018, 121.

hand, rice varieties which were bred in the 1990s were resistant to lodging and suitable for mechanical harvest contributed to the development of rice farming in the Meriç Basin and Lower Kızılırmak and Yeşilırmak Basins.

Table 5.1 The First Five Provinces that have had the Largest Rice Cultivation Areas (Decar) in Turkey (1930-2017)

Years Provinces	1930	1960	1995	2017
1.	Maraş (40000)	Edirne (60000)	Edirne (192100)	Edirne (485846)
2.	Şanlıurfa (35000)	Mersin (60000)	Samsun (96080)	Samsun (165965)
3.	Kastamonu (32000)	Adana (40100)	Çorum (52590)	Balıkesir (144376)
4.	Ankara (32000)	Çorum (34180)	Sinop (34580)	Çanakkale (82367)
5.	Diyarbakır (11000)	Samsun (32810)	Balıkesir (24700)	Çorum (69131)

SOURCE Türkoğlu, (1993); T.C Tarım Orman Bakanlığı, Toprak Mahsülleri Ofisi (TMO) *Hububat Raporu* 2017, 121

Rice is cultivated in 36 provinces of Turkey in the 2000s. However, between 80 and 90 percent of rice has been cultivated in Edirne, Samsun, Balıkesir, Çorum, Sinop, Çanakkale, Çankırı since the 1960s. In contrast to the decline of rice cultivation areas in the 1990s, they began to increase again from 2001 onwards.[876] However, in contrast to the case of Turkey, on a global scale, rice cultivation areas began to remain behind wheat and corn in the 2000s due to coal gas emission[877] and averagely 2000 tons of water consumption of one ton rice.[878] Furthermore, although the average rice yield of Turkey is higher than that of the world, Turkey has not been self-sufficient in rice production

876 Arzu Özalp, "Trakya'da Çeltik Üretiminin Ekonomik ve İstatistiksel Analizi," 20-22.

877 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişirme Değerleri Üzerine Araştırmalar,* 7-8.

878 "Su Tarımın Can Damarı," *Vatandaş,* March 19, 1977.

and imported rice.[879] For example, while, the average rice yield was 869 kg per decar in Turkey, it was 420 kg per decar in the world in 2013. Therefore, it seems that Turkish rice farmers obtain more than two times rice yield than the world average. [880] However, owing to the prices of imported rice, many rice growers cannot sell their products and some rice growers preferred other crops to rice.[881] To understand the rice cultivation in Turkey more comprehensively, the irrigation infrastructure and market-oriented rice production in the Meriç, Karacadağ and Lower Kızılırmak, and Lower Yeşilırmak Basins are also explained.

5.2. 1 *Land and Irrigation Water Infrastructure and Market Oriented Rice Production in the Meriç Basin*

Parallel to the increase of rice cultivation areas, the share of rice production of Edirne increased from 30 percent to 50 percent in Turkey in the last forty years.[882] This is closely related to the plentiful water sources in the Meriç Basin such as rivers, ponds, dams and artesian wells. For example, 99 out of 265 villages of Edirne are situated in the plains of Meriç and Ergene[883] 148 villages of Edirne have made use of agricultural irrigation. 52 villages use artesian wells, 16 villages use bore water, and 62 villages of Edirne use rivers in their agricultural irrigation.[884] Thus, 50 percent of rice cultivation areas have been irrigated by the Meriç and Ergene rivers, 32 percent of them are

879 Meral Peşkircioğlu, Harun Torunlar, Belgin Alsancak Sırlı and Others, "Türkiye'de Çeltik Yetiştirmeye Uygun Potansiyel Alanların Coğrafi Bilgi Sistem Teknikleriyle Belirlenmesi," *Tarla Bitkileri Merkez Araştırma Enstitüsü Dergisi* 22, no. 1, (2013): 21.

880 Ibid., 20-21

881 Nuran Taşlıgil and Güven Şahin, "Türkiye'de Gübre Sanayi," 196-197; Ahmet Şapaloğlu, "Pirinç Üretim ve Tüketim Zincirinde Pazarlama Kanallarının Yapısı ve Pirinç Pazarlama Marjları: Edirne İli Örneği,"43.

882 "İlimizde Üretilen Çeltik Yurdumuz Çeltik İhtiyacının % 30'nu karşılıyor, " *Vatandaş,* June 14, 1988.

883 "İlimizin Zirai Durumu İncelendi," *Edirne Sesi* August 26, 1965.

884 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Edirne Köy Envanteri 1997 (Edirne Village Inventory)* Ankara: 2002, 37.

irrigated by water holes and 13 percent of these lands are irrigated by ponds and dams. However, the water pollution in the Ergene River from 1970 onwards resulted from the industrialization in Çerkezköy and Çorlu, rice growers have difficulty in using the water of Ergene in rice irrigation.[885] Therefore, they have used some artesian wells and bore water in Ergene Plain.

With the loss of Filibe in the Balkan Wars in 1912-13, rice farming culture was moved to İpsala by Bekir Kara in the 1930s. However, thanks to the cultivation of Italian rice varieties, market-oriented rice production began in the Meriç Basin at the end of the 1940s.[886] Therefore, İpsala became famous for rice cultivation and rice farming culture settled in the mid - 1950s.[887] However, due to inadequate physical infrastructures such as water channels, the reclamation of soils and levee along the Meriç River, the prominent rice growers were exposed to floods lost their capitals in rice fields that could be regarded as national wealth.[888] Therefore, only one tenth of İpsala Plain could be cultivated.[889] However, despite this rate, 80 percent of rice in the Meriç Basin was produced in İpsala in the 1950s.[890]

5.2. 2 *The Lower Kızılırmak and Lower Yeşilırmak Basins*

Second, almost 283 out of 974 villages of Samsun are situated in Çarşamba and Bafra Plains which have 1450000 decars of land. Therefore, these plain villages are seen in Alaçam, Tekkeköy, Salıpazarı, 19 Mayıs, Bafra, Çarşamba, and Terme districts. 273 villages have irrigation facilities in their

885 Arzu Özalp, "Trakya'da Çeltik Üretiminin Ekonomik ve İstatistiksel Analizi, " 24-35.

886 "Çeltik Ekimi," *Edirne Postası,* June 26, 1948.

887 "Fikirler," *İpsala Doğuya Sesleniş,* May 14, 1958.

888 "Meriç Ergene Nehri ve Ovamız," *İpsala Doğuya Sesleniş,* November 11, 1956.

889 "53,000 Dekarlık Çeltik Müracatı Yapıldı," *İpsala Doğuya Sesleniş,* April 10, 1957.

890 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Zirai Bünye ve İstihsal 1954-1958 (Agricultural Structure and Production 1954-1958).* Ankara: 1959, 76.

agricultural production. For example, 66 villages use artesian wells, 41 villages use bore water, and 126 villages use the Kızılırmak and Yeşilırmak rivers in their agricultural irrigation.[891]

Rice farming culture was moved by Yusuf Kiraz to the Lower Kızılırmak Basin from Tosya, Boyabat, and Osmancık in the 1950s. It had been cultivated in irrigable lands along Kızılırmak in Bafra Plain in the 1960s and the 1970s. Especially, due to the high underground water of lands in Gelemağrı (Koruluk) and Doğanca villages, rice is the most advantageous and unrivaled crop for them. On the other hand, in addition to rice farming, Koşu Village and Ahıllar can cultivate vegetables such as pepper and red cabbage alternatively.[892] There has been polyculture farming in the Lower Kızılırmak and Lower Yeşilırmak Basins.[893] Therefore, 42 percent of Bafra Plain and 35 percent of Çarşamba Plain were rice in the 1990s.[894]

5.2. 3 *The Karacadağ Agriculture Basin*

Rice has been cultivated in the foothills of the Karacadağ and some plains of the Karacadağ Agriculture Basin. There has been rice farming culture in the villages of Yenişehir, Kayapınar, Bağlar, Çınar, Çermik, Ergani, Hazro and Kocaköy districts of Diyarbakır, Hilvan, Viranşehir, and Siverek districts of Şanlıurfa and Derik districts of Mardin.[895] Especially, there are large plains in Çınar, Siverek, Viranşehir, Ergani and Derik. Since the geographical position of the Karacadağ Agriculture Basin is situated in the east of Şanlıurfa, the

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891 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Samsun Köy Envanteri 1997 (Samsun Village Inventory 1997)* Ankara. 2002, 4-41.

892 Ahmet Aydın and Osman Kiraz, tape-recorded in terview by the author, Bafra, Samsun, Turkey August 6, 2018.

893 Atilla Ocaktan, *Samsun Yöresinde Şekerpancarı, Çeltik, Soya, Domates, Biber, Patlıcan ve Hıyar Üretimi ve Maliyetleri*, 6-10.

894 Okan Gaytancıoğlu, "Türkiye'de Çeltikte Uygulanan Üretim, Fiyat ve Pazar Politikalarının Değerlendirilmesi," 14; Halil Sürek, *Çeltik Tarımı*, 43.

895 Abdullah Öktem, "Şanlıurfa Koşullarında Karacadağ Çeltiği YetiştiriciliğiÜzerine Anket Çalışması," 103.

west of Diyarbakır, and the northwest of Mardin, rather than all of these provinces, the settlements of rice farming culture in the Karacadağ Agriculture Basin need to be analyzed in detail. As mentioned before, there are 12 districts and 597 villages of these three provinces in the Karacadağ Agriculture Basin. 315 out of 597 villages are situated in plains. 197 villages have irrigation facilities in their agricultural production. 40 villages use dams, 56 villages use rivers, 79 villages use artesian wells, 20 villages use bore water and also 17 villages use ponds.[896] Since some villages are close to Ataturk Dam, they use its water such as Yalankoz, Güvenli, Üzümlü and Beyceri.[897]

While the rice growers of the Meriç, Lower Kızılırmak, and Lower Yeşilırmak Basins cultivate other crops such as sunflower, wheat and water melon, in general those of Karacadağ cultivate only rice through sharecropping. The peasants of Karacadağ are interested in husbandry and go to Black Sea Region for hazelnut harvest, Malatya for apricot harvest, and Çukurova for cotton harvest every year.[898] Hacı Haşim Özkahraman and Hasan Oruç played an important role in the development of the rice economy in Karacadağ. Furthermore, they went to the Meriç Basin to cultivate rice from 1950 onwards.[899]

Although rice farming culture in Filibe regions of Meriç, Lower, Kızılırmak and Lower Yeşilırmak go back to the fifteenth and sixteenth centuries, their cultivation areas were limited. Besides although rice farming culture and its market have remained more limited in Karacadağ, the history of rice farming in Karacadağ has a longer historical past. However, with the

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896 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Diyarbakır Köy Envanteri 1997 (Diyarbakır Village Inventory 1997)* Ankara. 20024-39; T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Mardin Köy Envanteri 1997 (Mardin Village Inventory 1997)* Ankara. 20024-37; T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Şanlıurfa Köy Envanteri 1997 (Şanlıurfa Village Inventory 1997)* Ankara. 2002 4-39.

897 Abdullah Öktem, "Şanlıurfa Koşullarında Karacadağ Çeltiği YetiştiriciliğiÜzerine Anket Çalışması," 104.

898 Şerif Kahraman and Adil Kayapınar, tape-recorded interview by the author, Yalankoz Village of Diyarbakır, Turkey, August 09, 2018.

899 İlhan Avcı, tape-recorded interview by the author, Diyarbakır, Turkey, August 09, 2018.

spread of market oriented rice production, rice production began to be commoditized and the rice growers of these basins began to be integrated into the market economy in the 1950s. While rice cultivation was done in 253 villages in the 1990s, it increased to 317 villages in these three basins in 2016.[900] However, while the number of rice cultivated villages has increased in the Meriç, Lower Kızılırmak and Lower Yeşilırmak Basins, their number has decreased in Karacadağ in this period. It seems that this situation results from high underground water,[901] the cost account of farmers, and the government support of some crops in specific regions. However, the number of rice growers in the Karacadağ Agriculture Basin has increased since 2005.

Table 5.2 The Number of Rice Cultivated Villages in 5 Provinces (1996 and 2016)[902]

Provinces	1996	2016
Edirne	79	118
Samsun	109	146
Diyarbakır	20	35
Şanlıurfa	32	15
Mardin	13	3

SOURCE Gaytancıoğlu (1997); Sürek, (2002) and ÇKS 2005-2018

900 Okan Gaytancıoğlu, "Türkiye'de Çeltikte Uygulanan Üretim, Fiyat ve Pazar Politikalarının Değerlendirilmesi," 14; Halil Sürek *Çeltik Tarımı*; ÇKS 2017.

901 Edirne İl Tarım Müdürlüğü, Edirne Tarım Master Planı, 2005, 47; Abdulveli Sirat, İsmail Sezer and Hasan Akay, "Kızılırmak Deltasında Organik Çeltik Tarımı," 78.

902 Esen Durmuş, "Diyarbakır İlinde Yerleşmelerin Yükselti Basamaklarına Göre Dağlışı," *TÜCAUM 30. Uluslararası Coğrafya Sempozyumu,* (October 3-6, 2018), 343; "Urfa İli Çevresi İçinde Yapılan Çeltik Ziraatı,"; Lale Taş, tape-recorded interview by the author, Şanlıurfa, Turkey, June 18, 2019; Ferat Önal and Mübarek Kavan, tape-recorded interview by the author, İzmir, Turkey, June 18, 2019.

Table 5.3 The Number of Rice Growers in 5 Provinces (1996-2016)

Provinces	1996-2005	2018
Edirne	8017	8000
Samsun	2480	3401
Diyarbakır	121	131
Şanlıurfa	-	45
Mardin	18	25

SOURCE Gaytancıoğlu (1997); ÇKS (2005- 2018)

§ 5.3 The Commodification of Rice Cultivable Lands and Irrigation Water

Thanks to its high economic income, lands and irrigation water have gained value in rice cultivation areas. Therefore, rice farming take place at the core of court cases, conflict of interest, and labor exploitation. Together with the beginning of rice cultivation, the wetlands, the mulberry gardens and the meadow of Meriç Plain became more valuable at the end of the 1940s. However, at the first stage since rice farming had required adequate capital, mechanizations, intensive, and specialized labor force, in general, it had been cultivated by capitalist big landowners who were well connected in the paddy market and local politics until the mid-1960s. These men had cultivated the lands of peasants through land tenure. However, thanks to physical infrastructures in plains in irrigation and land reclamations, agricultural mechanization, the building of irrigation cooperatives and increasing rice prices, rice farming began to spread among small agricultural enterprises in the Meriç Basin in the 1970s. Furthermore, since rice has a strong adaptation to salty lands and floods for a while, it has been regarded as the most profitable product in Meriç Plain.[903] Therefore, the sale prices or land tenure prices of rice cultivable lands in Meriç Plain is two or three times higher than other lands.

To indicate the value of rice fields, three cases in Adasarhanlı, Kadıdondurma and Karpuzlu were quite explanatory examples. First, sixty families

903 Turan Güneş, Türkiye Çeltik Ekonomisi, 13

who tried to get more lands in plain took legal action and brought a lawsuit to the detriment of the public purse in the amount of 900,000 TL in Adasarhanlı village of Meriç District in 1951. These farmers tried to indicate as if they had cultivated 10000 decar of public lands for 20 years. Thus, they demanded to get the title deeds of these rice fields. However, these lands had been meadow until 1947 and they had been cultivated rice by one of the prominent rice growers through land tenure for four years.[904] Similarly, some peasants of Kadıdondurma village set forests on fire increase their rice cultivated lands in Meriç Plain in 1964.[905] Furthermore, due to bureaucratic problems, the peasants of Karpuzlu village and some prominent rice growers disputed and there was a conflict of interest for the cultivation of Paşalı Land. While peasant demanded to cultivate these lands, capitalist rice growers said that they paid 750,000 TL and hired 5347 decar of lands to cultivate rice. Both side accused the regional directorate of foundations.[906]

In addition to soil, due to the irrigation water requirement of rice fields in the summer months, some rice farmers have experienced difficulties and conflicts of interest for the adequate irrigation water of their field every year.[907] For example, with the spread of rice farming among peasants, they claimed that irrigation water of Altınyazı Dam was used only by big landowners who cultivated rice in Ergene Plain in 1968.[908] Furthermore, the conflict of interest among them caused both a bureaucratic crisis and brought a lawsuit. As it was reported by the Journal of İpsala, due to water-holding in Altınyazı Dam through the shackle, some prominent rice growers and SHW took issue with each other allegedly. Therefore, they were deeply occupied with the irrigation of thousand decars of rice fields. As a president of the rice cultivation commission, Uzunköprü district governor said that they tried to pass the water of

904 "Meriç'te Hazine Aleyhine 60 Tarla Tescil Davası Açılmıştır," *Edirne Postası,* November 23, 1952.

905 "Tarla Açmak İçin Ormanı Yakmışlar,"*Vatandaş,* November 29, 1964.

906 "Karpuzlu Köylüleri ile İsmail Kocman Arasındaki Arazi İhtilafı Gittikçe Büyüyor," *İpsala,* May 5, 1975.

907 "Trakya'da Pamuk," *Edirne Sesi,* June 1, 1965.

908 "Ya Hep Ya Hiç," *İpsala,* August 14, 1968.

Kadıgebren stream through the chiffon under the water channel of SHW. Thus there was no the shackle of Altınyazı Dam. Thanks to district governorship and rice commission, this dispute was also brought to trial by SHW and the contractor of chiffon in 1970. After the reconnaissance of Judicature, İpsala SHW Chief Engineering took a machine to dismantled chiffon. The district governor said that it was a legal subject, thus they could not interfere.[909] Similarly, one of the prominent rice growers who cultivated rice in unlicensed lands shoot at gendarmeries in the course of opening sealed moto pumps of Altınyazı Dam near Sultanköy on June 21, 1970. Although he was arrested at first, the judge of execution abstained from the case.[910] However, rice cultivation in these basins necessitates regulation of the modes of production between peasants and these prominent rice growers.

Although the lands of Meriç, Bafra and Çarşamba plains had been a swamp, meadow and marshy until the 1960s, the economic importance of these lands began to be felt with rice farming. Furthermore, with the cultivation of rice varieties that have a higher yield, the value of these lands has increased at least two or three times in recent years.[911] As a rice grower and older waterman, Hasan Topçu said that rice has played an important role in the development of Akçadam village and he added that he prefers 30 decars of rice field to 100 decars of wheat. When the soil structure of plains, the yield, and the economic income of rice are considered, rice is the most profitable, advantageous, and unrivaled crop in these basins. On the other hand, this is not valid for the stony lands of Karacadağ. The peasants who clean these stones cultivate other cereals rather than rice.

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909 "Altınyazı Barajına Köstek Yaparak Sulamayı Engellemek İsteyen Çeltikçi Fuat Çakır Hakkındaki Neşriyatımız Üzerine Uzunköprü Kaymakamı Cafer Eroğlu'nun Açıklaması," *İpsala*, May 19, 1970

910 "Jandarmaya Ateş Ettiği İddiasıyla Yakalanarak Adliyeye Sevk Edilen ve Yapılan Sorgusu Sonunda Serbest Bırakılan Uzunköprülü Çeltikçi İsmail Kocaman (Papçık) Tevkif Edildi," *İpsala*, June 29, 1970.

911 Mustafa Öden, Interview by Authors, İpsala, Edirne, Turkey August 20, 2017; Ahmet Aydın, Interview by Author, Bafra, Samsun, Turkey August 6, 2018.

§ 5.4 The Modes of Rice Production in Three Basins

While the sharecropping system had been widespread in the Southeast Anatolia, the land tenure system had been seen in the Meriç, Lower Kızılırmak and Lower Yeşilırmak Basins until 1970.[912] For example, rice was firstly cultivated in Akçadam village of Meriç district by Hasan Buğdaycı in 1952.[913] Similarly, Mustafa Öden had cultivated rice between the mid-1950s and the mid-1970s through land tenure in Meriç Plain.[914] Due to inadequate rice cultivable lands, inadequate labor force and capitals and also the rice farming culture of some prominent rice growers, the sharecropping system has continued to some extent in the Karacadağ Agriculture Basin.[915] Sharecroppers make a deal with the notables of villages and they distribute the share of peasants separately.[916] Many rice growers in Diyarbakır hired some land in Nusaybin to cultivate rice in the 1960s.[917] Besides, the process of sharecropping and land tenure was limited to the vegetation period of rice. However, it might be two years in the Meriç Basin. The total amount of land tenure paid is based on the fertility of the soil. The share of landowners might have changed from region to region. While sharecropping was made by means of oral agreement in the Karacadağ, Lower Kızılırmak, and Lower Yeşilırmak Basins, it was made through notarial deed in the Meriç Basin.[918]

Furthermore, in the production process, due to a lack of enough mechanization, capitals and an organization in cooperatives in villages, rice farming

912 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 52

913 Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, Akçadam, Meriç, Edirne, Turkey, September 01, 2018.

914 Mustafa Öden, tape-recorded interview by the authors, İpsala, Edirne, Turkey August 20, 2017.

915 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 54- 59.

916 Süleman Kızılkaya, tape-recorded interview by the author, Yalankoz Village of Diyarbakır, Turkey, August 09, 2018.

917 "Bu Yıl Pirinçlerimiz de Bol Olarak İstihsal Edilmiştir," *Diyarbakır,* February 12, 1963.

918 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 59.

had limited to the work of some rich men.[919] For example, the peasants of Subaşı could not cultivate their plain and their lands were hired by big landowners for rice cultivation in the 1970s. They worked in their own lands as laborers.[920] While small agricultural enterprises make use of the labor of their households, big agricultural enterprises have hired workers[921] Apart from İpsala and Enez, there have been small agricultural enterprises in the rice cultivation of the Meriç Basin. Furthermore, some of these big landowners are also the owners of rice factories, merchants, and industrialists who have lived in districts.[922] They cultivate between 3000 and 8000 decars of land which is almost 25 percent of total rice cultivation areas in Turkey.[923]

Almost 57 percent of rice growers cultivated between 1- 50 decars of land which corresponded to 18 percent of lands and produced about 24 percent of rice. Also, almost 40 percent of rice growers cultivated between 51- 200 decars of lands which corresponded to 60 percent of lands and produced almost 60 percent of rice. Finally, 3 percent of rice growers cultivated between 501- 5000 decars which was 14 percent of rice and produced 14 percent of rice in the 1960s and 1970s.[924] The rate of rice growers who cultivate their own lands in Marmara was 64 percent, in the Black Sea was 45 percent and in Southeast Anatolia was 41 percent in the 1960s and 1970s. On the other hand, small agricultural enterprises in the Lower Kızılırmak and Lower Yeşilırmak Basins cultivated averagely 21 decars of rice. While the percentage of rice growers who cultivated their own fields increased to 86, the rate of those who cultivated through land tenure declined to 7.[925]

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919 Ferdi Akıncan, "Çeltik Ziraatında Tohumluğun Değeri ve İstihsal Usulleri," *Ziraat Dünyası,* no: 109-110-111, (1958): 16.

920 "Subaşı Köyü Kalkınma Hamlesinde," *Adalet,* January 24, 1975.

921 Okan Gaytancıoğlu, Türkiye Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli, 73.

922 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 62.

923 Okan Gaytancıoğlu, Türkiye'de Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli, 56.

924 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 46-53.

925 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi,* 5-10; İsmail Sezer and Zeki Mut, "Samsun İlinde Çeltik Tarımının Durumu," 62.

The shares of landowners and sharecroppers in the expenses of rice seed, fertilizer, and weed cleaning changed. First, while seed expense was completely paid by sharecropper in Karacadağ, it was paid completely or in half by landowners in other basins. Second, while weed cleaning expenses were received by sharecroppers in three regions, harvest expenses were paid by sharecroppers only in Karacadağ, the Lower Kızılırmak, and Lower Yeşilırmak Basins. However, sharecropper and landowners paid harvest expenses and shared rice by half and half. Besides, in some cases due to higher expenses and much more labor force of sharecroppers, they could get 60 or 70 percent of output. However, the marketing of rice was made separately.[926] In contrast to other basins, there was a tribal community and much more landless peasants in Karacadağ. For example, 48 percent of 56,613 peasant households in Diyarbakır were landless and 32 percent of these families worked through sharecropping in the 1970s.[927] However, the rice cultivation techniques of these basins have differentiated in time.

§ 5.5 The Transformation of Rice Production Technics from Cultivation to Harvest

Thanks to the instruments of the Green Revolution and the Marshall Plan such as mechanization, fertilization and new rice varieties, total rice production doubled[928] and rice yield has increased 76 percent since the 1960s.[929] However, while the rice growers of the Meriç, Lower Kızılırmak, and Lower Yeşilırmak Basins have used intensive technology in time, those of Karacadağ has still used traditional methods. Furthermore, the rice growers of Karacadağ have not used tractors too much except fertilization, agricultural spraying and the transportation of rice grain in the harvest in recent years. There had not been agricultural spraying and fertilization until the end of the 1980s,[930] therefore, rice yield was lower than the other basins. Thus, it can be claimed that

926 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 60- 61.

927 "Diyarbakır'da 56,613 Çiftçi Ailesi 1,538,500 Hektar Arazileri Var," *Yeni Zaman* May 4, 1974.

928 Halil Sürek, *Çeltik Tarımı*, 31.

929 Arzu Özalp, "Trakya'da Çeltik Üretiminin Ekonomik ve İstatistiksel Analizi, " 17.

930 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesinde Çeltik Tarımının Bugünkü Durumu,* 8.

on the one hand the rice cultivation methods and rice culture of the Meriç, Lower Kızılırmak, and Lower Yeşilırmak Basins represent the modernization, changes, and transformation, the rice cultivation technics and culture of the Karacadağ Agriculture Basin represent traditionalism, immutableness and continuation.

5.5.1 *Rice Varieties*

Based on the rice yield, technological transformation, rice prices in the free market, and the popularity of new varieties, rice growers have changed their rice varieties. For example, Maratelli, Ribe, Baldo, Violin, Karolin Rocca and Osmancık varieties had cultivated in the Meriç and Lower Kızılırmak and Lower Yeşilırmak Basins until the end of the 1990s. However, Sarıçeltik or Karacadağ varieties have been cultivated in Karacadağ for centuries.[931] 68 percent of farmers prefer this variety due to its high yield, the rest prefers due to its quality and price.[932] Furthermore, the Karacadağ rice variety complied with the environmental conditions such as soil structure and irrigation water in Southeastern Anatolia.[933] Due to its high yield, many farmers in the Meriç, Lower Kızılırmak and Lower Yeşilırmak Basins began to cultivate Luna and Ronaldo rice varieties in recent years. However, these varieties are used in forage rather than cooking. Many rice growers preferred these varieties to extinct red brass and to clean the field.[934] Furthermore, some pesticides were developed specifically for some rice varieties. For example, the pesticides of Luna cannot be used for Ronaldo.[935] In general, while the rice growers of the

931 Mehmet Oğraş*, Çeltik Tarımı;* Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi,* 10-13.

932 Abdullah Öktem, "Şanlıurfa Koşullarında Karacadağ Çeltiği Yetiştiriciliği Üzerine Anket Çalışması," 105.

933 Şerif Kahraman, Şeyhmus Atakul and Sevda Kılınç, "Diyarbakır Yöresinde Çeltik Tarımının Yapısal Durumu,"82.

934 Kurtuluş Varol, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6, 2018.

935 Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, Akçadam Köyü, Meriç, Edirne, Turkey, September 01, 2018.

Meriç, Lower Kızılırmak, and Lower Yeşilırmak have bought rice seeds from merchants and agricultural research institutes, those of Karacadağ have used their local rice varieties.[936] Except for Karacadağ, other basins have complied with the changes in rice technology and market conditions. For example, with the advent of combine harvesters and drying machines in harvest, these basins stopped the cultivation of spiny rice varieties.

With the use of agricultural machines, both rice varieties such as Maratelli and Ribe that are suitable for modern technologies began to be grown and more yields could be obtained.[937] Furthermore, Thanks to the brochures of the General Directorate of Soil Water on Ribe varieties, many rice growers cultivated Ribe in the Lower Kızılırmak and Lower Yeşilırmak Basins.[938] Almost 33 percent of rice fields were R. Bersani, 22 percent was Maratelli, about 20 percent was Egypt rice and the rest was local rice varieties such as *Akkılçık, Karakılçık,* and *Sarıkılçık* in Turkey in the 1960s and 1970s. When the rice varieties of three basins are considered until the 1980s, while almost 70 percent of rice fields in Edirne and Samsun were R. Bersani and Maratelli, more than 50 percent of the rice fields of Karacadağ was local rice varieties and 30 percent was Egypt rice.[939]

Besides, by means of the breeding of new rice varieties that are sensitive to fertilizer, suitable for mechanization, resistant to diseases, and adapted to different regions, rice yield has steadily increased since the beginning of the 1980s.[940] These rice varieties such as Osmancık 97 increased rice yield to almost one ton per decar in the 2000s.[941] Thanks to a higher economic income, rice yield encourages rice growers to use modern agricultural technics and new rice varieties. Namely, it can be said that rice farming requires an inno-

936 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi*, 10-13; Arzu Özalp "Trakya'da Çeltik Üretiminin Ekonomik ve İstatistiksel Analizi, 39.

937 Turan Güneş, *Türkiye Çeltik Ekonomisi*, 128.

938 Ahmet Aydın, tape-recorded interview by the author, Bafra Samsun, Turkey, August 6, 2018.

939 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 133-136.

940 Halil Sürek, *Çeltik Tarımı* 195; Rasim Ünan and Melih Enginsu, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6, 2018.

941 Rasim Ünan and Halik Sürek, "Hibrit Çeltik ve Türkiye'deki Geleceği," 13.

vative standpoint and private entrepreneurship. In this context, the rice growers of İpsala have visited the rice fields of Greece and Italy to get information about the increase of rice yield.[942] In addition to these, to get an easier pest control and higher rice yield, crop rotation is required.

5.5. 2 *Crop Rotation*

Since rice fields are cultivated for many years without making crop rotation and herbs gain resistance against pesticides, rice growers have had difficulty in dealing with plant diseases, herbs, and low rice yield. Only 15 percent of rice growers cultivated their rice fields 5 years in a row in the Lower Kızılırmak and Lower Yeşilırmak Basins in the 1980s and the 1990s due to the decline of rice yield, the difficulties in agricultural pest control, and red brass. In this crop rotation, they cultivated corn, wheat, sunflowers, and sugar beet.[943] Apart from Terme, rice growers made crop rotation quinquennial in these basins.[944] Especially, due to the higher yield of new rice varieties and bank debts, many of them have not complied with crop rotation.[945] Furthermore, with the encouragement of the government, some farmers made hazelnut farming.[946]

In general, some rice growers do not make crop rotation or some of them made it decennially in the Meriç Basin due to the requirement of extra expenses and the higher income of rice farming.[947] They can cultivate only their lands summer growing plants such as corn, bean, and kitchen garden due to the floods of the Meriç River.[948] Furthermore, Edirne Provincial Directorate of Agriculture planned 3 years of corn cultivation project to receive forage crop requirements.[949] On the other hand, since the rice cultivated lands of the

942 Okan Gaytancıoğlu, *Türkiye Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli,* 74.
943 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi*, 10-13.
944 İsmail Sezer and Zeki Mut "Samsun İlinde Çeltik Tarımının Durumu," 62.
945 Ahmet Aydın, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6, 2018.
946 Okan Gaytancıoğlu, *Türkiye Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli,* 117.
947 Arzu Özalp, "Trakya'da Çeltik Üretiminin Ekonomik ve İstatistiksel Analizi," 38.
948 Halil Sürek, and Haluk Yakan, *Edirne Yöresinde Çeltik Sulaması,* 9-10.
949 "Çeltik Yerine Mısır," *Hudut,* May 25, 2000.

Karacadağ Agriculture Basin are stony and volcanic lands, rice has been cultivated without implementing ground surface tillage or land leveling. Thus, the rice fields of the Karacadağ Agriculture Basin are cultivated septennial. Otherwise, they have used these lands as meadows.[950] Furthermore while 66 percent of them cultivate rice every four years, 24 percent of farmers cultivate biennially. Apart from rice, they cultivate cotton, barley and wheat.[951] Thus, rice farming supports the development of husbandry and other crops in some years.

5.5. 3 *The Use of Seasonal Labor force in Rice Farming*

In addition to the providing of higher yield in rice fields, the regulation of the irrigation water of rice fields has created seasonal employment in these basins. The big rice growers of these basins have hired watermen individually. However, while the peasants of the Meriç Basins have hired their watermen by Irrigation Cooperatives, the peasants of the Lower Kızılırmak and Lower Yeşilırmak have provided and regulated their irrigation water themselves. They benefit from the water channels of SHW and irrigation union.[952] In contrast to the Meriç Basin, the rice growers of the Lower Kızılırmak and Lower Yeşilırmak Basins cannot take joint action in rice cultivation. Therefore, they claimed the organization in the Meriç Basin make the work of rice growers easier.[953] These watermen have been employed in the months between April and September. For example, the household heads of some poor families in the villages of Edirne have been employed as waterman, engineman and

950 A. Kadir Kıran, *Güneydoğu Anadolu Bölgesi Çeltik Tarımı, Bugünkü Durumu ve Geliştirilmesi* 12.

951 Abdullah Öktem, "Şanlıurfa Koşullarında Karacadağ Çeltiği Yetiştiriciliği Üzerine Anket Çalışması," 104.

952 Ahmet Aydın, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6, 2018.

953 Osman Kiraz, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6, 2018.

cooker in rice cultivated areas since the 1950s. With the spread of rice cultivation in the Meriç Basin in the 1970s, waterman became a more widespread occupation in Edirne.[954]

Due to intensive labor requirements and excessive use of pesticides, fertilizer, diesel oil, and electricity, economic mobility attracts attention in rice cultivation areas.[955] From the building of water channels and the bank lines of rice fields to agricultural spraying and harvest, rice farming has required both intensive and specialized labor. While these water channels had been built by people until the 1980s,[956] they have been built by diggers since the end of the 1990s. Thus, Edirne Employment Agency demanded the names and addresses of rice growers from the Directorates of Agricultural Affairs to provide their labor requirements in 1965. Thus employment agency prepared a staffing plan at the regional level. Therefore, rice growers would pay the share of mentors who provided laborers from Maraş and Kars. Since the employment agency carried out the employment of rice workers legally, Edirne deputies presented a jeep to this institution.[957] Furthermore, irrigation cooperatives employed the workers to open water channels that had come in March and April. These men had stayed in village coffees of Edirne.[958]

However, the labor wages of these workers have changed from region to region. Similarly, rice growers had received money wages and food.[959] With the increase of rice cultivation areas from 3000 to 5000 hectares in Enez, rice growers had difficulty in finding new workers for rice farming. Thus, teenagers were employed for 35 TL in 1974.[960] Thus, corn chandlers tried to get in contact with rice growers three months before the rice harvest.[961] Similarly,

954 "Keşan'da Çeltik Bakıcıları Ayda 6,000 Lira Kazanıyor," *Vatandaş,* August 21, 1976.

955 Hayati Tuncalı, "Çeltik Ziraatı ve İktisadi Önemi,"15.

956 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 69.

957 "Tarım İşçilerinin Çalışma Şartları," *Edirne Sesi*, March 25, 1965.

958 Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, Akçadam, Meriç, Edirne, Turkey, September 01, 2018.

959 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 67.

960 "Enez'de Bu Yıl 50,000 Dekar Çeltik Ekildi," *Vatandaş*, June 5, 1974.

961 "Bu Yıl Pirinç Rekoltesi İyi Durumda," *Vatandaş,* July 28, 1974.

thanks to suitable climate conditions, high paddy prices and the encouragement of the Provincial Directorate of Agriculture in Diyarbakır, the rice cultivated areas increased from 3628 hectares to 4000 hectares in April 1974.[962] However, since the health and socio-economic conditions of these wage laborers had not been determined by laws, their labor could be exploited. Thus, some of them evaded from rice fields.[963] In such a case their wages were not paid and they could not demand justice.[964]



Figure 5.1 The Building of Telmata Channel in İpsala in 1951
SOURCE: İpsala State Hydraulic Works (DSİ)

5.5. 4 *The Means of Rice Production*

In addition to seasonal workers who provide soil and irrigation infrastructure, rice cultivation mainly depends upon the intensive labor of farmers. However,

962 "Şehrimizde 5420 Hektar Sahaya Çeltik Ekilecek," *Yeni Zaman,* April 15, 974.

963 "Şimdi Tam Zamanı," *Vatandaş,* April 24, 1963.

964 Çanakkale Milletvekili Ali Rıza Kırsever'in, Meriç nehri civarındaki Çeltiklerde çalıştırılan işçilerin sihhi durumlariyle iaşeleri hakkındaki sözlü sorusuna Çalışma Bakanı Dr. Sadi Irmak'm cevabı, (TBMM Tutanak Dergisi, September 3, 1947) https://www.tbmm.gov.tr/tutanlar/TUTANAK/TBMM/d08/c006/tbmm08006080.pdf

rice cultivation technics have changed from labor-intensive production to mechanized system in Meriç, the Lower Kızılırmak, and Lower Yeşilırmak Basins in the last 60 years. For example, while water buffalos and oxen were used to plough their rice fields and to build their bank lines, some top model tractors cultivated these fields in the 2000s. Furthermore, the bank lines of rice fields were called water buffalo waist colloquially in the Meriç Basin in the 1960s. Similarly, planker mounted horses had been used for the land leveling of rice fields in these basins until recent years. However, due to non-standard land leveling and slopes, the extent of rice fields was not more than 0.1 hectares. Thanks to laser-guided land leveling, the extent of rice fields increased in the 2000s. Rice growers could deal with pest control and get higher yield.[965] Especially, laser-driven land leveling, the cater-pillar technology of combined harvest and drying machines has remarkably made rice farming easier, and increased rice production since the 1990s.



Figure 5.2 Caterpillar Technology in Combine Harvesters
SOURCE: *YurtHaber,* September 12, 2013

Since pesticides had not been used commonly, rice growers had been weeding their rice with the labor force. Rice growers of Meriç, the Lower Kızılırmak, and Yeşilırmak Basins had received their labors either from their own villages or from neighbor villages through daily wages. Since weeding had required

965 Ahmet Aydın, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 06, 2018.

an intensive labor force and had taken a long time in wetlands, some relative families also had helped with each other until the mid-1980s. Weeding was implemented two times in the vegetation period of rice. However, some peasants began to use pesticides at the end of the 1960s. Thus, the number of pulverizators has increased remarkably in these basins. In addition to weeding, fertilization and the harvest of rice fields required intensive manpower. Since tractors mired in wetlands, draught animals were also used in transporting the harvested rice bunches from rice fields to threshing machines.[966]

Since the use of modern technology in rice cultivation has come from Italy and Greece, it was firstly seen in the Meriç Basins and a few years later in the Lower Kızılırmak and Yeşilırmak Basins.[967] However, due to the capital of rice farmers and the importance of rice in the regional economy, new technologies have been adapted slower in the Lower Kızılırmak and Yeşilırmak Basin. Therefore, with the agricultural mechanization such as tractors, combine harvesters, and disk harrow, the number of draught animals and wooden plows has declined, the number of tractors and other machines used in rice farming has increased remarkably in these basins since the mid-1980s. However, with the increase of mechanization in these basins in the 1980s, the requirement of the labor force decreased half in half[968] and many households began a migration to cities. In contrast, the rice growers of Karacadağ had not weeded these herbs. The use of pesticides began in the 1990s.

Thanks to 25 directorships, 387 branch offices and 1300 dealers of Agricultural Equipment Institution that was founded in 1944, many farmers had purchased their fertilizer and agricultural machines.[969] The government encouraged small peasants to buy tractors and combine harvesters. Thus, credit facilities and purchasing conditions were eased. There were 58 tractor brands

966 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 92-106; Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, Akçadam, Meriç, Edirne, Turkey, September 01, 2018.

967 Rasim Ünan and Melih Enginsu, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6, 2018.

968 Mustafa Öden, tape-recorded interview by the authors, İpsala, Edirne, Turkey August 20, 2017.

969 "Giderek Küçülen Kurum Zirai Donatım Kurumu,"*GAP'ta Diyarbakır,* (Adana: Kemal Matbası, 1990), 21-22.

in Thrace in the 1970s such as Ford, Massey Fergusson, and Fiat. However, in case of breakdown, dealers had difficulty in mending and providing spare parts with farmers.[970] Similarly, the number of tractors was limited since there was no auto mechanic service in the Karacadağ Agriculture Basin.[971] Thanks to Agricultural Equipment Institution, the sale of moto pumps and tractors increased.[972] Thus, the use of tractor became widespread in the mid-1970s in Diyarbakır. The farmers of Diyarbakır gave up the primitive plough. However, as these tractors could not be used in stony lands of rice fields in Karacadağ, 700 out of 823 tractors in Diyarbakır were used in transportation and road haulage in the 1970s.[973]

5.5. 5 *Harvest*

The turning yellow of rice stalk means the maturing of rice grain in the harvest period. The irrigated water of rice fields is cut fifteen days before the harvest of rice. Peasants had reaped rice with sickles and made rice bunches in all of the basins similarly until the mid-1980s.Since the anther of rice waited a few days in the fields, the moisture content of the rice kernel decreased to 14 and dried. Thus, rice grains were moved to storages or rice factories. For example, the adults of economically backward villages of Meriç districts were going to İpsala and Enez plain to work in rice fields by pickup trucks every day.[974] Due to the rice harvest, many guest workers came to İpsala Plain to reap rice and move rice bunches to trash machines. Since they worked and stayed near rice

970 "Trakya Bölgesinde 58 Marka Traktör Var," *Vatandaş,* May 4, 1976.

971 "Zirai Bahislerde Köylü Çiftçimiz Bugünkü Durumu," *Diyarbakır,* January 19, 1963.

972 "Gübre Satışları Bu Sene Rekor Düzeyde," Yeni Zaman, May 01, 1974; "Traktör Almak İçin 210 Kişi Sıra Bekliyor," *Yeni Zaman,* June 1, 1974.

973 "Diyarbakır'da 823 Traktörün 700'ü Yük ve Binek İşlerinde Kullanılıyor," *Yeni Zaman,* October 4, 1974.

974 "İpsala ve Enez Ovalarındaki Çeltik İşletmelerinde Bini Aşkın gence İş Olanağı Sağlandı," *Hudut,* September 5 1981.

fields in the evenings, these lands were enlightened and resembled a townscape.[975] Furthermore, there were the lodgments of rice enterprises in Italy in this period.[976]

In addition to intensive and specialized labor, the life conditions of rice workers had been difficult. Furthermore, they had lived in tents and were exposed to mosquitos at nights. While the peasants of Çanakkale went to Edirne, the peasants of Kahramanmaraş went to Diyarbakır as seasonal workers in the harvest of rice.[977] The watermen and workers in the rice harvest have come from Kahramanmaraş to the Karacadağ Agriculture Basin. The rice growers of Karacadağ believe that these workers are more practical and specialized. The people of Kahramanmaraş have also been influential in the development of cotton and rice farming in Karacadağ.[978] However, since the harvest of rice with sickles requires an intensive laborforce, in general women have worked on it.[979] The labor force requirement of Bafra and Çarşamba in rice harvest was received from the villages of Samsun. Moreover, big landowners could hire at least 60 workers a day in the 1970s.[980] On the other hand, they have had difficulty in finding workers in recent years. Thus, some Afghan and Syrian workers began to work in Samsun.[981] The rice growers of the Meriç Basin receive their labor force requirement with daily wage laborers most of whom are Gypsy. In addition to their agricultural production and husbandry, almost 6,000 peasants went to Cilician Plain in Adana as seasonal workers for the cotton harvest every year in Karacadağ.[982]

Furthermore, rice growers began to use combine harvesters in rice harvest in the 1980s successfully. Since these combine harvesters did not have

975 "Çeltik Hasadı Başladı," *İpsala,* September 26, 1975.

976 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 67.

977 Şerif Kahraman and Adil Kayapınar, tape-recorded interview by the author, Yalankoz village of Diyarbakır, Turkey, August 09, 2018.

978 Süleyman Kızılkaya, Şerif Kahraman and Adil Kayapınar, tape-recorded interview by the author, Yalankoz village of Diyarbakır, Turkey, August 09, 2018.

979 Kardaş Ailesi, tape-recorded interview by the author, Yenişehir, Diyarbakır, August 09, 2018.

980 Şükrü Derebey, tape-recorded interview by the author, Bafra Samsun, Turkey, April 30, 2019.

981 Temel Kaya, tape-recorded interview by the author, Bafra Samsun, Turkey, April 30, 2019.

982 Ali Sonsuz, "Urfa'nın Şehir Coğrafyası," *Urfa Postası,* December 10, 1963.

caterpillar, farmers had reaped rice with sickles and transported their rice bunches to combine harvesters until the mid-1990s. For example, while 80 percent of the Lower Yeşilırmak basin was harvested with sickles, half of the Lower Kızılırmak Basins was harvested with sickles in the 1990s.[983] On the other hand, rice could have been harvested through combine harvesters in Europe and the USA in the 1960s and 1970s.[984] However, Firstly, the combine harvester with rubber tank track in rice harvest was tried in Uzunköprü in 1962. However, they could not get a good result.[985] Secondly, Bekir Ünal who lived in Karahüyük village of Kahramanmaraş made use of the caterpillar system in his combine harvester in 1965.[986] However, they could not be successful. Besides, until the caterpillar technology of combine harvesters in rice harvest in the 1990s, rice growers had hired workers.



Figure 5.3 Rice Harvest in Derik (Karacadağ)
SOURCE: *Yurthaber* October 8, 2019

983 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi,* 23.
984 Mirza Gökgöl, *Çeltik Ziraatı,* 78.
985 Hayati Tuncalı, "Çeltik Ziraatı ve İktisadi Önemi,"14.
986 Ömer Aktürk, "Elbistan'da Çeltik Ziraatı," 22.

With the development of caterpillar technology in combine harvesters in Turkey, they have harvested rice fields more easily and quickly in the Meriç, Lower Kızılırmak, and Lower Yeşilırmak Basins. Since rice grain could not dry in its anther, peasants needed extra drying. Furthermore, drying is required for the prevention of the spoiling or heating of moist rice kernels and the enhancing of rice yield.[987] On the other hand, in general rice has been still harvested with sickles in the Karacadağ Agriculture Basin. This harvest method is called as *Pilahi* in Karacadağ.[988] In the development of the cater pillar technology of combine harvesters, laser-driven land leveling and also the use of drying machines, Sami Dubacı pioneered in Turkey in the 1980s and the 1990s. Furthermore, while he purchased the first caterpillar from İskenderun, he imported other machines from Italy and Greece.[989]

While small rice growers sundried their rice, big landowners made use of drying machines in the 1990s. However, diesel oil or coal-driven rice drying machines were used in Adana in the 1960s. In the harvest period, all of the peasants determine a sunny and windy place around the villages and they move their rice there. In accordance with the gender division of labor, while women waited and dried rice, men followed combine harvester to harvest their fields. However, due to the requirement of intensive and expensive labor of the threshing floor, almost all of the peasants have used drying machines since 2015. Then to make easy transportation and to conserve properly, rice is sacked in hemp sacks. Besides, while rice growers who need hard cash sell their rice in the ,harvest period, those who do not need immediate cash store their rice.[990]

987 Hüseyin Gökçora, *Bitki Yetiştirme Islahı,* 493.

988 "Karacadağ'da Pirinç Hasadı Yüzleri Güldürdü," *Tigris,* October 1, 2016

989 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 13, 2018.

990 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 108-120.



Figure 5.4 Rice Drying in Edirne
SOURCE: *Hudut,* October 4, 2011

While the rice farming culture and the trends of statistical data in the Meriç, Lower Kızılırmak, and Lower Yeşilırmak have been similar to each other, those of the Karacadağ Agriculture Basin have differed. Due to the lack of special statistics data of Karacadağ, the total statistical indications of Diyarbakır, Şanlıurfa and Mardin are given. However, although these data are indicated the number of draught animals or tractors, they have not been used for ground surface tillage in the rice fields of the Karacadağ Agriculture Basin where volcanic stones are present. However, oxen were used in the 1950s and the 1960s to open water channels every four years.[991] Similarly, many rice growers of Karacadağ have never used caterpillar technology to combine harvesters due to stony lands. Thus, there have been intensive labor force and high production cost from the cultivation of rice to harvest. Due to the capital and rice farming culture, in general big landowners have cultivated the fields of peasants through sharecropping for centuries. Although there have been drying machines in this region, these machines are used in corn dry. Besides, since they burn rice, they cannot be used in rice dry.[992] The distinct rice farming cultures and mechanization between the Karacadağ Agriculture Basins and others indicate different historicity in the same period.

991 Süleman Kızılkaya, tape-recorded interview by the author, Yalankoz village of Diyarbakır, Turkey, August 09, 2018.

992 Şerif Kahraman and Adil Kayapınar, tape-recorded interview by the author, Yalankoz village of Diyarbakır, Turkey, August 09, 2018.



Figure 5.5 The Volcanic Stones of Karacadağ in Rice Fields
SOURCE: *Doğru Haber*, October 10, 2018

Table 5.4 The Numbers of Agricultural Equipment in the Meriç Basin (Edirne)

Means of Production	1952	1974	1982	1990	2007	2018
Buffalo	22242	23760	17461	2467	78	265
Horse	14231	4620	341	1780	955	882
Ox	-	20889	4258	262	-	-
Tractor	950	6680	15670	21005	23483	24024
Trailer	-	5696	14649	20265	24932	25725
Wooden Plow	20239	5737	2052	353	-	5
Plough	30907	37468	26759	28542	33098	36380
Cultivator	-	2167	2367	5906	16657	17200
Disk Harrow	-	1872	5937	7065	5475	6267
Tresher	-	375	830	919	481	-
Combine Harvester	-	210	598	593	707	791
Motopump	-	3276	5881	10117	9739	338

Electric Driven Pump	-	-	-	479 (2000)	560	290
Pulveriza-tor	-	-	1352	16561	23983	25650
Seed Cleaner	15	49	56	76	185	119
Roller	-	891	347	709	1827	2171
Planker	-					
Dry Machine	-	-	-	-	238	434

SOURCES T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Tarımsal Yapı ve Üretim 1955-2009;* T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) https://bi-runi.tuik.gov.tr/medas/?kn=92&locale=tr (2018)

Table 5.5 The Number of Agricultural Equipment in the Lower Kızılırmak and Lower Yeşilırmak Basins (Samsun)

Means of Production	1952	1974	1982	1990	2007	2018
Buffalo	54809	82869	88112	46424	8581	6956
Horse	25259	26480	20410	10120	3624	1849
Ox	-	75029	38073	21696	-	-
Tractor	467	518	14166	17845	35326	42499
Trailer	-	4625	14316	16668	29264	33321
Wooden Plow	39076	45753	22975	10075	1617	151
Plough	24955	65750	58713	55675	50988	41235
Cultivator	-	628	1268	2069	4719	6834
Disk Harrow	-	572	815	1167	1635	2363
Tresher	-	403	2640	3634	5854	-
Combine Harvester	-	66	120	133	286	313
Motopump	-	1497	9229	8156	11059	9050
Electric Driv.	-	-	-	5507 (2000)	-	9356

Pump						
Pulverizator	-	-	7222	9071	22156	26119
Seed Cleaner	7	32	33	98	198	130
Roller	-	173	224	359	602	633
Planker	-	-	2005	-	-	-
Drying Machine	-	-	-	-	32	87

SOURCE T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Tarımsal Yapı ve Üretim 1955-2009 (Ag-ricultural Structures and Production 1955-2009)*; T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) https://biruni.tuik.gov.tr/medas/?kn=92&locale=tr (2018)

Table 5.6 The Number of Agricultural Equipment in the Karacadağ Agriculture Basin (Diyarbakır, Şanlıurfa and Mardin)

Means of Production	1952	1974	1982	1990	2007	2018
Buffalo	14446	26840	28450	9452	1026	6955
Horse	24744	33680	42790	23900	17546	12869
Ox	-	135852	159353	27326	-	-
Tractor	1689	3816	6690	15964	26671	33180
Trailer	-	2665	8160	14517	19819	35671
Wooden Plow	95750	79380	46311	46199	9020	5064
Plough	972	8838	41269	31253	31961	44613
Cultivator	-	31139	4120	9857	21454	27807
Disk Harrow	-	2522	1988	2991	2609	4975
Tresher	-	516	1331	3452	4239	-
Combine Harvester	-	735	612	432	333	933
Motopump	-	12614	5452	6412	6698	7521
Pulverizator	-	-	3365	5654	14376	26008
Seed Cleaner	74	131	86	119	462	751

Roller	-	413	2343	3206	2943	4013
Planker	-	-	11264	-	-	-
Dry Machine	-	-	-	-	14	99

SOURCE T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Tarımsal Yapı ve Üretim 1955-2009* T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) https://biruni.tuik.gov.tr/medas/?kn=92&locale=tr (2018)

§ 5.6 From A Comparative Perspectives Rice Production, Rice Cultivation Areas and Rice Yield in Three Basins

When the rice cultivation areas and rice production data of three basins are regarded, it seems that the extent of rice cultivated areas and the amount of rice production in the Meriç Basin have been more than other basins since 1949. While the rice cultivation areas of the Karacadağ Agriculture Basin have remained the same or declined, those of other basins have steadily increased. This situation is closely related to the marketing of rice, the conditions of irrigation water, public investments for the physical infrastructures of rice farming, land structures, the government supports, the use of agricultural inputs and technology, and also the capitals of rice growers. By the same token, Sürek thinks that rice has had gross revenue and economic income in Edirne and Samsun. Thus the rice cultivated lands and rice production has steadily increased since the 1940s.[993] On the other hand, since the people of Southeastern Anatolia prefer their local paddy varieties that appeal to their taste buds rather than cheap and imported rice varieties, the rice cultivation areas of Diyarbakır, Mardin and Şanlıurfa have not changed remarkably. Namely, Karacadağ paddy has been purchased either by the local community or by those who migrated to big cities from Southeastern Anatolia.[994]

993 Halil Sürek *Çeltik Tarımı,* 41.

994 İlhan Avcı, tape-recorded interview by Author, Diyarbakır, Turkey, August 09, 2018.

Table 5.7 Rice Cultivated Land (Ha) in Five Provinces in Three Basin

Year	Edirne	Samsun	Diyarbakır	Şanlıurfa	Mardin
1949	2591	340	1540	834	280
1954	6828	2056	1950	1187	102
1959	7067	2975	2039	750	2699
1963	9000	5000	1723	789	2400
1968	5435	6411	1484	825	724
1973	10551	7400	3348	650	591
1978	16920	10325	3270	443	540
1983	15976	8962	2010	393	573
1988	16766	6858	1163	425	341
1993	15512	6960	1433	249	118
1998	26299	8279	1597	542	148
2005	33730	10278	1471	470	89
2008	44309	8583	1656	2827	162
2013	43040	14000	1968	1400	120
2018	48593	18056	1687	600	162

SOURCE: T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Tarımsal Yapı ve Üretim 1948-2013 (Agricultural Structure and Production 1948-2013*

Table 5.8 Rice Production (Ton) in Five Provinces in Three Basins

Years	Edirne	Samsun	Diyarbakır	Şanlıurfa	Mardin
1949	7594	366	3555	830	450
1954	21760	2935	4656	1223	255
1959	12664	6736	4078	750	895
1963	11405	14000	3000	1650	5500
1968	18566	16198	4865	815	2972
1973	30722	18300	6096	-	505
1978	50308	25876	7208	330	658
1983	44931	23567	4108	603	1172
1988	56867	20390	2114	660	555
1993	44623	19753	2694	588	163

1998	82056	26214	3151	586	98
2005	158194	36797	3306	1366	260
2008	371601	65405	6829	13000	896
2013	361918	122710	9450	6902	686
2018	410681	133221	7421	2252	875

SOURCE T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Tarımsal Yapı ve Üretim 1948-2013 (Agricultural Structure and Production 1948-2013)* https://biruni.tuik.gov.tr/medas/?kn=92&locale=tr

Table 5.9 Rice Yield in Three Basins and Turkey (1948-2018)
(Kg/ Decar)

Years	Edirne	Samsun	Diyarbakır	Şanlıurfa	Mardin	Turkey
1949	293	107	230	100	160	233
1954	318	142	238	103	250	217
1959	179	226	200	100	33	202
1963	126	280	174	209	229	236
1967	201	224	271	90	217	233
1973	177	209	351	46	100	442
1978	297	250	220	74	121	452
1983	281	263	204	153	204	450
1988	339	297	181	155	162	515
1993	287	283	188	224	138	502
1998	312	316	197	108	66	525
2005	469	358	224	290	292	572
2008	839	762	412	412	551	757
2013	841	851	480	480	572	814
2018	845	738	468	468	540	796

SOURCE T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Tarımsal Yapı ve Üretim 1955-2009 (Agricultural Structures and Production 1955-2009)*; T.C Başbakanlık Türkiye İstatistik Kurumu(TÜİK) https://bi-

runi.tuik.gov.tr/medas/?kn=92&locale=tr (2018) T.C Tarım ve Orman Bakanlığı, Toprak Mahsülleri Ofisi (TMO) http://www.tmo.gov.tr/Main.aspx?ID=61

§ 5.7 Agricultural Inputs in the Market Oriented Rice Production Rice Farming and the Oil Crisis in the 1970s

To understand the market- oriented production and the influence of the free market on rice cultivation, the importance of agricultural inputs should be considered. First, the electrification of the rural areas in these basins began in the 1970s. However, rice growers used diesel oil energy to run their moto pumps in rice irrigation until the 1990s. Furthermore, while electric driven pumps have been used in the Meriç, Lower Kızılırmak and Lower Yeşilırmak Basins, some rice growers in Karacadağ have irrigated their rice fields through a water pressure system in which water pipe is placed in the bottom of the pond since the 1980s.[995] Thus the expenses of rice growers in rice irrigation decreased. However, due to high electric bills, illegal electric usage is common in the villages where the electrically driven moto pumps are used.[996] The use of diesel oil energy in rice irrigation caused much more expenditure and the supply of diesel oil problems. For example, due to the oil crisis in the 1970s, many rice growers had financial problems. However, thanks to the moto pumps driven by electricity, Evren Bulut said that Turkey earned 2 trillion a year. Furthermore, since the Akdeniz Electricity Distribution Company made a 36 percent discount in agricultural irrigation, the tender of electricity in Edirne was given to this company in 1998.[997]

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995 Süleyman Kızılkaya, tape-recorded interview by the author, Yalankoz village of Diyarbakır, Turkey, August 09, 2018.

996 Abdullah Öktem, "Şanlıurfa Koşullarında Karacadağ Çeltiği Yetiştiriciliği Üzerine Anket Çalışması," 108.

997 "Evren Bulut Elektrikli Sulamadan 2 Trilyon Tasarruf Sağlandı," Vatandaş, September 28, 1998; *The State of Food and Agriculture, (1974)* (Rome: FAO of the USA, 1975), 29 accessed March 15, 2019, http://www.fao.org/3/f3350e/f3350e.pdf

Besides, due to the Oil Crisis on a global scale, the production cost of rice and retail prices of paddy increased in the 1970s. Hence, Turkey spent 45 percent of its export revenues on petroleum. In other words, it meant 10 milliards out of 22,5 milliard USD.[998] Furthermore, owing to foreign exchange reserve of the government, it was thought that Turkey could not import diesel oil.[999] While oil-producing countries increased their foreign exchange holdings, nonoil countries and developing countries had experienced economic stagflation which both unemployment and inflation increased together.[1000] With the increase in the profits of dealers and the cost of transportation, the government marked the petroleum up between10 and 12 percent in March 1980. Thus, the prices of diesel oil increased to 20,10 TL.[1001]

Since diesel oil went on the black market, rice growers could neither irrigate adequately nor fertilize their rice on time. For example, 100000 decars of rice was left for drying in Meriç Plain in 1976.[1002] 150 tons of diesel oil was used every day in İpsala and Keşan. Due to these delays, both rice yield and rice production decreased.[1003] For example, since there were only two petrol stations in Enez and Abdürrahim village, about 150 tractors had been waiting for a fuel truck that came in every few days. The owners of these stations bought petroleum from Ambarlı oil storage in İstanbul.[1004] Even worse, due to the scarcity of diesel oil, some frauds and black marketing began to become widespread in society.[1005] Despite the increasing production cost with the Oil

998 "İhracat Gelirinin % 45'i Petrole Gidiyor," *Vatandaş,* February 7, 1976;" Çarşamba Ovasındaki Ekili Araziler Motopomplarla Sulanıyor," *Hürsöz,* August 12, 1976.

999 "Keşan ve İpsala İlçelerimizde Binlerce Dönüm Çeltik Kurumaya Terkedildi," *Vatandaş,* August 9, 1976.

1000 Mustafa Ernam," Bir Yılın Ardından," *Medeniyet,* January 13, 1975.

1001 "Son Yapılan Zamlardan Sonra Şehrimizde Akaryakıt Fiyatları Belli Oldu," *Vatandaş,* March 16, 1980.

1002 "Keşan ve İpsala İlçelerimizde Binlerce Dönüm Çeltik Kurumaya Terkedildi."

1003 Erdoğan İndelen, "Türkiye'de Ekilen Çeltik Çeşitlerinin Üretimdeki Payları ve Çeltik Tohumluğu Üretim Programı," 14; "Akaryakıt Darlığı Yüzünden Çeltik Üreticileri Zor Durumda," *Vatandaş,* April 17, 1976.

1004 "Enezde Mazot Sıkıntısı Traktör Sahiplerini Güç Duruma Soktu," *Vatandaş,* April 25, 1977.

1005 "Mazot Verme Vaadiyle 5000 Lirasını Dolandırdılar," *Vatandaş,* November 2, 1979.

Crisis, the scarcity of labor force, and inadequate irrigation water in the Meriç River in the sowing time of rice in 1979,[1006] many rice growers though that they had to continue to rice cultivation with an ambition to make money and to make use of their land.[1007]

5.7. 1 *The Fertilization of Rice*

Since there were a lot of oxen, sheep, and cow in the villages, some farmers used 2 tons of animal manure per each decar of rice field in the 1950s and 1960s.[1008] If animal manure was wet, it would be used in winters. If it was dry, it would have used in spring in the rice fields.[1009] Therefore, the use of chemical fertilizer had not been common until the mid-1960s. The use of chemical fertilizer had firstly started at the beginning of the 1970s in the Meriç, Lower Kızılırmak, and Lower Yeşilırmak Basins.[1010] On the other hand, the use of fertilizer began to become widespread in the rice fields of the Karacadağ Agriculture Basin in the beginning of the 1990s. Thus rice yield increased from 200 kg to 400 kg.[1011] The use of fertilizer was 98 percent in the rice production of the Karacadağ Agriculture Basin in 2016.[1012] The fertilizer that was imported from Europe was brought to the port of Tekirdağ by ships and distributed to the agency bureau of Agricultural Equipment İnstitution in Thrace. There was quite a positive manner for the use of chemical fertilizer. In this context, it was regarded as the source of wealth of farmers and the productivity of agriculture in 1965.[1013]

1006 "İpsala'da Susuzluk Çeltik Üreticisini Güç Duruma Soktu," *Vatandaş,* May 23, 1979.

1007 "Enez'de Çeltik Ürününden Beklenen Verim Alınamadı," *Vatandaş*, October 19, 1979.

1008 Hayati Tuncalı, "Çeltik Ziraatı ve İktisadi Önemi," 11.

1009 İzettin Öztunalı, "Tava Usulü Çeltiklerde Gübreleme," 14.

1010 N. Gücüyener, "Çiftçilikte Suni Gübre," *Edirne Sesi,* February 25, 1965.

1011 Süleyman Kızılkaya, , tape-recorded interview by the author, Yalankoz village of Diyarbakır, Turkey, August 09, 2018.

1012 Abdullah Öktem, "Şanlıurfa Koşullarında Karacadağ Çeltiği Yetiştiriciliği Üzerine Anket Çalışması," 102.

1013 N. Gücüyener, "Çiftçilikte Suni Gübre."

Since fertilizer is one of the most important agricultural inputs, the government had determined its factory sale prices every year until 1973.[1014] Furthermore, the prices of fertilizers had been determined by the fertilizer industry and its marketing agencies based on the accounts of cost and profit. Then, their prices had entered into force with the official approval of the Ministry of Agriculture until 1980.[1015] However, due to the Oil Crisis, the prices of fertilizers increased. Therefore, to prevent black marketing in the fertilizer sector and to subsidize farmers, Agricultural Equipment Institution and Turkish Sugar Plants Incorporated Company had been tasked with the supply and the distribution of fertilizer until 1986 when the fertilizer was liberalized. Agricultural Equipment Institution was also responsible for the imports of fertilizers. Thus, private dealers have had to right in the marketing of fertilizer and the government have continued to implement supports from 1986 onward.[1016] The Council of Minister decided to give premium to foreign exchange saving with the production of fertilizer in the domestic market.[1017]

The increasing demand for fertilizer caused a triple increase in fertilizer prices. For example, while potassium was sold at 100 USD in 1975, it increased to 357 USD in 1976. This expensiveness caused a decline in the use of fertilizer.[1018] Due to foreign exchange bottle-neck, the subvention policies in the importation fertilizer raw materials, instead of one million tons of fertilizer, only a quarter of required fertilizer raw material imported and fertilizer production halted. Therefore, the fertilizer industry run in 30 percent capacity.[1019]

1014 Leyla Dolun, *Kimyasal Gübre Sektör Araştırması,* (Ankara: Türkiye Kalkınma Bankası A.Ş, 2002), 38-39.

1015 T.C DPT, *Beşinci Beş Yıllık Kalkınma Planı, Gübre ve Gübre Hammadeleri Özel İhtisas Komisyonu Raporu,* (Nisan 1983), 132.

1016 Leyla Dolun, *Kimyasal Gübre Sektör Araştırması,* 38-39.

1017 T.C DPT, *Beşinci Beş Yıllık Kalkınma Planı, Gübre ve Gübre Hammadeleri Özel İhtisas Komisyonu Raporu*, 132.

1018 "Gübre Fiyatlarının 2 Yılda 3 Kat Artması Dünya Tarımını Olumsuz Yönde Etkiliyor," *Vatandaş,* March 6, 1976.

1019 "Gelecek Yıl Gübre Sıkıntısı Olmaması İçin Tedbir Alınması İstendi," *Vatandaş,* March 6, 1976.

Table 5.10 The use of fertilizer in Rice Cultivation Areas(Ha), Usage Ton)

Lands	1976	1980	1982
Cultivtion Areas	54000	80000	77000
Ferlizated Areas	50000	80000	77000
Amonium Nitrate	24433	32500	48558
Phosphor 16-18	22478	30250	38346
Potasium %50KSO	575	100	327
Total Usage	47486	62850	87254
Rate	0.80	1.05	1.2

SOURCE T.C Kalkınma Bakanlığı Devlet Planlama Teşkilatı (DPT), *Beşinci Beş Yıllık Kalkınma Planı, Gübre ve Gübre Hammadeleri Özel İhtisas Komisyonu Raporu*, Ankara: 1983, 123-129

To prevent possible fertilizer problems in 1977 and to determine the used amount of fertilizer, Keşan district governor Emrullah Zeybek organized a meeting with the participation of the directors of the Keşan Agricultural Equipment Institution Agency, Agricultural Bank and Agricultural Credit Cooperative.[1020] Similarly, to prevent the sale of spoilt agricultural pesticides and black marketing, Edirne Agricultural Pest Control Equips controlled agricultural pesticide dealers.[1021] Furthermore, these dealers were subjected to a test to get a qualifying certificate.[1022] The president of the agricultural chamber in Samsun demanded immediate intervention of the government as a solution to the fertilizer, tractor, and credit needs of farmers in the 1970s.[1023]

1020 "Keşan'da Gelecek Yıl Gübre Sıkıntısı Çekilmemesi için Tedbir Alınmaya Başlandı," *Vatandaş,* May 24, 1976.

1021 "İlaç Bayilerinin Kontrolleri Sıklaştırıldı," Vatandaş, June 11, 1976.

1022 "Zirai Mücadele İlaçlarıBayilik Belgesi Sınavı 4 Haziranda," *Vatandaş,* May 28, 1974.

1023 "Samsun Ziraat Odası Başkanı Şevki Yücel," *Hürsöz,* May 6, 1976.

After the decision of January 24,1980, the retail prices of fertilizer increased between 41 and 67 percent in 1981.[1024] Since the subvention of fertilizer increased from 38 milliards to 83 milliards, the prices of fertilizer increased between 43 and 66 percent in 1981.[1025] In contrast to this price increase rate of fertilizer, the price increase in agricultural products was 14 percent.[1026] In this context, 100,000 milliard TL government support or subvention on fertilizer was abolished.[1027] However, with the privatization of Agricultural Equipment Institutions at the beginnings of the 2000s, the fertilizer support declined from 50 to 17 percent and the fertilizer prices increased again.[1028] Due to the monopolization in fertilizer production and no government intervention, the prices of fertilizer increased between 150 and 250 percent.[1029] However, the use of fertilizer has been unconscious. Since rice grows in wetlands, it needs nitrogen three times periodically. While the rice growers of Lower Yeşilırmak (Çarşamba) used more nitrogen than those of Lower Kızılırmak (Bafra). However, 55 percent of the rice growers used nitrogen once, 38 percent of rice growers twice and the rest used it three times in the vegetation period of rice.[1030] Similarly, the rice growers of the Meriç Basin have used excessive amounts of fertilizer.[1031] Therefore, farmers have experienced both the delays of rice harvest and the decline of rice yield.[1032] While the rice growers of the Lower Kızılırmak and Lower Yeşilırmak Basins have mainly used DAP, Urea, and Composed fertilizers, those in the Meriç Basin

1024 "Gübreden de Devlet Desteği Kalktı," *Vatandaş,* January 2, 1984.

1025 "Gübre Fiyatlarına Zam Yapıldı," *Hudut,* September 3, 1981.

1026 "Gübre Zammı İle Türk Tarımı Dar Boğaza Girecek," *Hudut,* September 5, 1981; "250,000 ton Mamul Gübrenin İthaline İzin Verildi," *Hudut,* December 26, 1981.

1027 "Gübreden de Devlet Desteği Kalktı," *Vatandaş,* January 2, 1984.

1028 "ANAP Edirne Milletvekili Evren Bulut," *Önder,* February 14, 2000.

1029 "Köylü Gübresiz Bırakıldı," *Edirne Haber,* March 16, 2001.

1030 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi*, 15; K. Bellitürk, "Edirne İli Uzunköprü İlçesi Topraklarının Beslenme Durumlarının İncelenmesi," *Tekirdağ Ziraat Fakültesi Dergisi,* 8, no. 3 (2011), 8.

1031 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi,* 31.

1032 "Yanlış Gübreleme Verim Kaybına Neden Oluyor," *Vatandaş,* July 28, 1986.

have used Ammonium Nitrate and Ammonium Sulfate. On the other hand, the use of fertilizer in Karacadağ has been 10 and 30 kg per decar.[1033]

Table 5.11 The Changes in the Reel Prices of Fertilizer in Rice Cultivation 1975-2018 TL/Ton (Indexed to the prices of 1975)

Fertilizer	1975	1982	1990	2005	2017
Ammonium Sulphate	100	67,8	96,3	133,7	131,3
Amonium Nitrate	100	63,9	92,0	122,9	126,0
DAP	100	88,2	131,0	120,2	128,0
Urea	100	58,2	58,5	89,7	115,3
TSP	100	114,7	164,7	-	-
Composed 20-20-0	100	60,8	84,0	89,3	91,2

SOURCE T.C Kalkınma Bakanlığı Devlet Planlama Teşkilatı (DPT),*Beşinci Beş Yıllık Kalkınma Planı, Gübre ve Gübre Hammadeleri Özel İhtisas Komisyonu Raporu*, 139; *Vatandaş,* January 2, 1984; *Vatandaş,* March 1, 1984; T.C Kalkınma Bakanlığı Devlet Planlama Teşkilatı (DPT), *Sekizinci Beş Yıllık Kalkınma Planı, Gübre Sanayi Özel İhtisas Komisyonu Raporu,* (Ankara: DPT, 2000), 50; Dolun (2018), 42; Gübre Sektör Politka Belgesi 2018-2022, Ankara: TAGEM, 2018, s. 36; TEFE Katsayıları 1994-100 http://www.alomaliye.com/2015/08/05/tefe-katsayilari-1994-100-toptan-esya-fiyatlari-endeksi/

1033 Okan Gaytancıoğlu, "Türkiye'de Çeltikte Uygulanan Üretim, Fiyat ve Pazar Politikalarının Değerlendirilmesi," 100.

5.7. 2 *The Use of Agricultural Credits*

With its 650 branch offices, Agricultural Bank was the only national institution that gave agricultural credit in the 1960s.[1034] However, Agricultural Bank could cover only 50 percent credit needs of peasants in 1964. Agricultural Bank decided to give priority to small landholders and Agricultural Credit Cooperatives.[1035] Rice growers need cash during the vegetation period of rice and its marketing. They received this money either from their income or loan from Agricultural Bank and Agricultural Credit Cooperatives with a one-year maturity.

In general, they used retail credit for marketing their rice under the suitable conditions. These credits were used by the big agricultural enterprises of Marmara and Mediterranean Regions. However, small agricultural enterprises got credit from their relatives in the 1960s and 1970s.[1036] Almost 40 percent of rice growers in the Lower Kızılırmak and Lower Yeşilırmak Basins used credit. 20 percent of them benefited from the credits of Agricultural Bank, almost 15 percent got credit from merchants and the rest received credits from Agricultural Credit Cooperatives. While credit use was 60 percent in Çarşamba and they received it from merchants, this was 27 percent in Bafra and they received it from banks and cooperatives in the 1970s and the 1980s.[1037] The expenses of agricultural inputs, wage labors and license tax of rice farmers require capital.[1038] Thus, rice growers directly experience the influence of the high cost of living and inflation.[1039] While small agricultural

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1034 "Ziraat Bankasınca Verilen Zirai Krediler Daha da Arttırılarak Tevzi Olunacaktır," *Vatandaş,* November 29, 1963.

1035 "Ziraat Bankası Kredide Öncelik Tanıyacağı Kuruluşarı Belirledi," *Vatandaş,* June 1, 1979.

1036 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 152- 155.

1037 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi,* 23.

1038 "Edirnelinin Endişesi," Bizim Köy, April 5, 1961.

1039 Çorum Milletvekili Cahit Angın ve 11 arkadaşının, çeltikçiliği geliştirmek, verimi artırmak ve maliyeti düşürmek yolunda gerekli tedbirleri saptamak amacıyle bir Meclis Araştırması açılmasına ilişkin önergesinin görüşülmesi

enterprises took out a loan to buy seed and fertilizer, big agricultural enterprises used took out a loan to buy fertilizer and to pay the wage labor of workers in rice farming in the 1960s and the 1970s.[1040]

The use of credit has been seen since 1980 in the basin and has become widespread since the beginning of the 2000s. Many farmers try to get credits from the banks that have low-interest loans such as Agricultural Bank and some private banks.[1041] While two-thirds of rice growers have bought fertilizer from Agricultural Credit Cooperatives, the rest of them have bought it from private firms in the Meriç, Lower Kızılırmak, and Lower Yeşilırmak Basins, this situation has been vice versa in the Karacadağ Agriculture Basin.[1042] Furthermore, due to the bureaucratic hardships in the credit extension of Agricultural Credit Cooperatives and Agricultural Bank and the inadequacies in price policies, transportation, and marketing, the peasants of Karacadağ became indebted to usurers in the 1980s.[1043] However, the use of credit is not common among the rice growers of Karacadağ.[1044] However, at least 75 percent of rice growers have used credits. Therefore, they specifically prefer Agricultural Credit Cooperatives in the supply of fertilizer.[1045]

5.7. 3 *Rice Pesticides*

While fertilization influence the yield of rice, pesticides protect it from herbs and diseases. Also, since rice is grown in wetlands, herbs can find adequate

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1040 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 80

1041 Ahmet Aydın, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 06, 2018.

1042 Okan Gaytancıoğlu, "Türkiye'de Çeltikte Uygulanan Üretim, Fiyat ve Pazar Politikalarının Değerlendirilmesi," 99.

1043 Diyarbakır Milletvekili Mahmud Altunakar'ın, Güneydoğu Anadolu'da meydana gelen kuraklık ile bunun sebep olduğu kıtlık ve yokluk tehlikesi ve alınması gerekli önlemler konusunda gündem dışı konuşması,

1044 Şerif Kahraman and Adil Kayapınar, tape-recorded interview by the author, Yalankoz village of Diyarbakır, Turkey, August 09, 2018.

1045 Okan Gaytancıoğlu "Türkiye'de Çeltikte Uygulanan Üretim, Fiyat ve Pazar Politikalarının Değerlendirilmesi," 99.

temperature, water, and nutrients to develop. These herbs are Echinocloa spp, the species of Cyperus, Scirpus maritimus L, and Typha latifolia L.[1046] While soft rush grows in salty lands, echinochloa colonum grows in humid soil. Therefore, rice growers could deal with echinochloa colonum problem by means of crop rotation and Chemrice. On the other hand, Kuron pest was suggested in the pest control with soft rush. However, since the use of the pesticides in other cereals might damage to rice, they were found inconvenient.[1047] In contrast to this suggestion, some rice growers in the Meriç Basin could clean sedge warbler with the pesticides used for wheat.[1048] Chemrice is a kind of pesticide that has been produced by Koruma Pesticides Company since 1971. Due to the high demand for rice growers, the company introduced a sufficient amount of chemrice into the market in 1973. The rice growers of Koşu village of Bafra and Kara Mustafa village of Çarşamba used these pesticides in the 1970s.[1049] However, with the decline of the purchasing power of rice growers, the use of pesticides decreased from 623000 tons in 1973 to 51000 tons in 1974.[1050]

In addition to these, the first pesticides in rice cultivation were Korcide 3-10, Uviton 3-10, Aldirin, and 50 percent of DDT.[1051] These pesticides can be grouped under three titles. First, the pesticides including monilates are Orlate, Ordram, and Agro Dram. Second, the pesticide including Thıobencarb is Saturn. Third, the pesticides including Propanil are Surcopur, Kem-ray, Hepanil and Agropor. Finally, Basargan, Sindax, Londax have been also used in agricultural pest control.[1052] While there has been intensive agricultural pest control in the Meriç, Lower Kızılırmak, and Lower Yeşilırmak Basin since the

1046 Ibid., 103.

1047 "Kuron: Çeltik Dip Otuna Karşı," *Medeniyet,* February 1, 1975.

1048 Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, Akçadam, Meriç, Edirne, Turkey, September 01, 2018.

1049 "Çeltik'te Yabancı Otlarla Mücadele," *Medeniyet,* November 10, 1973.

1050 "Türkiye'de 1976 Yılı Sonuna Kadar 60000 Ton Tarımsal Mücadele İlacı Kullanılacak," *Vatandaş,* August 23, 1976.

1051 Hayati Tuncalı, "Çeltik Ziraatı ve İktisadi Önemi,"14.

1052 Okan Gaytancıoğlu, "Türkiye'de Çeltikte Uygulanan Üretim, Fiyat ve Pazar Politikalarının Değerlendirilmesi,"103.

mid-1960s, the rice growers of Karacadağ has used them since the mid-1990s. In addition to these chemical methods, while some rice growers in villages also had weeded these herbs using labor force until the beginning of the 1980s in the Meriç, Lower Kızılırmak, and Lower Yeşilırmak Basins, the rice growers of Karacadağ had not weeded them. Although these herbs decline rice yield, they can prevent the flow of rice grain due to surface irrigation.[1053]

Furthermore, the Ministry of Agriculture made some preparations for the supply of cheap and domestic pesticides to fight against herbs. In this context, it was decided on the foundation of the Plant Protection Research Institute. The taxation of fertilizer and pesticides tried to be kept low.[1054] Besides, to encourage agricultural pest control and to increase the sale of pesticides in rice farming, the pesticide dealers of Edirne distributed 4,5 tons of pesticides for free in 1977.[1055] According to the data of the General Directorate of Agricultural Pest Control and Quarantine, there were 35 fungicide and 51 herbicide pesticides. There were 8 importer companies, 9 formulator companies and 13 agent companies in İstanbul, Ankara, İzmir, Adana and İzmit in the 1970s. As a pesticide industry, Bayer, Hektaş, Koruma, and BP were founded in the 1950s and 1960s.[1056]

Monsanto, Du Pont, Bayer, Cargill, and Dow are the companies of the production and the trade of fertilizer, pesticides, and seed across the world. Farmers have depended on free-market conditions from seed to fertilizer, pesticide credit, and mechanization.[1057] With the alliance of Turkish governments, IMF, and the World Bank the law of seed growth was enacted in 2006. Thus, the links of production and consumption chains changed from the public sector, farmers, and consumers to company-farmer and company-con-

1053 Hüseyin Gökçora, *Bitki Yetiştirme Islahı,* 488.

1054 "Zirai Mahsuller,"*Edirne Postası,* February 2, 1961; "Müstahsile Koruyucu İlaçlar Verilecek," *Edirne Postası,* April 20, 1961.

1055 "Hububat Yabancı Ot İlaçlarının Bayilerde Satışlarına Başlandı," *Vatandaş,* February 8, 1977.

1056 T.C DPT, *Tarım İlaçları ve Hammadeleri Alt Komisyon Raporu, 4. 5 Yıllık Kalkınma Planı,* no: 1561, (May 1977), 7-22.

1057 Çağlar Keyder and Zafer Yenal, *Bildiğimiz Tarımın Sonu,* 33-67.

sumer. Thus the labor of farmers and the income of consumers has been exploited.[1058] Furthermore, as Tyrone Hayes says, the firms or companies that produce seeds also produce pesticides and fertilizers. Thus, farmers depend upon the products of these firms in the agrarian sector. With the bank debts and high loans, small agricultural enterprises avoided from the agrarian sector.[1059]

In general, 50 percent of rice growers have bought these pesticides from private firms or dealers in the Meriç, Lower Kızılırmak, and Yeşilırmak Basins. However, while 35 percent of them has bought these pesticides from Agricultural Credit Cooperatives and 15 percent has bought from Agricultural Chambers in the Meriç Basin, 50 percent of rice growers has bought their pesticides from Agricultural Credit Cooperatives in the Lower Kızılırmak and Lower Yeşilırmak Basins. Due to a lack of adequate capital, at least 85 percent of these rice growers has used credits in the supply of agricultural inputs. The excessive and unconscious use of these pesticides caused both the decline of the profit of farmers and environmental pollution.[1060]

Furthermore, under the leadership of a directorate of agricultural quarantine in Edirne, some big landowners began to use crop dusters in their agricultural spraying in the Meriç Basin in the 1970s.[1061] Furthermore, the agricultural spraying of 6000 decars of rice fields was made quickly by crop dusters in the 1980s.[1062] However, due to environmental pollution, it was banned in 2006. While the government considered environmental pollution and public health, the rice growers of İpsala taken into account their rice yield and profit.[1063]

1058 Abdullah Aysu, *Küreselleşme ve Tarım Politikaları*, (İstanbul: Su Yayınevi, 2008), 18.

1059 Jon Betz and Taggart Siegel, *Seed: The Untold Story.*

1060 Okan Gaytancıoğlu, "Türkiye'de Çeltikte Uygulanan Üretim, Fiyat ve Pazar Politikalarının Değerlendirilmesi,"102-104.

1061 Edirne'de Ekili 8,500 Dekar Arazi Helikopterle İlaçlandı," *Vatandaş,* May 4, 1976.

1062 "İpsala'da Çeltikte Ot Mücadelesi Uçakla Yabancı Ot Mücadelesi Yapıldı," *Vatandaş,* August 12, 1987.

1063 "Çeltik Üreticileri Uçakla İlaçlama Yasağının Kalkmasını İstiyor, "Finans Haberler, July 27, 2011.

§ 5.8 The Price Formation of Rice: TGB and Commodity Exchange Market

After the production of rice, rice growers sell their crops in the domestic market in which the government is influential in the price formations of rice and the conditions of rice purchase. However, due to the free-market economy from the 1980s onwards, the government has not given a guarantee of purchase. To regulate the domestic market of rice, the government imports rice through TGB. Institutionally, the Ministry of Agriculture quotes a price for the rice to the Council of Minister. In the formation of rice prices, rice variety, rice yield, the production cost of rice, the rice prices in domestic and international markets are taken into account. In contrast to this, rice growers think that the Ministry of Agriculture does not consider the production cost of rice.[1064]

Within the concept of rice prices determined by the government, the purchasing prices of TGB are regarded as the maximum price. According to the research of Gaytancıoğlu, while 78 percent of farmers in the Meriç Basin demand TGB to determine rice prices, this rate is about 40 percent in the Karacadağ, Lower Kızılırmak and Lower Yeşilırmak Basins. On the other hand, while only 3.6 percent of farmers in the Meriç Basin demand the determination of rice prices by stock markets, this rate was about 40 percent in the other basins. The rest of 20 percent of farmers demand cooperatives to be influential in the price determination of rice.[1065] However, due to the increasing paddy demand of the growing population and the inadequate rice production of Turkey, in general paddy prices have a tendency to increase.[1066] There is an inverse proportion between the amount of rice production and rice or paddy

1064 Tuncay Sarı, *İl Tarım ve Kırsal Kalkınma Master Planının Hazırlanmasına Destek Projesi*, (Edirne: Edirne İl Tarım Müdürlüğü, 2005), 48-49.

1065 Okan Gaytancıoğlu, "Türkiye'de Çeltikte Uygulanan Üretim, Fiyat ve Pazar Politikalarının Değerlendirilmesi," 111.

1066 İsmail Sezer and Zeki Mut, "Samsun İlinde Çeltik Tarımının Durumu," 61.

prices.[1067] Therefore, TGB imports rice to equilibrium rice prices in domestic markets. Based on this statistical data, it can be said that there has been a parallel price increase in the prices of rice.

Table 5.12 The Changes in the Reel Rice Purchasing Prices of TGB (1975-2018) Based on the Grain Size of Rice Varieties (TL/Kg)

Years	Long Baldo	Middle Karacadağ	Short Akçeltik	Average Prices
1975	100	100	100	100
1976	-	-	-	92,3
1977	-	-	-	51,2
1982	96,9	90,9	89,4	96,9
1987	66,4	58,4	50,4	66,4
1992	89,3	84,2	79,1	89,3
1997	118,8	106,9	101,0	118,8
2002	101,1	79,4	72,2	86,7
2007	72,1	61,2	55,8	67,6
2012	87,1	64,1	59,7	72,5
2016	97,9	69,2	64,7	78,8
2018	122,4	-	-	-

SOURCE T.C Tarım ve Orman Bakanlığı, Toprak Mahsülleri Ofisi, (TMO) *Çeltik Alım Fiyatları İstatistiği;* T.C Tarım ve Orman Bakanlığı, Toprak Mahsülleri Ofisi, (TMO) *Yıllar İtibariyle Hububat, Bakliyat ve Haşhaş Alım Fiyatları;* TEFE Katsayıları 1994-100 http://www.aloma-liye.com/2015/08/05/tefe-katsayilari-1994-100-toptan-esya-fiyatlari-endeksi (Indexed to Reel Prices of 1975, 1975=100)

Short Grain rice varieties are not cultivated in Turkey. There is only Karacadağ variety as medium grain rice varieties but this rice is consumed in

1067 Çorum Milletvekili Cahit Angın ve 11 arkadaşının, çeltikçiliği geliştirmek, verimi artırmak ve maliyeti düşürmek yolunda gerekli tedbirleri saptamak amacıyle bir Meclis Araştırması açılmasına ilişkin önergesinin görüşülmesi (TBMM Tutanak Dergisi, February 9, 1977).

Southeastern Anatolia. Thus TGB did not need to explain their purchasing prices from 2018 onwards.[1068]

5.8. 1 *Commodity Exchange Market*

Commodity exchange markets are institutions where producers and merchants come together. They buy or sell all kinds of agricultural products that have economic competition in the free-market economy. Thus when rice growers sell their products to rice factories, rice yield, rice varieties and rice quality are also considered in the price formation of rice in commodity exchange markets. Rice prices are determined within the concept of legal procedures and supply- demand relations in these institutions. For example, there are 29 commodity exchange markets that rice marketing has done in Turkey. Furthermore, there is a salon sale of rice in 5 commodity exchange markets. Edirne Commodity Exchange Market that was founded in 1884 and commenced operation in 1924 is the most prominent institution in the sale of rice. Similarly, the commodity exchange markets of Edirne, Uzunköprü, Keşan, Çarşamba, Bafra, and Terme have had commercial activities regarding rice.[1069]

On the other hand, since there is no commodity exchange market for rice marketing in the Karacadağ Agriculture Basin, rice growers and the owners of rice factories determine rice prices based on the cost increase of rice farming and legal procedures.[1070] Since the rice fields of Karacadağ are cultivated in every few years, it is expensive.[1071] However, its price has been almost the same for the last ten years.[1072]

1068 TMO Genel Müdürlüğü, tape-recorded interview by the authors, Ankara, TMO, September 5, ,2019.

1069 Arzu Özalp"Trakya'da Çeltik Üretiminin Ekonomik ve İstatistiksel Analizi," 68; Ahmet Şapaloğlu, "Pirinç Üretim ve Tüketim Zincirinde Pazarlama Kanallarının Yapısı ve Pirinç Pazarlama Marjları: Edirne İli Örneği," 85.

1070 İlhan Avcı, tape-recorded interview with the author, Diyarbakır Turkey August 10, 2018.

1071 Süleman Kızılkaya, tape-recorded interview with the author, Yalankoz, Diyarbakır Turkey August 10, 2018.

1072 İlhan Avcı, tape-recorded interview with the author, Diyarbakır Turkey August 10, 2018.

Rice had been traded in the stock markets of İstanbul and İzmir until the 1990s. Based on the differences in rice varieties, the production of rice and market situation, rice prices differentiates by years. Furthermore, it seems that while the growth of the urban population has increased the demand for rice, the mechanization of agriculture and the use of agricultural inputs have increased the supply of rice. In general, these statistical data of stock markets indicate that rice prices had increased. Bersani, Karoline, Viyolin, Tosya, Egypt, Maratelli, and Karacadağ varieties had been traded in İstanbul and İzmir Stock Markets.

Table 5.13 The Changes in the Reel Rice Prices of Stock Market in İstanbul (kg/ kurus until 1989) (kg/TL from 1990)

Years	Bersani	Karolina	Viyoline
1970	100	100	100
1974	104,9	127,0	104,4
1980	83,8	49,0	71,7
1984	73,7	86,0	-
1990	40,3	-	-
1993	763,4	673,9	-

SOURCE T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Yıllık İstatistikler* 1964-1994 (Annual Statistics of Turkey 1964-1994) ; TEFE Katsayıları 1994-100 http://www.alomaliye.com/2015/08/05/tefe-katsayilari-1994-100-toptan-esya-fiyatlari-endeksi/

Table 5.14 The Changes in the Reel Rice Prices of Stock Market in İzmir (kg/kurus 1955-1990) (kg/TL from 1990)

Years	Bersani	Mısır (Egypt)
1970	100	100
1974	100,4	107,9
1980	74,4	75,5
1984	75,1	-
1990	27,7	-
1993	572,1	-

SOURCE T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) Yıllık İstatistikler 1964-1994 (Annual Statistics of Turkey 1964-1994) ; TEFE Katsayıları 1994-100 http://www.alomaliye.com/2015/08/05/tefe-katsayilari-1994-100-toptan-esya-fiyatlari-endeksi/

§ 5.9 Marketing of Rice: The Rules of TGB in Rice Purchasing

After the production process and the harvest of rice, the rice is sold to TGB or rice factories. However, the first criterion in rice marketing is the supply of 14 percent of moisture content that is determined by the Turkish Standard Institute and accepted in the purchasing of TGB. However, some rice growers may have difficulty in providing the appropriate conditions due to climate conditions. In addition to the economic reasons, high humidity is also one of the obstacles for storing rice in the Lower Kızılırmak and Lower Yeşilırmak Basins. On the other hand, apart from those who have economic debt, farmers could store about 5 months in the Meriç Basin. Finally, due to the lack of adequate storage of farmers in the Karacadağ Agriculture Basin, they either sell their rice after harvest or hire the storehouses of rice mill to store their rice.[1073]

1073 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 121.

Furthermore, in some cases, 14 percent moisture content of rice criteria was brought before the politicians. For example, due to excessive precipitations, the moisture content of rice in the Meriç Basin was 16 in 1958. Thus TGB both lowered the price by 30 kurus and did not want to buy the rice of the Meriç Basin. In return, Keşan Rice Grower Association sent a petition about their economic problems and the bureaucratic barriers of TGB to Prime Minister Adnan Menderes on December 27, 1958.[1074]

Due to high relative humidity, the drying of rice is more difficult in the Lower Kızılırmak and Lower Yeşilırmak Basins. According to the explanations of Osman Kiraz, due to 15 moisture content, his father Yusuf Kiraz could not sell his 2200 tons of rice to TGB. Since there was no drying machine, he rented a house in Bafra to dry rice in the 1950s. Furthermore, while Osman Kiraz was drying his rice, his 4 tons of rice was burned. Besides, due to high moisture content, he dried his 400 tons of rice with a propeller. Thanks to drying machines, rice growers can deal with rice drying easily.[1075] However, to equilibrate the moisture content in rice grain, rice has to be dried in drying machines 10 hours after the rice harvest.[1076] Although there were drying machines in the rice factories of big rice growers in the 1980s, they became widespread in the Meriç Basin in the 2000s.[1077] Similarly, the complains of rice growers about 14 moisture content of rice continued in the 1990s. They demanded that it had to be 16. Thus Edirne deputy Ümran Akkan held a meeting in TGB.[1078]

In addition to the moisture content of the rice kernel, the expert analyses system of TGB which has considered only fit rice grain declines rice yield. Thus TGB does not pay for crocked rice grain. However, the Turkish Standards Institute let the existence of crocked paddy at 5 percent. This analysis

1074 BCA İTV 30 1 0 0 85 537-9.

1075 Osman Kiraz, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6, 2018.

1076 Selim Tarhan and Turan Ekmekçi, "Çeltikte Randımana Etki Eden Faktörler ve Alınabilecek Tebdirler," 69.

1077 Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, Akçadam, Meriç, Edirne, Turkey, September 01, 2018

1078 "Ümran Akkan Çeltik Üreticileriyle El Ele," *Vatandaş,* December 12, 1995.

causes an 8 percent difference between the rice factories and TGB.[1079] Besides, this bureaucratic procedure of TGB causes the economic loss of farmers in the period when the production cost of rice has increased 30 percent every year.[1080]

When rice provides the appropriate conditions of sale, the yield of rice is used as a base in the pricing of rice. The amount of foreign matters, the amount of crocked rice, precipitations before rice harvest cause the decline of rice yield.[1081] For example, adverse weather conditions and pesticides caused late spikelets in the Meriç Basin in 1976. Therefore, rice yield declined half in half in İpsala.[1082] In addition to climatic influences, human factors in the fertilization, pest control and irrigation of rice have influence over rice yield. For example, the unconscious use of irrigation water in rice farming cause wastage and the decline of rice yield in the 1990s.[1083]

In general, while the rice growers of Edirne and Samsun sell their products as rice rather than paddy, similar to the rice growers of Kargı, Tosya and Osmancık the rice growers of Karacadağ have processed their rice into paddy and they sell their paddy in their local markets.[1084] However, due to heavy rains in the harvest period of rice in the Meriç Basins, rice growers experienced both the decrease of rice yields and the spoil of moist rice grains. The increase in paddy prices reached 80 percent in two months. Exceptionally, some rice growers began to sell their own paddy to higher profit by extra processing price to rice factories. [1085] For example, 1000 tons of rice of Karlı

1079 Dr. Gürsel Şimşek, "Türkiye'de Çeltik Tarımının Ekonomisi," *Önder,* August 10, 2000.

1080 "Çeltikte Fiyat Beklentisi Sürüyor," *Son Haber*, September 11, 2006.

1081 Selim Tarhan and Turan Ekmekçi, "Çeltikte Randımana Etki Eden Faktörler ve Alınabilecek Tebdirler," 67-68; Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi,* 19

1082 "Çeltik Üreticileri Serin Havalar Yüzünden Zor Durumda Kaldı," *Vatandaş,* September 8, 1976; "İpsala Ovasında Bu Yıl Çeltik Hasadı Çok Düştü," *Vatandaş,* October 14, 1976.

1083 Haluk Yakan and Halil Sürek, *Edirne Yöresinde Çeltik Sulaması,* 2.

1084 Okan Gaytancıoğlu, *Türkiye Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli*, 111.

1085 "İpsala'da Çeltiğin Kilosu 10 Liradan Satılmaya Başlandı," *Vatandaş,* February 4, 1977.

village and Koyuntepe village of Keşan were processed into paddy and sold by village cooperatives.[1086]

Rice factories process rice into paddy and sell to retailers or markets. In the marketing of rice from fields to the dinner table, rice wholesalers (*Çerçi, Allaf* and *Toplayıcı*) and merchants some of whom are fabricators play an important role. Since they have suitable storing, they have been influential in the market supply of paddy for markets and retailers. Thus, they have benefited from price differentials among seasons. However, the rice growers of Karacadağ sell their products as paddy. After processing the rice into paddy, they paid their expenses and sell their paddy in their local markets. Farmers sell their products to fabricators, merchants and TGB.[1087]

Historically, with the increase of rice production in the 1960s, rice growers demanded the rice purchasing of TGB due to economic reasons. Since the stocking of Italian origin rice such as Bersani and Sezya was introduced into the market in 1962, it caused the decline of rice prices and the economic income of farmers on the one hand, it caused worry about the heating and spoiling threat of rice in inadequate storages on the other.[1088] Due to low rice prices in 1964, rice growers neither could sell their rice and pay their debt nor could cultivate rice. They preferred to cultivate forage and cotton in İpsala.[1089] Many rice growers in İpsala who undersold some of their rice could not sell the rest in 1966.[1090] Thus rice growers and the deputies of Edirne demanded the intervention of TGB. Furthermore, the news about the importation of 10000 tons of paddy from the USA on the radio created a reaction in the Meriç Basin in 1965. Uzunköprü Agriculture Chamber and Rice Grower Association

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1086 "Edirne İli Köylerinde Çeltik Alımına Başlandı," *Vatandaş,* October 10, 1977.

1087 Işık Ocaklı, *Edirne İli Çeltik Sektörü Raporu,* 67-68.

1088 Edirne Milletvekili Fahir Giritlioğlu'nun, 1962 yılında bol miktarda ekilen çeltik malhsulünün normal bir fiyatla satışlarının sağlanması konusunda ne gibi tedbir düşünüldüğüne dair yazılı soru önergesi ve Ticaret Bakanı Muhlis Ete'nin yazılı cevabı. (TBMM Tutanak Dergisi, October 15, 1962) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/MM__/d01/c008/mm__01008130.pdf

1089 "İpsala'da Bu Yıl Çeltik Ekimi Çok Az," *Vatandaş,* March 31, 1964.

1090 "Çeltikçiler Faaliyette," *Edirne Sesi,* April 21, 1967.

sent a telegraph to the Ministry of Commerce which emphasized that the decision of the government was untimely.[1091] State Planning Organization and the Ministry of Agriculture invited prominent rice growers such as Osman Ergene and Mehmet Kabakoğlu to Ankara to discuss rice cultivation in December 1965.[1092]

TGB had 51 purchasing places in seven regions in the 1960s. Based on the cabinet decision, TGB firstly began to purchase rice in its 51 purchasing places in seven regions in 1959.TGB has purchased rice and paddy from 1966 onwards.[1093] For the purchase and stock of rice, the required money has been supplied by the Central Bank of Turkey. Therefore, the Central Bank supplied 450 million TL credit in July 1966.[1094]

TGB had implemented three types of prices. These are the main purchase price between 1938 and 1988, support purchase prices in 1988, and 1989 and intervention purchase prices between 2002 and 2009. Then, TGB began to implement a purchase model that complied with the standards of the European Union.[1095] In this case, based on rice size and rice yield, TGB has had price discrimination. The main aim of TGB is the regulation of the domestic rice market to prevent an unreasonable rise in paddy price to the detriment of consumers and drop of the rice price to the detriment of producers. Besides, TGB regulates rice importation and exportation based on the rice marketing conditions.[1096] Since Turkey has been a rice importer country, the price policy of rice exporter countries influences the domestic rice market of Turkey. Thus, TGB has tried to stabilize rice prices and has tried to prevent price fluctuations.[1097]

1091 "Amerika'dan Pirinç Getirilmesi Trakya'da Tepki Uyandırdı," *Edirne Sesi,* July 8, 1965; "Ofisin Çeltik Mubayaası Başbakanlıkta," *Edirne Sesi,* October 20, 1967.

1092 "Çeltikçiler Ankara'dan Döndü," *Edirne Sesi,* December 20, 1965.

1093 İpek Atılgan Helvacıoğlu, Tuna Şener, Cem Tokatlı and Alpay Balkan, "Socio-economic Conditions and Behaviours of Rice Producers in Meriç Plain," 21.

1094 "TMO'ya Kredi Verildi."

1095 Işık Ocaklı, *Edirne İli Çeltik Sektörü Raporu,* 67-68.

1096 *Resmi Gazete,* August 9, 1969.

1097 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 170- 195.

While 3.4 percent of rice was sold to TGB, 94,7 was sold to local merchants and fabricators in the 1960s across Turkey. 10 percent of rice in the Meriç Basin, 3 percent of rice in the Lower Kızılırmak and Lower Yeşilırmak Basins, and 8.6 percent of rice in the Karacadağ Agriculture Basin were sold to TGB in this period.[1098] Since fabricators and merchants pay cash in a short time, small agricultural enterprises prefer them rather than TGB. [1099]

Thanks to the purchase contract of TGB about moisture degree, yield and grain quality, TGB provides the supply of more qualified rice in the domestic market. TGB used two systems such as degree systems and technical purchasing wage salary. In the premier system rice is evaluated in twelve degrees such as moisture, yield, crocked rice and foreign matter. Each of them is priced separately. The degree system was implemented in 1967 and 1968. In the second method, the elements that influence rice prices are evaluated separately such as the rate of red brass, yield, foreign matter, and moisture degree. The second method provides a higher income for farmers. However, an important amount of rice was sold to fabricators and merchants rather than TGB. Thus, they are also influential on paddy prices.[1100] Due to strict purchasing criteria, purchasing procedures, and the late payment system of TGB, some rice growers prefer rice factories in the Meriç Basin.[1101]

Thanks to municipal owned lands and foundation lands that have been hired as thousands of decar, the rate of big rice growers in İpsala is more than in other districts.[1102] While big landowners are more common in İpsala plain, they are almost 10 percent in Bafra and Çarşamba plains.[1103] They sell their rice for the account. Sometimes, some of them could not obtain their money

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1098 Ibid., 172.

1099 İsmail Sezer and Zeki Mut, "Samsun İlinde Çeltik Tarımının Durumu," 65.

1100 T.C Tarım ve Orman Bakanlığı, Toprak Mahsülleri Ofisi, *Çeltik Alım ve Depolama İşleri Hakkında Genelge, 033/06-1101*, 8. 10. 1966; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 188-189.

1101 Ahmet Şapaloğlu, "Pirinç Üretim ve Tüketim Zincirinde Pazarlama Kanallarının Yapısı ve Pirinç Pazarlama Marjları: Edirne İli Örneği," 111.

1102 Halil Sürek, tape-recorded Interview by the author, Edirne, Turkey, August 13, 2018.

1103 Rasim Ünan and Melih Enginsu tape-recorded interview by the author, Bafra, Samsun, Turkey. August 6, 2018.

from rice factories.[1104] In general, more than two thirds of rice growers have sold their rice until December.[1105] 65 percent of paddy produced in the Meriç Basin, 22 percent of paddy produced in the Karacadağ Agriculture Basin, and also 53 percent of paddy produced in the Lower Kızılırmak and Lower Yeşilırmak Basins had been consumed in national markets in the 1960s and the 1970s.[1106] The rice of the Meriç, Lower Kızılırmak, and Lower Yeşilırmak Basins have still been bought in national markets. For example, the rice of the Azad rice factory in Samsun marketed its paddy with the name of Anadolu Pirinç.[1107] Similarly, Ödenay paddy in Edirne is one of the important brands in the national rice market.

There have not been any cooperatives and unions in rice marketing. All farmers sell their products separately. Thus, fabricators have been influential in rice prices. During the marketing of rice, carriage, the prices of weigh-bridge, town dues and the share of the retailer have been paid.[1108] Although TGB has declared rice prices in general, some years it has not. Thus, they are exposed to the initiatives of some fabricators. However, although many rice factory owners buy the rice of farmer by cash, they sell their paddy into retails and markets for account. In case of the decline of paddy prices with the rice importation of TGB, they may lose money.[1109]

Furthermore, although rice prices increased, rice growers had difficulty in selling their rice due to inadequate stores of TGB in Meriç district in 1979. Therefore, although the minimum price of rice was 21 TL, the rice merchants in Edirne who knew the store conditions of TGB attempted to buy it at 13

1104 Ahmet Aydın, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 06, 2018.

1105 Halis Öz, *Samsun İlinde Çeltik Üretim Tekniğinin Belirlenmesi ve Ekonomik Analizi*, 30-31.

1106 Turan Güneş, Türkiye Çeltik Ekonomisi, 173.

1107 Kurtuluş Varol, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6, 2018.

1108 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 175.

1109 Doğan Başaran, "Çeltik Ekimi," *Tarım Makineleri Belgeseli,* Çiftçi TV, 2016.

TL.[1110] The same situation appeared in İpsala in 2012. Due to the lack of adequate storage of TGB, some rice merchants tried to purchase their rice at lower prices.[1111] By the same token, although both the minimum prices and rice yield were high, the inadequate storage capacity of TGB, rainy weather, and inadequate capital of farmers forced them to undersell their rice to merchants in the villages Havsa district in 1979. For example, the rice productivity of the Baldo variety was 650 kg and the Ribe variety was between 500 and 600 kg.[1112]

On the other hand, in some years, political developments such as elections may direct the policy of TGB. For example, due to local elections in 2003, TGB purchased the highest amount of rice in its history. However, since TGB had storing problems, it hired the stores of private firms and also applied to tariff quota in 2004 and 2005.[1113] Therefore, The USA said that Turkey does not comply with the rules of free trade, and the USA resorted to the World Trade Organization.[1114] Similarly, natural disasters, the prices determined by the government directly influence the domestic market conditions of rice. For example, 28810 decars of rice fields were exposed to floods in Edirne in 1998. To prevent the economic loss of rice growers, the government declined the minimum yield rate from 50 to 40 and the rate of foreign matter was increased from 5 to 10. Therefore, the rice purchase of TGB increased to 17600 tons in Edirne. The government paid 6,3 trillion to rice growers in Turkey.[1115]

Due to uncontrolled rice importation, TGB purchased rice in local markets to prevent the reduction of rice prices to the detriment of rice growers as an interventionist public institution. Turkish government implemented both

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1110 "Çeltik Depolarının Yetersizliği Sebebiyle Meriç İlçesinde Çeltik Üreticileri Ürününü Satamıyor," *Vatandaş,* October 16, 1979.

1111 "Çeltik Üreticileri Ürünlerini Satamamaktan Dertli," *Gündem* October 6, 2012.

1112 "Yağışlı Havalar Havsa'da Çeltik Üreticisine Zor Anlar Yaşattı," *Vatandaş,* November 24, 1979

1113 Okan Gaytancıoğlu, *Türkiye Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli,* 50.

1114 "ABD ve Türkiye Pirinçte Anlaşma Sağlayamadı," Hürriyet, February 09, 2006

1115 Edirne Milletvekili Mustafa İlimen'in, Edirne İlinde aşırı yağışların neden olduğu ürün kayıpları ve çeltik üreticilerinin sorunları ile alınması gerekli önlemlere ilişkin gündemdışı konuşması ve Turizm Bakanı İbrahim Gürdal'ın cevabı

tariff quota and the use of local seed between 2004 and 2006. Thanks to this system, rice was marketed at its value, the purchasing amount of TGB declined, rice production was registered, and rice importation was controlled. However, these implementations were abolished since they were against the rules of the liberal market economy.[1116] In addition to these developments, the tariff quota that necessitates the purchasing of local rice and restraints imported rice in 2005 led to the increase of rice production. Thus, together with the decline of rice importation and the obligation of TGB, rice growers could sell their products more easily.[1117]

On the other hand, since the Turkish government cannot form and develop regular vendors and purchasers' mechanisms in the agricultural market, imported rice policy in harvest time led to the decline of rice prices.[1118] Due to paddy importation, the prices of rice decreased in the domestic markets. Thus, the rice growers in the villages of Meriç district had difficulty in finding rice merchants to sell their rice and paying their debts.[1119] Therefore, the labor of rice growers was exploited and they could not make a profit. Farmers have not had a voice either in bank interest or in the determination of rice prices. Namely, farmers were directly exposed to the strict norms of the free market economy.[1120] These farmers have been obliged to the rice prices that are imposed by monopoly companies. Their labor is exploited without being a laborer.[1121] The low priced importations from Latin American countries and Russia, which had financial difficulties influenced the prices of agricultural products in Turkey. To prevent the economic trouble of farmers, it was expected that the government had to keep minimum price levels.[1122]

1116 Ömer Faruk Ekmekçi and Hikmet Özkan, "Türkiye'de Çeltik Üretimi ve Destekler," 65.

1117 Sibel Şerifoğlu, Çeltik, Üretim, Tüketim ve Destekler, *Çiftçi ve Köy Dünyası,* no. 370, (2015), 51.

1118 Okan Gaytancıoğlu, *Türkiye'de Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli*, 46.

1119 "Meriçli Çeltik Üreticileri Dertli," *Vatandaş,* January 4, 1986.

1120 "TZOB Başkanı Özbek Çiftçi Yeni Üretim Arayışları İçindedir," *Vatandaş,* April 17, 1986.

1121 Çağlar Keyder and Zafer Yenal, *Bildiğimiz Tarımın Sonu,* 34.

1122 "Edirne Milletvekili Evren Bulut Çeltik Fiyatının 165,000 TL Olmasında Israr Ediyor," *Vatandaş,* September 9, 1998.

To decline tariff and to put the rice in the storage of TGB, some rice companies increased paddy prices speculatively. Furthermore, rice factories increased rice prices by at least 80 percent. Through perception operations such as the low rice supply and the influence of global drought, paddy prices were increased three times.[1123] The owners of restaurants complained about purchasing expensive paddy and selling cheaper pilaf in cities.[1124] Due to the invoicing process of rice fabricators, lack of adequate storage and finance, there have been marketing problems of rice growers. Therefore, rice farmers can use the storage of TGB freely from 2006 onwards. To benefit from this opportunity, farmers were expected to be registered in the farmer registration system by the Ministry of Agriculture.[1125] There are TGB storages in Edirne, Samsun, Diyarbakır and Şanlıurfa. Furthermore, to develop rice production, third five-year development plan was implemented in Edirne, Samsun, İçel, Diyarbakır, Kahramanmaraş, Çorum, Sinop, Adana and Bursa in1973. However, while there were wheat silos of the TGB, there were no rice silos. The rice that was bought by the TGB received only one-tenth need of military.[1126]

1123 "Pirinç Fiyatı Aldı Başını Gidiyor," *Yenigün*, April 11, 2008.

1124 "Pirinç Fiyatı Pilav Satıcılarını da vurdu," *Yenigün,* April 26, 2008.

1125 "Çeltikçiler TMO Depolarını Ücretsiz Kullanabilecekler," *Son Haber,* October 19, 2006.

1126 Çorum Milletvekili Cahit Angın ve 11 arkadaşının, çeltikçiliği geliştirmek, verimi artırmak ve maliyeti düşürmek yolunda gerekli tedbirleri saptamak amacıyle bir Meclis Araştırması açılmasına ilişkin önergesinin görüşülmesi.

Table 5.15 Rice Cultivation (Ha), Production (Ton)and TGB Purchasing (Ton) in Turkey

Years	Areas	Production	Purchasing Rice	Purchasing Paddy	Rate
1938	20000	46310	-	-	-
1948	25656	59709	-	6170	-
1958	59000	119000	15	12246	-
1968	45000	123000	2,154	10512	-
1978	70000	316600	972	-	0.3
1988	51000	262500	-	-	-
1998	60000	315000	70701	-	22.4
2008	99500	753000	501	-	0.1
2018	118100	940000	432	-	0.05

SOURCE T.C Tarım ve Orman Bakanlığı, Toprak Mahsülleri Ofisi, TMO Tables (1938-2018) http://www.tmo.gov.tr/Upload/Document/istatistikler/tablolar/6celtikeuva.pdf

§ 5.10 The Importance of Industrialization in Paddy Production

The processing of rice into paddy is the first step of consumerization. However, the quality of rice depends on the grinding, the size, and the characteristics of its grain. Furthermore, the cooking quality of paddy depends on amylose content in the endosperm.[1127] The quality of rice changes according to rice growers, fabricators, shopkeepers and consumers. All of these groups try to get the highest profit in the end. Farmers aim to price out of the market and therefore they aim to get a higher yield that means the amount of paddy obtained out of 100 kg rice. Fabricators prefer clean, moisture free and storable rice and also higher rice yield. Shopkeepers favor market qualified, clean and standard paddy. Finally, consumers take into account cooking quality and palatal delight.[1128]

1127 Emine Aydın, "Pirinçte Kalite Kriterleri ve Alternatif Kullanım Alanları," *Uluslararası Katılımlı Konuralp Çeltik Çalıştayı,* Düzce (2015), 33.

1128 Halil Sürek, *Çeltik Tarımı,* 145.

Before the foundation of rice factories, there were milling machines and grinding machines in Turkey. Since the paddy of the milling machines and grinding machines were not shiny, they were crocked paddy and floury. There were 943 grinding machines in Turkey. Two thirds of the total grinding machines and one-third of milling machines were in Southeast Anatolia. There were grinding machines in Şanlıurfa, Hakkari, Tekirdağ, Ankara, and Bolu in the 1970s. Furthermore, while there were 360 milling machines in the 1940s, their number declined to 297 in the 1970s. For example, the number of milling machines was 37 in Diyarbakır, 10 in Samsun and 5 in Şanlıurfa in 1947. Furthermore, there was no fulling mill in the villages where rice was cultivated. Therefore, peasants used to dig some holes that were one-meter depth to obtain paddy from rice. They filled these holes with rice grain and they malled them. Some peasants worked as laborers in the obtaining of paddy and they got 30 kg paddy instead of cash in the Karacadağ Agriculture Basin.[1129]

The first rice factories were founded in the Tosya district of Kastamonu, Kahramanaraş, and İstanbul in the 1920s and the 1930s. As the sources of energy, water vapor, electricity and diesel oil were used in these factories. However, thanks to the factory assembled system, rice can be processed into paddy more polished and less crocked.[1130] The first rice factory in Turkey was founded in the Tosya district of Kastamonu in 1928. The capital of this factory was worth 120,000 TL and it had 24,000 shareholders. This firm was under the control of Sumer Bank.[1131] The building materials and some machines of the factory were transferred by ships from England to İnebolu port. Then they were reached to Tosya.[1132] The second rice factory was founded in Kahramanmaraş in the 1930s.[1133] While there were 21 rice factories in

1129 Nuri Taner "Urfa İli Çevresinde Çeltik Ziraatı," *Yenilik,* June 22, 1949.

1130 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişirme Değerleri Üzerine Araştırmalar*, 34-36.

1131 BCA İV, 30 18 1 2 5 43 4.

1132 Emrullah Koyuncuoğlu, tape-recorded interview, by the author, Tosya Kastamonu, April 20, 2018.

1133 BCA BV 030 18 01 02 9 11 9.

1940,[1134]their number increased to 29 in 1947.[1135] Thus, rice was transported from Diyarbakır and Adana to the rice factories of İstanbul and İzmir for processing into the paddy. On the other hand, the rice factories of the Lower Kızılırmak and Lower Yeşilırmak Basins processed their local rice.[1136]

Rice grower founded a rice factory as a joint adventure of 22 businessmen in Keşan on April 25, 1955. The factory could process 25 tons of rice a day. They produced cargo rice and sold it to TGB.[1137] In general, the foundation of rice factories in the Meriç Basin began to be widespread in the 1970s. Since there was no rice factory in Edirne, the rice of the Meriç Basin had been transferred to İstanbul until the mid-1950s.[1138] However, Hamdi Buzcu founded the first rice factory and sunflower seed oil factory in Uzunköprü in 1953. Thanks to the building of this factory, the market potential of rice growers increased in the Meriç Basin.[1139] The development of the industrial infrastructure of rice increased its commodification and economic value. This process is not different from other crops such as wheat and sunflower. However, since rice has a higher yield, it is more valuable for peasants. Furthermore, as the first rice factory owner of Uzunköprü, Hamdi Buzcu became the highest tax payer in Thrace in the 1980s.[1140]

Similarly, Fuat Abdiş and Faruk Güven who had rice factories in Boyabat, Terme, and Alaçam attempted to found a rice factory in Bafra in 1957. Fuat Abdiş said that there was not adequate rice cultivation for a rice factory in Bafra. However, with the building of a rice factory, rice cultivation areas would increase in the long run. [1141] On the other hand, the people of Bafra

1134 Rahmi Çeltik,"Türkiye'de Pirinç Ziraatı," 29.

1135 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişirme Değerleri Üzerine Araştırmalar*, 34

1136 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 141- 143.

1137 "Çeltik Müstahsilleri Kargo Birliği İle Bir Mülakat," *Demokrat Keşan,* May 14, 1955.

1138 BCA İTV 030 01 85 537 9.

1139 "Hamdi Babayı Kim Batırdı," *Patronlar Dünyası,* April 9, 2008; Nazmi Metin, "Hamdi Baba ve Günümüzün Kıytırık Zenginleri," *Keşan Postası,* January 18, 2018.

1140 "Trakya'da Vergi Rekortmeni Fabrikatör Hamdi Buzcu'ya Plaket Verildi," *Adalet,* November 15, 1981.

1141 "Bafra'ya Çeltik Fabrikası Kuruluyor," *Bafra,* April 4, 1957.

requested and attempted for the building of the Çarşamba Sugar Plant in the 1950s. However, it could only be built 30 years later from this rice factory.[1142] Although Azad Rice Factory was founded in Bafra in 1997. The grandfather of Kurtuluş Varol began to process rice into paddy in diesel oil-driven rice mill in the 1940s.[1143]

Süleyman Esen, Hüseyin Özen and Nesim Barakas founded a modern technological factory with the name of Akar Rice in the Kağıthane district of İstanbul in 1957. They bought rice from İpsala in the 1950s.[1144] According to the records of the İstanbul Chamber of Industry, there were 5 rice factories and they had a 35102-ton capacity. 25 percent of Turkish rice could be processed in İstanbul in the 1970s.[1145] There were 120 rice factories in Turkey in the 1970s. For example, 34 factories were in the Black Sea Region, 17 rice factories were in Marmara and 7 of them were in Southeast Anatolia in 1970. The number of rice factories was 5 in Edirne, 14 in Samsun, and 5 in Diyarbakır. In general, these factories were located in Kastamonu, Samsun, Edirne, Adana İstanbul, İzmir, and Diyarbakır in three regions.[1146]

After the attempt of Ahmet Ünalan and his two brothers for the foundation of a rice factory that had 40 tons of capacity a day in İpsala in 1973,[1147] 16 village cooperatives of Meriç district of Edirne decided to found a rice factory in Meriç. Furthermore, their entrepreneurship was pressed on the Trade Registry Gazette in 1976.[1148] However, this project could not be realized. By the same token, 8 years later, 5 soil water cooperatives and 18 village development cooperatives in the villages of Meriç district made a joint attempt again to found a rice factory in Meriç. To consult their agricultural and economic situations, the board of management of these cooperatives held a meeting in

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1142 "Çarşamba Şeker Fabrikasi 1985'te Üretime Geçecek,"; Türk Şeker, Türkiye Şeker Fabrikaları Tarihçesi, accesed February 13, 2019 https://www.turkseker.gov.tr/tarihce.aspx

1143 Kurtuluş Varol, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6,

1144 "Çeltikçilerin Nazarı Dikkatine," *İpsala Doğuya Sesleniş,* November 30, 1957.

1145 Nafiz Çatak," Çeltik Fabrikaları," *İstanbul Sanayi Odası Dergisi*, no: 84, (February 1973): 33.

1146 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 141-143.

1147 "İlçemizde Bir Fabrika Daha," *İpsala,* April 6, 1973.

1148 "Edirne'de 16 Köy Kooperatifi Birleşip Çeltik Fabrikası Kuruyor," *Vatandaş,* July 5, 1976.

Meriç Municipal on January 3, 1984. Based on their agreement and the size of their rice cultivation areas, every cooperative would pay 500 TL partnership interest per decar until March 2, 1984. Also, all the processes would be controlled by the General Directorate of Cooperatives in Edirne.[1149] A fund account would be opened in Meriç Agricultural Bank and the expenses of the building of the rice factory would be supplied. However, the cooperatives fell behind intentionally.[1150]

In contrast to these unsuccessful attempts, to protect the labor of rice growers from the undeserved gain of rice merchants, Edirne Village Cooperative opened a rice factory with 4, 250,000 TL in Keşan in 1979. This factory could process 20 tons of rice a day.[1151] Edirne village cooperative held a meeting 12 years later. The cooperative had 25 percent of rice production in Turkey and tried to equilibrate rice prices through the rice factory in Keşan.[1152]

There are 130 rice factories in Turkey. While there are 51 rice factories in Edirne, 23 of them are in Samsun and 2 of them are in Diyarbakır. Namely, more than half of the rice factories take place in three basins in 2015. While the number of rice factories has increased almost by 25 percent in Turkey, their number has increased by 33 percent in Edirne since 2000. In recent years, some of the owners of these factories came from the Black Sea region.[1153] In contrast to the increase of rice factories in Edirne, their numbers have decreased from 3 to 2 in Diyarbakır since the 1960s.[1154] The rice growers of Diyarbakır complain about the indifference of the businesspeople of Diyarbakır. The rice factories of Edirne are located in Uzunköprü, İpsala, Keşan, and Meriç districts. In general, they are limited companies and employ 512

1149 Meriç'teki Kooperatifler Meriç İlçesinde Bir Çeltik Fabrikası Yaptıracak," *Vatandaş,* January 5, 1984.

1150 "Meriç Çeltik Fabrikasının Bu Yıl Kurulup Çalışması İçin Çaba Saredilecek," *Vatandaş,* January 7, 1984.

1151 "Edirne Köy Kooperatifi Keşan'da Bir Çeltik Fabrikası Aldı," *Vatandaş,* December 18, 1979.

1152 "Köy Koop Edirne Birliği 12 Yıl Aradan Sonra Genel Kurul Yaptı," *Edirne,* May 20, 1992.

1153 Okan Gaytancıoğlu, *Türkiye Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli*, 56-121.

1154 "Bu Yıl Pirinçlerimiz de Bol Olarak İstihsal Edilmiştir."

workers. Some of their workers are seasonal.[1155] Similarly, there were about 242 workers in the rice factories of Samsun.[1156] Although the supervision and the inquest of these factories are made by the Ministry of Agriculture, there has still been uninsured employment and undeserved gain.[1157]

Although these factories have the capacity to process about 3 million tons of rice, they only process 700000 tons of rice that are produced and imported in annually the 2000s. However, due to insufficient rice production, and low demands in domestic and international markets, these factories work under their potential working capacity. Many of these factories do not have enough capital and thus the cost of bank credits is high for these factories. They work in full capacity in six months of a year. For example, rice factories in Edirne and Samsun work in 34 percent capacity.[1158] Furthermore, the Azad Rice factory has worked for about two months every year. There are 18 workers in the rice factory.[1159]

Besides, rice plants worked in a full capacity during the three months following the harvest. The term of employment was 75 days in the Black Sea, 150 days in Marmara Region and 135 days in Southeast Anatolia. Averagely, the workers of the rice plant worked 13 hours a day in the 1960s and 1970s. In this context, while only 1 percent of Turkish rice was processed into paddy through milling and grading machines, the rest was processed through the factory system in the 1970s. For example, 203 tons of rice in Marmara, 186 tons of rice in the Black Sea and 751 tons of rice in Southeast Anatolia were processed through milling or grading machines. On the other hand, 75669 tons of rice in Marmara, 61499 tons of rice in the Black Sea, and 11866 tons

1155 Ahmet Şalapoğlu, "Pirinç Üretim ve Tüketim Zincirinde Pazarlama Kanallarının Yapısı ve Pirinç Pazarlama Marjları: Edirne İli Örneği," 84.

1156 Samsun İl Tarım Müdürlüğü, tape-recorded interview, by the author, Samsun, Turkey, August 06, 2018.

1157 Arzu Özalp, "Trakya'da Çeltik Üretiminin Ekonomik ve İstatistiksel Analizi,"80.

1158 Ibid. 81 Işık Ocaklı, *Edirne İli Çeltik Sektörü Raporu,* 31- 67.

1159 Kurtuluş Varol, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6, 2018.

of rice in Southeast Anatolia were processed through the factory system in 1970.[1160]

In contrast to the Karacadağ, Lower Kızılırmak and Lower Yeşilırmak Basins, the owners of rice factories in the Meriç Basin were rice growers at the same time.[1161] However, some rice factory owners such as Yerebakanlar cultivate rice in Bafra plain.[1162] Since the term of employment in the rice factory coincided with the rice harvest period, İlhan Avcı has not cultivated rice for 5 years in the Karacadağ Agriculture Basin. His father Ali Avcı had cultivated rice until 2013. However, they give security for due payment of sharecroppers in the purchasing of fertilizer.[1163]

After the processing of rice into paddy, about 50 percent was rice, 15-16 percent was crocked rice, 20 percent was paddy husk and also 10-13 percent was rice bran. Rice yield means the amount of paddy obtained from 100 kg of rice. It was averagely 60 percent in the Meriç Basin, 60- 70 percent in the Lower Kızılırmak and Lower Yeşilırmak Basins and 55 percent in the Karacadağ Agriculture Basin in the 1960s and 1970s.[1164] With these rates, the rice yield of Turkey has been higher than the world average.[1165] The rice yield of these basins change according to climate conditions, fertilization, and cultivation technics in time. In addition to the obtaining of paddy as the main crop, rice bran and rice husk are two waste products of rice in factories. Rice bran has been used in the making of red capsicum, henna, and animal feed. Similarly, rice husk is used as sub soil fertilizer in the Black Sea region. As a subsidiary product, rice has more than 300 industrial uses. Since the husk of rice has a high level of silicon, it is used in the production of synthetic materials such as fertilizer, rubber, and furfural.[1166]

1160 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 144-145.

1161 Ibid., 142.

1162 Kurtuluş Varol, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6, 2018.

1163 İlhan Avcı, tape-recorded interview with the author, Diyarbakır Turkey August 10, 2018.

1164 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 146.

1165 Murat Palabıyık, Tahıllar İçinde Buğdaydan Sonra Gelen En Önemli Ürün Çeltik," *Hasad Tarım Dergisi,* no. 301 (2010): 58.

1166 Mirza Gökgöl, *Çeltik Ziraatı,* 4-5.

§ 5.11 The Cost Profit Analysis of Rice Farming: Daily Socio-economic Lives of Farmers

As a result of rice production and marketing, the production cost and profit of rice need to be analyzed. In this context, in general, while the economic income of rice growers had steadily increased until 1984, their earnings began to decline from 1984 onwards. This situation is closely related to the increasing production cost of rice and exposure to foreign market prices in the neoliberal period. While rice farming was commodified, foreign trade and the capital regime are liberalized and internationalized. Thus, the increase in production cost causes the deepening of borrowing to banks or usurers. Consequently, the farmers who experience these producing risk factors have become addicted to the free-market economy.[1167] Although 66 percent of farmers in all of these basins think that rice provides high income, an averagely 6 percent of them are satisfied with their earnings from rice cultivation.[1168] Furthermore, since many small scale agricultural enterprises have not had adequate capital, they cannot have stored their rice and undersold their rice.

First of all, when the economic situation of rice cultivation in the 1960s and 1970s is considered, it seems that rice farming had been ignored for years and spent millions of TL did not have any credit facility. Rice farming might have led to the bankruptcy of many farmers every year. Some of them sold their tractors, furniture, fields, and houses. Furthermore, the aghas of last year might have been laborer (*amele*)or garcon in coffees. Rice growers were afraid of floods of the Meriç Rivers, low yield, and the work stoppage of workers. Rice required capital, credit, and specialized labor. Rice farming resembles gambling. Rice farming is a kind of passion. Although many farmers went into bankruptcy due to floods or other natural disasters, they could not give up rice cultivation.[1169]

1167 Çağlar Keyder and Zafer Yenal, *Bildiğimiz Tarımın Sonu,* 154-155.

1168 Okan Gaytancıoğlu, "Türkiye'de Çeltikte Uygulanan Üretim, Fiyat ve Pazar Politikalarının Değerlendirilmesi," 110.

1169 Tevfik Işık, "Meriç Nehri Kıyılarında," *İpsala Doğuya Sesleniş*, September 3, 1960.

Similarly, since rice production reached a new record in the Meriç Basin in the 1970s, the rice merchants of İstanbul compete with each other in paying a deposit to rice growers. Since many Farmers did not have capital and needed cash, they sold their rice at 330 kurus that had been determined as the minimum price without stocking in their storehouses. Therefore, farmers accused the government of providing fewer credit facilities with them. However, the rice merchants who got more capitals and credit facilities stockpiled and caused rice scarcity in the market. While these merchants got rich, the labor of rice growers was exploited.[1170] Thus, due to the lower price, many rice growers did not prefer TGB to sell their rice in 1973.[1171] Namely, although rice prices have increased, it has been for the benefit of some speculators rather than rice growers. While people continue to consume paddy expensively, rice growers continue to work at lower profits.[1172] Farmers are not organized in the sale cooperatives. Therefore, although farmers produce their products, they cannot have the right to comment on the determination of their prices.[1173] However, Edirne Village Development Cooperatives Union is interested in rice in the production and marketing process. This institute has two aims. The first is the production of rice seed, the processing into paddy, and the sale of rice. The second aim is the purchasing of milk and dairy farming. 43 percent of rice is produced by the partners of the cooperatives in the 2000s.[1174]

When the prices of fertilizer and diesel oil in 1980 are regarded, it seems that the reel prices of fertilizers had increased four times and the reel prices of diesel oil had increased two times until the beginning of the 2000s. On the

1170 "Keşan İlçemizde Bu Yıl Çeltik Mahsulü Rekor Seviyeye Ulaşmış," *Vatandaş,* October 25, 1973.

1171 "Çeltik Üreticisi Malını TMO'ya Vermiyor," *Vatandaş,* October 26, 1973.

1172 "Kapının Açılıp Kapanışı," *Edirne Sesi,* July 8, 1965.

1173 Edirne Milletvekili Şadan Şimşek'in, tarım kesiminin sorunlarına ve alınması gereken önlemlere ilişkin gündemdışı konuşması ve Tarım ve Köyişleri Bakanı Hüsnü Yusuf Gökalp'in cevabı, (TBMM Tutanak Dergisi, February 13, 2001) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d21/c054/tbmm21054057.pdf

1174 N. Serinikli and İ. H. İnan, "Edirne Köy Kalkınma Kooperatifleri Birliğinin Ekonomik Analizi," *Tekirdağ Ziraat Fakültesi Dergisi* 4, no. 3 (2007), 239-240.

other hand, the increase in rice prices had been behind these agricultural inputs.[1175] For example, the production cost of rice increased by 120 percent in the 1980s.[1176] In the same way, Gürsel Şimşek emphasized that the production cost of rice had increased by 183 percent since 2002. Furthermore, while the production cost of rice was 300 TL in 2002, it increased to 850 TL per decar in 2011[1177] and 1,319 TL per decar in 2017.[1178] On the other hand, the minimum prices of rice increased from 60 kurus to 106 per kg in this process.[1179] This directly reflects the economic income of farmers in rice marketing.

The soil structure of plains such as saltiness or stony, flood threat of Meriç plain and the expectation of gaining money force farmers to cultivate rice. As a rice grower in Bafra plain said that he could gain more than his father who worked in Holland in the 1990s. However, as many farmers expressed, a rice grower pays off his debt with an extra debt in the 2000s.[1180] Therefore, they have used bank credit for 20 years. While the production cost of rice has increased, the economic income of rice growers has remained the same in the 2000s. To prevent economic loss, rice growers have to get higher yield. Rice is a more guaranteed crop than vegetables that have daily prices.[1181]

The level of rice production technology in İpsala equals to that of developed countries such as the USA, Italy and Australia. Since the production cost of rice has been high, farmers try to increase rice yield. In this context, although the development of land leveling system and the breeding of new varieties has contributed to rice production, rice growers have had difficulties in selling their products at their value. Gürsel Şimşek who was a local politician and chairman of the Rice grower association between 1997 and 2007 said that agrarian policies were a robbery system and farmers could not earn

1175 Okan Gaytancıoğlu, "Türkiye'de Çeltikte Uygulanan Üretim, Fiyat ve Pazar Politikalarının Değerlendirilmesi," 76.

1176 "Üreticiler İçin Bu Yılda Kaybolmuş Sayılıyor," *Vatandaş,* August 29, 1988.

1177 "2012 Çeltikte Kıyamet Yılı," *Hudut,* August 25, 2012.

1178 "Çeltik Üreticisi İçin 2017 Maliyet Raporu Hazırlandı," *Haber Türk,* August 16, 2017.

1179 2012 Çeltikte Kıyamet Yılı."

1180 Yahya Temiz, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 06, 2018.

1181 Temel Kaya, tape-recorded interview by the author, Bafra, Samsun, Turkey, April 30, 2019.

money in this banking system.[1182] Therefore, although these agricultural inputs are regarded as required to increase agricultural yield, they are also the source of uncertainties and concerns about the economic income of farmers. Due to the increase of production cost and the price fluctuations of rice cause the spiral of debt among rice growers.[1183]

Table 5.16 Cost and Profit Analyses of Rice by Years in Turkey (TL)

Years	Nominal Price of Oil	Amonium Nitrate	Osmancık Bersani	1 kg rice for Fertilizer	1 kg rice for 1 lt Oil
1980	25,3	6,8	6,8	1	2,7
1984	122	24	20,4	8,3	1,6
1990	1,5	393	117,1	2,9	0,7
1995	11,0	52,4	-	-	-
2001	788,4	0,1	0,3	2,9	1,2
2005	2,2	0,3	0,6	2,0	0,4
2010	2,3	0,4	-	-	0,2
2013	3,8	0,8	1,3	1,2	0,2
2017	5,6	0,8	1,4	1,6	0,2

SOURCE Gaytancıoğlu, (199); Özalp (2003); T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Yıllık İstatistik 1960-1996 (Annual Statistics of Turkey; 1960-1996)*; T.C Tarım Bakanlığı TMO *Çeltik AlımFiyatları(1980-2017*https://biruni.tuik.gov.tr/medas/?kn=84&locale=tr TC Kalkınma Bakanlığı, (DPT)*Beşinci Beş Yıllık Kalkınma Planı, Gübre ve Gübre Hammadeleri Özel İhtisas Komisyonu Raporu*, 139; *Vatandaş*, January 2, 1984; *Vatandaş* March 1, 1984; TC Kalkınma Bakanlığı, DPT *Sekizinci Beş Yıllık Kalkınma Planı, Gübre Sanayi Özel İhtisas Komisyonu Raporu,* Dolun (2018); TC Tarım ve Orman Bakanlığı, *Gübre Sektör Politika Belgesi* .

1182 "2012 Çeltikte Kıyamet Yılı."

1183 Çağlar Keyder and Zafer Yenal, *Bildiğimiz Tarımın Sonu*, 63.

As agricultural inputs fertilizer and diesel oil are two important production costs in rice farming. However, there is also, the cost of irrigation and pesticides. These production costs have changed both from region to region and in time. From the ceteris paribus perspective, there have been causal relations among these variables. Thus it is quite difficult to account for clear cut production costs. However, due to the increase of diesel oil and fertilizer prices, this table indicates more than four times the decline of the income of rice growers from 1980 onward.



Figure 5.6 The Economic Situation of Rice Farmers
SOURCE: Samsun Haber Gazetesi May 26, 2020

Table 5.17 The Production Cost of Rice in 2017 and 2018 (Ton/TL)

The Statement of Process	Edirne	Samsun	Diyarbakır
Ploughing	74,3	105	-
Land Levelling	37,5	40	-
Cultivation	126,6	120	171,5
Fertilization	106,4	125	77,6
İrrigation	250	150	180
Agricultural Control	143,3	95	60,5
Harvest	75,0	150	120
Preparation for market	63,5	-	-
Marketing	36	32	15
Other Costs	4	-	-
Total	929,7	817	625,1
Trading Capital Interest	46,4	40,8	31,2
Other Costs	976,2	-	-
General Administrative Expense	29,2	25,7	19,7
Rental Expense	300,0	250	200
Total Costs	1,3	833,5	876,0
Yield kg/ decar	900	800	500
The Cost of Crop TL/Kg	1,4	2,2	1,7

SOURCE *Üretim Maliyetleri* Edirne, Samsun ve Diyarbakır İl Tarım Müdürlüğü

This table indicates the differences in the production costs of rice among three basins in 2018. Rice farming culture, water sources, the use of technology, and agricultural inputs become influential in the emergence of different production costs. While there are ploughing and land leveling costs in Edirne and Samsun, these two methods have not been implemented in Diyarbakır where there is no ground surface tillage in rice cultivation. Furthermore, the costs of

irrigation and agricultural control in Edirne is one and a half higher than Samsun and Diyarbakır. This is closely related to excessive and unconscious use of pesticides and fertilizer, water pollution, and high electric bills in irrigation. Since irrigation cooperatives hire watermen in the Meriç Basin, their wages also increase the irrigation costs. For example, their average income is 20,000 TL for five months.[1184] On the other hand, apart from big land owners, small rice growers irrigate their own lands in Samsun and Diyarbakır. While the daily wages of watermen in Samsun is 100 TL,[1185] sharecroppers give ten percent of rice to them in Diyarbakır.[1186] However, thanks to advanced technology, the cost of the rice harvest in Edirne is two times lower than the other regions. On the other hand, rice fields have been sickled by workers in Karacadağ.

Although the total production cost of rice in Edirne is higher, rice growers can have higher income thanks to high rice yields. If the sustainability of rice farming is counted based on the annual minimum wage, it seems that a rice grower needs to cultivate at least 18 decar in Edirne, at least 16 decar in Samsun, and at least 37 decar in Diyarbakır. Furthermore, since sharecroppers give forty or fifty percent of their rice to land owners and ten percent to watermen, they need to cultivate at least 74 decar in Diyarbakır.

1184 İlhan Ceylan, , tape -recorded interview by the author, Edirne, Turkey August 20, 2018,

1185 Samsun İl Tarım Müdürlüğü, tape recorded interview by the author, Samsun, Turkey, August 6, 2018.

1186 Şerif Kahraman, tape recorded interview by the author, Diyarbakır, Turkey August 20, 2018.

Table 5.18 The Average Production Cost of Rice Industry and Marketing in 2018 (for 60 rice yield) (The Cost of Rice per Each Ton) (Rice Price Kg/TL)

The Statement of Process	Edirne (Osmancık)	Samsun (Osmancık)	Diyarbakır (Karacadağ)
Rice Purchasing	3-3,5	3-3,5	3-3,5
Processing into paddy	120	170	160
Transportation Electricity Labor cost Office expenses	320	310	315
Total Costs of Rice Plants Per Ton	440	440-480	475
The Sale of Rice to Wholesaler	6,2	5,2-5,5	-
Packing cost per Ton	1,0	500	-
Shelf Rent per Kg	150 kurus	150 kurus	150 kurus
1 Kg of Paddy Price	8	8	7

SOURCE These data were obtained through some interviews with three rice factory owners in three basins.

In the production chain of rice farmers, rice industry owners, wholesalers, and retailers and markets are seen respectively. As a result of the interviews, it seems while farmers complain about the increasing prices of agricultural inputs, energy costs in irrigation, and bank interests, rice factory owners complained about the economic uncertainties, high energy costs and employment costs. Also wholesalers and retailers pay taxes, transportation costs and hire purchase. Actually, when the economic income of these groups is considered, it seems that every group gain at a limited level. However, farmers or rice growers are the most suffered group in this production chain. In addition to increasing production costs, climate factors may influence their income. They have difficulty in receiving their production cost in some years. On the other

hand, while farmers spend half of their income as an expense, rice plant owners spend one of five from their income as an expense. Furthermore, they may sell rice bran and husk.

In general, the number of workers in the rice industry is between 10 and 20. However, in the harvest period, this number might increase to 50 people. In general, the costs of rice industries are close to each other. In contrast to Edirne and Samsun, rice processing into paddy and marketing in Diyarbakır is different. In this context, rice growers in Karacadağ have not sold their crops to the rice industry as rice directly. Most of them have their rice processed into paddy in return 315 TL and market their paddy individually.[1187] Therefore, the production cost of farmers increased from 876 to 1100 per ton. However, since they sell their crop as paddy without any intermediaries, their income is between 4,90 TL and 5,90 TL per kg. On the other hand, in general since the rice growers in Edirne and Samsun sell their crops as rice, the income of rice growers is between 1,50-2 TL in Edirne and between 0,75 and 1,25 in Samsun per kilogram. Therefore, it can be said that high costs of energy, agricultural inputs and the number of intermediaries increase paddy prices in markets.

5.11.1 *The Reflections of Neoliberal Policies to Socio-economic Lives of Farmers*

However, the increase in paddy price contributes to the earning of intermediaries rather than that of rice growers. For example, the managers of Yenikarpuzlu Agricultural Development Cooperatives were requested to be incarcerated since they could not pay the electric bill used in the rice irrigation in 2008. Fortunately, they paid 1 million debts in 36 months.[1188] Some rice growers have been sent in the bailiffs, since they cannot have paid their irrigation debt on time in Bafra.[1189] The biggest economic problems of rice growers

1187 İlhan Avcı, tape-recorded interview with the author, Diyarbakır Turkey August 10, 2018.

1188 "Üreticiler Borç Batağında," *Yeni Gün,* April 19, 2008.

1189 Ahmet Aydın, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 06, 2018.

have been diesel oil and electricity used in rice irrigation. With the privatization of electricity, irrigation cooperatives or agricultural development cooperatives that organize rice cultivation in the Meriç Basin has paid their electric bill monthly.[1190] Therefore, some farmers may delay paying the price of irrigation water in the Meriç Basin.[1191] Similarly, the rice grower who use electricity in the irrigation of their rice fields complain about the high cost of electricity and inadequate irrigation water capacity in the Karacadağ Basin.[1192]

TGB neither quotes a suitable price nor makes fee description on time in some years. Therefore, the pricing policy of TGB waste the labor of rice farmers. Due to the high production cost, high credit interest, and wrong pricing policy, rice prices were lower than the production cost of rice.[1193] This situation causes a problem in the marketing of rice.[1194] Thus, the big landowners of the Meriç Basin have been to Filibe in Bulgaria to cultivate rice since the mid-1990s. Thus they decrease the production cost of rice such as land tenure, labor force, and modern irrigation infrastructure in the 2000s.[1195] For example, Ali Soydan who studied at Boğaziçi University and his brother Cem Soydan graduated from Portsmouth University in England decided to cultivate 10000 decars of rice in the plains between Pazarcık and Filibe in Bulgaria in 2001. Since there were only two rice factories, they founded a rice factory and received 20 percent paddy requirements of Bulgaria. They also expected to benefit from the EU support projects in rice production. Apart from Turks, there have been Italian rice farmers in Bulgaria.[1196]

1190 "Çeltik Üreticisinin En Büyük Sıkıntısı Mazot ve Elektrik," *Uzunköprü,* October 05, 2013.

1191 Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, Akçadam, Meriç, Edirne, Turkey, September 01, 2018.

1192 Şerif Kahraman, Şeyhmus Atakul and Sevda Kılınç, "Diyarbakır Yöresinde Çeltik Tarımının Yapısal Durumu,"88.

1193 "Çeltik Üreticisi Sıkıntılı,"*Son Haber,* October 17, 2006; Doğan Başaran, "Çeltik Ekimi," *Tarım Makineleri Belgeseli,* Çiftçi TV, 2016.

1194 "Çeltik Üreticisi Ürününü Pazarlayamıyor," *Son Haber,* October 17, 2006.

1195 "Çiftçimize Tarlalar Dar Geliyor," *Yenigün,* May 20, 2008.

1196 "Komşunun Tarlalarını Türk Çiftçiler İşliyor," *Milliyet,* April 12, 2004.

The production cost of Turkish rice growers is higher than that of the USA per each decar. Furthermore, in the determination of agricultural supports, the government does not take into account the production costs of rice which are closely related to foreign exchange. Thus, these topics have been discussed and Opponent Parties made their ideal suggestions in the political ground in the Turkish Grand National Assembly. In return to these discussions, the governments pay attention to the statistical data about rice cultivation and technological transformation rather than the socio-economic situations of rice growers in their daily lives.[1197] More interestingly, there has been no production planning although rice cultivation has been subject to permission since 1936. Since rice growers have not been organized, the governments have focused on the consumption of paddy rather than the production of rice since the 1970s.[1198]

§ 5.12 The Marketing of Paddy

In general, the marketing of rice from rice growers to consumers is done in three types. First, farmers sell their rice to TGB, and TGB markets them to citizens. Second, farmers sell their products to rice factories. These factories or merchants sell them to supermarkets and wholesalers in Rami in İstanbul, GIMAT in Ankara, and İzmir. Third, farmers make their rice processed in rice factories and sell their paddy in district bazaars. Thus they remove many intermediaries. Furthermore, when the arrival of imported paddy or rice to consumers is considered, it is realized in three ways such as rice factories, wholesalers and catering firms.[1199]

Due to the growing demand for big hospitals in the Aegean and Mediterranean regions for Osmancık or Calrose paddy, their prices have increased.

1197 Edirne Milletvekili Kemal Değirmendereli'nin, çeltik üreticilerinin sorunlarına ilişkin açıklaması, (TBMM Tutanak Dergisi, February 8, 2012), https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d24/c013/tbmm24013063.pdf

1198 Çorum Milletvekili Cahit Angın ve 11 arkadaşının, çeltikçiliği geliştirmek, verimi artırmak ve maliyeti düşürmek yolunda gerekli tedbirleri saptamak amacıyle bir Meclis Araştırması açılmasına ilişkin önergesinin görüşülmesi

1199 Okan Gaytancıoğlu *Türkiye Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli,* 45.

The advertisements, the promotion and the brands of paddy, the cleanness and the image of paddy determine the preferences of consumers. Thus, retailers play the most important role in the paddy market in Turkey. In this context, retail trade first began with the foundation of Migros firm in Turkey in 1955. Then the development of retail trade accelerated with the entering of Metro and Carrefour into the domestic market of Turkey in the 1990s. For example, the share of retail trade in the paddy market is 60 percent in the 2000s. Furthermore, almost 80 percent of paddy is marketed in supermarkets as packed products, the rest is sold in sacks.[1200]

However, the first problem in the marketing and the consumption of paddy is tricking in paddy standardization. Osmancık and Baldo paddy varieties are blended and marketed with the name of luxury Baldo to decrease the production cost of the fabricator and to get higher income.[1201] Similarly, the smallest grained rice variety of Turkey is Karacadağ.[1202] Some imported paddy varieties were attempted to market in some super markets with the name of Karacadağ. Some firms blend imported paddy such as Kamolina and Calrose with local paddy such as Osmancık with each other and market them as favored paddy varieties such as Baldo and Osmancık 97. Thus, they cause decrease in paddy quality in pilaf, unfair competition, and undeserved gain. This situation results from the inadequate controls. The news on Turkish media and the press about the genetically modified organism in rice led to the preferences of local paddy. In general, since Calrose paddy and the Egypt paddy which is called Kamolina appeal to the taste buds of Turkish society, they are preferred. Therefore, While Calrose variety is demanded by rice factories who use modern technology, the Egypt variety is preferred due to its low price.[1203] While low income consumers prefer imported and cheap paddy, middle and upper middle classes prefer qualified and local varieties.[1204] In

1200 Ibid., 58-68.

1201 Ibid., 56.

1202 İlhan Avcı, tape-recorded interview with the author, Diyarbakır Turkey August 10, 2018.

1203 Okan Gaytancıoğlu, "Türkiye'de Çeltikte Uygulanan Üretim, Fiyat ve Pazar Politikalarının Değerlendirilmesi," 39-46.

1204 Halil Sürek, *Çeltik Tarımı*, 145.

general, the paddy grown in the Meriç Basin is consumed in the domestic market. Due to insufficient production, the consumption of the paddy grown in the Karacadağ, Lower Kızılırmak, and Lower Yeşilırmak Basins is limited with the regional level.[1205]

Besides, Turkey imports rice from Italy within the concept of Custom Union Agreement with the EU. In general, while Turkey imports rice from the USA, Turkey imports paddy from Egypt. Due to the standardization and lower prices of imported paddy such as American, Chinese and Egypt paddy, retailers can market more easily. However, since Turkish citizens like to consume coarse grained rice varieties, they prefer Calrose that is like Osmancık and Baldo. Kamolina is marketed as economic paddy with lower prices.[1206] Since local paddy is more qualified, consumers prefer them.

Within the concept of market size, paddy sales, and the basins where rice has been produced, the retail prices of İstanbul, Ankara, İzmir, Edirne, Samsun, and Diyarbakır are given. The retail of paddy prices in six different cities indicates that there has been a steady increase since 1948. However, due to the free market economy, the increase of agricultural inputs and some economic crises, the increasing rate of paddy prices during the 1980s and the 1990s were quite remarkable. Although there are little price differences, they have been to close each other.

1205 Okan Gaytancıoğlu, *Türkiye Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli,* 83.

1206 Ibid., 34-39.

Table 5.19 The Reel Retail Prices of Paddy in Turkey (1994-2016)

Years	January	February	March	April	May	June	July	August	Sept.	Octob.	Novemb.	Decemb.
1994	13	17	18	27	31	32	31	31	31	32	37	39
1995	27,45367	26,17801	25,04696	23,66864	22,90951	22,89224	22,21018	21,80685	21,21504	20,86168	20,35513	20,45075
1996	22,35067	22,86136	22,34637	21,59686	21,28992	22,59542	23,91629	24,54338	23,66227	22,47475	21,60864	21,59276
1997	21,49123	21,79328	21,66207	20,87181	20,99506	21,09415	20,81988	22,64438	23,79266	23,27102	23,17312	22,97376
1998	22,07962	22,8125	22,87027	22,1374	22,21812	22,50023	22,55312	22,19802	21,42857	21,16794	20,93535	21,29999
1999	21,1106	21,66868	21,80153	21,60494	22,34542	23,94258	24,75065	24,35936	23,50917	22,91929	22,72825	22,10372
2000	21,46822	21,00101	23,86062	20,43936	20,20448	20,06839	20,16824	20,63219	20,91486	21,28189	21,00021	20,75831
2001	20,45072	20,28563	19,99735	20,37783	20,65267	19,95884	20,20529	20,13226	20,06344	23,84913	25,69758	25,43256
2002	24,01689	23,00323	22,17203	21,39583	21,11654	20,82331	21,24633	21,37597	21,12055	21,0087	20,38705	20,05731
2003	19,96894	19,8088	19,38647	19,54769	19,23123	19,18064	19,56454	19,75001	19,73514	19,67856	19,58323	19,5373
2004	28,63656	19,66741	20,64583	21,02089	21,25887	21,65895	21,80962	21,88024	22,28049	22,35545	22,0991	21,93868
2005	28,62231	26,27498	26,27099	26,29355	26,31233	26,29073	26,32774	26,1586	25,9969	25,41545	25,38871	25,27919
2006	27,87886	26,05628	26,0774	25,7334	24,99098	25,17524	25,84894	26,49652	26,16027	26,00582	25,33208	25,18829
2007	27,98125	25,50535	25,77425	25,632	25,50389	25,64815	26,00244	26,32799	26,05932	25,59537	25,10617	25,52371
2008	35,24547	26,1563	27,13014	34,95055	37,39896	38,27519	38,42547	38,22335	36,42917	33,20578	33,64445	33,63969
2009	34,61405	32,15469	32,58277	33,1433	33,35428	33,73928	34,0054	34,38874	34,32452	33,10649	32,48909	32,2508
2010	30,41192	31,66866	31,54968	31,36251	31,28175	30,22606	30,17635	29,47101	28,98562	28,71612	29,02304	29,17398
2011	27,23039	28,96891	28,91032	28,66204	27,86421	28,14655	28,20095	27,9368	27,42606	26,3816	25,53124	25,15636
2012	24,33338	24,30987	24,09715	23,57114	23,56575	23,83476	23,88958	23,70112	23,51435	23,11638	23,13744	23,31881
2013	29,19304	22,92541	22,98445	23,09725	23,42893	23,71749	23,74717	23,82343	23,79641	23,47644	24,12924	25,72348
2014	33,19016	28,44633	29,0496	30,19282	31,02566	31,30905	31,40353	31,56257	31,09453	30,28371	30,8289	31,29029
2015	29,71125	30,77511	30,45958	29,74972	29,49516	29,33771	28,95806	28,79853	28,41258	27,71981	27,53637	27,56436
2016	26,36089	26,82702	26,50283	26,04743	25,97641	25,24165	24,82942	24,86093	24,69397	24,42403	24,49793	24,45511

SOURCE Consumer Price Index (1994=100), TÜİK Edirne Bölge Müdürlüğü; TÜFE, Tüketici Fiyat Genel Endeksi ve Değişim oranları https://www.hakedis.org/endeksler/tuketici-fiyat-genel-endeksi-ve-degisim-oranlari(1994=100)

§ 5.13 The Influence of Rice Import on Domestic Market

Turkey has imported paddy since the Early Republican Era. However, due to the Rice Cultivation Law of 1936, both paddy importation and rice production decreased for a while. However, with the increasing demand for rice, its prices

have increased from 1939 onwards.[1207] Furthermore, there has not been a strategic plan in rice production and marketing since the foundation of the Republic.[1208] In general, while Turkey had imported rice or paddy from Pakistan, India and China until 1980. However, with free import policies in the neoliberal period in the 1980s, rice has been imported from the USA.[1209] Thanks to import policies, rice prices were tried to be declined in the domestic market. In spite of the growing paddy demand of increasing population and the increase of rice cultivation areas, Turkey has not been self-sufficient in paddy production.[1210]

In contrast to the unplanned agrarian policies of Turkey, there is a technological and export oriented rice production with the collaboration of public and private entrepreneurship in the USA. The United States Agricultural Department (USDA) makes important encouragement for the research, the development and the export of American rice. Similarly, Rice Federation that is a rice union make advertisement for American rice abroad. For example, Promedya which is a public relations firm has made the promotion and advertisement of American rice in Turkey since 1995. In addition to this institutional entrepreneurship, due to the ecological characteristics of American rice, it has low moisture content. Namely, in contrast to local rice, it can be easily storable.[1211] Thus, the rice growers of Turkey have been exposed to the rice policies of American rice grower unions.[1212]

To deal with imported rice in the free market, rice growers were aware of getting high rice yield. Thus, mechanization has steadily increased in rice

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1207 Mustafa Uluöz, *Türkiye Çeltik Ziraatının Durumu ve Türkiye Pirinçlerinin Fiziki, Kimyevi Vasıfları ile Pişirme Değerleri Üzerine Araştırmalar,* 37.

1208 Edirne Milletvekili Cemaleddin Uslu ve 20 milletvekilinin, çeltik üreticilerinin sorunlarının araştırılarak alınması gereken önlemlerin belirlenmesi amacıyla Meclis araştırması açılmasına ilişkin önergesi, (TBMM Tutanak Dergisi, June 12, 2009), https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d23/c046/tbmm23046104.pdf

1209 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 13, 2018.

1210 Arzu Özalp, "Trakya'da Çeltik Üretiminin Ekonomik ve İstatistiksel Analizi,"28.

1211 Okan Gaytancıoğlu, *Türkiye Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli,* 87.

1212 Necmi Beşer, "Çeltik Tarımının Sorunları ve Çözüm Önerileri," *Edirne Haber*, November 9, 2001.

farming.[1213] Therefore, Turkey preferred paddy imports in the 1980s. However, with the increase of rice production, the developments of rice factories, high added value features of rice and lower custom tariffs of rice than paddy, Turkey has imported rice in the 2000s. Turkey has more rice production capacity. However, the Turkish government has imported Kamolina from Egypt and Calrose from the USA instead of increasing rice production and developing the marketing capacity of local rice. It results from the excessive use of irrigation water and the increasing production cost of rice. Thus, the Ministry of Agriculture gives more importance to the farming of sunflowers and corn, and also defends the free-market economy and the importation of rice.[1214]

However, the rice imports in the harvest time, cause the decline of prices in domestic markets and the decline of the economic income of rice growers. Therefore, while many farmers use bank credits as capital to cultivate their fields in villages, some of them have migrated to cities and are employed as subcontracted workers. Ali Soydan said that Turkey should have paid 263 billion USD to Turkish rice farmers rather than the importation of paddy from the Far East.[1215]

The production costs of cereals at the international markets are lower than those of Turkey where the raw materials of agricultural inputs are imported from abroad. Turkey contracts an agreement with the World Trade Organization to implement 45 percent of maximum tariff quotas in rice importation.[1216] Due to the liberal economic policy, TGB has considered international rice prices in the determination of price rather than the expenses of Turkish rice growers since the 1980s. Furthermore, since TGB is late in price making and imports rice in the harvest period in some years, rice growers are exposed to the initiatives of some merchants. Although rice is consumed during a year, its marketing is limited to one or two months. This is the disadvantage of rice

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1213 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 13, 2018.

1214 Okan Gaytancıoğlu, *Türkiye Pirinç Piyasasının Sorunları ve Çeltik Üretim Potansiyeli,* 28-58.

1215 "Çeltik Fiyatlarına Tepki," *Yenigün,* September 6, 2008.

1216 Ömer Faruk Ekmekçi and Hikmet Özkan, "Türkiye'de Çeltik Üretimi ve Destekler," 65.

growers.[1217] Moreover, due to low agricultural supports, irrigation water problems, the high prices of agricultural inputs, and low rice prices in domestic markets, Turkey is not self-sufficient in rice production.[1218] Furthermore, more than 80 percent of farmers think that the agricultural supports of the government are far from receiving the expenses of agricultural inputs.[1219]

When the international market of paddy is considered, it seems that Europe and the Middle East have half of this market.[1220] Since rice production and exportation in Egypt and Australia declined due to the drought, bioenergetics production export prohibition and storing, rice prices increased in 2008 in international markets.[1221] Thus, While the rice prices in Asian markets from a maximum of 200 USD in 2003 to max 855 USD per ton in March 2008. Similarly, this price increased was from a maximum of 350 USD to 1000 USD per ton in the same period. Furthermore, Monsoon rains did not cause an expected loss in Indian rice production in 2008.[1222] The price increase of food in 2008 has been the highest since 1973. The countries that have the highest rice production such as China, India, Indonesia, Bangladesh, and Vietnam implemented export prohibition to prevent scarcity and black marketing. On the other hand, rice importer countries such as China, Niger, Indonesia, Iran and the Philippines levied a tax on rice importation to stabilize their markets.[1223]

Due to the rice trade with Egypt and the USA, the rice prices of these countries have been influential in the determination of Turkish rice prices in the domestic markets. To manage the rice market adequately in the importa-

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1217 Murat Palabıyık, "Tahıllar İçinde Buğdaydan Sonra Gelen En Önemli Ürün Çeltik," 60-61.

1218 Işık Ocaklı, *Edirne İli Çeltik Sektörü Raporu,* 25.

1219 Ahmet Şapaloğlu, "Pirinç Üretim ve Tüketim Zincirinde Pazarlama Kanallarının Yapısı ve Pirinç Pazarlama Marjları: Edirne İli Örneği," 110.

1220 İsmail Sezer and Zeki Mut, "Samsun İlinde Çeltik Tarımının Durumu," 61.

1221 Halil Sürek, "Dünyada Farklı Ülkelerin Çeltik Ekimi, Hasat Zamanları ve Ülkemiz Pirinç Piyasasına Etkileri," *Hasad,* no: 290 (2009), 79.

1222 Halil Sürek, "Çeltikte Yüksek Fiyat Beklentisi Gerçekleşmedi ve Ürünler Elde Kaldı," *Hasad,* no. 302, (2010), 34.

1223 Ömer Faruk Ekmekçi and Hikmet Özkan, "Türkiye'de Çeltik Üretimi ve Destekler," 62-63.

tion and the sales of Turkish rice growers, TGB has to consider licensed warehousing in Turkey.[1224] This warehousing system is implemented to prevent the sale of rice in the periods when there is excessive rice supply. Historically, the licensed warehousing system firstly began in Osaka Commodity Exchange Market in Japan to store and collateralize their rice production in their trade in 1730.[1225] Thanks to deposit purchase from 2005 onward, TGB did not receive the rent of its store and TGB provided farmers with the opportunity of low-interest loans. Thus, TGB created an awareness of the storing of rice. TGB regulated the rice market in 2009 and 2010 without fee description.[1226] TGB firstly made a fee description in 2012 as 1,165 TL.[1227]

In addition, the agricultural policies, the climate conditions and the trade volume of China, India, Thailand, Indonesia, the USA and Egypt influence rice prices in the world. These countries take place near the top of rice production, trade, and consumption. In this context, weather conditions such as drought, precipitations, and floods, the decline of rice production and the growing rice demand of importers led to the increase in rice prices from May 2014 onwards. However, due to the new rice harvest in September and the destocking policies of Thailand and India, rice prices started to decline from September 2014 onwards around the world.[1228]

Turkey imported rice from the USA, Portuguese and Russia. Similarly, Turkey imported paddy from the USA, Italy, Greece, and India. On the other hand, Turkey exported 21000 tons of paddy to Syria and Iraq and 325 tons of rice to Russia in 2014.[1229] While the rice prices decreased in international markets in 2013 and 2014, the rice prices in Turkey increased due to the destocking of rice in domestic markets, the increase in the exchange rate of the dollar and

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1224 Halil Sürek, "Çeltikte Yüksek Fiyat Beklentisi Gerçekleşmedi ve Ürünler Elde Kaldı," 34.

1225 T.C İMKB, *Sermaye Piyasası ve Borsa Temel Bilgiler Kılavuzu,* (İstanbul: İMKB Yayınlar, 2008), 451; Salih Memiş and H. Dilara Keskin, "Tarımsal Mamüllerde Lisanslı Depoculuk Sisteminin Rolü," Yönetim ve Ekonomi 22, no: 2, 2015, 621.

1226 Ömer Faruk Ekmekçi and Hikmet Özkan, "Türkiye'de Çeltik Üretimi ve Destekler," 66.

1227 "Çeltik Üreticileri Ürünlerini Satamamaktan Dertli."

1228 Tarımsal Ekonomi ve Politika Geliştirme Enstitüsü (TEPGE), *Durum ve Tahmin Pirinç, (2015/2016)*, 3-6.

1229 Ibid., 6-7.

the increasing prices of imported rice at the same time. Therefore, TGB did not declare an intervention price. In contrast to 2014, heavy rains in the Meriç Basin in September and droughts in the Karacadağ Agriculture Basin in April decreased rice production in 2015. Rice prices in the domestic market were higher than those of international markets in 2015. Thus, with the decline of vat value from 8 percent to 1 percent on February 1, 2015, paddy prices decreased.[1230] While Turkey imported 873 tons of rice in 1969, Turkey imported 165,052 tons of rice in 2017.[1231] Although the rice production of Turkey has increased so far, it is far from receiving the paddy needs of the growing population. Thus, it seems that the rice import of Turkey has increased since the 1960s.

5.14 Concluding Remarks

Theoretically, all of these ideas prove that rice is an actor in the making of socio-economic history in these basins. Namely, rather than an anthropocentric standpoint, this study emphasizes the reciprocal or mutual relations between the labor of humans and also biological and agricultural characteristics of rice from the economic point of view. Although people in the rice sector consider primarily their economic interest and making more profit, actually they serve the generation of rice genes. Furthermore, thanks to its economic value, strong adaptability to different soil types, the development of new technologies, both rice cultivation areas, and production have steadily increased. Similarly, thanks to its high nutritional value characteristics and status indication, the growing and urbanized population of Turkey created a higher demand for paddy consumption per capita.

Historically, the Second World War was an important turning point in the spread of rice cultivation areas outside of Manson Asia and Far Eastern Asia. Thanks to the instrument of the Marshall Plan and the Green Revolution such as the use of agricultural mechanization, fertilizers and pesticides and also the

1230 Ibid., 8-11.

1231 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Tarımsal Yapı ve Üretim 2000 (Agricultural Structure and Production 2000)*; Arzu Özalp, 27; T.C Tarım ve Orman Bakanlığı Toprak Mahsülleri Ofisi (TMO) *Hububat Sektör Raporu 2017.*

building of the main road made the market oriented-production possible in Turkey. Thus, while rice cultivation had been limited to some big landowners until the mid-1960s, rice farming culture began to settle and spread among peasants in these basins sweepingly from the 1970s onwards. In this context, rice cultivation led to the commodification of irrigation water and lands more and more. Second, in the rice production process, rice farming culture requires adequate capital, specialized and intensive labor force. Furthermore, the pesticides, fertilization, and irrigation of rice require an experiment, a responsibility and a labor discipline. Therefore, the use of these inputs adequately and on time directly influence rice yield and the economic gain of farmers. Otherwise, the unconscious use of fertilizer and pesticides increased the expenses, environmental pollution and declined the profit of rice growers.

In the production process, on the one hand rice cultivation forces farmers to be in social cooperation, in case of inadequate irrigation water, rice may cause a conflict of interest among them at the same time. Furthermore, rice cultivation creates seasonal employment in irrigation such as watermen, enginemen and chefs. While these people have been employed by irrigation cooperatives in the Meriç Basin, they have been employed individually in other basins. In addition, some rice farmers may hire workers in rice cultivation, fertilization and agricultural pest control. While rice growers could have found workers more easily until the 1980s, it has been more difficult due to migrations from villages since the 1990s. However, thanks to the development of technology, the transition from labor intensive rice production to mechanized system has been seen since the mid-1980s.

Furthermore, thanks to the breeding of new rice varieties, the innovation of laser driven land leveling, cater pillar technologies and drying machines in the 1980s and 1990s, both rice cultivation areas and rice yield have increased. In other words, this situation indicates that the transformation of rice farming has been complied with developing technology and the free-market economy in the Meriç, Lower Kızılırmak and Lower Yeşilırmak Basins. In contrast to these basins, due to the stony lands structures and land forms of Karacadağ, the geographical determinism has differentiated rice farming culture and cultivation technics. Therefore, the use of fertilizer and pesticides began in the 1990s. Besides, sharecropping has continued in the Karacadağ Agriculture

Basin. Therefore, while the rice farming technics of other basins represent the modernization, changes and transformation, those of the Karacadağ Agriculture Basins represent traditionalism, immutableness and continuation.

In addition to labor and technology, the use of energy has been quite an important input. In this context, while diesel oil had been used in rice irrigation, electrically driven moto-pumps have been widespread since the 1990s. Therefore, the economic crises and foreign exchange bottle neck has influenced rice farming directly. Therefore, rice growers try to decrease expenses and increase their profits.

Historically, with the political attempts of Edirne deputies, the institutional entrepreneurship of the Uzunköprü Agriculture Chamber and Rice Grower Association, TGB has been influential in the marketing of rice since 1967. However, in order to get money in cash, most of the rice growers sell their products to merchants or rice fabricators. Rice purchasing of TGB depends upon its storage capacity and the government policies. TGB has some purchasing criteria, a price mechanism that provides a price equilibrium for the benefits of producers and consumers, and also the right to import rice. In addition to TGB, commodity exchange markets and rice factory owners might be influential in the determination of rice prices in Turkey.

Due to intensive the labor force and a large number of inputs, there has been the labor exploitation of workers in the production process and rice growers in the process of marketing in free market economic conditions. Since there has not been any sale cooperative in rice marketing in Turkey, many peasants have been still exposed to the conditions of the free-market economy. Namely, especially small peasants are far from defending their economic interest and becoming organized. Thus, international agricultural companies break the production chain among farmers, the public sector and consumers. They have dominated the market from seed and other agricultural inputs to the sale of packed foods.

When it comes to paddy, rice factories take part in the processing of rice into the paddy. The foundation of rice industrialization began in the early periods of the Turkish Republic. Based on the rice cultivation areas and paddy market, these factories were seen in Kastamonu, Kahramanmaraş and İstanbul in the 1930s. Furthermore, these factories began to be established into the

Meriç, Karacadağ, Lower Kızılırmak and Lower Yeşilırmak Basins in the 1950s. Especially, they became quite widespread in the 1970s in these basins. However, while their numbers have increased so far in Edirne and Samsun, they have decreased in Diyarbakır. Furthermore, there is more than an adequate number of rice factories in Turkey. Therefore, they only used one-third of their total capacity.

In cost and profit analyses, although rice cultivation areas have increased in Turkey, only 6 percent of rice growers are content with their profit. Many peasants who do not have enough capital regard rice cultivation as a gambling and robbery system in which dealers make more profit in the neoliberal period. While some of the small peasants were sent in the bailiffs due to bank debt, some of the big rice growers of the Meriç Basin went to Bulgaria to decline the expenses of rice cultivation. When these topics are discussed in the Grand National Assembly of Turkey, opponents focus on the socio-economic life experience of rice growers. On the other hand, the deputies of the ruling party focus on the statistical indications of rice cultivations areas, rice production and technological innovations.

Finally, most of the paddy has been sold in retails since 1955. However, due to tricks and the obtaining of undeserved gains, there has been a standardization problem in paddy. Although Turkey has known the extent of rice cultivation areas since 1936, there has been no rice production or consumption strategies. Since Turkey is not self-sufficient in paddy, Turkey has received its paddy needs through the import of rice. For example, the Calrose paddy of the USA and the Kamoline paddy of Egypt are the most popular imported paddy varieties in Turkey. Due to these importations rather than the encouragement of rice cultivation policies, sometimes the governments are criticized by some Agricultural Chambers and Rice Grower Association.

6

Rice and the Society

From its cultivation to consumption, rice is a symbol of fruitfulness, organization, talent, and wealth in different societies. Since it requires a social, cultural and traditional experience, neither every farmer can grow qualified rice nor every person can make delicious paddy meals. Since it is a social commodity, both the cultivation of rice and the consumption of paddy get people together. However, the togetherness and the organization of human communities may create some common and controversial social relations such as a social division of labor, common socio-economic interest, and the conflict of economic interest in the use of irrigation water, pesticides, fertilizer, and also in harvest time.

Besides, rice is consumed in some traditional activities such as weddings, feasts, pilaf days of some institutions and religious ceremonies. The consumption of pilaf in these ceremonies means the sensation of social solidarity and the indication of kindness. Furthermore, since pilaf is one of the most indispensable meals of students, pilaf days of schools also revive the memories of students during their school years.[1232] Namely, rice farming or consumption culture coexist with human communities.

1232 Güzin Yalın, *Mutfaktan Tabaktan Sokaktan,* 346.

From a biological perspective, this coexistence begins in babyhood. Rice is such a precious, sociable and anthropic food that thanks to its phytin and lecithin, human beings firstly taste rice flour after human milk.[1233] In addition to the ceremonies in which pilaf is given, there are rice related social ceremonies in the Far East. For example, according to the military memories of Hayati Tuncalı in Korea Wars in the 1950s, rice cultivation means fertility and it is the most sacred product in Korean. Rice workers who went to rice fields to cultivate carried a Korean flag within the scope of celebrations. In breaks, they drank rice wines and ate boiled paddy.[1234] By the same token, rice workers in İpsala Plain had begun to rice cultivation with musical celebrations in the 1950s and 1960s.

From a cultural perspective, etymologically, paddy or rice that are called *pirinç* or *çeltik* in Turkish came from the Persian language.[1235] Similarly, *birinç* means yellow in the Persian language due to its husk color. Due to its yellow color, the copper-zinc alloy is also called *pirinç* in Turkish. This word entered into western languages as bronze. Therefore, it is *riz* in French, rice in English, and risotto in Italian.[1236] Ottomans called paddy *dane*. Dane came from *dhnya* which means human food in the Indian language.[1237] Actually, paddy or rice is called *tuturkan* in older Turkic groups in Central Asia.[1238]

Based on these, this chapter claims that rice is one of the most social and cultural commodities that directs societies in their social organization, folklore, literature, cinema, cuisine culture and public health. Furthermore, people desire rice to feed the growing population, increase their wealth and strengthen their social solidarity. All these desires support the spread of rice genes and their popularity. Therefore, since cultural and social elements are the common values of the whole nation, this chapter tries to explain the influence of rice farming culture in a geographical context and paddy in cuisine

1233 Rahmi Çeltik, "Türkiye'de Pirinç Ziraatı," 26.

1234 Hayati Tuncalı, "Çeltik Ziraatı, Zirai ve İktisadi Önemi," 13.

1235 Feridun Mustafa Emecen, "Çeltik," 265-266.

1236 Ekrem Buğra Ekinci, "Şark Soğrasında Pirincin Saltanatı," *Türkiye Gazetesi,* April 16, 2014.

1237 Faruk Şüyün, "Hadi Şu Pirinci Ayıklayalım," *Dünya,* July 31, 2016.

1238 Feridun Mustafa Emecen, "Çeltik," 265-266.

culture, folk culture, and public health not only in three basins but also in Turkey in a historical process.

§ 6. 1 Geography and People

6. 1. 2 *Farmer Profile of three Basins*

When the profiles of farmers in these basins are analyzed in proportion to the general farmer population, it seems that Edirne has the highest number of rice growers. While almost 30 percent of farmers in Edirne cultivate rice, it is about 5 percent in Samsun. On the other hand, this percentage in Diyarbakır, Mardin, and Şanlıurfa was lower than 1 percent.[1239] Therefore, the socio-economic importance of rice farming has changed among these provinces. In general, while the members of small agricultural enterprises live in villages, the members of big agricultural enterprises live in cities in the Meriç, Lower Yeşilırmak, and Lower Kızılırmak Basins. Furthermore, the sharecroppers of the Karacadağ Agriculture Basin live outside of the villages such as in Siverek, Ergani, Çermik, or Çınar. Similar to other basins, small peasants who cultivate rice live in villages.[1240]

Second, in general, almost 80 percent of rice growers graduate from a primary school in these basins. Thus, although they used modern agricultural methods, they have been far from a scientific and academic perspective. Most of the time, many small rice growers trust what they hear and what they see from others. Similarly, they consider their experience rather than agricultural books. Thus they experience the cultivation of new rice varieties by trial and error. Furthermore, both in the vegetation period of rice and its sale, rice growers do not get the opinion of experts.[1241] They decide according to the general trend in society. For example, there is a popular view on the decline of the effects of pesticides in recent years for the protection of natural life. Consequently, although there are many technological innovations in rice

1239 T.C Tarım ve Orman Bakanlığı, *Farmer Registration System (2017/ 2018)*

1240 İpek Atılgan, Tuna Şener, Cem Tokatlı and Alpay Balkan, "Socio-Economic Conditions and Behaviors of Rice Producers in Meriç Plain," 22.

1241 Ibid., 23; Michael Polland, *Arzunun Botaniği,* 162.

fields, rice growers spend extra money, labor and working hours. However, they are disappointed in low rice yield in some years. On the other hand, many big rice growers of the Meriç Basin, the Karacadağ Agricultural Basin, the Lower Kızılırmak and Yeşilırmak Basins consult the opinion of professional agricultural engineers such as Halil Sürek, Necmi Beşer, Melih Enginsu, Rasim Ünan, Şerif Kahraman and Adil Kayapınar. However, due to the intensive agricultural input requirement of rice, rice farmers are more sociable than others.

Third, the average age of rice producers in these basins is more than 50. This situation not only indicates high age averages but also leaves the children of rice growers hopeless about their future in rice cultivation. The unsuccessful agricultural policies of the government, the increasing production cost of rice and the declining profit of farmers cause the voluntary migration of these youths to big cities and difficulties in the continuity of rice farming culture into the next generation. For example, almost half of the rice growers in the Meriç Basin says that their sons should not continue to cultivate rice. While 30 percent of them support the cultivation of rice in their next generation, 16 percent of them are indecisive.[1242] Therefore, an inadequate human capital in specialization required crops seems to be felt in the future more and more.

In contrast to small peasants, some big rice growers such as Sami Dubacı cultivate only rice in the Meriç Basin. On the other hand, to guarantee their economy, the small peasants in the Meriç Basin cultivate diverse crops such as wheat, sunflower, rice, corn, legume, kitchen garden, and vegetable. However, since the rice factory owners process sunflower into oil and wheat into flour, in addition to rice, they may cultivate sunflower and wheat in Edirne. Second, in contrast to small rice growers in Siverek and Derik who cultivate diverse crops such as kitchen garden, cotton, lentil, wheat, and barley, big rice growers of Karacadağ cultivate only rice through sharecropping. In addition to rice, rice factories process lentil in Karacadağ.[1243] Third, rather than the cultivation of only rice, there is crop diversity in the Lower Kızılırmak and

1242 Ibid., 22.

1243 İlhan Avcı, tape-recorded interview with the author, Diyarbakır Turkey August 10, 2018.

Yeşilırmak such as sunflower, kitchen garden, legume, vegetables, and corn.[1244]

§ 6. 2 The Geography and the Sociology of Three Basins

Geography is one of the most determinant factors in the distribution of population, agricultural structures, and water sources. In this context, Due to land productivity, agricultural production, and transportation facilities, Bafra and Çarşamba deltas are densely populated areas.[1245] On the other hand, the distribution of population in the Meriç Basin is more regular due to landforms, suitable climate conditions, and the distribution of water sources. However, due to floods, in general the settlement of villages along the Meriç River is situated in piedmonts of a high hill rather than in the middle of Meriç plain. Besides, the villages of Karacadağ is situated in the large plateau and the foothills of Karacadağ. This basin is also famous for its hot spring and skiing.

From a geographical point of view, interior Thrace roughly corresponds to the drainage of Ergene and the Meriç Rivers. It is surrounded by the Rhodope Mountains in the west, Işıklar Mountain in the south, and the Istranca Mountains in the north. Thanks to its tectonic structure, there are various water sources such as rivers, artesian wells and water bores. Since there had been no effective land reclamation until the 1950s, there were large wetlands in Meriç and Ergene Plains. Due to severe and snowy winters, the cultivation of Mediterranean crops is difficult. Although the region had railroad connections with İstanbul, the domestic trade with İstanbul was limited except the dairy industry. Due to the continental climate and high latitude of Thrace, agricultural crops grow mature late. Thus, the markets of İstanbul imports them from other region. However, the region had more intensive agricultural technics than other region in the 1950s.[1246] With the building of levee along the Meriç river and land reclamation in Meriç plain, cultivable lands increased. However, in terms of population, most of the population of Edirne had migrated

1244 İsmail Sezer and Zeki Mut, "Samsun İlinde Çeltik Tarımının Durumu," 62.

1245 Sırrı Erinç and Necdet Tunçbilek, "The Agricultural Regions of Turkey," *Geographical Review* 42, no. 2 (April 1952), 192-193.

1246 Ibid., 203.

from Rumelia in the last quarter of the nineteenth century and half of the twentieth century. Thanks to large cultivable lands and crop diversities such as sugar beet, sesame and rice that had created employment in the agriculture sector, the peasants of Edirne began to migrate to big cities in the 1970s rather than in the 1950s.

The Lower Kızılırmak and Lower Yeşilırmak Basins can also be called the Samsun sub region. This region is situated in the western part of the Ünye mountains which have large plains. Furthermore, Samsun is the least humid sub region of the Black Sea Region. Furthermore, the Samsun sub-region can be thought of as a transitory region from Internal Anatolia to the Black Sea Region in terms of crop diversity. There are two large deltas which have been formed by Kızılırmak and Yeşilırmak. However, Yeşilırmak Delta has had higher productivity than Kızılırmak. Cereals, vegetables and especially tobacco have been famous products in the Samsun sub-region. On the other hand, on the upper side of Samsun, there are more highlands and there has been corn cultivation and stock raising.[1247]

The Lower Kızılırmak Basins had allowed immigrations between 1950 and 1970 from the eastern Black Sea and the mountain villages of Samsun. Furthermore, due to the geographical position of Samsun, many immigrants from the eastern Black Sea, Rumalia and Caucasia were settled in Samsun. Therefore, 16 out of 114 villages of Bafra had migrated from the Balkans in the last quarter of the nineteenth and the twentieth centuries.[1248] Besides, many peasants had been coming to Bafra Plain from the mountain villages of Ordu to open some new cultivation areas in winter. However, there had been a malaria threat in the summer months in the 1940s and 1950s in Bafra. Most of these lands belonged to some prominent families such as Çizmeliler and Hacı Ömerler.[1249]

Southeastern Anatolia is situated in the foreland of Taurus Mountain and has an average of 500 meters of altitudes. Karacadağ volcanic mountain sep-

1247 Ibid., 192-193.

1248 Ahmet Aydın and Osman Kiraz, tape-recorded interview by the author, Bafra, Samsun, Turkey, August 6, 2018.

1249 Temel Kaya, tape-recorded interview by the author, Bafra, Samsun, Turkey, April 30, 2019.

arates the region into two drainage basins such as Dicle and Fırat. Climatically, it has a transitional climate between the continental climate and Mesopotamia desert climate. Since precipitation is not adequate, irrigation is required. In irrigable basins and valleys, there have been rice, viticulture, vegetables, and fruit growing. Besides, these green valleys have been surrounded by wheat and barley. Some nomad and semi nomad tribes who had goat and sheep herds had been to Syria in some periods of the year in the 1950s.[1250]

Due to climate conditions, the size of cultivable lands, transportation facilities, and water sources, the mountain villages of the Karacadağ Agriculture Basin is more densely populated than the villages in the plain. There have been Turk, Kurd and Zaza populations in this basin. Similarly, mountain villages have more forestry and there is fruit growth. On the other hand, there are field crops such as cotton, wheat, barley, rice, and vegetables in the villages settle in the plain. Thanks to their large meadows, the villages are situated in the foothills of Karacadağ are famous for livestock raising. On the other hand, husbandry is more limited in mountain villages.[1251]

Traditionally, rice cultivation is a culture that requires good craftsmanship and experience. There are many variables that influence rice yield directly such as humans, temperature, water, weeds. Rice cultivation requires the use of time, agricultural inputs and family budget correctly.[1252] While rice culture has been spread among small peasants in the Meriç, Lower Kızılırmak and Lower Yeşilırmak Basins, it has been more limited with big sharecroppers and landholders in the Karacadağ Agriculture Basin. As Süleyman Kızılkaya says, his ancestors have cultivated some rice fields of Karacadağ through sharecropping since the 1960s. Since many peasants of Karacadağ have had water problems in rice irrigation and do not have rice culture, sharecropping has spread. Tribal norms and tribal organizations are quite determinant in the socio-economic and socio-cultural life of the Karacadağ Agriculture Basin. Since the terrorist attacks of PKK have not appeared in this basin intensively,

1250 Sırrı Erinç and Necdet Tunçbilek., "The Agricultural Regions of Turkey," 200-201.

1251 Ekrem Sanver, "Ergani Tarihçesi 3", *Ergani Söz,* November 11, 2004.

1252 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 13, 2018.

migrations to big cities result from tribal conflicts and financial difficulties. The population of Karacadağ grows through fertility. There are 9 or 10 children in every household. Some of these children migrate due to business and education concerns. [1253]

Besides, from a socio-cultural perspective, in the transferring of legacy, there have been differences among these basins. While girls can inherit some rice fields or their prices in the Meriç, Lower Kızılırmak, and Lower Yeşilırmak Basins, it depends on the initiatives of boys in the Karacadağ Agriculture Basin. However, this share is not equal between boys and girls in Edirne and Samsun.[1254]

This table indicates the population of rice growing cities and villages. While there has been a continuous population increase in the settlements of Karacadağ, it is more limited in the other basins. This table indicates also the total population in rural and urban areas in these basins.

1253 Süleyman Kızılkaya, tape-recorded interview with the author, Yalankoz, Diyarbakır, Turkey August 10, 2018.

1254 Ahmet Aydın and Osman Kiraz, Interview by Author, Bafra, Samsun, August 6, 2018; Şerif Kahraman and Adil Kayapınar, tape-recorded interview with the author, Yalankoz, Diyarbakır Turkey August 10, 2018.

Table 6.1 The Population Change of Rice Cultivation Areas

Settlement	1950	1970	1990	2000	2013
Edirne	221125	316425	404599	402606	398582
Meriç	16342	23212	25896	19052	14782
Uzunköprü	55065	72974	83556	73486	65033
İpsala	21421	32643	36122	33564	29021
Enez	-	-	12334	12700	11929
Havsa	-	22425	27900	24027	20248
Samsun	475953	821183	1158400	1209137	1261810
Bafra	72081	121509	153701	157010	142812
Çarşamba	83371	138399	124270	131194	136184
Terme	48872	87947	81668	82608	73614
19 Mayıs	-	-	28947	25820	24424
Alaçam	29049	48410	43162	37490	28162
Tekkeköy	-	-	48730	50476	50124
Salıpazarı	-	-	29561	25113	19623
Diyarbakır	294618	561208	1094966	721463	1607437
Çınar	15590	28344	50445	58583	50657
Yenişehir	-	-	-	-	204930
Bağlar	-	-	-	-	357757
Kayapınar	-	-	-	-	277489
Kocaköy	-	-	15408	13069	16371
Çermik	31196	34294	49107	46050	50657
Ergani	27243	50766	78603	87467	121072
Mardin	26980	453092	557727	558275	779738
Derik	19131	36855	45983	45860	61226
Şanlıurfa	295734	538131	1001455	1443422	1801980
Siverek	53037	90027	133832	224102	232290
Viranşehir	19438	64301	100361	187705	177084

SOURCE T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK), *Genel Nüfus Sayımı 2000: Nüfusun Sosyal ve Ekonomik Nitelikleri: Edirne, Samsun, Diyarbakır, Mardin and Şanlıurfa (General Census 2000: The Social and Economic Characteristics of Population: Edirne, Samsun, Diyarbakır, Şanlıurfa, Mardin).* Ankara: 2002; T.C Başbakanlık Türkiye İstatistik Kurumu

(TÜİK) *Adrese Dayalı Nüfus Kayıt Sistemi Sonuçları 2013 (Addressed Based Census)* Ankara: 2014.

6. 2. 1 *The Class Consciousness of Rice Growers*

In addition to the socio-economic profile of rice growers and their sociological structure, rice cultivation directs these men to have common socio- economic interests and life experiences. Thus, rice cultivation requires the formation of class, organization or rice grower party as Korkut expresses. While lots of malaria-infected peasants had difficulty in finding quinine, rice growers tried to silence the free press through bribes and their political relations. Although they considered their individual economic interests, they looked like charitable, philanthropic and emphasizing the economic wellbeing of Turkey. Furthermore, big rice growers regarded the prohibition of rice cultivation as an anti- national, discriminatory policy, and the restriction of the free market in their letters sent to some ministries.[1255] Korkut defines rice cultivation as snatching in which all of the lands were hired by big rice growers in the plain. He also emphasized the inadequate health services and the requirement of drainage in wetlands in Turkey in the 1940s.[1256]

By the same token, the same behaviors and common economic interest of rice growers can be explicitly seen in the *Teneke* novel of Yaşar Kemal. In this context, owing to their socio-economic interest, it seems that the notables who are rice growers take joint action both in convincing district governor Fikret Irmaklı and in complaining him to the Ministry of Internal Affairs. They tried to ignore some articles of the Rice Cultivation Law of 1936. Furthermore, in accordance with their economic interests, these notables do not consider the peasants who suffer from malaria and always emphasize the importance of rice in national economy, their patriotism, and their love for Ataturk.[1257] Although it seems as if they considered national values, actually their main concern was their profit.

1255 Mehmet Şerif Korkut, *Isıtma ve Çeltik,* 44-45; Kyle T. Evered and Emine Ö. Evered, "A Conquest of Rice: Agricultural Expansion, Impoverishment and Malaria in Turkey,"125-130.

1256 Mehmet Şerif Korkut, *Isıtma ve Çeltik,* 66-70.

1257 Yaşar Kemal, *Teneke,* (İstanbul: Adam Yayınları, 2002), 1-70.

The water requirement of rice also directs rice growers to be organized under some irrigation cooperatives, village development cooperatives and irrigation unions in Edirne and Samsun. For example, the water level of rivers or lakes directly influences the economic gain, social union and bureaucratic attempts of rice growers. For example, due to the low water level of the Ergene river in rice irrigation, rice growers in the villages of Meriç districts founded Ergene Irrigation Union in 1976. They aimed at transmitting the water of the Meriç river to Ergene by moto pumps.[1258] In another example, the special administration of the Diyarbakır tendered contract of rice irrigation water. The contractors entered into a rivalry with each other to buy this contract in the 1960s.[1259] Thus special administration earned money.

6. 2. 2 *As Non-Governmental Organization: Rice Grower Associations*

Theoretically, these associations aim to develop rice farming technically and economically. Thus they tried to supply agricultural inputs at an affordable price, protect the interest of rice growers and develop agricultural extension activities. However, in practice, these associations neither work together with each other nor are active adequately in the formation of rice prices and policies. For example, due to the high prices of fertilizer and oil diesel, the production costs of rice have increased year by year. Thus, the profit of farmers has declined.[1260] First of all, the rice grower association in İpsala was founded in 1949.[1261] This civil organization dealt with the reclamation project of the Ergene river, the providing of agricultural inputs such as fertilizer, oil diesel, and pesticides on time, and also the importation of rice seeds. The board manager of Rice growers has been quite well known people such as business men,

1258 "Çeltikleri Sulamak İçin Meriç'te Çeltik Birliği Kuruldu," *Vatandaş,* July 19, 1976.

1259 "Bu Yıl Pirinçlerimiz de Bol Olarak İstihsal Edilmiştir."

1260 "Çeltikçiler Derneğinin Kongresi Yapıldı," *Adalet*, January 3, 1975.

1261 Haluk Kayıcı, *Arşiv Belgeleri ve Salnamelere Göre İpsala,* (Edirne: Ceren Yayıncılık, 2017), 55.

mayor, the president of the Agricultural Chamber and the commodity exchange market. For example, Rafet Dağlı who was one of the full member of the association was a hotelkeeper in Uzunköprü.[1262]

Today, there are 13 rice grower associations in 8 provinces. They were founded in the 2000s. There are four rice grower associations in the Meriç Basin such as İpsala, Keşan, Uzunköprü, and Meriç. Similarly, there are associations in sub-Kızılırmak and sub-Yeşilırmak Basins such as Terme and Ondokuz Mayıs. Besides, other rice grower associations are located in Karacabey in Bursa, Manyas and Gönen in Balıkesir, Osmancık in Çorum, Kızılırmak in Çankırı, Boyabat in Sinop and Düzce.[1263] As a civil society, Rice Grower Associations tried to be a pressure group on the government in the determination of rice prices and the formation of adequate market conditions.[1264]



Figure 6.1 The Parade of Rice Grower Associations in İpsala Independence Day

SOURCE: İpsala State Hydraulic Works (DSİ)

1262 "Çeltikçiler Derneğinin Kongresi Yapıldı," *Adalet,* January 3, 1975.

1263 T.C Tarım ve Orman Bakanlığı, Toprak Mahsülleri Ofisi (TMO), *Temmuz 2013 Çeltik Raporu*; Ahmet Şapaloğlu, "Pirinç Üretim ve Tüketim Zincirinde Pazarlama Kanallarının Yapısı ve Pirinç Pazarlama Marjları: Edirne İli Örneği," 86.

1264 "Çeltikçiler Fiyat Bekliyor," *Son Haber,* October 3, 2006.

6. 2. 3 *Prominent People in Rice Cultivation in These Basins*

The interviews with rice growers, agriculturalists and rice factory owners indicates that there are close and strong socio-economic relations and friendships among them in three basins. Besides, these people are quite open minded to novel ideas, changing market conditions and technological developments. Almost all of them are aware of the fact that rice cultivation requires a specialization, intensive labor force and experience. Furthermore, despite the fact that there are traditional methods to a large extend in the rice cultivation of Karacadağ, they have used pesticides and fertilizer since the beginning of the 1990s. To be able to understand the influence of rice in the lives of these people, their short biographies concerning rice might be an enlightening explanation.

First of all, the attempts of market-oriented rice cultivation and the foundation of rice factory began in the Lower Kızılırmak and Lower Yeşilırmak Basins in the 1950s. In this context, almost 27 rice factories were established and about 3,400 farmers cultivated rice in 2018.[1265] Therefore, it seems that rice has an important place in the agrarian economy of Samsun. However, some rice farmers have changed their socio-economic class and thus turn towards industry and business sectors. In this context, the name of Yusuf Kiraz has to be emphasized in the introduction and the development of rice in Bafra plain. For example, Yusuf Kiraz who pioneered in the spread of rice cultivation in Bafra opened an auto gallery with his earnings from rice farming.[1266]

Today, Ahmet Aydın who is one of the ex-deputies of Samsun, and Osman Kiraz who is a son of Yusuf Kiraz are two prominent rice growers of Samsun. Although the Samsun region is famous for the cultivation of tobacco and Bafra cigarette, Ahmet Aydın says that tobacco cultivation is the work of small agricultural enterprises. Thus, these families cannot have capitals and they have not changed their socio-economic classes.[1267] In addition to these

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1265 T.C Tarım ve Orman Bakanlığı, *Samsun İli Çiftçi Kayıt Sistemi (2018);* Samsun İl Tarım Müdürlüğü, tape-recorded Interview by the author, Samsun, Turkey, August 06, 2018.

1266 Osman Kiraz, tape-recorded interview by the author, Samsun Turkey August 6, 2018.

1267 Ahmet Aydın, tape-recorded interview by the author, Samsun Turkey August 6, 2018.

two prominent rice growers, Rasim Ünan and Melih Enginsu are two young and successful agriculture engineers who specialize in the development of rice cultivation in the Black Sea region. In the process of rice into paddy, the Azad rice factory is one of the oldest factories in the basin. Although their rice factory was founded in 1997, the grandfather of Kurtuluş Varol had a diesel oil-driven rice mill in the 1940s.[1268]

Second, the Karacadağ Agriculture Basin is one of the oldest rice cultivation areas in Anatolia. Since rice requires specialization and experience, Armenians had been quite influential in the rice sector until the beginning of the twentieth century.[1269] Especially, as many rice growers and factory owners explained Haşim Özkahraman who was the most prominent and famous rice grower of the Karacadağ Agriculture Basin. He also had cultivated rice in Bismil and the Meriç Basin in 1994. He was also engaged in the real estate industry and trade in Diyarbakır.[1270] As a young business man and an intellectual entrepreneur, İlhan Avcı also took part in the development of the education sector and the foundation of some private schools in Diyarbakır. However, as İlhan Avcı said, rice growers could not get huge capitals. He said that his father Ali Avcı could found a rice factory or Hacı Haşim Özkahraman had only a house when he died. However, Emin Karacadağ Paddy company was the first modern rice factory of Diyarbakır. The factory could process 130 tons of rice a day and marketed it with the name of *Doğu Yıldızı.* While the rice factory owners in the Meriç Basin has also industries to process sunflower, wheat and forage, those of the Karacadağ Agriculture Basin have plants to process lentil. However, the lentil of Diyarbakır has been sold in national markets but Karacadağ paddy is consumed only in Southeast Anatolia.[1271]

In the development and the introduction of Karacadağ rice, the importance of Şerif Kahraman at GAP International Agricultural Research and

1268 Kurtuluş Varol, tape-recorded interview by the author, Samsun Turkey August 6, 2018.

1269 İlhan Avcı, tape-recorded interview by Autor, Diyarbakır, Turkey, August 9, 2018.

1270 Süleman Kızılkaya, tape-recorded interview by the author, Yalankoz Village of Diyarbakır, August 09, 2018; Kardaş Ailesi, tape-recorded interview by the author, Yenişehir, Diyarbakır, August 09, 2018.

1271 İlhan Avcı, tape-recorded interview by Autor, Diyarbakır, Turkey, August 9, 2018.

Training Center and Adil Kayapınar at Diyarbakır Provincial Agricultural Directorate, Lale Taş at GAP Agricultural Research Institute in Şanlıurfa, and also Ferat Önal and Mübarek Kavan at Derik District Directorate of Agriculture have important roles. While Şerif Kahraman and his equip struggle to take the geographical indication of Karacadağ rice in Diyarbakır, Lale Taş tried to increase rice cultivation and organize rice growers to found a rice factory in her project in the villages of Siverek.[1272]

Third, in the Meriç Basin Bekir Kara was the first person who took rice from Filibe to İpsala plain in the mid-1930s. Also, Vizeli Hüseyin Bey, Hasan Buğdaycı, Hasan Deniz, Mehmet Aytin, Ali Çakırlar and Mustafa Öden are well known and the most famous rice growers in the Meriç Basin since the 1930s.[1273] Besides, Hamdi Buzcu began his business life by taking over the ice plant that belonged to a Jewish. Therefore, he took Buzcu a surname with the Surname Law of 1934. He participated in transport business, jewelry, and ginnery sectors. He firstly founded a rice factory in 1953 and a refined oil plant in 1967 in Uzunköprü. Furthermore, Hamdi Buzcu donated for the building of Uzunköprü Public Hospital.[1274]

Another important person in the rice cultivation of the Meriç Basin is Mustafa Öden. Since he lives as the oldest rice grower in the Meriç Basin, the transformation of his life might give an opinion about the influence of rice on the socio-economic lives of some prominent rice growers. Mustafa Öden had been a shepherd and a driver before he had cultivated rice. He firstly earned the required capital for rice farming from these jobs at the end of the 1940s. Mustafa Öden is one of the oldest and well-known rice growers in the Meriç Basin. He has cultivated rice for 65 years. He had cultivated the plains of many villages through land tenure or sharecropping in the 1950s and the 1960s. With the economic income of rice farming, Mustafa Öden founded the

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1272 Lale Taş, tape-recorded interview by the author, Şanlıurfa, Turkey, June 18, 2019; Şerif Kahraman and Adil Kayapınar, tape-recorded interview with the author, Yalankoz, Diyarbakır Turkey August 10, 2018.

1273 Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, Akçadam, Meriç, Edirne, Turkey, September 01, 2018.

1274 "Uzunköprü'de İz Bırakanlar 5: Hamdi Buzcu," *Uzunköprü Sesi,* 2009.

Ödenay rice factory as a family company in the Meriç district of Edirne in 1976. Thanks to their income, they purchased some lands and shops from Rami dry food site and mega center. Similar to Hamdi Buzcu, Mustafa Öden had been the tax champion of Edirne for four years.[1275]

Furthermore, Mustafa Öden was called the grandfather of rice as representative of both traditional and modern rice cultivation by agriculturalists that came from Philippines.[1276] He has worked actively in his rice fields until his death on November 10, 2019. These rice factory owners are well known people in their regions and they are quite influential in local politics. The entrepreneurship of Hamdi Buzcu and Mustafa Öden represents the transition to the liberal economic policies of Turkey from etatism at the beginning of the 1950s.

From a younger generation, Ali Soydan is an older president of the rice grower association in İpsala. He studied at Political Science and International in Boğaziçi University. Thanks to rice farming, the Soydans changed their class and entered into new sectors such as tourism and health at the international level. For example, as a family company, they have cultivated rice in Filibe in Bulgaria for the last ten years. Similar to Ali Soydan, other rice factory owners entered into new sectors such as gas stations, oil factories and buying hundreds of hectares of cultivable lands. Furthermore, Ali Soydan says that big rice growers in İpsala changed their socio-economic class. For example, they go to Dedeağaç province of Greece for dinner with their families at some weekends.[1277]

In the first invention of tank caterpillar technology of combine harvester, mobile drying machines of rice and also the spread of laser-driven land leveling technologies, Sami Dubacı is one of the most prominent people in Turkey.[1278] Sami Dubacı began to cultivate rice in İpsala in the 1970s. As he says, in addition to his technological novelties, the academic contribution of Halil Sürek in Thrace Agricultural Research Institute in Edirne has increased both

1275 Mustafa Öden, tape-recorded interview by the author, İpsala, Edirne, TurkeyAugust 20, 2017.

1276 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 13, 2018.

1277 Ali Soydan, tape-recorded Interview by the author, İpsala, Edirne Turkey, September 12, 2019.

1278 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 13, 2018.

rice varieties and yields since 1979. Rice is not only a livelihood for him but also an opportunity to open abroad. He went to Sacramento in the USA and Vercelli Rice Institute in Italy with the reference of Halil Sürek. Sami Dubacı is a quite open-minded, curious and risk bearer person in rice cultivation. He is also one of the good examples to indicate how rice has transformed the socio-economic life of a rice grower.[1279]

Today, Halil Sürek is one of the most important and prominent agricultural specialists in rice breeding and cultivation in Turkey. After his graduation from the Agricultural Faculty of Ege University, he began his work in Thrace Agricultural Research Institute in Edirne. As he says, there had not been an adequate number of agricultural engineers who specialized in rice in 1978 when he came to office in Thrace Agricultural Research Institute. As professional agricultural engineers, Halil Sürek and his team have bred almost 60 rice variety and 18 rice variety that were waiting to be registered.[1280] He had been an eponym of 21 Turkish rice varieties in Thrace Agricultural Research Institute until 2008.[1281] Especially, he is an inventor and breeder of Osmancık- 97 variety that has increased rice production in Turkey. As Halil Sürek is called the father of rice, Mustafa Öden is called the grandfather of rice. In rice studies, Halil Sürek is one of the most prominent and important agricultural specialists who has strong academic and social links at a national and an international level. He is also met by the IRRI in the Philippines. Due to his contribution to the development of rice cultivation, he received an award from the President of Turkish Republic Recep Tayyip Erdoğan in Ankara on July 26, 2019.[1282] More importantly, as many other precious agricultural scientists do, Halil Sürek is so willing to share his knowledge with farmers, academicians, and other agriculturalists.

1279 Mehmet Öztürk, "Sami Dubacı,"*Mehmet Abinin Günlüğü Belgeseli,* Çiftçi TV, İpsala/ Edirne, 2015.

1280 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 13, 2018.

1281 Meliha Okur, "Çeltik Mücidini Tanıyın," *Sabah,* April 19, 2008.

1282 "Kırk Yıllık Yorgunluğu Alan Ödül," *Yenigün,* July 30, 2019.

§ 6. 3 The Influence of Rice on Public Health

Apart from the social and organizational parts of rice, rice cultivation has been a matter of debate in the healthcare field, climate science, and social science. Furthermore, in contrast to its benefits on the human body, rice is associated with a high level of glycemic index and malaria. However, rice water is used as a remedy for the stomachaches of babies, blood pressure, nephropathy, and heart condition.[1283]

Furthermore, while rice cultivation is associated with the spread of malaria especially by doctors and some social scientists, they do not consider adequately the increase of cancer, respiratory tract diseases, rheumatic diseases, and orthopedic disorders result from the environmental pollution, industrial waste, and intensive labor force in rice cultivation areas. For example, the relation between malaria and rice cultivation is explained in the novels of Yaşar Kemal and the book of Mehmet Şerif Korkut in terms of the contradiction between economic development and public health. Furthermore, from a political point of view, the Rice Cultivation Law of 1936 tries to evaluate modern times as the conditions of the 1930s, the 1940s, and the 1950s. Thus, it cannot respond to the needs of rice cultivation today and it needs to be revised or repealed. Based on these claims, firstly it focuses on malaria.

6. 3. 1 *Malaria: The Legal Regulations and Public Health*

As a founder of modern medicine, Hippocrates is the first doctor who defined malaria as febrile seizures that appear every 72 hours. As a name, malaria is firstly used by F. Jackquer in 1743. It was firstly found in 1600 that quinine obtained from Cinchona could be a remedy for malaria by Juan Lopez. Hippocrates says that the people who drink dirty water experienced the problem of splenomegaly. First, French doctor Laveron discovered in Algeria in 1880 that plasmodium that lives in the blood causes malaria. Furthermore, Patric

1283 Mirza Gökgöl, *Çeltik Ziraatı,* 4.

Manson found that plasmodium was infected to people by mosquitos. Furthermore, Italian doctor Giovanni and his team found that the female anopheles of mosquitos infected malaria. Quinine that had been used as the remedy for malaria since the eighteenth century was not adequate in the treatment of malaria. Cinchona firstly came to Anatolia in the eighteenth century and *Risale-i Haysiyet-i Kınakına* was written by a doctor Ali in Bursa. Quinine was known as Sulfato at the beginnings of the nineteenth century.[1284]

The first legal regulations about quinine were made in 1913. In addition to the war, there was an anti-malarial campaign during the First World War.[1285] Quinine had been imported by the Ministry of Health until 1935, however, it was imported by the Red Crescent 1935 onwards. Quinine had been used in the treatment of malaria until the beginning of the 2000s. They were distributed by Agricultural Bank. However, atabrine produced synthetically was a remedy in dealing with malaria.[1286] Malaria was called as bad air, swamp fever colloquially.[1287]

Dirty waters are quite suitable places for the generation of anopheles. The temperature between 18 and 27 Celsius is suitable for the reproduction and spread of malaria parasites. Therefore, anopheles highly infect malaria at nights in the months between September and October. For example, in the case of adequate precipitation, temperature, and humid air, malaria was seen in the spring. After the infection of malaria, it shows an indication about two weeks later. It was founded by Richard Bright in 1832 that malaria parasites settle in the capillary vessels of the brain, spleen, liver. While arms and legs of malaria-infected people get thinner, their spleens swell.[1288] Furthermore, it

1284 Fatih Tuğluoğlu, "Türkiye'de Sıtma Mücadelesi," 352- 356; Ümmügülsüm Candeğer, "Cumhuriyetten Güzünümüze Sıtma İle Savaş," 411- 413.

1285 Ümit Akagündüz, "II Meşrutiyet Döneminde Toplumsal Bir Sorun Olarak Sıtma ve Sıtmadan Korunma Çareleri," *Kebikeç* 41, 2016, 119.

1286 Fatih Tuğluoğlu, "Türkiye'de Sıtma Mücadelesi," 352- 356; Ümmügülsüm Candeğer, "Cumhuriyetten Güzünümüze Sıtma İle Savaş," 411- 413.

1287 Ümit Akagündüz, "II Meşrutiyet Döneminde Toplumsal Bir Sorun Olarak Sıtma ve Sıtmadan Korunma Çareleri," 101.

1288 Fatih Tuğluoğlu, "Türkiye'de Sıtma Mücadelesi," 352- 356; Ümmügülsüm Candeğer, "Cumhuriyetten Güzünümüze Sıtma İle Savaş," 353-354.

may cause depression and mental disorders one year later. Consequently, malaria caused the decline of population and labor productivity that provided agricultural production.[1289]

From a social point of view, malaria is one of the oldest diseases in the history of humanity. The emergence of epidemics such as malaria, plague and typhus are related to the beginning of agriculture and the taming of some animals in the process when humans dominated nature. Malaria epidemic had been seen especially in war-time and in the periods when there were population movements such as the migrations of seasonal workers in summer and soldiers in wars in the nineteenth century.[1290]

Michael Foucault said that the politics of health emerged in the course of the eighteenth century. The subsistence, the growth of the population, and the adjustment of the population to an economic production were conceptualized as bio-power. Therefore, the healthy population has been regarded as a labor force.[1291] In this context, the government tried to prevent the spread of the malaria epidemic to protect public health and to provide the rearing of healthy generations. The government policies to prevent the spread of epidemics such as malaria, tuberculosis, plague and lues began in Tanzimat Reform Era in 1839 and had continued until the 1970s. Besides, the geographical explorations, wars, and commercial relations caused the historical spread of malaria on a global scale.[1292]

The Ottoman State enacted a law about the standardization of rice farming and the increasing malaria threat. The Ottoman State encouraged the drainage of wetlands and the formation of suitable lands for rice farming. In this case, there were two wings in the Ottoman parliament about rice and malaria discussions in 1910. While technocrats defended that rice cultivation had to depend on strict rules to deal with malaria threat. The liberals who were interested in rice cultivation and trade defended the economic interest and the

1289 Mehmet Şerif Korkut, *Isıtma ve Çeltik,* 1-4.

1290 Fatih Tuğluoğlu "Türkiye'de Sıtma Mücadelesi," 352-354.

1291 Ricchard A. Lynch, "The Politics of Health in the Eighteenth Century," *Foucault Studies,* no. 18 (2014), 117.

1292 Fatih Tuğluoğlu, "Türkiye'de Sıtma Mücadelesi," 351-354.

liberal economic targets of the empire.[1293] Besides, the poverty and the ignorance of peasants had increased malaria in the 1920s and 1930s.[1294] Although the members of the Committee of Union and Progress and some Armenian liberals disagreed ideologically, those who were interested in rice cultivation and trade had the same economic views on both sides.[1295]

Since it is thought that rice and malaria have been closely related to each other, a health inspector claimed that there was malaria resulted from rice cultivation in Bursa Plain in 1909. In contrast, Rıza Pasha who traveled around the plain refuted this argument. The inspector tried to prevent rice cultivation in the plain to protect and to develop the famous hot springs of his relatives in the Çekirge district of Bursa. On the other hand, although rice cultivated lands were very close to Filibe, Mosul, and Baghdad, malaria was rarely seen.[1296]

The ministry of Health tried to map malarial zones and wetlands with the reports of sanitation departments. In the conference held under the leadership of Refik Saydam, ten years of the malaria control program and sanitary organization were talked about.[1297] Furthermore, some doctors such as Abdülkadir Lütfi, Ahmet Fikri, Hüsamettin Şerif, Neşet Ömer and Tevfik Salim discussed the geographical spread of Malaria, the government policies against malaria and the treatment of malaria in the first National Medicine Congress in 1925.[1298] Besides, Anti Malaria Law of 1926 and the Public Health Law of 1930 determined the rules of fighting against malaria.

1293 Chris Graten, "Pilavdan Dönen İmparatorluk: Meclis-i Mebusan'da Sıtma ve Çeltik Tartışmaları," 100-102.

1294 Kyle T. Evered and Emine Ö. Evered, "A Conquest of Rice: Agricultural Expansion, Impoverishment and Malaria in Turkey,"119.

1295 Chris Graten, "Pilavdan Dönen İmparatorluk: Meclis-i Mebusan'da Sıtma ve Çeltik Tartışmaları," 116.

1296 Ibid, 110-116.

1297 Eminalp Malkoç, "Erken Cumhuriyet Döneminde Sıtma Mücadelesinin Altyapısı (1923-1927)" In *Osmanlı'dan Cumhuriyet'e Salgın Hastalıklar ve Kamu Sağlığı,* edited by Burcu Kurt and İsmail Yaşayanlar (İstanbul: Tarih Vakfı Yurt Yayınları, 2018), 173-174.

1298 Ayten Arıkan, "Milli Türk Tıp Kongreleri (1923-1968) ve Türkiye Sağlık Politikalarına Etkileri," (PhD Thesis, İstanbul Üniversitesi Fen Bilimleri Enstitüsü, 2005), 16-17.

Furthermore, Professor Dr. E. Martini and Dr. H. Vagel were invited from Hamburg Hot Countries Institutes in Germany in 1926 to research the mosquitos in Turkey. With the suggestion of E. Martini, Adana Malaria Institute was founded to do some research about malaria.[1299] These were health-related laws, regulations and orders. Thanks to the law of 1926, the treatment of rural population and farm laborers were aimed.[1300] For example, 92 percent of peasants were malaria infected in the rural areas of Adana. Then 16 Anti Malaria Centers were founded in the provinces where there was a high percentage of malaria, crowded population and intensive economic productions in the 1930s such as Eskişehir, Konya, Bursa, Manisa, Kocaeli, Samsun, Antalya, and İstanbul. 150 doctors and 400 medical assistants were employed in these institutions. To fight against malaria, the deepness of backwater was increased more than 70 cm, the sources of the larva were annihilated through petroleum, insect control were implemented in rural areas.[1301] However, with the spread of DDT, it has been used in insect control since the 1940s. Furthermore, to drain wetlands, the planting of eucalyptus, poplar, and willow were encouraged in the 1930s.[1302] Eucalyptus was regarded as an anti-dote of malaria.[1303] On the other hand, the cutting of ash trees, the cultivation of rice, and cannabis far from villages were discussed in the early republican period.[1304]

Furthermore, within the scope of fighting against malaria and the regulation of rice farming, the Rice Cultivation Law of 1936 was enacted by the cooperation between the Ministry of Health and the Ministry of Agriculture. Furthermore, similar to the Rice Cultivation Law of 1936, the relations between rice production and malaria had been discussed in the First Turkish

1299 Ümmügülsüm Candeğer, "Cumhuriyetten Güzünümüze Sıtma İle Savaş," 416.

1300 Kyle T. Evered and Emine Ö. Evered, "A Conquest of Rice: Agricultural Expansion, Impoverishment and Malaria in Turkey,"106.

1301 "Umumi Hıfzısıhha Kanunu," *Resmi Gazete,* May 6, 1930.

1302 Fatih Tuğluoğlu, "Türkiye'de Sıtma Mücadelesi," 357- 358.

1303 Chris Graten, "Pilavdan Dönen İmparatorluk: Meclis-i Mebusan'da Sıtma ve Çeltik Tartışmaları," 105-106.

1304 Eminalp Malkoç, "Erken Cumhuriyet Döneminde Sıtma Mücadelesinin Altyapısı (1923-1927)," 176.

Parliament.[1305] Besides, since this law charged governors and district governors in rice cultivation areas, the Ministry of Internal Affairs has been responsible for the performance of the legal obligation in rice cultivation. In this context, from water sources and rice cultivation areas to working hours and sheltering conditions of farm laborers have been determined.

Thanks to these precautions, malaria decreased to 10 percent in 1944. Furthermore, the war measurements during the Second World War prevented the influential fight against malaria. Thus, the Anti Malaria Law of 1946 was enacted to indicate the mutual responsibilities of different public institutions and Turkish citizens. In this context, 403 doctors and 1663 medical assistances were employed in 54 provinces.[1306] Fighting against malaria was regarded as a national priority and a humanitarian mission by İsmet İnönü. Thus, the government tried to bring preventative health care to every village in this period.[1307]

Malaria ceased to be threat 1950 onwards. In addition to economic and technological reasons, as a result of the adequate supply of anti-malarial drugs such as larvisit and kulisit in 1952 and 1953, the government gave the permission of rice cultivation in new areas where rice farming had been forbidden in 1940. Thus rice cultivation areas have increased. Furthermore, rice growers were obliged to distribute these drugs to rice workers and they were responsible for the protection of their health.[1308] Furthermore, terremisin was developed at Guadalajara University in Mexico. It was tested in 15 malaria-infected people and gave positive results. Thanks to terremisin, their body temperature declined and patients were recovered.[1309]

Within the scope of the Marshall Plan, as an American malaria specialist, Dr. Feredrick Kratz came to Turkey to work together with the Ministry of

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1305 Ümit Akagündüz, "II Meşrutiyet Döneminde Toplumsal Bir Sorun Olarak Sıtma ve Sıtmadan Korunma Çareleri,"109.

1306 Sıtma Savaşı Kanunu," *Resmi Gazete,* November 21, 1946; Fatih Tuğluoğlu, "Türkiye'de Sıtma Mücadelesi," 357-358.

1307 Kyle T. Evered and Emine Ö. Evered, "A Conquest of Rice: Agricultural Expansion, Impoverishment and Malaria in Turkey,"115.

1308 BCA S.S.Y.B. 26/1108, (March 9, 1953).

1309 "Malaryaya Çok Müessir Bir İlaç: Terramisin," *Urfa,* June 23, 1952.

Health. In this context, 1,600,000 TL was given to Turkey. This money was used to buy DDT, vaporizator, and other vehicles. On the one hand, the sources of malaria were prevented, and on the other hand, rice cultivation lands were increased in different parts of Turkey.[1310] Thanks to anti-malaria drugs such as DDT, both the lives of peasants and crops could be saved. Due to the deaths resulting from malaria, rice was called bloody agriculture colloquially in the Antalya region in the 1930s and 1940s. The pulvizator that is used for DDT was produced in Ankara Machinery and Chemical Corporation in the 1950s.[1311]

However, the first article of Yaşar Kemal on Cumhuriyet Newspaper on July 3, 1951 was about public health, poverty and the financial difficulties of Rumelia immigrants who settled in the rural areas of Diyarbakır in 1939. As Yaşar Kemal describes, it seems that there were epidemics such as malaria due to scorching hot air, dense mosquito population, dirty water and rice fields around the Ambar river in the 1940s. Furthermore, due to unplanned settlement policies, the immigrants who came from the Deliorman region (the north-eastern part) of Bulgaria to Diyarbakır could not adapt to their new lands and climate. Furthermore, 120 immigrants out of 500 died in the first month of their settlement. Based on the deaths and the abandonment of Köprübaşı, the population of the village declined from 500 to 205 in 1951. Besides, Yaşar Kemal also paid attention to the socio-economic conflicts between feudal lords and migrants. In this context, these notables objected to their land leasing.[1312]

Although there had been serious malaria control in Şanlıurfa until 1956 and the population of sandflies and mosquitos that caused Urfa boil on the face of people began to extinct, the inadequate supply of antimalarial drug caused the reappearance of malaria again in 1958.[1313] In this period, with the

1310 "Malaryanın Kontrol Altına Alınmasıyla Türkiye'de Pirinç İstihsalinin Artması Temin Ediliyor," *Demokrat Keşan,* April 1, 1953.

1311 "DDT Antalya'da Pirinç Ekimine Yeniden İmkân Verdi."

1312 "Diyarbakır'ın Göçmen Köylerini Gezerken Neler Gördüm," *Cumhuriyet,* July 3, 1951; "Yaşar Kemal'in Cumhuriyette Çıkan İlk Yazısı," *Cumhuriyet,* March 1, 2015.

1313 "İlimizde Trahom ve Sıtma Savaş Mücadelesi," *Yeni Urfa,* July 11, 1958.

support of Dr. Faruk Aksüyek, malaria control and pest control against mosquitos continued in villages. The main sources of malaria in Şanlıurfa were the Karakoyun stream and sewages.[1314] Also, diesel oil was used to disinfect these lands.[1315] DDT disinfection had been carried out in every spring. Otherwise, the people of Karacadağ could not sleep due to mosquitos and blackflies.[1316] The local press of Diyarbakır indicated that there was some malaria-infected people in rural areas and the supply of influential drugs and pest in the stores of malaria control organization. Furthermore, it was paid attention to the importance of malaria control on time.[1317] A Law about the Annihilation of Malaria was enacted in 1960.[1318]

Due to large wetlands in the Meriç Basin in the 1940s, Edirne Anti Malaria Organization held an organization in Edirne to determine the sphere of activity.[1319] Within the context of malaria control, the equips disinfected the larva of mosquitos in backwater, stables, dunghills, and wetlands.[1320]Within the scope of malaria and insect control such as mosquito, blackfly, and flea, DDT had been used in the 1950s.[1321] However, the floods of rivers in the region increased the risk of malaria. Due to large wetlands and immense rice fields, İpsala had the highest malaria risk in the Meriç Basin. Since two malaria - infected people were determined, Malaria Control Organization both took blood and disinfected all of the houses in the 1970s.[1322]

Furthermore, since anopheles provided immunity to insecticides, these chemicals started not to kill them. Furthermore, due to the population movement of seasonal farm laborers in Çukurova, malaria epidemics increased in the summer months of 1976.[1323] Furthermore, malaria was seen again in the

1314 "Sıtma Savaşı," *Yenilik,* July 1,1948.

1315 "Sivrisinekle Kim Mücadele Yapacak," *Yeni Urfa*, March 26,1959.

1316 "DDT Tatbikatının Zamanı Yaklaşıyor," *Diyarbakır,* February 28, 1963.

1317 "Sıtma Mücadele Teşkilatının Faaliyet Zamanı Geldi," *Diyarbakır,* May 30, 1963.

1318 Ümmügülsüm Candeğer, "Cumhuriyetten Güzünümüze Sıtma İle Savaş," 416.

1319 "Sıtma Savaşı Hazırlığı," *Edirne Postası,* April 9, 1949.

1320 "Sıtma Savaşı Faaliyetine Hız Verildi," *Edirne Postası,* April 23, 1949.

1321 "Sıtma Savaşı," *Edirne Postası*, February 28, 1951.

1322 "Sıtma ve Sinekle Mücadele Çalışmaları Olumlu Karşılanıyor," *İpsala,* June 18, 1971.

1323 "Sıtma Hastalığı Bütün Yurtta Artış Göstermeye Başladı," *Vatandaş,* July 20, 1976.

eastern part of the Mediterranean and Southeast Anatolia in 1976 and 1977. In this context, while there were 3,000 malaria-infected people in Çukurova, the rest was in Southeastern Anatolia.[1324]

While the percent of malaria-infected person was one per thousand in 1976, it increased to twenty-two per thousand in 1977. The minister of Health Cengiz Gökçek held a meeting with Leo A. Kaprio who was the president of the World Health Organization.[1325] Furthermore, due to political reasons, many officers of the malaria control organization were appointed to other provinces. Thus, malaria control could not be successful in Çukurova. In conclusion, there were 65,000 Malaria infected people in Adana, Hatay, and Mersin in 1980. Therefore, three million USD was needed to buy the anti-malarial drugs.[1326]

Therefore, the work of malaria control organization was increased in Thrace in 1977.[1327] However, the increase of mosquito population in the Havsa district of Edirne resulted from the increase of rice cultivation areas and the flowing of sewage into the stream that passed through the district.[1328] Furthermore, due to the dense mosquito population, the peasants of the Meriç Basin protected their animals through turf fire in the summer evenings. Furthermore, due to the high energy cost of the water engine, the people of Pırnar in Keşan had drunk water from the stream of the village in 1980. Although village headman Hasan Gayretli wrote a petition that expressed their socio-economic conditions and worries about epidemics, there had not been any answers or solutions.[1329]

However, malaria made an impression in social memory as a disease that appeared in the 1930s and 1940s in Edirne. In that period, they remembered the use of quinine in malaria treatment. However, they say that there has not

1324 "Çukurova ve Güneydoğu İllerinde Sıtma Vakaları Artış Gösterdi," *Hürsöz*, May 21, 1976.

1325 "Türkiye'nin Sıtma İle Mücadelesine Uluslararası Destek İsteniyor," *Vatandaş,* November 19, 1977.

1326 "Kökü Kazındı Denen Sıtma Yeniden Hortladı," *Vatandaş,* April 28, 1980.

1327 "Trakya'da Sıtmaya Karşı Alınacak Tedbirler," *Vatandaş*, November 8, 1977.

1328 "Havsa'da Sivrisinekten Geçilmiyor," *Vatandaş,* July 24, 1979.

1329 "Mazot Alamayan Keşan Pırnar Halkı Suyu Dereden İçiyor," Vatandaş, January 12, 1980.

been malaria since the 1950s and the governments have taken strict measures through disinfection.[1330] According to the memories of İbrahim Tali Bey who were the General Inspector of Thrace in 1940, small children in Thrace captured malaria while grazing their animals in Meriç Plain where there were suitable areas for the reproduction of anopheles such as wet lands, rice fields, reed fields, and backwaters. Therefore, he mentioned that some children had swollen abdomens. Involuntary servitude of these children and the malaria infection seems unfavorable for the population policy of Turkey in the 1930s.[1331] Furthermore, these children had been responsible for this economic activity in the Meriç Basin until the end of the 1980s.

Similarly, mosquitos became the nightmare of people in Samsun. According to the Çarşamba district governor Faik Kokan, mosquitos resulted from rice fields. Thus, they determined rice cultivated lands outside of Çarşamba.[1332] On the contrary, similar to many other agriculturalists and rice growers, Adil Kayapınar and Süleyman Kızılkaya said that there is not a direct relation between malaria and rice cultivation. Malaria was founded in the regions where rice had not been cultivated in southeastern Anatolia in the beginnings of the 2000s.[1333] Furthermore, Halil Sürek said that although there is not rice cultivation, there is the dense mosquito population in the corn fields of the Ödemiş district of İzmir.[1334]

Malaria was spread in the areas where there were floods of rivers, wetlands, and rice fields at the beginning of the twentieth century. Thus, the percent of malaria-infected people were 72 percent in the Lower Kızılırmak and Lower Yeşilırmak Basins, 80 percent in the Karacadağ Agriculture Basin and also 30 percent in the Meriç Basin in the 1920s.[1335] Rice farming has been

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1330 Hasan Topçu and Mehmet Topçu, tape-recorded interview by the author, August 20, 2018, Akçadam, Meriç Edirne, Turkey

1331 Murat Burgaç, *Trakya Raporu (1934),* (İstanbul: Kaynak Yayınları, 2017), 103-157.

1332 "Terme'de Sivrisinekle Mücadele Yapılıyor," *Hürsöz*, July 19, 1976.

1333 Süleyman Kızılkaya, tape-recorded interview by the author, Yalankoz Village of Diyarbakır, August 09, 2018; Adil Kayapınar, tape-recorded interview with the author, Yalankoz, Diyarbakır Turkey August 10, 2018.

1334 Halil Sürek, tape-recorded interview by the author, Edirne, Turkey, August 10, 2018.

1335 Fatih Tuğluoğlu, "Türkiye'de Sıtma Mücadelesi," 354.

associated with malaria for centuries. Furthermore, the Turkish government enacted a law about rice cultivation in 1936 to control and regulate irrigation water of rice. However, rather than the limitation of rice cultivation areas, mosquito control and sanitary measures could prevent the spread of malaria. For example, when malaria diseases increased in Southeast Anatolia, there was no influential mosquito control, and there was a malaria epidemic in Syria and Iraq in the 1950s and 1960s. On the other hand, while rice cultivation areas increased in the Lower Kızılırmak and Lower Yeşilırmak Basins, malaria decreased in this period.[1336]

The property taxes paid by rice growers were used to buy jeep rather than to buy DTT to control mosquitos by some rice cultivation commissions.[1337] Malaria was endemic in Southeast Anatolia, it could be activated in Thrace and also it could not be detected in the Black Sea but it could be infected from outside of the region in the 1960s. Strict measures against malaria had been taken until the beginning of 1980. According to the World Malaria Report, there were only 249 malaria infected people in Turkey in 2014.[1338] Furthermore, Dr. Mithat Süvey published Malaria Control Studies to indicate the success of the malaria control organization in Turkey in 1952.[1339]

There is a close relation between rice cultivation and the economic welfare in Turkey. Also, the development of rice cultivation in developed countries provided an increase in rice production and the prevention of malaria in the 1950s.[1340] However, these views contradicted with the thesis of Şerif Korkut on Malaria and Rice (*Isıtma ve Çeltik*) and *Teneke* novel of Yaşar Kemal which integrated public health concerns about malaria and the political ascendancy of capitalist farmers. They tried to connect among commodity, impoverishment and agrarian capitalism. Namely, while big landowners

1336 Turan Güneş, *Türkiye Çeltik Ekonomisi,* 39- 40.

1337 Antalya Milletvekili İhsan Ataöv'ün, Antalya'da sivrisinekle mücadele konusunda ne düşünüldüğüne dair sorusu ve Sağlık ve Sosyal Yardım Bakanı Yusuf Azizoğlu'nun sözlü cevabı, (TBMM Tutanak Dergisi, May 29, 1963) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/MM__/d01/c017/mm__01017086.pdf

1338 Ümmügülsüm Candeğer, "Cumhuriyetten Güzünümüze Sıtma İle Savaş," 417.

1339 "Sıtma Savaşı Çalışmaları," *Edirne Postası,* April 28, 1953.

1340 Behçet Hazar, "Çeltik Ziraatı ve Sivrisinek," 363.

gained money, farm laborers decayed with malaria. [1341] While Maraş plain brought up some millionaires, millions of Turkish peasants died due to malaria. [1342] Similarly, Korkut pointed out the fact that Turkey is rich in nature but Turkey lacks an adequate labor force and capital.[1343]

Historically, rice that was under state controlled and which was a lucrative commodity for rice growers included the tradition of coercion in the Ottoman Empire.[1344] From the Empire to the Republican Era, there had been both the encouragement of rice cultivation areas, and the malaria threat on public health. All these processes were closely related to the enactment of populism in 1927 and Etatism in 1931. Thus, the government tried to embrace the rural population who experienced the influences of the Great Depression of 1929. Moreover, economic self-sufficiency in some key food stables was aimed.[1345] In contrast to these, rather than malaria, the main issue of rice cultivated regions has been water pollution, the desertification of fertile lands, and increasing diseases such as cancer, rheumatic disorders and respiratory tract disease in the Meriç Basin since the 1970s. Thus, more concrete and modern solutions have to be developed for rice cultivation. The water pollution of Ergene, the decrease in water sources, and the excessive use of pesticides also threaten the sustainability of rice cultivation in the Meriç Basin. As a measure, the building of dams and the use of other clean water sources were encouraged by the state.

6. 3. 2 *Environmental Pollution in These Basins*

To provide additional value to the industry, the nutrition of society, and foreign currency inflow through foreign trade, the agricultural sector occupies

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1341 Kyle T. Evered and Emine Ö. Evered, "A Conquest of Rice: Agricultural Expansion, Impoverishment and Malaria in Turkey,"103-113.

1342 Mehmet Şerif Korkut," Acaba O zaman Pirinci Kaça Yiyeceğiz," *Karınca,* no. 150 (June 1949), 14

1343 Mehmet Şerif Korkut, *Isıtma ve Çeltik,* 1.

1344 Halil İnalcık, "Rice Cultivation and Çeltikçi Reaya," 69-72.

1345 Kyle T. Evered and Emine Ö. Evered, "A Conquest of Rice: Agricultural Expansion, Impoverishment and Malaria in Turkey,"105.

an important place in the Turkish economy. However, together with the unplanned industrialization of Çerkezköy, Çorlu, and Lüleburgaz from 1970 onwards, rice cultivation began to be popular in the Meriç Basin where water pollution was also faced with in these years. However, the environmental pollution in the cultivated areas damages public health, economy, and environment. Furthermore, some academicians and journalists have tried to draw attention to this topic in journals, articles and newspapers for a half century. For example, to provide better nutrition to people Professor Osman Tekinel who was an academician of the Agricultural Faculty at Çukurova University emphasized the productive use of water and soil sources such as the increase of irrigable lands, land leveling, drainage, and the building of transportation facilities and water channels among fields in 1979.[1346]

As much as the use of chemical pesticides and fertilizer in rice cultivation cause environmental pollution, the industrial and domestic waste cause soil and water pollution in rice cultivation areas. Also, greenhouse gasses that cause global warming result from stubble burning, rice production and livestock raising and fertilization. Furthermore, the emission of coal gas becomes a problem in the regions where there is perennial irrigation. These areas cover 20 percent of the cultivated lands in Turkey.[1347] Due to the use of chemical fertilizers and pesticides in rice cultivation, there have been soil and water pollutions in the Kızılırmak delta in recent years. Furthermore, fish, many migratory birds that live temporarily in the lakes, and reed fields of the plain or the water buffalos in the region get poisoned.[1348] Similarly, it was claimed that The industrialization in Çarşamba Plain also damaged to cultivated lands. The gas emission of copper and nitrogen factories of the Karadeniz Cooper Industry in this region caused a discussion between the general director of the industry and local people.[1349] However, the environmental pollution in the Meriç Basin cannot be compared either the Lower Kızılırmak and Lower

1346 "Türkiye'de Sulanabilir Tarım Arazisi Büyüyor," *Vatandaş,* January 3, 1979.

1347 Fahri Yavuz, *Türkiye'de Tarım,* 158-168.

1348 Abdulveli Sirat, İsmail Sezer and Hasan Akay, "Kızılırmak Deltasında Organik Çeltik Tarımı," 78.

1349 "Çarşamba Ovasına Zarar Verdiği İddia Edilen Fabrikadan Çıkan Gazlar," *Hürsöz*, June 22, 1976.

Yeşilırmak or the Karacadağ Agriculture Basin. Furthermore, the water pollution of the Ergene river is a symbol of environmental pollution in Turkey.



Figure 6.2 The Water Pollution of the Ergene River
SOURCE: "Ergene Nehri Ölüm Saçıyor," CNN Türk, December 12, 2018

6. 3. 3 *The Water and Soil Pollution of Ergene Plain in the Meriç Basin*

The Ergene river rises from the water sources of the Istranca (Yıldız) mountains which has 283 km length. Its surface water potential is 1,83 m^3 and its underground water potential is 376 m^3.[1350] Furthermore, the Ergene river has a 10,732 km^2 drainage area. The environmental pollution of Ergene plain has been seen since the foundation of an organized industry of Çerkezköy in 1970.[1351] Furthermore, the refining plant for the prevention of industrial waste

1350 Edirne Milletvekili Mehmet Müezzinoğlu'nun, doğal zenginliğe sahip Ergene havzasının önemine ve havzada meydana gelen çevre kirliliğinin önlenmesi için alınması gereken tedbirlere ilişkin gündem dışı konuşması ve Orman ve Su İşleri Bakanı Veysel Eroğlu'nun cevabı, (TBMM Tutanak Dergisi, October 6, 2011) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d24/c002/tbmm24002004.pdf

1351 Edirne Milletvekili Rasim Çakır ve 33 arkadaşının Ergene Nehrindeki kirliliğin ve çevreye etkilerinin araştınlarak alınması gereken önlemlerin belirlenmesi amacıyla Meclis araştırması açılmasına ilişkin önergesi, (TBMM Tutanak Dergisi, December 17, 2002) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d22/c001/tbmm22001011.pdf

of more than 900 business organizations in Çerkezköy and the environmental pollution in cultivated areas in the plain have been discussed in the parliament from time to time. Similarly, with the attempts of regional deputies, environmental pollution parliamentary investigation commission was founded in 1988.[1352] As a result of this research, it seems that Çorlu and Çerkezköy have had the lion's share in Ergene pollution.[1353] Worse still, due to the inadequate precipitation in the Meriç Basin, rice growers have used the water of Ergene in rice irrigation. Thus, thousands of decars of rice fields dried and the health of thousands of people have been influenced negatively.[1354]

6. 3. 4 *The Influence of Bulgaria and Greece in the Pollution of the Meriç River*

Similar to Turkey, Greece and Bulgaria have been quite irresponsible in water pollution. Due to the industrial waste of Bulgaria, the Meriç river still being polluted. For example, due to the appearance of dead fish around Kapıkule in 1988, it was claimed that there were arsenic and quicksilver in the water. Therefore, a cup of water was sent to the laboratory for analysis.[1355] Also, some samples of these fish were sent to the Veterinary School of İstanbul University for analysis. Similarly, due to the coal washing of Bulgaria and the industrial wastes of pepper and spinning mills in Edirne, the Meriç river has been polluted in time. Thus the bottom of the Meriç river became a marsh. Turkey, Greece and Bulgaria have been responsible for the pollution of Meriç, Saros Gulf and the extinction of fish since the 1970s.[1356]

The water pollution of the Meriç river has also worried local people and rice growers about their health and irrigation water. For example, the chemical and industrial wastes of Bulgaria alarmed Turkey and Greece in 1992. According to the laboratory analyses of Thrace University, the pollution resulted

1352 "Çevre Kirliliği İnceleme Komisyonu Trakya'da," *Vatandaş*, August 3, 1988.

1353 "Ergene Kirliliğinin Adresi Belli Oldu," *Vatandaş,* July 15, 1997.

1354 "Çiftçi Bu Defada Ergene Kirliliğinden Vurgun Yedi," *Vatandaş,* June 27, 1996.

1355 "Meriç Nehrinin Tahlil Sonuçları Bekliyor," *Vatandaş*, July 1, 1988.

1356 "Meriç Nehri Ölüyor," *Vatandaş,* August 19, 1988.

from the lack of refining systems of Bulgarian plants. Turkish farmers could not use the water of the Meriç river for a while in their rice irrigation.[1357] Furthermore, the samples were sent to Ankara. Fortunately, the results of the analyses were clean. However, during this process, fishery, the irrigation of animals, and agricultural irrigation were forbidden.[1358] According to Nazmi Sönmez who was the president of Enez water products cooperative, the industrial wastes and the agricultural pesticides of rice have damaged the fish population in Gala Lake.[1359] Due to inadequate oxygen level in Gala Lake, the Meriç and Ergene rivers, total fish mortalities have been seen. Worse than this, the acidic and dirty water of Ergene has leaked underground water. It threatens the potable water of settlements situated along the Ergene river.[1360]

6. 3. 5 *The Government Projects in the Ergene and the Meriç Rivers*

The biggest environmental problem of the Meriç Basin is water pollution in the Meriç, Ergene and Tunca rivers.[1361] While the degree of water pollution of the Ergene river is 3-4 and that of Meriç 2-3. This situation causes soil salinity, desertification and the decline of rice yield in the Meriç Basin.[1362] This was proved by Mehmet Karpuzcu and 22 academicians at Boğaziçi University the Institute for Environmental Science. According to this analysis, the water of Ergene had the first-class pollution between 1982 and 1986, the

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1357 "Hıfsıhha Kurumu İkinci Duyuruya Kadar Her Türlü Su Kullanımını Yasakladı," *Edirne,* March 5, 1992.

1358 "Zehir Alarmı Sürüyor," *Edirne Haber,* March 9, 1992.

1359 "Kirlilik Balıkçılığı da Etkiledi," *Vatandaş,* November 15, 2003.

1360 Edirne Milletvekili Rasim Çakır ve 33 arkadaşının Ergene Nehrindeki kirliliğin ve çevreye etkilerinin araştınlarak alınması gereken önlemlerin belirlenmesi amacıyla Meclis araştırması açılmasına ilişkin önergesi

1361 R. Yılmaz, "Edirne'de Çevre Bilincinin Belirlenmesi ve Sosyo-ekonomik Özelliklerin Çevresel Bilinç Üzerine Etkisi," *Tekirdağ Ziraat Fakültesi Dergisi* 6, no.1, (2009), 91.

1362 Edirne Milletvekili Rasim Çakır ve 33 arkadaşının Ergene Nehrindeki kirliliğin ve çevreye etkilerinin araştınlarak alınması gereken önlemlerin belirlenmesi amacıyla Meclis araştırması açılmasına ilişkin önergesi, "Akarsulardan Su Değil, Zehir Akıyor," *Vatandaş,* January 19, 1994.

second class pollution in 1987, the third-class pollution in 1989, and also the fourth class pollution in 1990.[1363]

Based on these pieces of academic research, the Governors and the Provincial Directors of Environment of three provinces such as Edirne, Kırklareli, and Tekirdağ discussed the increasing water pollution of Ergene and salinities of cultivated lands as a result of industrial wastes. Water pollution causes both health problems and the increase in production costs in the agrarian sector. For example, since the water of the Ergene river could not be used in Uzunköprü, rice growers took water from Kayalı Dam in 1997.[1364] Thus, A Commission for the prevention of environmental pollution in the Ergene plain was founded in the mid-1990s. The commission determined the damage and loss report to the Ministry of Environment. Similarly, SHW, State Planning Organization, Kırklareli Ataturk Research Institute and the General Directorate of Rural Affairs prepared some reports about the environmental pollution of Ergene.[1365]

Although a protocol was signed to be prepared for a master plan for the Ergene river between Thrace University and the Ministry of Environment on July 11, 1999. However, it cannot be implemented due to the lack of resources. Since there is not an active master plan in Çerkezköy, Çorlu and Lüleburgaz, the cultivated lands of Ergene plain have been a victim of unearned income and illegal industrial waste of some factories such as paper, textile, and leather industries. Although factory owners look after their interest, the environmental pollution of Ergene plain damage both public health and the national economy. Due to the water and soil pollution, rice cultivated lands have decreased in recent years.[1366]

1363 "Akarsulardan Su Değil, Zehir Akıyor," *Vatandaş*, January 19, 1994.

1364 "Edirne, Tekirdağ ve Kırklareli Valileri Toplandı," *Vatandaş,* February 22, 1997.

1365 "Uzunköprü'de Çeltik Üreticisi Zararın Tanzimi İçin Çevre Bakanlığına Dilekçe Gönderdi," *Vatandaş,* December 18, 1996.

1366 Edirne Milletvekili Rasim Çakır ve 32 arkadaşının, Ergene Nehrindeki kirliliğin ve çevreye etkilerinin araştırılarak alınması gereken önlemlerin belirlenmesi amacıyla Meclis araştırması açılmasına ilişkin önergesi, (TBMM Tutanak Dergisi, December 3, 2002) https://www.tbmm.gov.tr/tutanalar/TUTANAK/TBMM/d22/c001/tbmm22001006.pdf

Due to the pollution of the Meriç Basin, dermatologic disorders, respiratory tract disease, rheumatic diseases, and cancer has steadily increased since the 1970s. In the same way, owing to the chemical substance and acidic water of Ergene water, it cannot be used in the irrigation of crops such as rice, corn and sunflower and also husbandry. These indicate both the unclear borders between industrial zones and agricultural areas and the negative influence of industry on rice cultivation areas.

Similar to the parliamentary investigation commission about environmental pollution in Meriç and Ergene plains in 1988 and the attempts of 1999, the parliamentary inquiry about the water pollution of the Ergene river was accepted with the attempts of opposing deputies of Edirne, Tekirdağ and Kırklareli in 2002.[1367] The Justice and Development Party (AKP) prepared an environmental action plan about the Ergene river.[1368] In detail, this report had three sub titles such as a waste water action plan, a solid waste action plan, and a basin protection action plan. It seems that the soil and water pollution of the Ergene river results from the uncontrolled and unplanned industrialization in Çerkezköy, Çorlu and Lüleburgaz, and also the domestic wastes of the 68 municipals where 1,5 million of the population live around the Ergene river.

Only 19 factories out of 436 had refining plant in 1996.[1369] As a measure, the foundation of refining plants for factories was obliged by the Ministry of Environment in 2000.[1370] However, the Çorlu mayor said that the factories that cause environmental pollution in the Ergene river and underground water

1367 Ibid.

1368 Edirne Milletvekili Mehmet Müezzinoğlu'nun, doğal zenginliğe sahip Ergene havzasının önemine ve havzada meydana gelen çevre kirliliğinin önlenmesi için alınması gereken tedbirlere ilişkin gündem dışı konuşması ve Orman ve Su İşleri Bakanı Veysel Eroğlu'nun cevabı.

1369 "Trakya'da Yalnızca 19 Arıtma Tesisi Var," *Vatandaş,* June 7, 1996.

1370 Edirne Milletvekili Rasim Çakır ve 33 arkadaşının Ergene Nehrindeki kirliliğin ve çevreye etkilerinin araştınlarak alınması gereken önlemlerin belirlenmesi amacıyla Meclis araştırması açılmasına ilişkin önergesi.

release their wastes out of working hours.[1371] Also, it is claimed that the excessive use of fertilizers and pesticides in the agrarian sector has increased this pollution more and more.[1372] According to the rector of Thrace University in 2006, the Ergene river turned into a canalization of industrial waste in Thrace. The water pollution of Ergene results from Tekirdağ at 56 percent, Kırklareli at 34 percent, and Edirne at 10 percent in the 2000s.[1373]

Furthermore, thanks to some new projects of the Ministry of Environment, the World Bank provided a 300 million USD loan to Ergene. In this context, the Union of Thrace Municipal would be founded and collaborated with Thrace University.[1374] The Ministry of Environment developed a project to clean the Ergene river. It required between 285 and 410 million Euro investment in 2010.[1375] In this context, the Minister of Forestry and Water Affairs attempted to realize another action plan called "the Dawn Movement *(Şafak Harekatı)*." On the other hand, the opponent deputies of Thrace provinces claimed that these legal procedures were not implemented and this pollution endangered both the health and the socio-economic lives of 300,000 people and 800000 decars of cultivated lands.[1376]

After the floods of Ergene, polluted water spread on rice fields and had stayed for 3 days. Thus, rice dried. Therefore, the Edirne deputies of the Republican People's Party (CHP) demanded an investigation commission, but it was rejected by AKP.[1377] As a result of the water pollution of the Ergene river,

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1371 "Ergene Nehrini Kirleten Fabrikaların Atık Suları Yeraltı Kaynaklarını Zehirliyor," *Son Haber* September 7, 2006.

1372 Edirne Milletvekili Rasim Çakır ve 33 arkadaşının Ergene Nehrindeki kirliliğin ve çevreye etkilerinin araştınlarak alınması gereken önlemlerin belirlenmesi amacıyla Meclis araştırması açılmasına ilişkin önergesi,

1373 "Ergene Nehri Sanayi Kanalizasyonu Oldu," *Son Haber,* October 26, 2006.

1374 "Ergene Havzasına 300 Milyon Dolarlık Kredi," *Edirne Haber,* March 15, 2001.

1375 "Ergene'yi Kurtaracak Proje Hazır," *Son Haber,* December 3, 2010.

1376 Edirne Milletvekili Mehmet Müezzinoğlu'nun, doğal zenginliğe sahip Ergene havzasının önemine ve havzada meydana gelen çevre kirliliğinin önlenmesi için alınması gereken tedbirlere ilişkin gündem dışı konuşması ve Orman ve Su İşleri Bakanı Veysel Eroğlu'nun cevabı.

1377 "Çeltikler Kuruyor, Üreticiler Kan Ağlıyor," *Adalet,* July 24, 2014

cancer rate increased in Thrace. Faruk Yorulmaz the head of the Department of Public Health in Trakya University, Bülent Balcıoğlu a member of Ergene Platform and Mustafa Yardımcı president of Edirne Commodity Exchange Market, and Cengiz Yorulmaz a president of Edirne Agricultural Chamber participated on the *Yeşil Ekran* program on NTV. They said that the AKP government did not keep their promise for the cleaning of Ergene. Thus, both rice cultivated lands and the Saros Gulf are polluted.[1378] The cleaning of the Ergene river has been a subject for populist policies in the periods of elections and unearned income. Although the AKP government founded a commission to clean the Ergene river, the government could not succeed it and tried to hoodwink.[1379] Within the scope of the Fanta Youth Festival in Edirne, Tarkan Tevetoğlu talked about the environmental pollution in the Ergene Plain in his concert in 2012. For the memory of the water pollution of the Ergene river, he sang a song.[1380]

Industrial and domestic waste have threatened not only rivers directly but also other lakes and ponds indirectly. In this context, Gala Lake in Enez is a striking example. Gala Lake is a natural habitat of many birds and snakefish. These fish have been exported abroad.[1381] The flow of rice irrigation water into Gala Lake causes the extinction of fish varieties. Besides, with the enlargement of rice cultivated lands, the size of Gala Lake has declined from 5630 to 1700 decars since 1960. While 100 tons of snakefish was caught in the 1960s, it declined to 3 tons in the mid-1990s.[1382] This situation indicates how rice cultivation limits fishery in the Meriç Basin.

Due to the flowing of polluted water of Ergene and the industrial and domestic wastes of three countries, there is water pollution in the Meriç River. Furthermore, the water pollution of these rivers has continued and increased

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1378 Onur Akman," Ergene Zehir Akıyır," *Hudut,* June 21, 2012.

1379 "Ergeneyi Temizlerim," Hudut, July 10, 2012.

1380 Ergene Kirliliği Tarkan'ın Edirne Konserinde de konu olmuş. Tarkan üzerine düşeni yapmaya hazır olduğunu söylemiş. Ergene için Uyan Ey Gözlerim Gafletten Uyan adlı eseri okudu. "Ergene Dostu," Hudut, July 14, 2012.

1381 Metin Tuncel, "Meriç," *TDV İslam Ansiklopedisi* 29, (2004), 189.

1382 "Enez İlçemizdeki Gala Gölü Kuruyor," *Vatandaş,* August 9, 1996.

due to migrations, unplanned industrialization, and inadequate water sources.[1383] Turkey formed a joint committee with Greece and Bulgaria under the coordinator of the Ministry of Environment of Turkey to clean the Meriç River. However, the costs of these projects exceed the budget of the Ministry of Environment.[1384] Thus the water pollution of Ergene has still caused toxicities in plants and salinity in the soil.[1385]

The ministry of Environment gave a penalty to 20 factories that polluted the Ergene River in 2008. The samples taken from these plants proved their influence on the pollution of Ergene. Furthermore, none of them had refining plants and drainage licenses. These samples were observed in Ankara Environment Reference Laboratory. These factory owners were obliged to found refining plants until May 13, 2009.[1386] The Ministry of Forest and Water Affairs decided to found 5 automatic measure stations in Yulaflı, İnanlı, Evrensekiz and Yenicegörece to determine the factories that pollute the Ergene River. These stations would be built by SHW.[1387]

However, in addition to these pieces of industrial waste, there is 230,000 m^3 domestic waste in the Meriç Basin. However, due to the importance of rice cultivation in the local economy of the sub-district, Yenikarpuzlu municipal has only a refining plant. Although the building of Hamzadere Dam is indicated as a solution for the cleaning of Ergene, actually it is vice versa. In the

1383 Edirne Milletvekili Rasim Çakır'ın, Edirne ili Uzunköprü ilçesi Çakmak Barajı 'nm yapımıyla ilgili yaşanan sorunlara ilişkin gündem dışı konuşması ve Adalet Bakanı Mehmet A li Şahin 'in cevabı, (TBMM Tutanak Dergisi, July 17, 2008) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d23/c025/tbmm23025132.pdf

1384 Edirne Milletvekili Rasim Çakır ve 33 arkadaşının Ergene Nehrindeki kirliliğin ve çevreye etkilerinin araştınlarak alınması gereken önlemlerin belirlenmesi amacıyla Meclis araştırması açılmasına ilişkin önergesi.

1385 "İllerarası Ergene Nehri Çevre Sorunları Toplantı Gerekçe ve Sonuçları Açıklandı," *Vatandaş,* February 26, 1997.

1386 "Ergeneyi Kirletenlere Ceza Yağdı," *Yeni Gün,* April 30, 2008.

1387 "Ergene Nehrini Kirletenler Anında Tespit Edilecek," *Adalet,* June 19,2014.

case of pumping irrigation water from Ergene to the Hamzadere dam, the water of Hamzadere will be polluted. Furthermore, this water pollution will reach to Keşan plain.[1388]

On the one hand, due to the malaria threat, rice cultivation has been controlled legally, the environmental pollution in rice cultivated areas has not been considered adequately on the other hand. Although there is a dense mosquito' population in rice cultivated areas, there has not been malaria for a long time. Thus, the Rice Cultivation Law of 1936 needs to be updated.[1389]

6. 3. 6 *The Academic Studies and the Attempts of Civil Society Organizations*

The lands of Meriç Plain have been used unconsciously since the 1970s when the industrialization and fertilization have started to be seen. This issue was supported by some civil societies regarding the environment.[1390] Furthermore, the association of village headmen in Edirne appealed help from the president of the Turkish Republic Süleyman Demirel about the environmental pollution of Ergene.[1391] Similarly, civil society in Yeniköy sub-district of Uzunköprü aimed to collect 50,000 signatures with the slogans "the pollution of the Ergene river have to be prevented immediately" and "Ergene is the lifeblood of Thrace."[1392]

Similarly, an academic symposium was held in Çorlu about the Industrialization and Environment in Thrace between January 3 and 6, 1996. In this symposium 64 proceedings were presented. All these proceedings indicated that the industrialization of Thrace became a sub-region of İstanbul rather

1388 "Kurbağasız Nehir Ergene," *Hudut,* June 20, 2012.

1389 Çorum Milletvekili Cahit Angın ve 11 arkadaşının, çeltikçiliği geliştirmek, verimi artırmak ve maliyeti düşürmek yolunda gerekli tedbirleri saptamak amacıyle bir Meclis Araştırması açılmasına ilişkin önergesinin görüşülmesi.

1390 "Çevre Gönüllüleri Toplantısında Meriç Nehri Tartışıldı," *Vatandaş,* February 13, 1994.

1391 "Muhtarlar Demirel'den Ergene Havzasını Kurtarmasını İstediler," *Vatandaş,* July 15, 1997.

1392 "Yeniköylüler Ergene için İmza Kampanyası Başlattı," *Vatandaş,* August 13, 1997.

than the internal dynamics of Thrace. Second, the agricultural lands and industrial regions of Thrace intertwined. Third, the agricultural lands of Thrace could not be destroyed for the unsolvable industrialization of İstanbul.[1393]

In addition to these, some rice growers of Yenice görece and Adasarhanlı villages of Meriç opened a case to the detriment of the Ministry of Environment.[1394] Similarly, a case opened about the soil and water pollution of the Ergene River that caused an economic loss and a decline of rice yield in the Ergene Plain, and was accepted by the State council in 2008. Although this case had been rejected in Edirne Administrative Court in 2001, it was taken to the state council. The pollution of the Ergene River damaged the national economy and the value of soil in the Ergene and Meriç plains.[1395] As a result of all these cases, the total amount of all indemnity was about 10 million.[1396]

In the end, Thrace People Committee was founded by a group at the beginning of 2012. They decided to walk from Uzunköprü to Ankara with the slogans of "Ergene is Thrace. We will not be a waste of imperialism." They said that 88 percent of factories are unlicensed. They are under the monopoly of imperialism and its domestic collaborators. They traveled 40 villages and collected 20,000 signatures along the Ergene River. They would be in Ankara on June 6, 2012.[1397] Furthermore, the rice growing villages along the Meriç River supported the protests of the Thrace People Committee to indicate their difficult conditions in rice cultivation. Due to the water and soil pollution, farmers could have difficulty in making a profit and they undersell their rice. These peasants also do not trust the empty promises or the populist discourses of politicians.[1398]

1393 "Trakya'da Sanayileşme ve Çevre Sempozyumunun Sonuç Bildirgesi Yayımlandı," *Vatandaş*, February 8, 1996.

1394 "Uzunköprü'de Çeltik Üreticisi Zararın Tanzimi İçin Çevre Bakanlığına Dilekçe Gönderdi," *Vatandaş,* December 18, 1996.

1395 "Ergene Kirliliğine Mahkemece Tescil," *Yeni Gün,* April 10, 2008.

1396 "Ergeneyi Temizlerim," *Hudut,* July 10, 2012.

1397 "Ergene İçin Adım Adım Ankara," *Hudut,* June 4, 2012.

1398 "Ergene Uğruna," *Hudut,* June 20, 2012.

§ 6. 4 The Flood Threat of the Rivers and Social Anxieties

Labor, nature, and capital are the components of agricultural production. Although the capital and the labor of farmers are successful, natural factors such as weather conditions, climate and natural disasters influence agricultural production directly. To decrease the influences of natural factors, fertilizer, pesticides, and irrigation methods are implemented. However, these are not the ultimate solutions in the agricultural sector.[1399] In this context, although the environmental pollution of the Meriç Basin has been seen since the 1970s, the floods of the Ergene, Meriç and Tunca have had a longer historical past. Since Ergene and Meriç have not been reclaimed, they have still overflowed and damaged the plains.[1400] Despite the existence of the Ergene, Meriç and Tunca, the flood disasters of them indicate that water works of Thrace has continued as the most burning issue. Moreover, this situation was written by the Thrace reports of İbrahim Tali Bey and Kazım Dirik in the 1930s and the 1940s. They suggested the development of irrigation plan and projects and the building of water jumps. Otherwise, due to floods, Ergene and Meriç caused economic damages and loss rather than profit.[1401]

The floods of these rivers or a probable drought have worried the peasants who have lands in the Meriç and Ergene Plains. Most of the time, since they have cultivated rice, they mainly consider their damage and loss in case of drought or flood.[1402] Namely, both flood and drought have negative influence on rice cultivation. For example, in some years, due to these floods in spring months, summer growing plants such as rice, corn, kitchen garden and bean have been under flood water.[1403] However, due to the land structure of the plains, the flood threat of the rivers and the biological durableness of rice, it is the most suitable crop for the Meriç and Ergene Plains. Furthermore, as a

1399 "Ziraatta Çevre," *Edirne,* November 17, 1986.

1400 İbrahim Görece, Meriç-Ergene," *Bizimköy,* September 27, 1960.

1401 Murat Burgaç, *Türkiye Umumi Müfettişliklerinin Kurulması ve Trakya Umumi Müfettişliği* (Ankara: Atatürk Araştırma Merkezi, 2013), 245.

1402 "Edirnelinin Endişesi," *Bizim Köy,* April 5, 1961.

1403 "Tunca ve Meriç Nehirleri Taştı," *Edirne Postası,* May 12, 1948.

result of heavy rainfall in the Balkans and the uncompleted reclamation project of the Meriç River, the floods of Meriç have been usually seen in the winter time. Thus, wheat, barley, and rye cannot be cultivated in the plain.

However, in addition to natural disasters, the lack of levees, electric driven moto-pumps and inadequate capital of peasant households caused rudimentary technics in rice irrigation. For example, since some farmers who evaded paying extra diesel oil price opened water slots along the Meriç River, the increasing water level caused water flow into İpsala plain through these water slots. In other words, the irresponsible behaviors of these farmers and the negligence of the rice commission caused the flood of İpsala plain in April 1953.[1404] Damage and loss determination was sent to the Ministry of Agriculture. Due to both the economic damage and the loss of the labor of farmers, the government delayed their bank and cooperative debts. In such a case, the government implements the debt relief of farmers, sending new rice seed and damage and loss determination.[1405] According to the views of American specialists, the levees had to be mended again and the floodwaters in the plain could be drained through water channels and moto pumps.[1406] Similar to the flood of 1953, the moto pumps of rice growers along the Meriç River again caused the destruction of the levee and the increase of flood disaster. Thus SHW regulated water extraction from the Meriç River in 1975.[1407]

Since the flood of Meriç is a common problem of both Turkey and Greece, it seems difficult to prevent the floods of the Meriç, Arda, Tunca and Ergene without making a collaboration with Greece.[1408] In contrast to these flood disasters, since Greece built irrigation facilities and levees around the Kofçalı region, they tried to obtain more alluvial soil and use more irrigation water.

1404 "İpsala Ovasını Sular Bastı," *Demokrat Keşan,* April 21, 1953

1405 Edirne Milletvekili Mustafa İlimen'in, Edirne İlinde aşırı yağışların neden olduğu ürün kayıpları ve çeltik üreticilerinin sorunları ile alınması gerekli önlemlere ilişkin gündemdışı konuşması ve Turizm Bakanı İbrahim Gürdal'ın cevabı, (TBMM Tutanak Dergisi, November 5, 1998) https://www.tbmm.gov.tr/tutanaklar/TUTANAK/TBMM/d20/c065/tbmm20065015.pdf

1406 "Sel Felaketine Uğrayan İpsala Ovası," *Demokrat Keşan,* May 20, 1953.

1407 "Meriç Nehri Kıyılarına Yapılan Tahribatlar Önlenecek," *İpsala,* July 17, 1975.

1408 "Yatakları Temizlememiz Gerekiyor," *Son Haber,* October 27, 2006.

Therefore, the rice grower of İpsala had difficulty in the finding of adequate water.[1409]

However, since the SHW had built levees along the Meriç River in the 1960s, they prevented big disasters in the Meriç Plain.[1410] In addition to natural disasters, since Greece closed one of the two reaches of the Meriç River, the rice fields of Karpuzlu Plain were exposed to floods in 1960. [1411] This flood caused some big economic damage in corn and rice fields.[1412] Therefore, Turkey sent a committee to Athens on October 14, 1960.[1413] Besides, due to the collapse of the Meriç levee, rice growers suffered economic damage in 1961. These farmers applied to the government for the demand that Greece provided for their economic damages. In this context, Keşan mayor Hüseyin Yazır had an interview with Süleyman Bilgen and the deputies of the Justice Party on January 21, 1964. The economic damages of them were solved.[1414]



1409 Yunanlılar Meriç Nehri'nin Akıntısını Kendi Taraflarına Çekiyorlar."

1410 "İpsala Ovası Yine Sular Altında," *İpsala Doğuya Sesleniş,* January 16, 1960.

1411 "Karpuzlu Ovası Sular Altında," *İpsala Doğuya Sesleniş,* October 3, 1960.

1412 "İpsala Ovasında Yunanlıların Sebeb Oldğu Su Baskınları," *Trakya,* September 19, 1960.

1413 "İpsala Ovası Meselesini Görüşecek Heyet Atinaya Gidiyor," *İpsala Doğuya Sesleniş,* October 14, 1960.

1414 Necmi Gücüyener, "Göz Yaşları," *Edirne Sesi,* February 10, 1965.

Figure 6.3 The Building of Levee Along the Meriç River in in 1960
SOURCE: İpsala State Hydraulic Works (DSİ)

In the flood of the Meriç River in 1963, some villages such as Sarıcaali, Küplü and Subaşı along the Meriç river were exposed to floods. Some of the houses were destroyed and many people were disposed.[1415] Furthermore, according to the Edirne deputy İlhami Ertem, the flood disaster of the Meriç River caused the damage of 100000 decars of lands, the financial difficulty of 10,000 people and the delay of the cultivation summer growing plants.[1416] In addition to the high latitudes and the climate of the Meriç Basin, the floods of rivers had delayed the cultivation of rice and sugar beet.[1417] Furthermore, two months later, the floods of Meriç damaged rice and sugar beet in the plain.[1418] However, they re-experienced the same flood disaster when rice fields were in the ripening period in September 1969. The peasants of Esetçe, Koyunyeri, and Kocahıdır said that SHW did not take measures in spite of their warnings and they felt wretched.[1419]

Since the excessive precipitation and the floods of the Meriç River damaged crops such as rice, bean and sunflower, many farmers cultivated their lands for the second time in Edirne in 1975.[1420] Due to the heavy rainfall in 1979, many rice bunches in rice fields were drifted towards the Meriç River. Furthermore, the rain damaged winter sesame fields and 10 cattle in İpsala.[1421] In addition to the loss of many rice bunches, many of them decayed in the

1415 "İpsala Ovasının Muhim Bir Kısmı Sular Altında," *Vatandaş,* February, 7, 1963; "Küplü ve Subaşı Köylerinde Suların Yaptığı Tahribat," *Vatandaş,* February 13, 1963.

1416 "Su Taşkınları Yüzünden Edirne'de 10,000 Kişi Geçim Sıkıntısı İçindedir," *Vatandaş,* March 25, 1963.

1417 "Ergene Nehri Suları Ovaya Yayıldı," *Vatandaş*, February 13, 1965.

1418 "Nehir Suları Yatağına Çekiliyor," *Edirne Sesi*, May 22, 1965.

1419 "DSİ'nin İhmali Yüzüden Sular Altında Kalan Binlerce Dekar Arazinin Sahipleri Olan Köylüler Perişan Oldu, *İpsala,* September 16, 1969.

1420 "Bazı Çiftçiler Tarlalarını İkinci Defa Ekiyor," *Adalet,* June 7, 1975.

1421 "Şiddetli Yağmurlardan İpsala Çeltik Tarlaları Su Altında Kaldı," *Vatandaş,* November 14, 1979.

fields. Thus, the rice growers of İpsala demanded their damage –loss determination and the delay of bank debts from the Ministry of Agriculture.[1422] The damage of rice, the destruction of settlements, and some drowning events increased social anxiety in the Meriç Basin.

Due to heavy rainfall, the flood disasters in the Meriç River caused 40 million economic damage in rice and sunflower fields in 1972. Due to the harvest of rice, 37 peasants, 387 sheep, 14 oxen and 200 cattle were exposed to floodwater and they saved their lives by passing to Greek side. These citizens were sent to Turkey and Edirne governor visited İpsala.[1423] The people of İpsala accused SHW of being negligent in the building of levees along the Meriç River. In the flood of Meriç in 1975, they were exposed to 50 million of economic loss.[1424]

The social anxiety about the floods of the Meriç River also worried rice farmers individually. Their main worry was about the economic damage of flood. The payment of bank or cooperative debts is always an important concern for small peasants. For example, a woman who lived in Büyükdoğanca village of Keşan had a heart attack and died in a rice field in the course of the flooding of Meriç.[1425] Besides, as a result of the flood of the Meriç and Ergene rivers in 1995, 50000 decars of wheat was damaged in Uzunköprü, Meriç and İpsala. More interestingly, while the rice fields of these regions were exposed to drought in 1994, they experienced floods in 1995.[1426] Due to the flood, 173000 decars of wheat cultivated lands of 91, 174 farmer households in 6 districts and 48 villages were damaged.[1427]

1422 "Keşan ve İpsalalı Çeltikçiler Zarar Tespiti İstiyor," *Vatandaş,* Aralık 18, 1979.

1423 "Vali Kime Geldi," İpsala, October 26, 1972; Son Yağan Yağmurlar Nedeniyle Taşan Meriç Nehri 10 Milyonluk Zarara Yol Açtı," *İpsala,* October 16, 1972.

1424 "Meriç Nehri Taştı," *İpsala,* May 20, 1975.

1425 "Bir Kadın Çeltik Tarlasında Öldü," *Vatandaş,* June 14, 1980.

1426 "Yağan Yağmurlardan İpsala Ovasını Su Bastı," Vatandaş, January 2, 1995; "Ergene Nehri Zarara Yol Açtı," *Vatandaş,* January 2, 1995.

1427 "İpsala ve Enez'de Su Baskını Sorunu Devam Ediyor," *Vatandaş,* January 14, 1995.

6. 4 .1 *The Deaths and Injuries of People in Rice Fields*

In addition to natural disasters such as floods and drought, rice growers and rice workers have been exposed to some dangers in these wetlands such as intoxication, snakebites, and drowning. For example, a snake entered into the stomach of a rice worker who was asleep in İpsala plain. Due to his stomach ache, he was taken to the İstanbul Guraba Hospital in 1948. Based on the radioscopy results of the hospital, the snake had destroyed the internal organs of the worker.[1428]

In addition to these serious and fatal accidents in rice cultivation areas, the drinking of rice pesticides to commit suicide was seen in the Meriç Basin. Especially, due to bank debts, marital conflicts and psychological disorders, some people put an end to their lives by drinking rice pesticides. A woman who was 60 years old in Kurdu village of Uzunköprü committed suicide in this way. She could not be saved despite all the medical efforts of doctors in Uzunköprü Public Hospital in 1979.[1429]

Another social event is related to drowning. In this context, 3 rice growers and 3 headworkers went boating to control the influence of a flood in the rice cultivated lands of İpsala plain. However, due to the strong water course, their boat had an accident. Thus 2 people died.[1430] Due to the floods in 1957, rice growers were exposed to an economic loss.[1431] The same drowning case happened in İpsala in 1970. 2 rice workers from Koyuntepe village of İpsala drowned in the water channel of SHW as a result of a boat accident.[1432] Similarly, two women from Çiftlik village of Uzunköprü drowned as a result of a boat accident in the Ergene river in 1974. They had been to rice fields to mow the grass around water channels. While one of them was saved, the other died.[1433] The drownings of some teenagers in the villages along the Meriç and

1428 "Bir Adamın Midesine Yılan Kaçtı," *Edirne Postası,* July 28, 1948.

1429 "Çeltik İlacı İçen Bir Kadın Hayatını Kaybetti," *Vatandaş,* February 15, 1979.

1430 "Gölde İki Kişi Boğuldu," *İpsala Doğuya Sesleniş,* June 12, 1957.

1431 "Meriç Nehri Taştı," *İpsala Doğuya Sesleniş,* July 13, 1957.

1432 "10 Metre Genişliğindeki Kanalı Kayıkla Geçerken Boğuldular," *İpsala,* June 4, 1970.

1433 "Ergene'de Kayık Battı, 2 Kadın Boğularak Öldü," *Vatandaş,* June 8, 1974.

Ergene rivers were written in local newspapers.[1434] Finally, a coal miner had an accident while coming from Uzunköprü to Rahmanca village. His vehicle entered into rice fields and the coal miner drowned.[1435]

Since agricultural inputs and pieces of machinery have been used intensively in rice cultivation areas, occupation accidents might be seen. For example, a rice worker who came from Bursa to Meriç district of Edirne was broken to piece by trashing machine in 1981.[1436] Another desperate situation was experienced in İpsala. In this context, a crop duster that got off the ground for agricultural spraying crashed in Karpuzlu village of İpsala in June 1997.[1437] Namely, rice cultivation is so labor-intensive crop that it can cost workers' lives.

In contrast to the flood disasters in the Meriç Basin, the rice growers of Karacadağ struggle to have dealt with drought in some years. Therefore, farmers had difficulty in paying their bank debts.[1438] Due to extensive agricultural methods, precipitation determines crop yield and crop variety in Karacadağ. For example, thanks to adequate rainfall, wheat, barley, rice and cotton were cultivated in 1974.[1439] There have not been floods in Kızılırmak and Yeşilırmak for the last 30 years. However, due to the melting of snow in 1961, Kızılırmak flooded around Koşu village. Thus, some houses were exposed to flood.[1440] Furthermore, since Kızılırmak flooded in 1975 again, rice growers had a break for rice cultivation for some years.[1441]

1434 "Nehir Akıntısına Kapıldı, Sürüklenip Gitti," *Vatandaş,* August 16, 1963; "Ergene Nehrinde Bir Genç Boğuldu," *İpsala,* August 7, 1971.

1435 "Çeltik Tarlasına Uçan Traktörde Bulunan Kömür Ocağı İşçisi Öldü," *Vatandaş,* August 5, 1981.

1436 "Çeltik Batozuna Düşen İşçi Parçalanarak Öldü," *Hudut,* October 3, 1981

1437 "Zirai İlaçlama Uçağı Düşerek Parçalandı," *Vatandaş,* June 25, 1997

1438 "Çiftçilerimizin Acıklı Hali," *Yeni Urfa,* June 5, 1959.

1439 "1974 Yılı Mahsul Yılı Olacak, *Yeni Zaman,* April 27, 1974.

1440 "Kızılırmak Taştı," *Samsun Postası,* April 4, 1961.

1441 Ahmet Aydın, tape-recorded interview by the author, Samsun Turkey August 6, 2018.

§ 6. 5 Rice in Folk Culture, Literature, and Cinema

Rice is not only a subject of society and health but also a subject of literature, cinema, art and handicrafts. Therefore, it seems that rice is quite an aesthetic and artistic commodity. For example, since the people of Edirne believe that rice is the symbol of fruitfulness, they knit rice comb *(çeltik tarağı)* to hang on the wall in their houses. Thus, rice combs decorate the walls of houses, coffeehouses and work places in the Meriç Basin. Furthermore, rice comb is also exhibited in Edirne City Museum. Due to the cultural and economic life concerning rice, it is also uttered in folk music or literature and turned into a screenplay. Furthermore, to understand the feelings of Anatolian and Rumelia people about rice, these literary works are quite valuable sources. Since all of these works become public knowledge, in addition to these three basins, all of the literary works about rice in Turkey will be explained. In general, since people consumed rice as paddy or pilaf, these names can be found in folk music, poems, proverbs and idioms. On the other hand, rice is used in the novel of Yaşar Kemal to explain the socio-economic lives of peasants in Çukurova.



Figure: 6.4 Rice Comb, Wheat Comb and Sunflower
SOURCE: Edirne City Museum

6. 5. 1 *Rice in Poems and Legends*

In Islamic culture, Muslims believe that rice and rose are created out of the heavenly light of Muhammad. While eating pilaf, elders said salawat and Janissaries had not made sail without eating pilaf. Pilaf and paddy are also a subject of Turkish poems. Since pilaf had been mainly consumed in traditional and social activities such as Ramadan months, festivals, weddings, and Islamic memorial services, it is seen in Turkish poems about Ramadan as desired and substantial food.[1442]

First of all, since Çukurova had been an important rice cultivation areas and many peasants of this region suffered from malaria, there are plentiful works about the relation between rice and malaria such as Pirinç Destanı of Aşık Bayram, and Sivrisinek Destanı of Ali Dinç. These poems criticized the state due to the inadequacy of bureaucrats and statesmen for the prevention of malaria and the labor exploitation of peasants.[1443] To emphasize the decline of labor productivity and the increasing infertility rate based on malaria, Aşık Bayram wrote lines in the *Pirinç Destanı* in Engizek Newspaper on July 31, 1948.[1444] Besides, to explain the economic conflict of interest between the big rice growers and the peasants that suffered from malaria clearly, Cihangir Çamurdan wrote these lines in the Ceyhan Newspaper on April 13, 1946.[1445]

1442 "Ramazan geldi ulaştı
Sofralar doldu taştı
Davette pilav yoktu
Birden İştahım Kaçtı" Soner Yalçın, *Saklı Seçilmişler,* 62.

1443 Kyle T. Evered and Emine Ö. Evered, "A Conquest of Rice: Agricultural Expansion, Impoverishment and Malaria in Turkey,"127-128.

1444 "Durdu Saban, İşlemiyor Yabamız
Harap Oldu Hep İlimiz Obamız
Asker Bekler Bizden İsmet Babamız
Doğurmuyor Fatmacıklar Dul Gibi," Âşık Bayram, "Pirinç Destanı," Engizek, July 31, 1948; Mehmet Şerif Korkut, *Isıtma ve Çeltik*, 50.

1445 "Kaç Mazlumun Etinden Kaç Mazlumun Kanından
Kazananların Şüphe Edilir Vicdanından
Her Adımda Yatıyor Belki Binlerce Mezar

Furthermore, In the *Çeltik Destanı* poem, Kozanlı Durmuş mentioned the influences of mosquitos on the spread of malaria in the Adana region and demand health services in the 1940s.[1446] Similarly, there is also *Çukurova'nın Çeltik Mevlüdü* poem of Abdullah Zeki in the 1940s.[1447]

The Epic of the Thrace Rice (*Trakya Çeltik Destanı*) written by İsmail Sirke is composed of 236 lines of words. It gives many important ideas about the suitable geographical position of İpsala plain in rice cultivation, the transformation in the rice cultivation methods and technology of some prominent rice growers, and also the intensive and specialized labor of people. In this poem, the desperation, the high expense, the flood concern of rice growers can be seen clearly. Since rice is a food of controversies, both flood and drought are the most important anxiety resources of rice growers. Besides, thanks to the poem of İsmail Sirke, it is possible to learn who these rice growers are and what their other occupations are.[1448]

6. 5. 2 *Rice in Turkish Idioms and Proverbs*

Similar to these poems, some proverbs about malaria express dangerous and secure areas for malaria. For example, malaria is associated with wetlands

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Kaza İle Ölmedi Asla Değmedi Nazar," Cihangir Çamurdan, Ceyhan, April 13, 1946; Mehmet Şerif Korkut, *Isıtma ve Çeltik*, 52.

1446 "Açık Söyler Sözü Kozanlı Durmuş
Sinek Yeşil Ovalara Karargâh Kurmuş
Çıkarmış Öncüyü İleri Sürmüş
Milletin Derdine Derman Bul Paşam" Mehmet Şerif Korkut, *Isıtma ve Çeltik,* 59.

1447 Ibid, 51.

1448 "Başlamadan şu bir parça destana
Suya düşen sarılırken yılana
Allah yardım etsin garip kuluna
Bazen karar olur zaman efendim
İbrahim SAPÇI'lı Ede köyüne erdi
Etrafa yılmadan gergiler gerdi
Hasan BUĞDAYCI'da bu yola döndü
İnsanı döndüren zaman efendim.," İsmail Sirke, *Yeşil İpsala,* (Edirne, Ceren Yayıncılık, 2014), 63-70.

where sedge grows and goose lives in the Çukurova region in the 1940s. Since the malaria virus cannot live in higher latitudes and low temperatures, it means thyme grows and partridge that live in high plateaus.[1449] Second, malaria can be found in riddles. In this riddle, it means becoming thin of the neck and the swelling of the belly of malaria-infected peoples.[1450] Namely, it describes the physical changes in the body of the people who suffered from malaria.

Paddy is used to express value, difficulties and conceit in Turkish idioms and proverbs. All of these expressions come to light as a result of deep historical pasts and social life experiences. For example, an idiom about a merchant who had been to Damietta to buy paddy but also lost his existing *bulgur* is quite well-known in the Turkish idiom today. It indicates that while running after huge profits, the loss of an existing product. As it is seen, paddy is more precious, and valuable than boiled and pounded wheat (*bulgur*). In the history of this idiom, a rice merchant from Karaman province had been to Damietta in Egypt to buy paddy. However, while returning his ship was attacked by pirates. Therefore, all of his paddy sucks and gold were stolen. Worse than this, since he had sold his wheat to bulgur merchants, his family had found neither bulgur nor paddy in the winter time.[1451]

Second, lets shell the stones of paddy indicates the vague and messy issues in daily social life. The history of this idiom is related to the Yemen uprising after the conquest of Yemen in the period of Yavuz Sultan Selim. Since the consumption of pilaf keeps people full for a long time, Ottoman armies had supplied paddy in their conquest. The soldiers at the command of Sinan Paşa were exposed to a sandstorm in desert in the course of shelling the stones of paddy. Namely, they faced a more difficult situation.[1452]

1449 "Otu Saz Kuşu Kaz Olan Yerde Kalma, Otu Keklik Kuşu Keklik Olan Yerde Otur," Mehmet Şerif Korkut, *Isıtma ve Çeltik,* 51.

1450 "Boynu Çöp Gibi Karnı İp Gibi," Ibid., 51.

1451 "Dimyata pirince giderken evdeki bulgurdan olmak," "Atasözleri ve Deyimler Nereden Geliyor," *Sabah,* May 07, 2010.

1452 Hayrettin Karaman, "Kötüyü Ayıklamak (Ayıkla Pirincin Taşını)," *Yeni Şafak,* June 14, 2019.

Third, the people who cannot stand and are not self-sacrificing are likened to the water absorption of paddy.[1453] Similarly, the proverbs about pilaf or paddy are used to mean tenacity, labor, stability, taking lessons, and experience.[1454]

Since rice cultivation increases the wealth and economic income of villages, the people of Edirne think that the villages where there is rice cultivation are wealthier than Edirne central district. Therefore, an idiom that compares between the budget of Edirne and Adasarhanlı village of Meriç is mentioned. In this idiom, it was claimed that Adasarhanlı had a higher budget and economic income than Edirne. Therefore, being a headman of Adarsarhanlı village is more promoted rather than being a governor of Edirne colloquially.[1455]

6. 5. 3 *Rice in Folklore*

Furthermore, although their power is underestimated, plants are an indispensable part of literature, folklore and cinema. They are an inspiration for many authors and artists.[1456] In this context, Paddy is a subject of four Turkish folk music that belong to Edirne, Balıkesir, Kastamonu, Sinop and one pop music of Arif Kemal. Respectively, the first folk song *Çarşıdan Aldım Pirinci*, Turkish folk music was compiled by Sadi Yaver Ataman. In this folk music, the word rice is used as an introduction to folk music. It mainly explains a the love of a woman to a painter in Edirne.[1457] Second, *Balıkesir içinde körük*

1453 Papaz Her Gün Pilav Yemez, Pilav Yiyen Kaşığını Yanında Taşır, Pilavdan Dönenin Kaşığı Kırılsın, Lafla Pilav Pişerse Deniz Kadar Yağı Benden, Ibid.,

1454 Papaz Her Gün Pilav Yemez, Pilav Yiyen Kaşığını Yanında Taşır, Pilavdan Dönenin Kaşığı Kırılsın, Lafla Pilav Pişerse Deniz Kadar Yağı Benden, Ibid.,

1455 "Edirne'ye vali olacağına Adasarhanlı'ya muhtar ol" halk deyimi Edirne'de Adasarhanlı köyünün bütçesinin bağlı bulunduğu Meriç İlçesinden daha yüksek olması dolayısıyla çeltikçilerin aralarındaki muhabbetlerde yer yer dile getirilen bir deyimdir.

1456 Stefano Moncuso and Alexandra Viola, *Bitki Zekâsı,* 20.

1457 "Çarşıdan aldım pirinci
Edirne'nin boyacıları birinci
Aman boyacı boyacı

paytona bindim folk song was compiled by Erkan Sürmen from Muzaffer Yalıncak in 1970 to explain the importance of pilaf and saffron and rice dessert in the wedding ceremonies in the Balıkesir region.[1458] Third, *Tosya'dan geliyor pirinci,* a folk song that belongs to the Tosya district of Kastamonu. This region has been famous for its rice cultivation since the fifteenth and sixteenth century.[1459] This folk song was compiled by Yıldız Ayhan from Perihan Altuncu.[1460] It explains the wealth, magnificence and beauty of a young daughter of a rice grower in Tosya. Fourth, there are also two folk songs belong to the Boyabat district of Sinop such as *Boyabat Pirinci* and *Boyabat'ın Pirinci.* The first one of them took place in the album of Özdemir Erdoğan in 2009. This folk song emphasizes the value of paddy grown in Boyabat while reproaching his lover.[1461] The second folk music is explained in the book of

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Cilana Vurgnum boycı
Fırçana vurgunum boyacı" accessed on March 2, 2019, https://www.turkudostlari.net/soz.asp?turku=1933 Hakan Kumru, "Edirne Çevresi Halk Ezgilerinin Makam, Ritm ve Tip İncelemesi," (Yüksek Lisans Tezi, İstanbul Teknik Üniversitesi Sosyal Bilimler Enstitüsü, 2012), 144.

1458 "Balıkesir içinde körük paytona bindim
Güzellerin içinden ceylan gözlü yar sevdim
Calsın davullar, önümüzde bahara düğünümüz var
Pilav zerde kaynasın, çalsın davullar" accesed on March 2, 2019 https://www.notaarsivleri.com/NotaMuzik/balikesir_icinde_koruk_paytona_bindim.pdf

1459 Murat Tanrıkulu, "Tosya'da Pirinç Üretiminin Dünü, Bugünü ve Geleceği," *Akademik Bakış Dergisi,* no. 71, 2019, 244.

1460 "Tosya'dan geliyor pirinci
Köylü kızı köyünde birinci
Ölüyorum onu görünce aman
Ellere gerdan sırası da var
Babasının dolu dolu parası da var
Gerdanında sıra sıra lirası da var"accesed November 2, 2019, http://www.trtnotaarsivi.com/bak-thm.php; Sıtkı Akarsu, "Kastamonu Yöresine Ait Türkülerin Makamsal ve Ritim Özellikleri Yönünden İncelenmesi," V. Uluslararası Halk Kültürü ve Sanatsal Etkinlikleri Sempozyumu, Ankara, (2017), 21.

1461 "Aşk bağının gülü olsan
Takmam seni başıma
Boyabat pirinci olsan

Turan Gökmenoğlu about Sinop. It likens the beauty of his lover to the elegance of Boyabat paddy.[1462] Finally, *Pirinç Türküsü* that can be evaluated as Turkish protest music or pop music took place in the album of Arif Kemal in 1987. It explains the difficulties of rice production and emphasizes the intensive labor of workers in the obtaining of paddy.[1463]

6. 5. 4 *Role of Rice in Social Ceremonies*

Harvest period determines both the production of crops and the investments of farmers such as buying a new machine, paying bank debt, holding wedding and other religious ceremonies. The harvest of a crop provides the accumulation of capital and directs the social and economic lifestyle of farmers. In this case, according to a field study in the Meriç Basin in the 1970s, it seems that most of the marriages took place in the years when there were high yield and high production of crops. The youths of Keşan were married at the beginning

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Katmam seni aşıma" Özdemir Erdoğan, *Boyabat Pirinci Albümü (Türküler),* Özdemir Erdoğan Müzik, 2009

1462 "Boyabat'ın pirinci
Dökülür inci inci
Benim sevdiğim yar
Boyabatta birinci" Turan Gökmenoğlu, *Sinop ve İlçeleri Ayancık Rehberi* (İstanbul: Usta Matbaacı Yayınevi, 1989), 94

1463 "Irmağın üstünde şehirde
Geçecek elimize bir avuç pirinç
Irmak Akar Aşağıya
Varacağımız yere zor varacağız.
Bir tekne pirince mal olur bize
Bir köpeğe dar gelen barınak.
Pirinç şehire varınca
Çocuklar soracak kim çekti bu ağır tekneyi…
Çek yedekçi daha sıkı çek açlıktan içimiz ezildi." Arif Kemal, "Pirinç Türküsü," *Red Türküleri Albumü* 2, Bonus Müzik, 1987.

or in the end of the harvest period. For example, while there were 274 marriages in 1974, there were only 127 marriages in 1976.[1464] Similarly, the percentage of marriages in Samsun increased after the tobacco harvest in these years. Therefore, in the last two months, 133 couples were married in Samsun.[1465]

To regenerate older Thrace fairs, to introduce rice cultivation and local paddy at a national level, some festivals were organized in these basins. Thanks to such organizations, local farmers, rice factory owners and local governors come together. These festivals were organized by district governors, municipals and civil societies. Some concerts, collective circumcision feasts, folk dance performances, and official speeches were made. The first rice festival began to be organized in Edirne in the 1970s.[1466] İpsala rice festivals and agricultural fairs have been organized since the beginning of the 2000s in İpsala that is called rice land. Within the scope of the festivals, march in review, stand in silence before the monument of Ataturk, oil wrestling, competitions, concerts and the speech of prominent persons such as district governors, mayor and agriculturists talked about rice farming in İpsala.[1467] Also, FAO declared that the year of 2004 is the rice year and 21 September is the world rice day.[1468]

1464 "Keşan'da Evlenmelerin Çoğu Üürünün İyi Olmasına Bağlı," *Vatandaş,* August 1, 1976.

1465 "Samsun'da Son İki Ayda 133 Çift Evlendi," *Hürsöz,* April 3,1976.

1466 "Edirne Turizm Derneği Folklor Ekibi Çeltik Festivaline Katıldı," *Vatandaş,* November 8, 1979.

1467 "İpsala Çeltik ve Sanat Festivali Bugün Başlıyor," *Önder,* September 6, 2000; "20. İpsala Çeltik Festivali ve Tarım Fuarı 28 Ağustos- 1 Eylülde," *Medya,* August 20, 2019.

1468 "İpsala 5. Çeltik Festivali Sona Erdi," *Vatandaş*, September 1, 2004.

Rice Cultivation festivals have been organized in Samsun by Bafra District Governorship and Bafra Agricultural Chamber since 2014. While the rice festival of İpsala is organized in the harvest period, that of Bafra is organized in the rice cultivation period in May. It is realized with the participation of Samsun deputies, district governors, farmers and agricultural specialists. Prominent people of Samsun discussed the importance of rice and other crops in the regional economy, the encouragement of rice cultivation in the Bafra plain, and then symbolically Samsun deputies, governor, and district governors cultivate rice.[1469]



Figure 6.5 Rice Cultivation Celebration in İpsala in the 1950s
SOURCE: İpsala State Hydraulic Works (DSİ)



1469 "Bafrada Geleneksel 5. Çeltik Ekimi Yapıldı," *Yenigün,* May 20, 2019.

Figure 6.6 Rice Cultvation Festivals in Bafra
SOURCE: *Yenigün,* May 20, 2019



Figure 6.7 İpsala Rice Festival and Agriculture Fair
SOURCE: *Edirne Olay*, September 4, 2015

6. 5. 5 *Rice in Turkish Literature and Cinema*

As symbols of the exploitation of human labor, capital accumulation, a struggle for life and class differences, rice is also a subject of cinema, theatre, and novels. In this context, Yaşar Kemal, Gülriz Sururi, Engin Cezzar, Zeki Ökten, Şerif Gören, Sebahat Duru and Yılmaz Duru are prominent authors and artists.

First of all, *Teneke* novel that explains rice cultivation in Çukurova was written by Yaşar Kemal in 1954. *Teneke* that was one of the first literal works of Yaşar Kemal and it was firstly published in 1955 and then played in theater by Gülriz Sururi and Engin Cezzar in Elhamra Theatre in 1965. Furthermore, it was played to 200 full houses in İstanbul, Ankara and İzmir at that time. While the theatre performance of *Teneke* encourages Yaşar Kemal, that of *Yer Demir Gök Bakır* novel disappointed him. He thinks that drama should be a

work of the theater player.[1470] Furthermore, *Teneke* won İskender Award and got a championship award at the International Nancy Theatre Festival in 1966.[1471]

Besides, in the changing life of Yaşar Kemal, rice played an important role. He marched with thousands of peasants who suffered from floods due to rice cultivation. Thus, he was accused of being a communist and put in prison.[1472] Then he went to İstanbul. Yaşar Kemal wrote his own life experience and was a friend of peasants. For example, to prevent the drying of the rice fields of the peasants in Çukurova, he taught them how to steal irrigation water at night.[1473]

In general, Yaşar Kemal explains the socio-economic conflicts between notables and peasants for land and irrigation in Çukurova. Especially cotton and rice cultivation are two important crops in the region. While rice is indicated as the source of malaria, cotton is indicated as a source of livelihood.[1474] This novel indicates a conflict of interest, unreliable orders in feudal structures and the essential power of rice in the making of social classes and socio-economic relations. In other words, *Teneke* explicitly reflects the hypocrisies of Anatolian notables and peasants based on the changing socio-economic interest. For example, when these bureaucrats such as district governors or officeholders make difficulty in rice cultivation, the aghas spread some rumors about them and they posted a letter which is about their complaints to Ankara. The delay of the rice cultivation period worries these big landowners for the decline of rice yield and their economic gain.[1475] That is to say, the vegetation period of rice obliged these men to take some measures.

1470 Engin Cezzar, "İlk Olarak Teneke 1965'te Sergilenmişti. Eserleri Hala Yurtiçi ve Yurtdışında Sergileniyor: Tiyatro Yaşar Kemal'i Bırakmadı," *Taha Toros Arşivi,* no. 35, accessed November 2, 2019, http://earsiv.sehir.edu.tr:8080/xmlui/discover

1471 "Bitmeyen Aşk: Yaşar Kemal," *Taha Toros Arşivi,* no: 35; November 7, 2019 http://earsiv.sehir.edu.tr:8080/xmlui/handle/11498/38958

1472 "Yaşar Kemal," *Başrol,* Habertürk TV, accessed 7, 2019, https://www.youtube.com/watch?v=9EFTlw5fOss

1473 Yaşar Kemal, *Yaşar Kemal Kendini Anlatıyor, Alain Bosquet İle Görüşmeler* (İstanbul: Yapıkredi Yayınları, 1993), 108.

1474 Olcay Önertoy, "Yaşar Kemal ve Çukurova," *Türk Dili Dergisi* (1983), 151.

1475 Yaşar Kemal, *Teneke,* 1-24.

Similarly, *Teneke* novel explains the conflict of interest between an idealist but an unexperienced bureaucrat and the government-related big agrarian bourgeoisie. Although district governor Fikret Irmaklı is quite sincere in his decision, the notables who cultivate rice to make more profit and the peasants who suffer from the negative influence of rice such as malaria, floods and the destruction of their houses do not behave honestly. However, as a result of the attempts of notables, the Ministry of Internal Affairs designated him to Kağızman. The designation of Fikret Irmaklı from Adana to Kağızman district of Kars also indicates the alliance between the government and local elites or notables against the small peasants. While the district governor was met by the convoys of notables, he was sent from the district in accompany with the sound of 150 tins. [1476]

While the administrative and health bureaucrats consider the natural disasters and malaria threat as a health issue, big agrarian bourgeoisies or some agriculturalists only take into account their own economic interests. However, these aghas such as Murtaza, Kemal Taşan, Okçuoğlu, Mehmet Dalkesen, and Mustafa Patır tried to legitimize their rice cultivation with nationalistic arguments such as national, developmental and honorable crop that feed the Turkish military and nation. *Teneke* also reflects the different viewpoints of doctors and agriculturalists about the relation between malaria and rice. While the agriculturalists are characterized as entrepreneurs and the supporter of the market-oriented economy, the government doctor is characterized as abstainer and anxious for the probable outcomes of rice cultivation such as malaria, the decline of labor force quality and floods threat. [1477]

In addition to *Teneke*, rice cultivation is mentioned in *Demirciler Çarşısı Cinayeti* novel of Yaşar Kemal. However, rice is not the main topic of this novel. This literal work was firstly published in 1973 and it mainly focuses on the socio-economic transformation of feudal relations into a market-oriented capitalist economy in the agrarian sector. Yaşar Kemal explains the social conflicts between two tribes such as Sarılar and Akyollu. Although its story is about the domain and the economic conflict of interests between nouveau-

1476 Ibid., 70-74.

1477 Ibid., 24-27.

rich and older notables in Çukurova with agrarian capitalism, the production relations and the modes of production in rice cultivation are explained in the novel.[1478]

In addition to literary works, rice is also a subject of cinema. For example, Riso Amaro in Italian. It was made by Giuseppe De Santis in Italy in 1949. The film explains the life story and livelihood of rice workers who plant rice in Po Plain from a neo-realistic perspective. Thus, it seems that although paddy is regarded as a consumption food, it indicates the quite difficult lives of worker women. Similarly, Riso Amaro came to the big screen in the Turkish Cinema with the name of *Acı Pirinç*. While Italians explain the lives of rice workers in Po Plain, Turks explain those of Çukurova.[1479]

Acı pirinç was made by Yılmaz Duru and Sebahat Duru in 1971. Erol Taş played a leading role. In *Acı Pirinç*, there are feudal conflicts for lands through illegal bills, the sexual abuse of worker girls, fraudulent relations, and an ambition to make more money. Actually, in addition to the indication of different life styles of people, *Acı Pirinç* reflects both labor exploitation of women through working in rice fields and satisfying the sexual needs of agha and his son on their farm. Desperation, love, and fraudulent are prominent topics. Therefore, at the end of the story, one of these girls was obliged to be married to agha in return for the saving of her lover. However, as they hear a gunshot, she runs away from her wedding. However, she commits suicide in rice field when she sees that his lover is killed. Then one of her friends find her in the rice field as stabbed. She immediately carries her to wedding. The girls challenge aghas and one of them shoots the son of aghas dead. Then all of the women take paddy largely and dust on her wound.[1480]

Third, *Kurbağalar* films were made by Zeki Ökten and Şerif Gören in the Sultaniçe village of Enez district and the Karpuzlu village of İpsala district in Edirne in 1985. It is about the daily social life, love and livelihood conditions of a woman whose name is Elmas. Talat Bulut, Hülya Koçyiğit (Elmas), Yaman Okay, Hikmet Çelik, and Tomris Oğuzalp played a leading role in the film. From a post-modernist perspective, traditional conservativism and the

1478 Yaşar Kemal, *Demirciler Çarşısı Cinayeti,* (İstanbul: Cem Yayınevi, 1973).

1479 Giuseppe De Santis, *Riso Amoro,* Lux Film, Budapest, 1949.

1480 Ünsal Aybek and Yılmaz Duru, *Acı Pirinç,* Renk Film, 1972.

expressionism of sexual desires in a widow who works in rice fields can be seen during the film. Although rice cultivation is not seen as a main subject of the film, actually rice led to the development of frog hunting, the increasing expenses for fertilizer and pesticides, and also the intensive labor force of Elmas and other people. These can be discerned when the film is watched in detail. Thus, it can be claimed that the main actor that directs the story of *Kurbağalar* is rice cultivation. For example, a scene about the declaration of a protested bill to Elmas resulted from the fertilizer debt of her husband reflects an attachment and garnishment concerns of rice growers. Especially the struggles of Elmas for growing her rice better and for hunting more frog to pay the protested bill of her killed husband. Frog hunting is not regarded as the work of a woman. Therefore, she is the only woman who goes hunting frogs. Since she is regarded as a weak person, sometimes she is exposed to the cutting of water flow into her rice. However, the water, fertilizer, and pesticide requirement of rice increased the life struggle of Elmas. Elmas deals with all of these difficulties in the film. Therefore, the film explains the intensive labor force, conflict of interest, and the socio-economic problems of a rice grower well.[1481]

§ 6. 6 Cuisine Culture: Its Historical, Social and Cultural Perspectives

In addition to its literary and social works concerning paddy, it has taken place in Turkish and World cuisine in the making of various meals. Furthermore, it symbolizes abundance, wealth and prestige in Middle Eastern Societies and is consumed as the main food in Far Eastern and Manson Asian societies. Therefore, paddy is quite a social and cultural food such as pilaf, stuffed grape leaves, stuffed green pepper, soup, paddy blancmange, rice pudding. Besides, rice starch or rice flour is used in the making of baby formula, ice cream, and powder. Likewise, the crocked paddy is used in the making of beer. Rice bran

1481 Şerif Gören and Zeki Ökten, *Kurbağalar Filmi,* Gülşah Film,1985.

is used in the making of forage, henna, and cayenne pepper. [1482] More interestingly, while rice stem is used in the pepper industry, rice husk is used in the fertilizer industry.[1483]

Besides, biologically, paddy includes protein, carbon hydrate, phosphor, calcium, iron, B1, B2, and C vitamins. However, the percent of A vitamin is low. Thanks to these minerals, our bones and muscles develop, nail and skin get brighter. Since paddy does not include sodium and oil, it is quite beneficial for those who have nephrotic and hearth problems. Since cargo rice makes the regulation of blood sugar and cholesterol easy, cargo rice is healthier in human nutrition. Since black paddy has higher nutritional value, lower sugar, and higher anti-oxidant, it is used in diets.[1484] While the human body can benefit from wheat at 69 percent, it benefits from paddy at 88 percent.[1485] Paddy is healthful and more easily digestible food. It helps digestion and regulates intestinal problems.[1486]

In general, paddy meals are consumed in social, cultural, and religious ceremonies such as pilaf, saffron, and rice dessert and also stuffed grape leaves. Namely, since paddy is the product of contradictions, it can be consumed as both salty and desserts such as pilaf, stuffed green leaves, rice pudding or saffron, and rice dessert. Furthermore, the consumption method of pilaf indicates the socio-economic status of people. For example, when it is consumed with bean, it is a meal for people with low incomes, when it is consumed with meat, it is the opposite. Furthermore, its consumption has become widespread in the twentieth century. In addition to social consumption of paddy, its individual consumption in meals has increased. While it had been consumed as one of the most remarkable products in the Ottoman palaces, it has been considered a street meal in recent years.[1487]

1482 Sait Tahsin Tekeli, *Hububat Teknolojisi,* (Ankara: Ankara Üniversitesi, 1964), 260-261; Turan Güneş, *Türkiye Çeltik Ekonomisi,* 157-165.

1483 Hayati Tuncalı, "Çeltik Ziraatı, Zirai ve İktisadi Önemi," 15.

1484 Faruk Şüyün, "Hadi Şu Pirinci Ayıklayalım."

1485 Mirza Gökgöl, *Çeltik Ziraatı,* 4.

1486 "Pirinç Faydalı Bir Besindir," *Samsun Postası,* January 12, 1976.

1487 Güzin Yalın, *Mutfaktan Tabaktan Sokaktan,* 347.

However, in the historical process, the meals that were made with paddy diversified in Ottoman State from the twentieth century onwards. Paddy pilaf stopped being a main course after the Tanzimat Reform Era in the nineteenth century. It had been consumed after the soup and the main course.[1488] According to *Seyahatname* of Evliya Çelebi, the court kitchen of the Ottoman Empire had imported rice, especially from Dimyat in Egypt and Filibe in Rumeli. Also, there was rice production in Maraş, Siirt, Ankara, Tokat, Urfa and Antep.[1489]

From a socio-cultural perspective, Pilaf is a meal that is used to indicate the reactions of people in the traditional life. For example, the boys who reached the age of marriage stick their spoons in a pilaf plate precipitously to make their demands for marriage clear. Similarly, Janissaries had brought pilaf boiler and their spoon in the course of declaring their service pay every three months. If they like the amount of this payment, they opened the pilaf boiler and ate pilaf. Otherwise, they toppled the boilers and spilled all of it.[1490]

In general, boiled and pounded wheat had been consumed in the rural areas of Turkey and the consumption was 30 kg per capita. On the other hand, it was only 750 grams per capita in urban areas. In terms of the relationship between consumption and economic income, although the consumption of paddy increased with economic income, high-income families consumed both of them in the 1960s. Since peasants produced as much as they needed, the trade of boiled and pounded wheat was not developed in this period. While only 4 percent of boiled and pounded wheat was marketed, almost 98 percent of paddy was marketed in the domestic markets.[1491] While 100 grams of boiled and pounded wheat has 75-90 calories, 100 gram of paddy has 90-110

1488 Feridun Mustafa Emecen, "Çeltik," 265-266; Sami Zubaida, "Ortadoğu'da Mutfak Kültüründe Pirinç," In *Ortadoğu'da Mutfak Kültürü,* Edited by Richard Tapper and Sami Zubaida (İstanbul: Tarih Vakfı Yurt Yayınları, 2000), 92-101.

1489 Faruk Şüyün, "Hadi Şu Pirinci Ayıklayalım."

1490 Güzin Yalın, *Mutfaktan Tabaktan Sokaktan*, 346

1491 Refet Seçkin, Bulgurun Terkip ve Yapılışı Üzerinde Araştırma (Ankara: Ankara Üniversitesi, 1968), 20; Turan Güneş, Türkiye Çeltik Ekonomisi, 164- 167.

calories.[1492] Furthermore, the demand of local people for some paddy varieties influences sales. For example, due to drawing 3 kg of water during cooking and its quality and aroma of Karacadağ variety, it has been preferred by locals.[1493]

However, the older Karacadağ paddy and that of today are not the same. It used to be more natural and organic.[1494] In terms of appearance, Karacadağ paddy does not have an attraction and it is the smallest rice variety of Turkey. However, it has a delicious taste when it is cooked. In comparison to lentil, since paddy cannot be consumed three meals a day, paddy cannot be sold as much as lentil is sold. Although the population has increased, consumption habits and the amounts of consumption of nuclear families have changed. For example, although the population of Diyarbakır has increased 4 times, people prefer to buy 5 kg of Karacadağ paddy sack instead of 50 kg paddy sack.[1495]

There are similarities among the cuisine cultures of Turks, Persian and Arabs. While pilaf is cooked according to court kitchen in İzmir, İstanbul and Bursa, it is cooked with regional folk culture in central and eastern Anatolia. Nevin Halıcı who knows the ethnography of regional foods says that rice boiling in water and frying of rice methods belongs to Turks. However, rice boiling in water and decantation belongs to Iranians.[1496] Paddy is the main meal for the festivals, wedding and feasts of people in the Middle East. However, while in general Turks consume it separately in meals, Iranians and Arabs consume paddy with legumes or meat on the same plate.[1497]

More specifically, stuffed lump ribs is one of the most famous meals of Diyarbakır. In its making, tomato sauce, garlic, onion, lamp, and paddy are

1492 "Bulgur mu? Pirinç mi? Hangi Pilav Kilo Aldırmaz? Hangisi Daha Sağlıklı," *Korkmaz Haber,* September 01, 2016.

1493 Abdullah Öktem, "Şanlıurfa Koşullarında Karacadağ Çeltiği Yetiştiriciliği Üzerine Anket Çalışması," 107.

1494 Kardaş Ailesi, tape- recorded interview by author, Yenişehir, Diyarbakır, August 09, 2018.

1495 İlhan Avcı, tape-recorded interview by Autor, Diyarbakır, Turkey, August 9, 2018.

1496 Nevin Halıcı, *Turkish Cookbook* (London: Dorling Kindersley, 1989), 119.

1497 Sami Zubaida, "Ortadoğu'da Mutfak Kültüründe Pirinç,"99.

used. Paddy is consumed with red meat or turkey meat. [1498] Besides, pilaf covered by crispy pastry and *Kibe Mumbar* are famous meals of Diyarbakır.[1499] Rice is consumed as *mantı* in which paddy, bulgur and chicken are used in Edirne. In addition, rice pudding, Pomak pastry, stuffed cabbage, rice rabbit meat, saffron, and rice dessert, leek with rice and rice soup are some of the well-known cooks in Edirne. Paddy is consumed in goose brewis (*kaz tiriti*), rice pudding, stuffed vine leaves and stuffed black cabbage, and pilaf with anchovies are consumed in Samsun.[1500] Stuffed meatballs, paddy fig dessert and also meatballs with rice dipped in egg beater and fried are some popular tastes of Turkish cuisine in which paddy is used.[1501]

§ 6. 7 The Relations of Rice with Other Crops and the Rise of Rice

With the development of irrigation facilities in rice fields, it seems that other products such as cannabis, sugar beet, cotton, legume, and vegetable can be grown.[1502] On the one hand, thanks to irrigation water, rice cultivation has supported the development of frog hunting in the Meriç, Lower Kızılırmak and Lower Yeşilırmak Basins since the end of the 1960s, it has caused the decline of silkworm breeding with the excessive use of pesticides and the cutting of mulberry trees. Furthermore, rice limited the cultivation areas of sugar beet, kitchen garden, and corn because of the use of irrigation water. For example, as Yaşar Kemal explains in *Teneke*, the notables who hired the lands of peasants in Çukurova in the 1950s proposed the annihilation of cotton, ses-

1498 Süleyman Kızılkaya, tape-recorded interview by the author, Yalankoz Village of Diyarbakır, August 09, 2018.

1499 "Diyarbakır Mutfağını Evinize Getirecek 10 Efsane Tarif," Radikal, August 26, 2014.

1500 İdil Çimrin, "Geleneksel Samsun Yemekleri," *Sabah,* December 3, 2017; "Samsun'un Yöresel Yemekleri Nelerdir?" Accesed October 10, 2019, https://www.gezgez.net/samsunun-yoresel-yemekleri/

1501 Hayrettin Karaman, "Kötüyü Ayıklamak (Ayıkla Pirincin Taşını),"

1502 Behçet Hazar, "Çeltik Ziraatı ve Sivrisinek," 366.

ame and kitchen garden cultivated lands to cultivate rice. This anecdote explicitly indicates that due to the cultivation period of rice and their higher economic income, these aghas tried to convince the peasants.[1503]

6. 7. 1 *The Karacadağ Agriculture Basin*

While rice farming has become more popular than sugar beet and tobacco in the Meriç, Lower Kızılırmak, and Lower Yeşilırmak Basins, it has remained limited and fell behind of husbandry, cotton and lentil cultivation in the Karacadağ Agriculture Basin since the 1960s. Due to climate, irrigation water and pricing, there were special interests for cotton cultivation in the 1970s in the Karacadağ Agriculture Basin.[1504] In addition to the direction of the Silk Road, since mulberry trees can be grown in 1500 meters of altitudes and – 30 Celsius, silkworm breeding can be developed in Diyarbakır. There were mulberry trees in Hevsel gardens. Besides, Kulp, Silvan, Lice, Hazro, Dicle, and Çüngüş were famous for silkworm breeding. The silks of Diyarbakır had been a subject for folk music.[1505]

6. 7. 2 *The Meriç Basin*

Similarly, Edirne Governorship tried to develop a plan for the crop rotation between sugar beet and rice in the Meriç Basin in 1975.[1506] However, in addition to Alpullu Sugar Plant in Kırklareli, as a result of the intensive agricultural method, the yield and production of cotton and sugar beet had increased

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1503 Yaşar Kemal, *Teneke,* 27.

1504 "Havalar Böyle Giderse Haftaya Pamuk Ekimine Başlanacak," *Yeni Zaman*, April 17, 1974.

1505 "Başındaki Puşu mudur?
Diyarbekir İşimidir
Bugün yârim bize gelmiş
Bu da devlet kuşu mudur" Adlı eser Muzaffer Sarısözen tarafından Diyarbakır yöresinden derlenip notaya alınmıştır. Bayram Filiz, "İpek Böcekçiliğine Başlarken," *Diyarbakır'da GAP ve Tarım,* (Nisan 1988)

1506 "Pancar ve Çeltik Münavebeyi Sağlamak İçin İşbirliği Yapılacak," *Adalet,* February 6, 1975

between 1950 and 1975.[1507] They aimed to solve the irrigation problem and prevent the decline of sugar beet cultivation areas. Thus rice cultivation areas were held separate from sugar beet areas.[1508] Furthermore, averagely the irrigation prices of rice had been three or four times higher than those of corn and sugar beet.[1509] Rice growers usually experience some disputes about the use of water in Dokuzdere and Mercan ponds with other farmers. For example, due to 18000 decars of unlicensed rice cultivation in İzzetiye village of Keşan, the sunflowers, corn, and sugar beet fields began to die of thirst in 2000.[1510]

In addition to the irrigation water problem, due to the vegetation period of sugar beet, it has been exposed to the flood of the Meriç River. Therefore, apart from rice, the peasant of the Meriç Basin has cultivated summer growing plants such as bean, kitchen garden, corn and sunflower in Turkey.[1511] As Diamond says, there has been a compound between rice and bean cultivation in China and Peru.[1512] Furthermore, many rice growers cultivate bean or tomato on the borders of rice fields in the Meriç Basin. On the other hand, Greek peasants have cultivated cotton, tobacco, corns and sunflowers rather than rice, in the western part of the Meriç Basin in Greece.[1513] Furthermore, in these years, some big farmers came from Adana and Hatay to cultivate cotton in İpsala. However, they gave up cotton farming in İpsala.[1514]

Thanks to the suitable living space of İpsala plain for frogs, the industrialization and the marketing opportunities of frog, frog hunting and gathering began in 1967. Thus, both Turkey earned foreign exchange and many rice growers lived on through international trade. The frogs that waited in cold storage were sent to the USA, France, Belgium, and Switzerland by planes in

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1507 Kazım Berzeg, "Türk Tarımında Gelişme Ölçüsü," *Medeniyet,* November 11, 1972.

1508 "Pancar Ekim Sahalarına Çeltik Ekimi Tahditli Olacak," *Adalet,* March 22, 1975.

1509 "Sulama Suyu Tarifesi," *Edirne Sesi,* May 15, 1965.

1510 "İzzetiye Köyündeki Ürünler Kuruyor," *Önder,* August 7, 2000.

1511 "İlimizde Çeltik Ekim Hazırlıklarına Başlandı," *Vatandaş,* April 6, 1976.

1512 Jared Diamond, *Tüfek, Mirop ve Çelik,* 284.

1513 "Trakya'da Pamuk," *Edirne Sesi,* June 1, 1965.

1514 "Trakya'da Pamuk," *Edirne Sesi,* July 30, 1965.

Yeşilköy Airport in İstanbul.[1515] Furthermore, it was said that frog hunting which was a waster product of rice had higher economic income than rice cultivation in İpsala. However, frogs were hunted at nights in rice fields and irrigation channels.[1516] Thanks to the export, Turkey earned 2,5 milliard TL every year in the 1980s.[1517]

Although frog is not consumed in Turkey, the foreign trade of this sector has continued since the 1970s in İpsala.[1518] Therefore, although it seems that rice cultivation supports the development of fishery, there have been problems and declines in the fishery sector in the Meriç Basin. There have been 5,000 and 10,000 frog hunters in İpsala and Enez. Their monthly earning was averagely 2000 TL in 2006. Turkey is in the first three countries in frog export and Turkey earns 20 million USD. Although a frog makes 10,000 eggs in rice fields, the pesticides kill lots of them.[1519] Furthermore, the moto pumps of rice irrigation and water pollution have damaged fish in rivers.[1520] However, due to floods of the Meriç river in the sowing time of rice, fish ate germinated rice seed in the fields in İpsala in 1957.[1521] Similarly, frog hunting began in Çarşamba in the 1970s. These frogs were packed and sent to Europe.[1522]

Although the historical past of silkworm breeding in the Meriç Basin is older than rice cultivation, rice replaced this sector in the twentieth century. However, with the spread of rice cultivation in Meriç Plain, many peasants cut their mulberry trees in their mulberry gardens and turned those areas into rice fields. Thus the food sources of silkworms were gone. Furthermore, the

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1515 "İpsala'da Çiftliklerde Kurbağa Üretiliyor," *Vatandaş,* April 15, 1977.

1516 "İhracat İçin Kurbağa ve Salyangoz Topluyor," *Vatandaş*, May 16, 1984.

1517 "İpsala Kurbağa İhracatından Yılda 2,5 Milyar Liralık Döviz Sağlandı," *Vatandaş,* June 26, 1986.

1518 Hülya Şereflişan and Ahmet Alkaya," Türkiye'de Eti Yenebilen Kurbaaların (Ranidae) Biyolojisi, Ekonomisi, Avcılığı ve İhracatına Yönelik Yasal Mevzuatı," *Türk Tarım Gıda Bilim ve Teknoloji Dergisi* 4, no. 7 (2016); 601.

1519 Yılda 500 ton Kurbağa İhraç Ediyor," *Son Haber,* December 19, 2006.

1520 "Çeltik Sulama Motorları Balık Neslini Yok Ediyor," *Vatandaş,* August 18, 1995.

1521 "Ovamızı Su Bastı," *İpsala Doğuya Sesleniş,* May 29, 1957.

1522 "Çarşamba İlçesindeki Basiret Gıda ve Kimya Şirketi Kurbağa Bacağı ve Salyangoz İhracatına Başladı," *Hürsöz,* July 29, 1976.

intensive use of pesticides caused the death of silkworms and the coincidence and the intersection of the cocoon period, and rice harvest caused the ignorance of these animals.

The wetlands, reed fields, and lakes of Meriç Plain are important areas for the accommodation and natural habitat of wild ducks, trumpeter swans and wild geese. Therefore, the peasants along the Meriç and Ergene rivers have been hunting them in winters. Rather than red meat, they consume these animals in different meals. In addition to locals, many hunters from İstanbul visit Meriç plain during the winters.[1523]

6. 7. 3 *The Lower Kızılırmak and Lower Yeşilırmak Basins*

Similar to Meriç Plain, the delta plain of Kızılırmak and Yeşilırmak had been regarded as worthless lands until the 1950s. However, these lands are alluvial soils. With the agricultural mechanization, these lands began to be cultivated. Thus the people of Bafra could cultivate their rice, sugar beet, vegetable, fruits in this plain instead of buying from other cities.[1524] Similar to the Meriç Basin, sunflower, bean and corn cultivation has become widespread in the Lower Kızılırmak and Lower Yeşilırmak Basins in the 1970s and 1980s.[1525] In contrast to the Meriç Basin, there were wheat and vicia sativa cultivation in Lower Kızılırmak in the 1960s.[1526]

The development of sugar beet cultivation and the sugar industry were discussed alternatively in the wetlands of the Lower Kızılırmak and Lower Yeşilırmak Basins in terms of increasing agricultural production, diversifying agricultural crop, developing an agrarian industry and market economy and also creating employment. In this context, the cultivation of vegetable, cotton and cannabis was discussed in the 1950s.[1527] These discussions actually go

1523 "İlçemiz Bayır ve Tarlalarında Ördek Avı Yapılıyor," *İpsala,* January 6, 1972.

1524 "Baframızın Toprakları," *Bafra,* March 19, 1956.

1525 "Samsun'da Kuru Faulye Ziraatı Hızla Gelişiyor," *Hürsöz,* October 16, 1976.

1526 Ahmet Aydın, tape-recorded interview by the author, Samsun Turkey August 6, 2018.

1527 "Şeker Fabrikası," *Bafra,* August 11, 1955; "Bafra'da Zirai Reform," *Bafra,* February 13, 1956.

back to the 1930s. After the building of the Turhal Sugar Plant in 1934, sugar beet cultivation began to become widespread in Samsun. However, the farmers of Samsun had difficulty in transporting their sugar beet to Turhal. Therefore, the building of the Sugar Plant in Samsun was regarded as necessary in the 1950s.[1528] Therefore, the notables of Bafra such as Ömer Güriş, Ali Kale, İsmail İşman, Kemal Kitaplı, Süleyman Türk, Hasan Genç, and Hakkı Yıldız went to Ankara to meet the government about the building of the sugar plant in 1957.[1529] Despite all these requests and attempts, Çarşamba Sugar Plant only could be built between 1979 and 1989.[1530]

In addition to sugar beet farming in the Meriç Basin and the cotton farming in Karacadağ, the other prominent crop of the Lower Kızılırmak and Lower Yeşilırmak Basins has been tobacco. Furthermore, thanks to its seed, climate conditions, growing methods and marketing, Bafra has had a reputation for tobacco and cigarettes since the beginning of the nineteenth century.[1531] The purchasing companies were Tekel, Di American, Felemenk, Austro Turk, Spierer, Freres, and Abdi Fuat in the 1950s.[1532] To develop tobacco cultivation and to encourage its producers, Agricultural Bank in Samsun paid in advance to tobacco producers.[1533]

Furthermore, to earn a higher profit, some farmers cultivated tobacco in lean soils. However, the quality of tobacco decreased. Due to the economic crisis in 1956, both tobacco purchasing and the profit of farmers decreased.[1534] Together with the unplanned economy and the increasing demand for consumer goods in markets, tobacco producers who undersold their products had difficulty in paying their debts to Agricultural Bank and Agricultural Credit Cooperatives.[1535] Thus, a kilogram of tobacco was between 100 and 500 kurus

1528 "Yine Şeker Fabrikası," *Bafra,* January 12, 1956.

1529 "Bafra Şeker Fabrikasının Kurulması İçin Esaslı Bir Teşebbüs," *Bafra,* February 7, 1957.

1530 "Çarşamba Şeker Fabrikasi 1985'te Üretime Geçecek," *Mücadele,* April 9, 1982; Türk Şeker, Türkiye Şeker Fabrikaları Tarihçesi.

1531 Adil Acay, "Bafra'da Tütün Dikimi ve Aksak Tarafları," *Bafra,* June 2, 1955.

1532 "Tütün Piyasası," *Bafra,* February 26, 1953.

1533 "Banka Avans Verecek," *Bafra*, July 2, 1953.

1534 "Samsun'da Tütün Mübayası Hazırlık," *Bafra*, January 16, 1956.

1535 "Bafra İktisadi Bir Kriz Geçiriyor," *Bafra,* February 13, 1956.

in 1956.[1536] Besides, 74,754 tobacco producers in Samsun experienced storage problems in the 1970s. Therefore, TEKEL could not purchase their products on time.[1537] Since the cultivation of tobacco in plains required extra expenses, farmers had difficulty in making a profit. Thus, thanks to its higher profit, rice cultivation was suggested to farmers in the suitable lands of the Bafra and Çarşamba Plains.[1538] In contrast, tobacco has been cultivated in the mountain villages.[1539] Furthermore, the needs of the increasing population, the policies of IMF in 2001 and the declining economic income of farmers necessitated the cultivation of new agricultural crops rather than tobacco.[1540]

Finally, the size of cultivated lands has increased three times in Edirne, five times in Diyarbakır and also one and half time in Samsun since 1946. Namely, the size of cultivated lands increased from 1,214,550 decar to 3,269,837 in Edirne, from 1,226,720 decar to 6,041,926 in Diyarbakır and also from 1,519,340 to 2,170,517 in Samsun between 1946 and 2007. Furthermore, the rate of rice cultivated lands to total cultivated size has changed in these basins. For example, the rate of rice cultivated lands to the total was 2 percent in Edirne, 1 percent in Diyarbakır and 0,3 percent in Samsun in 1946. However, this rate was 16 percent in Edirne, 3 percent in Samsun, and 0,25 percent in Diyarbakır in 2007. There is 8 times increase in Edirne and Samsun. In contrast to these, there are 4 times of decrease in Diyarbakır. While the increase of the size of rice cultivation areas had limited sugar beet cultivation and mulberry gardens for silk worm breeding in Edirne, the spread of cotton cultivation limited rice in Diyarbakır. However, rice cultivation areas limited vegetable gardens and sugar beet cultivation in Samsun to some extent.[1541]

1536 "Piyasa ve Müstahsilin Durumu," *Bafra*, February 23, 1956.

1537 "Çarşamba'da Tütün Üreticisi Depolama Sorunu İle Karşı Karşıya," *Hürsöz*, August 25, 1976; "Bafra'da Tütün Ekicilerine 30 Milyon Lira Avans Dağıtıldı," *Hürsöz,* December 6, 1976.

1538 "Bafra'da Zeytin Ağacı Yetiştirilmelidir," *Bafra,* February 7, 1957.

1539 Ahmet Aydın, Interview by Author, Bafra, Samsun, August 6, 2018.

1540 "Milletvekillerimiz Bafra'da," *Bafra,* March 21, 1957.

1541 T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Zirai Bünye ve İstihsal 1946-1954 (Agricultural Structure and Production 1946-1954)*. Ankara: 1955; T.C Başbakanlık Türkiye İstatis-

6.8 Concluding Remarks

All these ideas indicate that rice is one of the most social, cultural and traditional commodities. Thus, rice is a subject of folklore, literature, cinema, festivals, different cuisine cultures and public health. From its cultivation to consumption, rice requires an organization, experience and intensive labor. In other words, to spread its genes and to increase its popularity, rice collaborates with society. However, this social organization also accommodates some common and controversial relations in which there are social divisions of labor, common socio-economic interest and conflict of interests. Furthermore, paddy is such a social product that in general people taste rice flour after their human milk.

From socio-economic and cultural perspectives, thanks to its high production costs and expensive market prices, rice or paddy is a symbol of social prestige, wealth, kindness, and solidarity in visits and social ceremonies. Pilaf is consumed in wedding, celebrations, religious ceremonies such as Islamic memorial services and funeral rites. Since rice is a crop of controversies, people consume pilaf both in their joyful and mournful days. Furthermore, paddy is consumed both as a dessert and as a salty meal.

First of all, this chapter focuses on the geographical and sociological characteristics of these three basins such as the profile of rice growers, their living conditions and their socio-economic organization. As mentioned before, big rice growers have still tried to protect their socio-economic interests through political relations or some organizations. Furthermore, they are more

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tik Kurumu (TÜİK) *Tarımsal Yapı ve Üretim 1976-1978 (Agricultural Structure and Production 19—1976-1978)*. Ankara: 1979; T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Tarımsal Yapı Üretim, Fiyat, Değer (Agricultural Structure Production, Price, Value 2007)*. Ankara: 2009.

open minded to the liberal economy. On the other hand, since small rice growers in villages are exposed to the price levels of the free market and heavy production cost, they are working poor in the 2000s.

Namely, in contrast to many other academic and literary works, this dissertation also explains the socio-economic experience of the small peasantry in rice cultivation. Although big rice growers are characterized as the people who are profit-seeking and cause the spread of malaria but seem as if they were patriotic in the 1940s and the 1950s, this dissertation pays attention to the social and economic transformation of rice growers' profile. Rice growers have been exposed to heavy costs and environmental pollution in their production process. Therefore, this study tries to point out changing socio-economic conditions in a historical process and thus criticizes the Rice Cultivation Law of 1936.

Second, this chapter gives ideas about the prominent people who contribute to the development of rice farming such as Halil Sürek, Sami Dubacı, Mustafa Öden, Yusuf Kiraz, Hamdi Buzcu, Haşim Özkahraman, and so on. Actually some of these men are entrepreneurs, some of them are agriculturalists and some are big farmers. All of them have contributed to the development of rice distinctly such as production, technology, breeding and marketing. Therefore, it can be said that rice cultivation and its processing into paddy requires an organizational and multi-disciplinary contribution.

Second, rice is discussed from a public health point of view. In this context, rice cultivation is a subject of the healthcare field, social science and climate science. While there is a contradiction between economic development and malaria in rice cultivation in the early Republican period, today the limitation of rice cultivation areas and the increasing health problem due to environmental pollution and unplanned industrialization are discussed. Since epidemics such as malaria influences health of the whole society and prevent their labor force, some legal regulations had been made in the 1920s, 1930s and 1940s. However, there is not a direct relationship between the rice cultivation areas and malaria. Similarly, since the main issue of rice cultivation areas is water and soil pollution that result from industrial and domestic wastes especially in the Meriç Basin, the governments have tried to make

some legal regulations and establish a parliamentary investigation commission. Actually, in addition to industrial and domestic wastes, the pesticides and fertilizer that have been used in rice fields since the 1970s increase environmental pollution. This situation threatens natural life, public health, and other living creatures such as frogs, fish and migratory birds. These situations can be seen explicitly in the Meriç, Lower Kızılırmak ad Lower Yeşilırmak Basins. On the other hand, these chemicals have been used since the beginning of the 1990s in the Karacadağ Agriculture Basin.

However, due to the unplanned settlement of growing population, unplanned industrialization and the intensive use of agricultural inputs with market-oriented production, there has been the most dangerous environmental pollution in the Meriç Basin rather than the other basins. Therefore, it can be said that while rice farming was regarded as a scapegoat for the spread of malaria in the 1930s and the 1940s, nowadays rice farming is under threat. However, there has not been concrete political attempts. Thus, rice farmers regard the utterance of politicians as empty promises and populist discourses. The water pollution of Ergene is not only an environmental of Thrace but also Turkey, Greece, and Bulgaria. The Meriç Basin has produced almost half of the paddy needs of Turkey since the 1960s.

From an academic point of view, as a suggestion, the Environment and Industrialization, Symposium were held in Çorlu in 1996. They paid attention to the influence of unplanned industrialization and the increasing population of Çorlu and Çerkezköy on cultivation areas. Furthermore, with the supports of municipals, civil society organizations and syndicates, Thrace People Committee was organized in 2012 to save Ergene and the Meriç River in Thrace. Furthermore, rice growers in the villages of Edirne supported their attempts.

In addition to the negative influence of environmental pollution, since rice grows in wetlands, flood disasters may be seen especially in the Meriç Basin. Since the reclamation of the Meriç river was not completed in the 1950s, its floods have continued. Therefore, peasants can only cultivate summer growing plants such as rice, corn, bean, and kitchen garden in Meriç Plain. However, the probable floods of the Meriç river in spring months may damage the crops. In this context, rice is the most durable crop against flood. The flood

of the Meriç river not only damage to their crops but also cause the drowning of some peasants and the bankruptcy of some rice growers. Furthermore, drownings, snake bites and some suicides might be seen in these areas.

Third, since rice is a quite social, artistic, and aesthetic commodity, it takes part in Turkish literature, cinema, and theatre. Thus, from a socio-cultural point of view, these works indicate the feelings and the life experience of Turkish people and intellectuals about rice and paddy. As rice is cultivated in a social organization, it is consumed in social ceremonies such as weeding, religious rituals, and festivals. Furthermore, the regulation of pilaf days of schools has become popular in recent years. Thus, the consumption of pilaf around the same dinner table increases social solidarity and institutional identity among graduates in these organizations.

Rather than rice, paddy is seen in literary works. The literary works such as idioms, proverbs, poems, or novels about rice mention the malaria threat, the facts of life, the valuableness of paddy are explained. As the main topic, the economic, public health and bureaucratic dimensions of rice cultivation are explained in the *Teneke* novel of Yaşar Kemal. Similarly, although it is not the main topic, rice cultivation is explained in some novels such as *Demirciler Çarşısı Cinayeti* written by Yaşar Kemal and *Bereketli Topraklar Üstünde* written by Orhan Kemal. In Turkish Cinema, rice is explained in two films such as *Kurbağalar* and *Acı Pirinç*. Although both of them have some common topics such as the exploitation of labor in rice fields, life struggles and the sexuality of a woman's body. While *Kurbağalar* explains the life struggle of a widow and the conflict of interest among small peasants in Thrace, *Acı Pirinç* explains the production relations and the conflict of interest among feudal lords for lands in Çukurova. In folklore, there are 4 folk songs that belong to Edirne, Balıkesir, Sinop, and Kastamonu. In these folk songs, there are love, wealth, the valuableness of paddy, and the consumption of paddy in wedding as pilaf and rice dessert and saffron are explained. Besides, Thrace Rice Legend by İsmail Sirke give ideas about the prominent rice growers of the Meriç Basin, the technological transformation of rice cultivation and the life experience of local people.

Fourth, paddy is seen in cuisine culture. Although paddy is regarded as the essential nutrient of Manson Asia and the Far East, it is consumed in every

continent differently. This situation mainly results from socio-cultural and socio-economic differences. As paddy can be consumed with legumes such as bean or chickpea, it can be consumed with meat. Furthermore, the cooking methods of paddy can differ among societies and cultures. Paddy can be also used in the making of different dishes such as stuffed vine leaves, lamb stew with new onions and pilaf, and so on.

Finally, similar to its consumption, due to the biological water needs of rice promote or limit the cultivation of other crops and husbandry. Thanks to water sources, rice cultivation promotes the cultivation of bean, kitchen garden, and some vegetables to some extent. On the other hand, it limits the cultivation of sugar beet, cotton, sesame. Besides, the pesticides of rice damage to silkworm breeding and fishery. However, it supports the development of frog hunting, its industry, and its foreign trade.

7

Conclusion

All in all, while explaining the social history of rice, this dissertation mainly emphasizes the totality of nature and society rather than the anthropocentric point of view. In this context, it emphasizes the mutual and reciprocal interests between humans and plants. Furthermore, it reveals why and how the plants influence humans and bees in nature and why and how human being desire the cultivation of plants. In accordance with the intellectuals who have studied botany and evolutionary theory for centuries provide a theoretical infrastructure for the dissertation.

From this point of view, it seems that the biological and agricultural characteristics of rice and the desires of humans make the social history of rice mutually. Based on these ideas, this dissertation tries to indicate the social history of rice in spatial and temporal dimensions in Turkey from multi-directional perspectives. In this context, it regards the emergence of the Green Revolution as an important breaking point in the development of Turkish Agriculture from a temporal point of view. By the same token, this dissertation mainly focuses on three different geographical locations to understand the different and remarkable characteristics of rice farming culture.

This dissertation makes the inference that rice is a social, bureaucratic and capitalist commodity. Rather than an anthropocentric point of view, it emphasizes strongly rice as an actor in the making of history. In this context, it brings the biological and agricultural properties of rice at the forefront. Furthermore, in the mutual and reciprocal interests between humans and rice, people desire

rice for their food requirement, the indication of their socio-economic status and the accumulation of higher capital. Although it seems that people serve rice from cultivation to harvest and marketing for their self-interests, actually they contribute to the spread of rice genes and the increase of rice production.

In detail, from a biological and agricultural points of view, rice is a cereal that depends upon biological stability in its water requirement, environmental conditions and nutrients at an adequate dosage and on time. Furthermore, similar to fish, it is the only cereal that uses solvable oxygen in the water. These miraculous characteristics of rice differentiate it from other cereals. Thanks to the biological characteristics and the agricultural requirements of rice, it directs the labor force of rice farmers, merchants and factory owners during its vegetation period, harvest, and marketing.

Also, when the geographical distribution of rice in the world is regarded, it seems that rice can be grown in every continent except Antarctica. This is the indication of its strong adaptability to different soil structure, climates and geographies. Although rice came to Turkey from the east and southeast directions, the development of rice technology has come from the north west part of Turkey. Furthermore, the spread of rice is closely related to wars, migrations, silk road trade and cultural interactions.

From a historical point of view, although rice is one of the oldest crops, the consumption of paddy in the Ottoman State had been limited with the Ottoman palace and public institutions. Therefore, its consumption per capita and rice yield especially increased in the twentieth century. Moreover, paddy has become an ordinary ingredient of daily meals. This situation mainly results from population growth, capital accumulation, agricultural mechanization and the use of agricultural inputs such as fertilizer and pesticides. In this context, rice cultivation that was supported with statist policies within the context of economic self-sufficiency has become popular in the 1930s and widespread with the Green Revolution in the 1950s. Furthermore, thanks to the increasing credit facility, the modernization of agricultural technics and the free-market economy, the neoliberal economic policies also have supported rice cultivation and paddy consumption in Turkey. The biology and history chapters of the dissertation provide with a macro perspective and infrastructure for the upcoming chapters.

Thanks to its high nutritional value, its economic value and its strong adaptability to different soil structures such as marshy and salty soil, rice is one of the most profitable and required crops in the eyes of the government. Similar to the voyages of the tulip to Europe, rice has been one of the most bureaucratic commodities. Similar to the struggles of Lala Şahin Paşa in the mid-fifteenth century and the struggles of Ataturk in the spread of rice farming in the Meriç Basin in the 1930s, it has been cultivated with the permissions of governors or district governors since 1936. Therefore, the government has had a direct control mechanism on rice cultivation areas and rice farmers. In contrast to the government's control of cultivation, in general the sale of rice is treated in the free-market conditions. The government influenced the determination of rice prices in the rice purchasing of TGB. Although the average rice production of Turkey based on rice cultivation areas has been expected every year, there has not been a comprehensive rice policy in Turkey to receive the paddy requirement of the growing population.

Furthermore, the governments serve the development of rice farming from infrastructural investments and institutional research studies to legal regulations, the intervention of bureaucracy, agricultural supports, and industrialization. As a result of these policies, rice farming culture has developed in these basins. However, while the Ministry of Agriculture has supported rice cultivation for economic reasons, the Ministry of Health has mainly considered malaria threat in rice cultivation areas. The Ministry of Internal Affairs has been a control mechanism. Namely, every ministry regards rice from their own perspectives. Furthermore, they claim that they consider the wellbeing or the national interests of Turkey.

Since rice requires intensive and specialized labor force and also legal regulations, rice has collaborated with the state both in the period of the Ottoman State and Turkey to spread its genes and to increase its production. Thus, due to governmental enterprises, rice is a quite public crop. However, while the control of rice cultivation in the Ottoman period mainly results from the scarcity of labor force, it comes from the malaria threat in the Republican period.

However, rice technology and scientific breeding works have developed more quickly than the legal regulations for rice. For example, the Rice Cultivation Law of 1936 is more restrictive, stagnant, nonapplicable, and far from receiving the needs of today. Although the Rice Cultivation Law has tried to systematize rice cultivation in every basin, it cannot have been implemented completely. For example, based on the differences in rice cultivation technics, production relations and the modes of production in the Meriç Basin, in the Karacadağ Agriculture Basin and the Lower Kızılırmak and Lower Yeşilırmak Basins, it is impossible to form a unique rice cultivation system. Furthermore, the production cost of rice, the existence of water sources, the use of modern technology, and environmental problems differentiate among these basins.

Therefore, new legislation that considers the requirements of present conditions and the geographical characteristics of different basins need to be enacted. Namely, the Rice Cultivation Law of 1936 is far from the spatial differences and temporal transformation. For example, while rice cultivation is associated with malaria in the 1930s and 1940s, rice cultivation areas have been exposed to water, and soil pollution that results from unplanned industrialization since the 1970s. However, the law cannot find any solution to this environmental health problem.

Third, rice leads to the creation of a labor force, the commodification of lands and irrigation water, technological innovations, industrial enterprises and marketing networks in these basins. Furthermore, it might be claimed that rice is the avant-garde crop of both the Green Revolution and the neoliberal economy. Thanks to technological developments, chemical agricultural inputs of the Green Revolution, and the market size of the neo-liberal economy, rice yield and rice production has increased more than two times. However, while the use of agricultural inputs declines the labor force in the field to some extent, it increases the production cost of rice growers. Thus, farmers characterize rice farming as gambling and robbery in the face of increasing production costs and the decline of their profits. However, in contrast to these complaints of rice farmers that result from neoliberal economic policies, it seems that the economic welfare of rich peasants has slowly been increasing. In addition, the distribution of irrigation water, the land leveling of rice fields and

rice harvest require specialized and seasonal workers despite the technological developments.

Rice farming has also integrated the Meriç Basin, the Karacadağ Agriculture Basin, and the Lower Kızılırmak, and Lower Yeşilırmak Basins into market-oriented production and liberal capitalist economy through the use of agricultural inputs, petroleum, and bank credits. Rice cultivation had been limited to big agricultural enterprises until the end of the 1960s. Furthermore, together with the increase of agricultural mechanization, market-oriented production, increasing credit facilities, and irrigation cooperation, rice farming spread into small agricultural enterprises in the 1970s. In this capitalist production relations, different groups in rice sectors expect different interests from rice. Similar to farmers, fabricators desire to get higher rice production, higher yield and higher prices. However, consumers desire to consume more qualified paddy at lower prices. The economic interests of people contribute to grow more qualified rice and to produce a higher amount of rice.

Besides, rice is a social commodity that bond rice growers together in the process of taking rice cultivation decisions, the distribution of irrigation water and the agricultural spraying and fertilization process of rice. During the vegetation period of rice, there is a division of labor, collaboration, organization and conflict of interest. Similarly, the processing of rice into paddy in factories, its marketing networks, and the consumption of paddy requires well organized socio-economic relations. Furthermore, since rice is a social, cultural and aesthetic commodity, it is a subject of folklore, cinema, theatre, and literature. These literary works also indicate the reflections of rice in the social lives of people.

In addition to these, rice is a crop of contradictions. Therefore, contradiction is one of the most suitable concepts to summarize the social history of rice. Although it seems that there are disciplinary working conditions, organizations, and specialized experience in rice cultivation, the biological characteristics of rice lead to the appearance of some contradictions. First, while rice cultivation requires a traditional and cultural experience, it also makes necessary the following of modern cultivation methods to get higher yield and profit. Second, while the Ministry of Health regards rice as a source of malaria, the Ministry of Agriculture thinks that it is a national crop that feeds the

military and nation. Second, rice both leads to collaborations in the cultivation of rice fields and causes a conflict of interest in the sharing of inadequate irrigation water. Third, since rice cultivation has been dependent on the law, its cultivation is controlled by the state. On the other hand, in general, its marketing is done in the private sector. Namely, while it is a public commodity in cultivation, it is a capitalist commodity in marketing. Forth, while there is a collaboration among rice farmers in the rice cultivation process in irrigation unions or cooperatives, they sell their crop separately in the free-market. Therefore, they cannot have a voice in the determination of rice prices. Fifth, rice reflects different historicity in the same history. For example, today the modes of rice cultivation and rice production relations in the Karacadağ Agricultural Basin are similar to those of the 1960s in the Meriç Basin. Sixth, although the first rice factories were established in Kastamonu, Kahramanmaraş, and İstanbul in the 1930s, rice cultivation has been developed in Edirne, Samsun, and Balıkesir today. Seventh, people consume paddy both in deserts and salty meals Finally, paddy is consumed both in sad days and happy days of people.

This dissertation mainly observes the social history of rice in Turkey from different perspectives between 1948 and 2018. All of these ideas indicate that there has not been systemic and unified rice farming culture in Turkey. This situation mainly results from the differences in geography, human capital, agricultural structures, and economic capital in a historical process. This situation also reflects the colorfulness of agricultural history in these basins. For example, while the rice farming culture of the Meriç Basin, the Lower Kızılırmak and Lower Yeşilırmak Basins represent modernization, transformation and changes, that of Karacadağ represent traditionalism, and stability. In this context, it can be said that the influence and the density of the Green Revolution began to be seen at different times in these basins. For example, the use of fertilization began to be widespread in the mid of the 1970s in the Meriç Basin, it began to be seen in the beginnings of the 1990s in the Karacadağ Agriculture Basin. Furthermore, it is impossible to systematize the labor force, the production cost of rice and the profit of rice growers in three basins.

Appendix A Local Press



İPSALA

"İpsalalıların Gazetesidir..."

Yıl : 7

(Her gün Çıkar Siyasi Müstakil Gazete)
4-Temmuz-1973 Çarşamba

Çiftçilerin tarlalarına tabiat mı, yoksa çeltikçiler mi

Zarar veriyor?

İlçemiz Sarıkamış mevkiinde çeltik ekerek su kullarını kumlar mevkiin den geçiren büyük çeltikçilerin, kanal sularının dı şarıya sızmasına göz yum dukları ve bazı çiftçi vatandaşların tarlalarına su girmesine, dolayısiyle ge se bu vatandaşların mağ dur olmalarına seyirci kal dıkları öğrenilmiştir.

Bu durum karşısında başvurulacak tek kurtarıcının ilçemiz Ziraat Mühendisliği olduğunu düşü nen Mehmet Pınar, Mehmet Çiroz ve Arif İşlek isimlerindeki çiftçiler, yaki müracaat üzerine olay mahallinde giden Ziraat Mühendisinin yaptığı incelleme sonunda verdiği karara şaşırıp kalmışlar ve «derdimizi kimlere anlata cağız bizde bilmiyoruz» demeğe başlamışlardır.

Tarlalardaki suların yağmur suları olduğunu, tabiat olayının önüne genetabiatın geçeceğini belirterek çeltikçilerin aleyhinde bir karar alınamıyacağını belirten Ziraat Mühendisine şimdi biz soruyoruz:

İpsala çiftçisi en az bir ziraat Mühendisi kadar bilgili, görgülü, çalışkan bir çiftçidir. Hasbelkader çiftçi olduysa bu hiçbir şeybilmiyordemek değildir.

Tarladaki suyun yağmur suyu mu, yoksa kanal suyu mu olduğunu bilemiyecek kadar cahil olmadıklarına göre sakın siz şaşırmış olmayasınız?

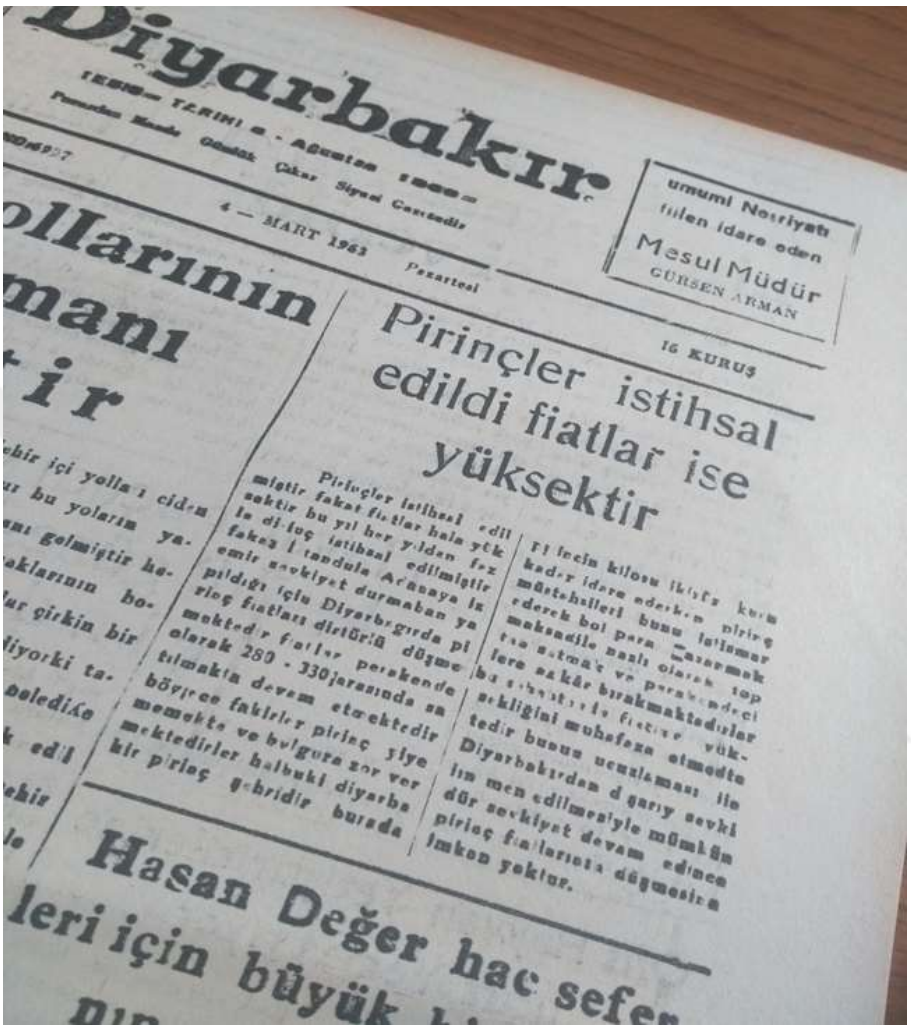
ilân

T.C. Ziraat Bankası İpsala Subesine bağlı 863 Sayılı

Kredi Kooperatifinden

Figure A.1 Rice Farming in the Meriç Basin

SOURCE İpsala July 4, 1973


Diyarbakır

4 — MART 1963 Pazarteşi

16 KURUŞ

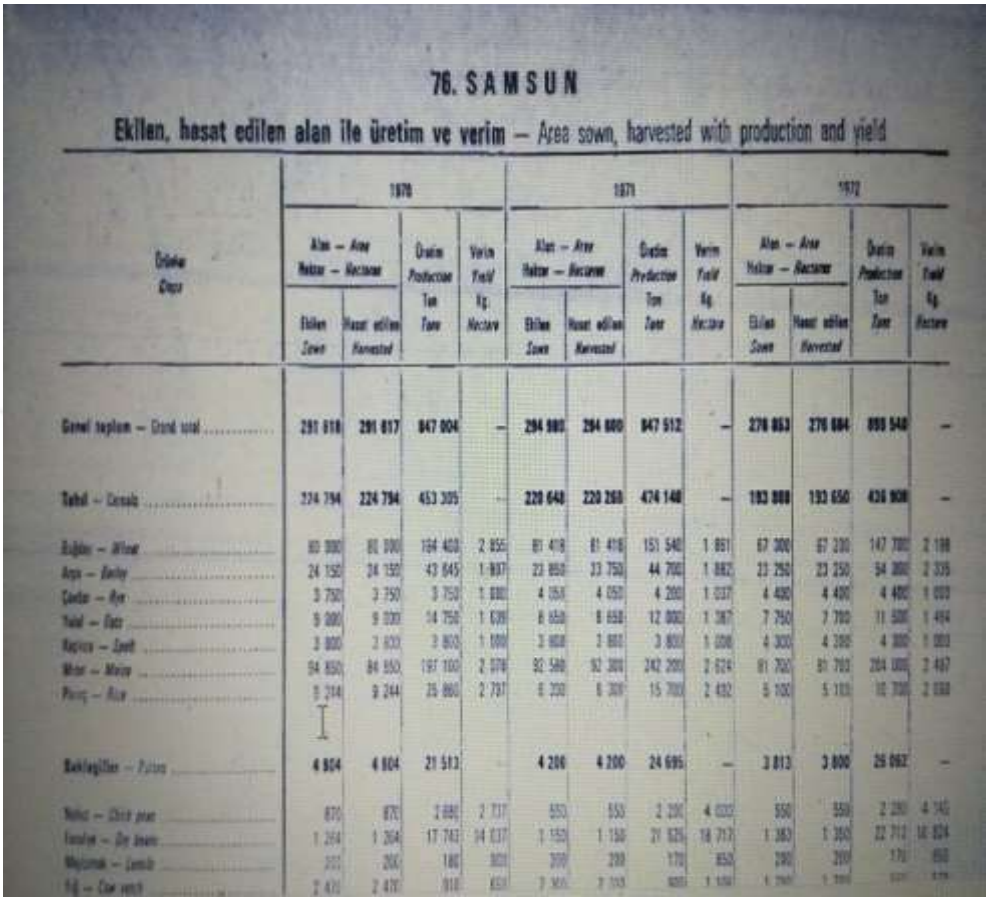
Pirinçler istihsal edildi fiatlar ise yüksektir

Hasan Değer hac sefer

Figure A.2 Paddy Prices in Diyarbakır

SOURCE: Diyarbakır, March 4, 1963

Appendix B TÜİK Statistics



76. SAMSUN

Ekilen, hasat edilen alan ile üretim ve verim — Area sown, harvested with production and yield

Ürünler Crops	1970				1971				1972			
	Alan — Area Hektar — Hectares		Üretim Production Ton Tons	Verim Yield Kg. Hektar	Alan — Area Hektar — Hectares		Üretim Production Ton Tons	Verim Yield Kg. Hektar	Alan — Area Hektar — Hectares		Üretim Production Ton Tons	Verim Yield Kg. Hektar
	Ekilen Sown	Hasat edilen Harvested			Ekilen Sown	Hasat edilen Harvested			Ekilen Sown	Hasat edilen Harvested		
Genel toplam — Grand total	291 818	291 817	847 904	–	294 980	294 680	847 512	–	276 863	276 884	855 548	–
Tahıl — Cereals	224 794	224 794	453 305	–	220 648	220 268	474 148	–	193 888	193 650	436 908	–
Buğday — Wheat	80 300	80 300	184 403	2 855	81 418	81 418	151 540	1 861	67 300	67 200	147 700	2 198
Arpa — Barley	24 150	24 150	43 645	1 807	23 850	23 750	44 700	1 882	23 250	23 250	54 300	2 335
Çavdar — Rye	3 750	3 750	5 750	1 880	4 150	4 050	4 200	1 037	4 400	4 400	4 400	1 000
Yulaf — Oats	9 000	9 000	14 750	1 639	8 650	8 650	12 800	1 387	7 750	7 700	11 500	1 494
Kapkara — Spelt	3 800	3 800	3 800	1 000	3 808	3 808	3 800	1 006	4 300	4 300	4 300	1 000
Mısır — Maize	94 850	94 850	197 100	2 078	92 548	92 308	242 200	2 624	81 700	81 700	204 000	2 497
Pirinç — Rice	9 244	9 244	25 860	2 797	8 700	8 300	15 700	2 432	5 100	5 100	10 700	2 098
Baklagiller — Pulses	4 804	4 804	21 513		4 200	4 200	24 695	–	3 813	3 800	25 062	–
Nohut — Chick peas	870	870	2 898	2 737	850	550	2 200	4 000	550	550	2 200	4 340
Fasulye — Dry beans	1 264	1 264	17 743	14 037	1 150	1 150	21 525	18 717	1 363	1 363	22 712	16 824
Mercimek — Lentils	200	200	180	900	200	200	170	850	200	200	170	850
Diğ. — Other pulses	2 470	2 470	890	650	3 300	3 300	800	1 000	1 700	1 700	180	106

Figure B1. Agricultural Structures of Samsun in the 1970s

SOURCES T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) *Tarımsal Yapı ve Üretim 1970-1972 (Agricultural Structure and Prduction 1970-1972)* TÜİK: 1975

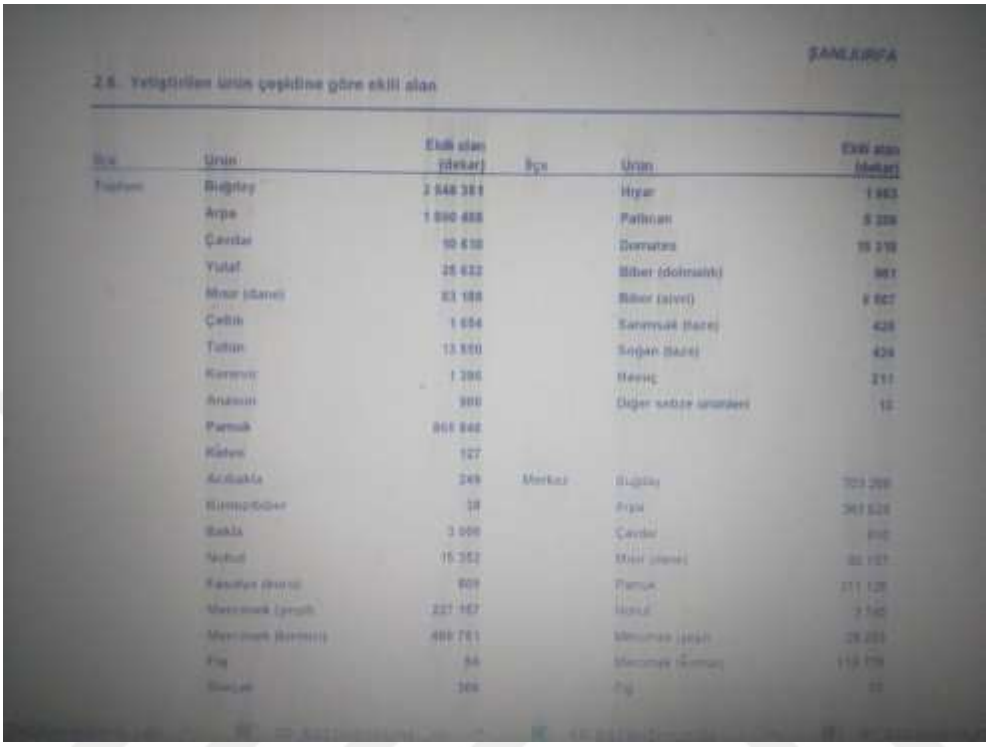
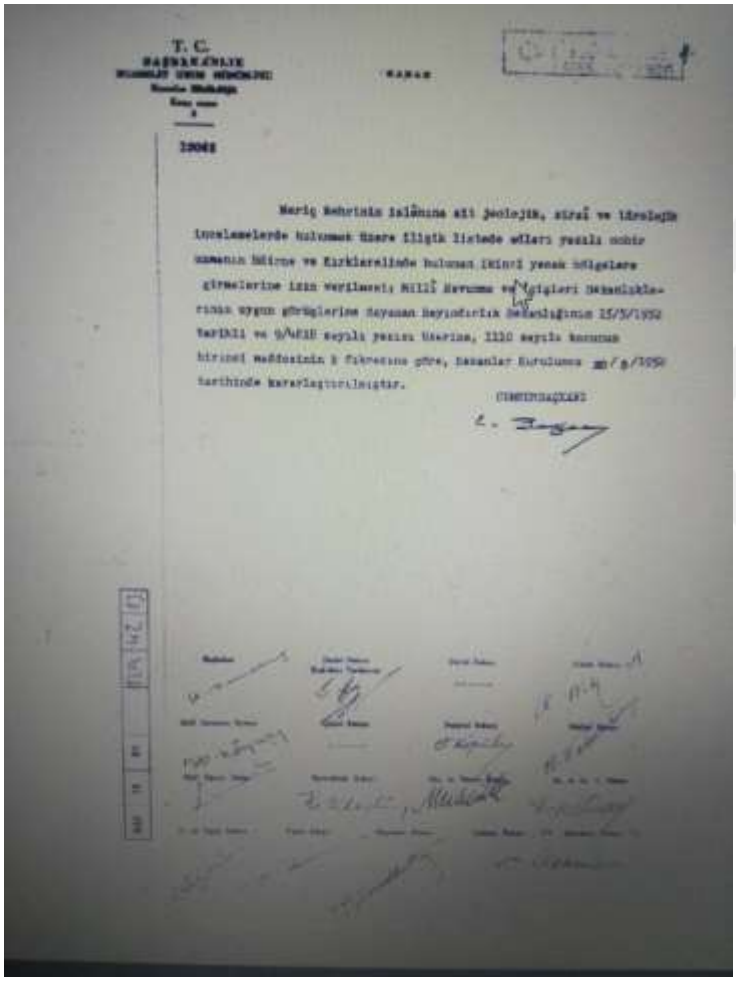


Figure B2. The Village Inventory of Şanlıurfa in the 1990s

SOURCE T.C Başbakanlık Türkiye İstatistik Kurumu (TÜİK) Şanlıurfa Köy Envanteri 1997 (ŞanlıurfaVillage Inventory 1997) Ankara. 2002.

Appendix C Prime Ministry Archaives



T. C.

Meriç Nehrinin ıslâhına ait jeolojik, ziraî ve iktisadî tetkiklerde bulunmak üzere ilgili listede adları yazılı sekiz mütehassıs Edirne ve Kırklarelinde bulunan ikinci yemek mütalaalara girmelerine izin verilmesi Milli Savunma ve Dışişleri Bakanlıklarının uygun görüşlerine dayanan Bayındırlık Bakanlığının 15/5/1952 tarihli ve 9/4838 sayılı yazısı üzerine, 1120 sayılı kanunun birinci maddesinin 2 fıkrasına göre, Bakanlar Kurulunca 20/5/1952 tarihinde kararlaştırılmıştır.

Figure C 1. The Reclaimation of the Meriç River

SOURCE BCA B.M.U. M, 030 18 01 129 42 13, (May 20, 1952)

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