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From Entomological Disaster to Agricultural Modernization, the Effect of Pink Bollworm on Cotton Farming in Çukurova (1914-1928)

Entomolojik Felaketten Tarımsal Modernizasyona, Pembekurdun Çukurova'da Pamuk Tarımına Etkisi (1914-1928)

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Abstract

Since the second half of the 19th century, pink bollworm, which has been effective on a global scale, spread to Çukurova as a result of cotton seed imports from Egypt after the First World War (the WWI). In 1924 and 1925, pink bollworm, which had a negative impact on cotton yields, was initially seen as an entomological problem in cotton, but turned into a social, economic and political problem due to the key importance of cotton in Türkiye's foreign trade, textile industry and rural development. As a matter of fact, the agricultural control against pink bollworm led to technical advances, scientific innovations and legal regulations in cotton cultivation. In this context, Adana Seed Breeding Station was established in 1925 and Mersin Agricultural Control Laboratory in 1926. In the literature, the cotton history of Çukurova is mostly discussed in terms of society, state and geography. This study, on the other hand, goes

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one step beyond the anthropocentric perspective and explains the historical process through the relationship of partnership and interdependence between cotton, society and the state. Spatially, the role of pink bollworm in the socio-economic, scientific and technical transformation of Çukurova cotton farming is explored, taking into account the global dimension. Periodically, this study focuses on the transition phase from the Ottoman Empire to the Republic and examines the period from the WW I, when the pest began to appear, to the Great Depression of 1929, when planned industrial development models or Keynesian economic policies that envisioned state interventionism began to be implemented.

Keywords: Cilicia, Cotton, Pink Bollworm, Agricultural Modernization, Entomology.

Öz

19. yüzyılın ikinci yarısından itibaren küresel ölçekte etkili olan pembekurt, Birinci Dünya Savaşı'ndan itibaren Mısır'dan yapılan pamuk tohumu ithalatı sonucunda Çukurova'ya yayılmıştır. 1924 ve 1925 yıllarında pamuk verimi üzerinde olumsuz etkisini gösteren pembekurt başlangıçta pamukta entomolojik bir sorun olarak görülse de, pamuğun Türkiye'nin dış ticareti, tekstil endüstrisi ve kırsal kalkınmasındaki kilit önemi nedeniyle sosyal, ekonomik ve politik bir soruna dönüşmüştür. Nitekim pembekurda karşı geliştirilen tarımsal mücadele, pamuk yetiştiriciliğinde teknik ilerlemelere, bilimsel yeniliklere ve yasal düzenlemelere yol açmıştır. Bu kapsamda 1925 yılında Adana Tohum Islah İstasyonu ve 1926 yılında Mersin Zirai Mücadele Laboratuvarı kurulmuştur. Literatürde Çukurova'nın pamuk tarihi daha çok toplum, devlet ve coğrafya ekseninde ele alınmaktadır. Bu çalışma ise insan merkezli bakış açısının bir adım ötesine geçerek tarihsel süreci pamuk ile toplum ve devlet arasındaki ortaklık ve karşılıklı bağımlılık ilişkisi üzerinden açıklamaktadır. Mekânsal açıdan küresel boyut da göz önüne alınarak pembekurdun Çukurova pamukçuluğunun sosyo-ekonomik, bilimsel ve teknik dönüşümündeki rolü araştırılmıştır. Dönemsel olarak ise bu çalışma daha ziyade Osmanlı'dan Cumhuriyet'e geçiş evresi üzerine odaklanarak haşerenin görülmeye başladığı Birinci Dünya Savaşı'ndan planlı sanayi kalkınma modellerinin ya da devlet müdahaleciliğini ön gören Keynesyen ekonomi politikalarının uygulanmaya başlandığı 1929 Dünya Ekonomik Buhran'ına kadar olan dönemi incelemektedir.

Anahtar Kelimeler: Çukurova, Pamuk, Pembekurt, Tarımsal Modernleşme, Entomoloji.

Introduction

From the ends of the WW I (1914-1918), the pink bollworm descended like a nightmare on the cotton farming in Çukurova. Entomologically, pink bollworm, which feeds on the fiber, bud, flower, and boll of cotton, reduced both the germination ability, yield, and the fiber quality of the crop.[1] Pink bollworm spread to Çukurova with the imported cottonseed from Egypt and Sudan. Although it seemed to be an entomological problem at first, in social and economic terms, it caused the decrease of cotton production in Adana and was on the agenda of the Grand National Assembly of Türkiye and the Ministry of Agriculture in 1925. During the debates in the parliament, it was claimed that pink bollworm was slowly spread by the importation of cottonseed during the WW I and the French occupation period (1918-1921).[2] Furthermore, some tradesmen from Adana sent denunciation letters to Prime Minister İsmet İnönü, blaming S. R. Gilado, the owner of the Vegetable Oil and Cotton Factory established in 1924, for the spread of pink bollworm. In these letters, it was claimed that Gilado was spying on behalf of the British and that he imported diseased cottonseed and distributed it free of charge to the market in order to disrupt cotton production in Adana.[3] Considering the strategic importance of cotton in foreign trade and rural development in the early years of the Republic, the political, economic and social importance of the control against pink bollworm can be better understood. On November 11, 1925, in the opening speech of the Second Cotton Congress held in Adana, cotton farming was described as a new and glorious sun rising on the commercial horizon of the young Republic and an economic revolution that would eliminate poverty, misery and destitution in Türkiye. At this point, it was emphasized that the cotton issue was a homeland issue.[4] In this context, production, trade, selection, fiber, labor, machinery, and pest problems of cotton were discussed at the congress.[5]

1 *Türkiye Büyük Millet Meclisi (TBMM) Zabıt Ceridesi*, (Grand National Assembly of Türkiye Minutes of Proceedings), Term 2, Vol. XII/34. Session, 8 January 1925, p. 59; Ahmet Kişmir, *Pamukta Pembekurt ve Mücadelesi*, Tarım Orman ve Köy İşleri Bakanlığı *Adana Zirai Mücadele Araştırma Enstitüsü*, Ankara 1988, pp. 4-5; Nihat İyriboz, *Pamuk Hastalıkları*, Ziraat Vekâleti, İzmir 1941, pp. 22-23.

2 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/34. Session, 8 January 1925, p. 59.

3 S. R. Gilado was a Russian Jew who fled to Istanbul from Belarus after the October Revolution of 1917. In 1924, he established a vegetable oil and cotton factory in Adana. Denunciation letters were sent to the government about his espionage activities on behalf of the British. See here., Servet Avşar, "Cumhuriyet'in İlk Yıllarında Adana'daki Gizli İstihbarat Yuvası: Gilodo Nebati Yağ ve Sabun Fabrikası", *Stratejik ve Sosyal Araştırmalar Dergisi*, Vol. IV/No. 2, 2020, pp.272-276.

4 *İkinci Adana Pamuk Kongresi Zabıtnamesi*, Matbaa-i Amire, İstanbul 1925, p. 4

5 *Ibid.*, p. 23.

Since the second half of the 19th century, pink bollworm has been effective on a global scale from Monsoon Asia to North Africa and from the Near East to the Americas. Agricultural, scientific and legal initiatives to control against the pest have increased both agricultural mechanization and scientific studies in the world.[6] At the beginning of the 20th century, variety breeding and modernization studies were carried out in many countries of the world to increase cotton production. Türkiye had not been successful enough in this regard except for importing cotton machinery. As a matter of fact, in 1921, both the destruction of bollworm and the standardization problem in cotton varieties and the lack of good coding had a negative impact on export opportunities.[7] Thus agricultural engineers were sent abroad, foreign experts were invited to Türkiye. Furthermore, both Adana Seed Breeding Station in 1925 and Mersin Agricultural Control Laboratory Directorate in 1926 were established. Mechanization in terms of agro-technical aspects became widespread and industrial initiatives became more important.[8] Furthermore, in earlier years, new cotton varieties had been imported to Adana from Egypt and Turkestan, but they degenerated to a great extent over the time.[9] Thus, within the scope of cotton variety breeding in Çukurova, the production of high quality and long-fiber cotton varieties required by the textile industry had been encouraged instead of short-fiber local cotton varieties from 1926 onwards. In this context, 40 different varieties of cotton seeds were imported from the USA and as a result of the climate experiments, it was determined that the Cleveland variety was the most suitable for Adana and its surroundings.[10] Based on the initiatives in the 1920s, the fumigation established by Agricultural Bank in Mersin in 1933 and the invitation of foreign experts for the control of pink bollworm accelerated scientific studies and technical developments cotton farming. [11]

6 Özlem Yaktı, *Toplumsal Değişim ve Dönüşüm Sürecinde Adana'nın Sosyo-Ekonomik ve Kültürel Yapısı (1923-1960)*, Ankara Üniversitesi Türk İnkılap Tarihi Enstitüsü, Yayımlanmamış Doktora Tezi, Ankara 2014, p. 26.

7 *Adana'da Pamuk Meselesi*, Adana Ticaret Odası, Adana 1922, pp. 5-9.

8 M. Kemal Sezen, *Pamuk ve Diğer Mühim Lifli Nebatlar*, Ziraat Vekâleti, İstanbul 1939; *Adana Zirai Mücadele Araştırma Enstitüsü*, p.1; Yaktı, *ibid*, pp. 25-26

9 "Pamuklarımızın Islahı" *Ziraat Gazetesi*, Year III/No.2, February 1931.

10 "Pamuk Tohumlarının Islahı" *Altıok*, Year 1, No. 12, 30 April 1934, p. 22.

11 Mehmet Temel-Hayrunnisa Baş, "Cumhuriyet'in İlk Yıllarında İzlenen Bitki ve Orman Sağlığını Koruma Politikası", *Muğla Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, No. 20, 2008, p. 171.

Pink bollworm is one of the rare pests for which regulations have been issued. The last regulation was published on pink bollworm on 24 August 2023. This regulation covers the issues that farmers, traders and ginning mills are obliged to comply with within the scope of pink bollworm control in cotton production areas.[12] However, this study focuses on the agricultural, economic, social and political dimensions of the control of pink bollworm in Çukurova between 1914 and 1928. The historical framework of this study is mainly limited to the late 1920s. The reason for this framing is to observe the first socio-economic developments of the Republic of Türkiye after the WW I through destructive effects of pink bollworm seen in cotton farming. Moreover, the 1930s pointed out a different economic phase as a planned industrialization model with state interventionism was implemented in following the Great Depression of 1929. Although pink bollworm has a very special place in the modernization of cotton farming in Çukurova, it has not been sufficiently analyzed in the literature. In fact, cotton production in Çukurova has been handled mainly from an anthropocentric perspective and the subject has been evaluated mainly from economic, commercial and geographical perspectives. In his article titled "20. Yüzyılın İlk Çeyreğinde Çukurova'da Emek ve Sermaye", Zafer Toprak approaches cotton cultivation in Çukurova in the late 19th century from an economic perspective such as labor, capital, and foreign trade in the context of the integration of Çukurova with world capitalism.[13] Cezmi Yurtseven and Mustafa Özarslan's *Çukurova'da Tarımın Tarihi* examines the role of cotton in Çukurova in terms of agricultural technique, labor force and trade in the context of economic development in the early years of Türkiye.[14] Nurettin Madran's *Türkiye'de Pamuk* examined the opening of new textile factories, the importation of new cotton varieties from the USA, and the establishment of trial and breeding stations from an economic perspective.[15] In addition, E. Ahmet Bozkaya, who examined the subject from a more sociological perspective, in his book *Anadolu'nun Pamuk, Çeltik, Mısır, Fındık, Afyon ve Bağcılık Bölgelerinde Kullanılan Ziraat Alet ve Düzenleri Üzerine Araştırmalar* dealt with the size of agricultural enterprises, production

12 "Pembekurt ile Mücadele Hakkında Yönetmelik" *Resmi Gazete*, 24 August 2023.

13 Zafer Toprak, "20. Yüzyılın İlk Çeyreğinde Çukurova'da Emek ve Sermaye", *Toplumsal Tarih*, No. 191, November 2009, pp. 70-71.

14 Cezmi Yurtseven-Mustafa Özarslan, *Çukurova'da Tarımın Tarihi*, Adana Ticaret Borsası, Adana 2013, pp. 179-181.

15 Nurettin Madran, *Türkiye'de Pamuk*, Adana Bölge Pamuk Araştırma Enstitüsü, Adana 1971, p. 8.

relations, and modes of production in cotton in Çukurova.[16] Finally, Necati Turgay and George Bailleux's *Pamuk ve Türkiye'de Ziraatı* and İ. Abidin Akıncı's *Pamuk İstihsalde İstihkale Kadar Türkiye, Mısır, Hindistan, Çin, Amerika, Rusya, İngiltere, İtalya ve sair Memleketler* examined this issue from a geographical perspective. In this context, the cotton farming of Çukurova and Egyptian were compared with each other by taking into account the climate, topography and water resources.[17]

In these studies, the pink bollworm pest has been ignored. Geography, economy or agricultural policies have been emphasized in the historical adventure of cotton in Çukurova. Thus, the subject has been handled from a perspective where only human beings and geography come to the fore. This has resulted in the agricultural and biological characteristics of the crop not being taken into account when writing a history that develops around cotton. It is precisely at this point that this study breaks down the thick walls between natural and social sciences and addresses the issue through the interdependence between the agricultural and biological needs of cotton and the desires of human beings, rather than the anthropocentric perspective and geographical determinism. In this respect, it aims to fill an important gap in the literature. In other words, the livelihood problems of the cotton producers in Çukurova, the clothing needs of the society, the rural development, and foreign trade goals of the state have made the control of pink bollworm a necessity. In social, economic, agricultural and legal terms, human beings have served the cultivation of cotton, the spread of its genes and its transmission to the future, even for their own benefit. In this context, the dependency or symbiotic relationship between cotton and human beings is centered as an actor in the making of history.[18] This study argues that the relationship of mutual interest and dependency between cotton and human beings makes the control of pink bollworm imperative. Therefore, it aims to explain how scientific, institutional and legal initiatives were taken and what measures were taken in the first years of the Republic to control the pink bollworm. In this respect, it examines the issue from a multidisciplinary perspective including entomology, geography, law, history, and sociology. Before explaining the cotton

16 Esat Ahmet Bozkaya, *Anadolu'nun Pamuk, Çeltik, Mısır, Fındık, Afyon ve Bağcılık Bölgelerinde Kullanılan Ziraat Alet ve Düzenleri Üzerine Araştırmalar*, Yüksek Ziraat Enstitüsü, Ankara 1936, p. 3; Toprak, ibid., p. 72.

17 İhsan Abidin Akıncı, *Pamuk İstihsalde İstihkale Kadar Türkiye, Mısır, Hindistan, Çin, Amerika, Rusya, İngiltere, İtalya ve sair Memleketler*, Hüsnütabiat Matbaası, İstanbul 1933, p. 17; Necati Turgay-George Bailleux, *Pamuk ve Türkiye'de Ziraatı*, Ziraat Vekâleti, Ankara 1940, pp. 4-5.

18 Michael Pollan, *Arzunun Botaniği*, transl. by Sevin Okyay, Domingo Yayıncılık, İstanbul 2019.

farming in Çukurova, it is necessary to examine the history of cotton at a global level.

The Story of White Gold: Cotton from Global to Local

India, in the borders of Monsoon Asia, and one of the world's three agricultural origins, is the homeland of cotton.[19] In the second and third centuries AD, cotton was cultivated and cotton fabrics were produced around East Turkistan during the Sassanid period.[20] Since the 8th century, Arab traders have been particularly instrumental in bringing cotton in India to the Middle East, Egypt and Iberian Peninsula for textile needs. Egypt is a very important country in terms of cotton production as well as its trade. In the 16th century, cotton cultivation began in very limited areas in Egypt. In the 19th century, during the reign of Khedive Mehmet Ali Pasha, it was carried out in the plains along the Nile Valley.[21] In fact, cotton and paddy played a key role in Egypt's modernization, economic development and foreign trade.[22] During the American Civil War between 1861 and 1865, cotton trade from South America to England and Western Europe decreased. Thus the British turned to Anatolia and Egypt.[23] In 1869, the opening of the Suez Canal, which connected the Red Sea to the Mediterranean, further increased trade between Egypt and Europe.[24] As a result, Egypt became more intensively integrated into world capitalism through cotton exports in the 19th century.[25] Furthermore, Egypt has been an important source of reference in the development of cotton cultivation in Çukurova, Western Anatolia and the Balkans. In 1906, cotton varieties such as Afifi and Abbasiye were imported from Egypt and agricultural trials were conducted in other parts of the empire.[26]

19 Tom Standage, *An Edible History of Humanity*, Thorndike Press, New York 2009, p. 32.

20 Nebi Bozkurt, "Pamuk", *Türkiye Diyanet Vakfı İslam Ansiklopedisi*, Vol. XXXIV, İstanbul 2007, p. 155.

21 Cotton has a history of 5000 years in India. Based on the archaeological evidence, it is estimated that the Indus Valley in the Sindh Province is the homeland of cotton.

22 Şevket Pamuk, *Türkiye'nin 200 Yıllık İktisadi Tarihi*, İş Bankası Kültür Yayınları, İstanbul 2015, pp. 106-109.

23 Fatih Damlıbağ, "Batı Anadolu'da İhraç İçin Pamuk Üretimi", *Sosyal Siyaset Konferansları Dergisi*, No. 60, 2012, pp. 437-443.

24 Donald Quataert, *The Ottoman Empire 1700-1922*, Cambridge University Press, New York 2005, p. 58.

25 Pamuk, *ibid*, pp.106-109.

26 "Payitaht Havadisi" *Seyhan*, 28 March 1906.

In addition to Egypt, Anatolia was the other prominent geography in cotton farming and trade. There were cotton farming in Çukurova, Western Anatolia, Sakarya Basin, Iğdır Plain, Central Anatolia, and Thrace.[27] Marco Polo, who came to Anatolia in the 13th century, stated that the Turks cultivated cotton, produced yarn and wove it.[28] Furthermore, together with cotton trade from Western Anatolian ports such as Ayasulug, Alanya and Antalya cotton cultivation also started in the Peloponnese Peninsula. Cotton reached the Balkans with the conquest of the Ottoman Empire in the middle of the 14th century.[29] From the 17th and 18th centuries onwards, the market share of Ottoman cotton in the Balkans, the suitable climate conditions of Anatolia, and labor force attracted the attention of Britain during the American Civil War. They tried to increase cotton production in the Ottoman Empire by conducting various surveys and researches through their consulates.[30] Thus, the press of the period, such as *Ceride-i Havadis,* reported that Egypt had no foreign trade deficit thanks to its cotton production and that the government would distribute seeds and cleaning machines to farmers. However, after the attempts of the Ottoman State failed, the British established companies to develop cotton agriculture.[31] Thus Çukurova and the İzmir region became prominent regions in cotton production from the second half of the 19th century onwards.[32] The Baltalimanı Trade Agreement of 1838 signed between Britain and the Ottoman Empire set the legal framework for free trade. Thus, Western Anatolia and Çukurova were integrated into world capitalism on a global scale, especially through cotton exports. From the 1870s onwards, cotton production in Çukurova was encouraged due to increasing foreign trade revenues. This made it possible to drain the swamps in the region, to allocate two-thirds of the arable land to cotton production and to develop land registry, cadaster.[33] Since cotton had a very special place in the economic history of Çukurova, the breeding of cotton varieties, and the facilitation of planting and harvesting were

27 Akıncı, *ibid*, p. 17.

28 Madran, *ibid*, p.7.

29 Bozkurt, ibid, p.155.

30 Damlıbağ, "Batı Anadolu'da İhraç İçin Pamuk Üretimi", pp.437-443.

31 Mehmet Çetin, "Osmanlı Devleti'nde Bir İngiliz Sermaye Girişimi: Şirket-i Maliye-i Mahdûde-i Osmanî", *Belleten*, Vol. LXXXVI/No. 305, 2022, p. 225.

32 Damlıbağ, "Batı Anadolu'da İhraç İçin Pamuk Üretimi", pp. 437-443.

33 Meltem Toksöz, "Bir Coğrafya, Bir Ürün, Bir Bölge: 19. Yüzyılda Çukurova", *Kebikeç*, Vol. XXI, 2006, pp. 102-106.

important in terms of both agricultural modernization at the regional level and increasing exports and commercial income at the national level.[34] Moreover in the modernization of cotton, mechanization, scientific methods, variety breeding, and the establishment of a cotton exchange were necessary.[35]

Geographically, Çukurova is an alluvial delta plain surrounded by the Mediterranean Sea to the south and the Taurus Mountains to the north, east and west. Çukurova has an area of 193,000 hectares and consists of three parts. These are: the Seyhan Plain of 80,000 hectares in the west, the Ceyhan Plain of 100,000 hectares in the east, and the Osmaniye - Dörtyol Plain of 13,000 hectares in the southeast.[36] When cotton production in Çukurova and Egypt is compared, it is obvious that cotton was the key to economic development and increasing the volume of foreign trade in both geographies. While the Lower Nile Delta was surrounded by deserts, the Taurus Mountains in the north made Çukurova more suitable for cotton cultivation. Evaporation in Çukurova is lower than in Egypt, while annual rainfall is higher than in Egypt.[37] Cotton requires an annual rainfall of 585 mm. In some years, drought in the region also caused a decrease in yield. In Çukurova, cotton planting was carried out between March 20 and April 15 depending on the weather temperature. However, while the Seyhan, Ceyhan and Tarsus rivers were useful for irrigation of cotton fields in Çukurova during dry periods, the flooding of these rivers due to snowmelt in the Taurus Mountains in the spring months delayed cotton planting.[38] This situation reveals the primitively growing conditions of cotton which was very strategic for economic development.

In the 19th century, as in Egypt, cotton production in Çukurova was dominated by large-scale producers who owned more than 500 hectares of land. Due to the lack of adequate mechanization and labor, these lands were cultivated on a two-year lease agreement with the landowners, either as sharecroppers or tenancy. According to this contract, the landowner was responsible for the supply of crops, livestock and agricultural implements, while the sharecropper or tenant was responsible for the cultivation, hoeing, harvesting and payment of the tithe. In other words, landowners were responsible for the supply of capital while tenants

34 *Adana'da Pamuk Meselesi*, pp. 3-4.

35 A. Nazım, *Pamuk İstihsalatının Tezyidi*, Türkiye Cumhuriyeti Ticaret Vekâleti, Ankara 1925, pp. 4-5

36 Turgay, *ibid*, p. 104; Sadık Toker, *Pembe Kurt ve Savaş Usulleri*, İstiklal Matbaası, İzmir 1962, p. 5.

37 Akıncı, *ibid*, p. 18.

38 Turgay, *ibid*, pp. 105-109.

were responsible for the supply of labor. However, the fact that farmers were able to obtain high-interest loans from moneylenders instead of banks and that the cottonseed supplied were not clean caused economic losses. Therefore, many tenants avoided labor and expenses. In addition, attempts to cultivate the fields with cotton every year have reduced both soil and cotton yield.[39]

In the late 19th century, since a significant portion of the fields were plowed with the black plow, crop yield was low. Although new agricultural machinery, such as locomobiles for plowing, was brought to the region, there were problems with repair and spare parts. In some fields, cotton was planted for 10 years in a row, while in others, wheat or sesame alternated with cotton. There were even cases where cotton and sesame or cotton and water-melon were planted together in the same field. However, sesame caused fiber loss at cotton harvest, while water-melon caused insufficient irrigation. Thus cotton yields decreased. During the cultivation of cotton in Çukurova, the labor shortage needed for hoeing and harvesting was mainly supplied from Çukurova, Central Anatolian provinces and Southeastern Anatolia.[40]

In the period before the WW I, natural disasters such as floods and droughts, locust infestations and labor shortages negatively affected cotton production in Çukurova. The WW I on the other hand, caused a decline in production and exports, and prevented cotton variety breeding.[41] In the French reports comparing cotton cultivation in Adana and Idlib after the WW I, it was emphasized that the cotton grown in Adana was of better quality, silkier and with longer fibers.[42] Studies conducted by the French indicated that the growing conditions and fiber quality of cotton in Çukurova were better than in Syria. This is evidence that cotton, the most important crop of the Industrial Revolution, and the regions where cotton is grown attracted the attention of Western European states.[43]

The local cotton varieties had short fibers in Çukurova but they were not popular in global markets. Since these types of cotton were usually collected with their bolls

39 Turgay, *ibid*, p.111; Bozkaya, *ibid,* p. 3; Toprak, ibid, p. 72.

40 Gordon P. Merriam, "The Regional Geography of Anatolia", *Economic Geography*, Vol.II/No.I, 1926, p. 91; Turgay, *ibid*, p. 111; Bozkaya, *İbid,* p. 3; Toprak, ibid, pp. 71-75.

41 Toprak, İbid, pp. 70-71.

42 "Asie (Syrie-Cilicie)"*Association Cotonniere Coloniale*, Paris, Octobre 1924, pp. 66-67.

43 Cevdet Kırpık, "Osmanlı'dan Cumhuriyet'e Adana Tarım İşçileri", *Tarihte Adana ve Çukurova III*, ed. M. Fatih Sansar-Yılmaz Kurt, Akademisyen Kitapevi, Ankara 2016, p. 391.

and sorted at home, it increased labor requirement. However, American cotton varieties were not preferred due to high costs of production and the harvest in a short time to prevent fiber loss. Thus it required more labor force and capital. Thus 95% of the cultivated land was of local cotton varieties, which were imported to the region from Syria, Egypt and North Arabia. In the late 19th century, there were also some large-scale enterprises in Çukurova that mechanized, used credit and produced American cotton varieties. In fact, two-thirds of the land was cultivated by farms with an area of 500 hectares.[44] Thanks to agricultural mechanization, they reduced the labor shortage to some extent.

At the beginning of the 20th century, Çukurova stood out in terms of cotton production, weaving industry and foreign trade.[45] In this period, four of the nine cotton textile factories in Türkiye were located in Adana and Tarsus.[46] The yarn production in these factories was determined by the import demands of foreign countries. In addition to the textile industry, Çukurova also had enterprises producing oil from cottonseed.[47] Between 1925 and 1929, the share of local cotton varieties in the total cultivated areas in Çukurova decreased to 78% and the rest was planted with the Iane cotton variety.[48] However, from the WW I onwards, pink bollworm began to threaten cotton production in Çukurova. In this context, it is very important to understand the emergence of pink bollworm on the stage of history and its spread on a global scale until it arrived in Çukurova.

The Global Journey of Pink Bollworm and Its Socio-Economic Consequences

Discovered in the cotton fields in India in 1842 and sent to the British Entomologist W. Saunders for examination, named as *Depressaria gossypiella* or pink bollworm by Saunders in his report to the London Pest Society on June 6, 1842.[49] It is estimated that the pink bollworm discovered in India is one of the native pests of Burma, the

44 Toprak, ibid, pp.70-73; Toksöz, ibid, pp.1 02-106.

45 Turgay-Bailleux, *ibid,* p.13.

46 Mehmet Ali Karaman,"1925 Adana Pamuk Kongresi ve Cumhuriyet'in Kuruluş Dönemi Pamuk Politikaları", *Tarihte Adana ve Çukurova IV*, eds. Yılmaz Kurt-M. Fatih Sansar, Akademisyen Kitapevi, Ankara 2016, p. 232.

47 Toprak, ibid, p.74.

48 After 1933, the Cleveland variety became widespread in Çukurova Region, see Yaktı, *ibid*, p. 31.

49 Steven E. Naranjo et. al., *A Bibliography of the Pink Bollworm, Pectinophora gossypiella (Saunders)*, Historic, Archive Documents, The United States Department of Agriculture, No. 136, 2002, p. 1; Toker, *ibid*, p. 5

Philippine Islands and Japan. It spread from India to the world thanks to its ability to live in cottonseeds for a long time. The global spread of the pest resulted from the cotton imports of the British weaving industry. Furthermore, the fiber and seed of cotton had an important share in international trade in the 19th century. [50]

It spread to the Hawaiian Islands in 1902, Rwanda, Tanzania, and Burundi (German East Africa) in 1903.[51] Similarly, pink bollworm arrived in Egypt via cottonseed import of the Filature Nationale of Alexandria from India between 1903 and 1910.[52] However, since cotton bollworms were not sufficiently controlled in Egypt, they had been increasing in time and had caused an average loss of two million British pounds per year. Furthermore, in 1905, the damage doubled and the loss of the Egyptian farmer reached 4 million British pounds.[53] Furthermore it reached Australia, and Mexico, Brazil, and spread across continents between 1911 and 1917. Thus, in 1917, pink bollworm was first seen in Hearne, Texas, a city on the US border with Mexico, when cottonseed was imported from Mexico for the American cotton oil industry.[54] Pink bollworm then spread to Louisiana in 1919 and to eastern Arizona in 1926.[55] The production and weaving industry had a critical role in the spread of pink bollworm in America. In 1918, when the world cotton production and cotton processing data among continents are analyzed, it is seen that 23,600,000 bales of cotton were produced. Of this production, 63.5% was produced in America, 22% in India, 4.5% in Egypt and 3% in Russia. Of this cotton, 54% was used for weaving in the United Kingdom and Europe, 25% in the USA and 16% in eastern countries such as India and Japan.[56] Due to the economic importance of cotton in textile industry in the 19th century, legal

50 Turgay-Bailleux, *ibid,* p. 4-5; O. T. Robertson et al., *Kill of Pink Bollworms the Cotton Gin and the Oil Mill*, Texas Agricultural Experiment Station, Texas 1959, p. 1.

51 Naranjo et. al., *ibid,* p. 1; Toker, *ibid*, p. 5.

52 L. H. Gough, "On the Effects produced by the Attacks of the Pink Bollworm on the Yield of Cotton Seed and Lint in Egypt", *Bulletin of Entomological Research*, Vol. IX/No. 04, 1919, p. 283; Kişmir, *ibid*, p. 4.

53 Vahid Fikri, *Nazari ve Ameli Pamukçuluk ve Mısır'da Pamuk Ziraatı*, Ticaret Vekâleti, İstanbul 1925, pp. 141-142.

54 TBMM Zabıt Ceridesi, Term 2, Vol. XII/ 34. Session, 8 January 1925, p. 59; Naranjo et. al., *ibid,* p. 1; *The Pink Bollworm: How We Fight It*, United States Department of Agriculture, Washington D.C 1953, p. 3

55 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 34. Session, 8 January 1925, p.59; Naranjo et. al., *ibid,* p. 1.

56 Turgay, *ibid*, p. 20.

regulations, a number of agricultural and scientific initiatives were made against pink bollworm. For example, spraying experiments were carried out in Albany in the State of Texas.[57] Cotton, which was an important foreign trade crop, had played an important role in the spread and control of pink bollworm on a global scale. In fact, it confirms the studies that indicate the possibility of the spread of pink bollworm in the USA over an area of 300 kilometers. This is why the US and Mexican governments had cooperated in the control of pink bollworm.[58]

A number of scientific measures and legal sanctions had been applied within the framework of legal regulations in the international arena. According to the entomologists who first identified pink bollworm, the most effective control was to clear the fields of old cotton stalks in the fall, followed by early planting and harvesting of cotton.[59] Another method was to irrigate the fields in winter. Thus, pink bollworm could be destroyed by drowning.[60] Agricultural Engineer Celal Iyriboz explained the control methods followed in Texas and Louisiana in the USA against pink bollworm as frequent spraying of ginning mills and seed storages by fumigation and vaporization, planting early cotton varieties and drying cottonseeds in the sun. In the USA, there were factories producing cotton oil, so the crop did not remain in the hands of the farmer for a long time, while in Türkiye, since there were no such factories, cottonseed was stored in warehouses for a long time to meet the feed needs of animals and for the next year's seed. This situation increased the possibility of the spread of pink bollworm.[61]

Pink bollworm, which lives in the cotton stalks, mixes with the soil at a temperature of 22 to 25 degree Celsius between May and July.[62] Thus, pink bollworm an important pest in cotton cultivation, has both pushed governments to take measures on a global scale and directed farmers' labor in the production process. In addition, cultural measures such as tillage, field cleaning, rotation and irrigation have often been recommended for controlling pink bollworm because of their low cost.[63]

57 *Amerika Ziraat Nezareti Teşkilat ve Vazifeleri*, Ziraat Vekâleti Birinci Köy ve Ziraat Kalkınma Kongresi Yayını, Ankara 1938, p. 79.

58 İyriboz, *ibid*, p. 30.

59 Gough, ibid, p. 315.

60 İyriboz, *ibid*, p. 34.

61 Mehlika Mete, *Cumhuriyet'in Ziraatçıları: İyriboz Kardeşler*, Ege Yayınları, İstanbul 2023, p. 87.

62 Kişmir, *ibid,* p.9.

63 *Türkiye'de Zirai Mücadelenin Dünü Bugünü ve Geleceği*, Tarım ve Köyişleri Bakanlığı Koruma ve Kontrol Genel Müdürlüğü, Ankara 2002, p. 5.

Another well-known control technique is the destruction of the cottonseed in the ginning factory by means of 55 degree Celsius cyanide or carbondisulphide hot air fumigation. Hot steaming is the most practical and cheapest method of control. Besides this method does not damage the germination capacity of the cottonseed.[64] In this context, the Department of Entomology had tested the operation of the machines that control the cottonseed in ginning factories in Egypt. However, since this control was done voluntarily by the ginners, the law on the control of pink bollworm was implemented with a delay from 1916.[65] This delay was disastrous for Egypt's cotton production. The law ordered the uprooting and burning of cotton seedlings after the cotton harvest under the supervision of agricultural officers. In the USA, the control was carried out both in the agricultural sector and in the industrial and commercial sectors. In agriculture, cotton cultivation was banned for three years in areas where the pink bollworm pest was found, provided that farmers were compensated. In industry and commerce, both the import of cottonseed from Mexico was banned and the cottonseed in the storehouses of oil factories were destroyed. Under the relevant law, the Egyptian government banned the import of cottonseed and cotton seedlings from abroad except for scientific research.[66] Both administrative and scientific measures were extremely important in the control against pink bollworm. Indeed, this pest was very different from phylloxera and locusts. So much so that, according to the discussions at the Cotton Congress held in Rio De Jenario, Brazil on October 10, 1922, pink bollworm had been effective in % 15 of the cotton cultivation areas in Egypt since 1910, according to the surveys conducted by the Egyptian Ministry of Agriculture. The annual cost of this devastation to the Egyptian farmer is 50 million British gold coins.[67]

Pink bollworm increased its influence in Çukurova from the end of the WW I. due to the importation of cottonseed from Egypt. Thus it caused a serious loss of yield.[68] Russian entomologist K. Demokidov was the first scientist to state in his work titled *Pink bollworm in Türkiye* published in 1929 supported the idea that pink bollworm spread after the WW I.[69] There was nine-fold decline in

64 İyriboz, *ibid*, pp. 28-30.

65 Gough, ibid, p. 315.

66 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 34. Session, 8 January 1925, pp. 59-60.

67 "Hasta Pamuklarımız" *Servet-i Fünun*, Vol. LVII/ No. 1486, 1924, pp. 235-237.

68 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/34. Session, 8 January 1925, p. 59.

69 Levent Ünlü, "Türkiye Pembekurt (*Pectionophora gossypiella* Saund.) Bibliografyası" *Harran Üniversitesi Ziraat Fakültesi Dergisi*, Vol. 14/No. 4, 2014, p. 40; Mehmet Karadaş, *Harran Ovasında*

cotton production from 120.000 bales in 1913 to averagely 15.000 bales in 1921. This decline was not only resulted from public order problems due to military mobilization, labor shortages, the closure of foreign markets, and disorganization in transportations[70] but also pink bollworm. Moreover, the sharp decrease of cotton production from 1924 to 1925 made clear the threat of pink bollworm. Pink bollworm caused severe damage to cotton grown in Çukurova in 1925. Although the pest was seen in the following years, it was not as effective as in 1925.[71] On the other hand, pink bollworm is ignored in literature. French agricultural experts, noting that the Turkish government had taken steps to develop cotton cultivation, even estimated that the Adana Plain could produce 100,000 tons of fiber if there was no war for ten years after the proclamation of the Republic.[72] However, pink bollworm in a sense negated these predictions. While cotton production in 1924 reached the production level of 1913, the pink bollworm caused both a 61% decrease in cotton production in Çukurova and the danger of the pest spreading to cotton production areas in Southeastern and Western Anatolia if measures were not taken.[73] When the cotton production statistics in Çukurova between 1913 and 1929 are analyzed, the table is as follows.

Table 1: The Cotton Production of Adana Basin (Çukurova)

Years	The Number of Cotton Balle
1913	120.000
1914	135.000
1915	15.000
1916	10.000

Pamukta Zararlı Pembekurtun Yaygınlık ve Feromon Tuzaklarıyla Populasyon Takibi, Harran Üniversitesi Fen Bilimleri Enstitüsü, Yayımlanmamış Yüksek Lisans Tezi Şanlıurfa 2015, p. 2

70 T.C. Başbakanlık İstatistik Umum Müdürlüğü, *İstatistik Yıllığı 1930*, (Republic of Türkiye Prime Ministry General Directorate of Statistics, Statistical Yearbook) İstiatistik Umum Müdürlüğü Ankara 1930, p. 182; Okan Ceylan, "Strateji, İşgal ve Tecrit Karşısında Millî Mücadele Döneminde Osmaniye ve Çevresindeki (Çukurova) Toplum ve Ekonomi (1918-1921)" *Osmaniye ve Çevresinin İşgalden Kurtuluşunun 100. Yılı Uluslararası Sempozyumu*, Osmaniye 5-7 January 2021 Bildiriler, Atatürk Araştırma Merkezi Yayınları, Ankara 2023, p. 259; Merriam, ibid, pp. 91-92.

71 Ali Müşavir, *Ziraat Heyeti Mütehassısasının, Şimdiye Kadar olan Faaliyetiyle Vazaifi (IV- 30.IX),* Dr. Oldenburg'un Raporu, 1928, p. 78.

72 "Turquie", *Association Cotonniere Coloniale*, Paris, (Octobre 1924), p. 101 ; "Cilicie", *Association Cotonniere Coloniale*, Paris, (Octobre 1924), p. 73.

73 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 34. Session, 8 January 1925, p. 59.

1917	10.000
1918	15.000
1919	20.000
1920	-
1921	15.000
1922	30.000
1923	80.000
1924	160.000
1925	63.188
1926	48.331
1927	61.662
1928	49.119
1929	95.139

Source: T.C. Başbakanlık İstatistik Umum Müdürlüğü, *İstatistik Yıllığı (1930),* İstatistik Umum Müdürlüğü, Ankara 1930, p. 182; *İstatistik Yıllığı (1939-1940),* Hüsnütabiat Basımevi, İstanbul 1955, p. 215.

Between 1913 and 1929, when the rate of change in cotton production in Çukurova is analyzed, a downward fluctuating decline is observed. Taking into account the data of 1913 as a reference, cotton production dropped by 87% in 1918, the year the WW I ended. Although this decline can be directly attributed to the reduced labor force due to the mobilization caused by the war and the war economy, the first signs of pink bollworm should also be added. The low level of cotton production continued during the French occupation of Çukurova between 1918 and 1921. This situation led to insufficient yields from agricultural areas, a decrease in cotton exports and a decline in the income level of producers. The National Struggle in Çukurova came to a conclusion with the Ankara Treaty of 1921 signed between Türkiye and France on October 20, 1921 as a result of Mustafa Kemal Pasha's success in both the Battle of Sakarya and the Ankara Government's foreign policy. Thus the French troops left the region.[74] In an environment of public order and security, cotton, which was 15,000 tons in 1921, doubled in 1922, increased by 81% in 1923, and reached 160,000 tons in 1924

74 *İkinci Adana Pamuk Kongresi Zabıtnamesi*, pp. 163-164; Süleyman Hatipoğlu, "Çukurova'da Fransız Ermeni İşbirliği (1918-1921)", *Belleten*, Vol. LXVI/No. 247, 2002, p. 965.

with an increase of approximately 11 times.[75] During this period, pink bollworm gradually spread in the region and as this was recognized, the first measures were taken at the scientific level. However, this sudden jump also resulted in a sudden decline a year later in 1925. Pink bollworm was responsible for this situation. On the one hand, pink bollworm caused serious economic losses in Çukurova, on the other hand, it was also instrumental in making cotton agriculture more scientific in nature through research and development studies. The table is shown up to 1929 to see the short-term results of the control of pink bollworm as well as the production losses. Due to its socio-economic importance pink bollworm entered the agenda of the parliament in the end of 1924.

The Agenda of the Grand National Assembly of Türkiye: Pink Bollworm in Cukurova

It is thought that pink bollworm was spread to Çukurova between 1914 and 1924 by both Fellahs (Arab farmers) and S.R. Gilado, the owner of the Nebati Oil and Cotton Factory, through the importation of cottonseed from Egypt.[76] As a result, in 1925, it caused a 40% yield reduction in the area from Mersin to Islâhiye District of Gaziantep.[77] The control of pink bollworm necessitated either labor-intensive agricultural activity or a change in cropping pattern such as replacing cotton with wheat.[78] Furthermore, as excessive rainfall caused great economic damage in the lowland villages, cotton producers were in great difficulty in hoeing and yield of the crop in the grip of a great lack of capital.[79] In particular, excessive rainfall has increased the damage of pests on cotton.[80] Thus the pink bollworm was also raising the alarm in Çukurova. In August 1924, an undersecretary Mr. Süreyya was assigned to take measures against the pink bollworm pest in the Çukurova and to examine the agricultural situation.[81] Süreyya Bey, together with the governor and mayor of Adana, Hilmi Uran and the mayor of Adana, Alimünif Yeğenağa, inspected 10,000 decares of land where the pink bollworm had emerged. They

75 T.C Başbakanlık İstatistik Umum Müdürlüğü, *İstatistik Yıllığı (1930)*, İstatistik Umum Müdürlüğü, Ankara 1930, p. 182.

76 Avşar, ibid, pp. 272-276.

77 İyriboz, *ibid*, p. 18.

78 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 34. Session, 8 January 1925, pp. 60-63.

79 "Bu Hafta Adana" *Altın Yurt*, 31 May 1923.

80 Kemal Sezen, *Pamuk Ziraatı*, İktisat Vekaleti, İstanbul, 1931, p. 7

81 Cumhurbaşkanlığı Devlet Arşivleri Başkanlığı Cumhuriyet Arşivi (BCA), 30.10.0.0.0/185.277.2; Karaman, ibid, p. 238.

reported that approximately 5,000 decares of land had been damaged by the pest. As part of the control against pink bollworm, he made an explanation in Adana based on cotton samples.[82] Thus, the necessity of scientific measures against the pest, which infected cotton in Çukurova and caused widespread damage, was first brought to the agenda of the Grand National Assembly of Türkiye on December 29, 1924 by Mustafa Rahmi Köken (Izmir Deputy), a member of the Committee of Agriculture, and this issue was also covered in the Adana Press of the period.[83]

The public control of pink bollworm was first discussed in the parliament on January 8, 1925. The discussions on the eradication and treatment of pink bollworm were not limited to political and agricultural debates, but also addressed economic and social aspects. Within the scope of the control, the Finance Committee proposed an allocation of 300,000 TL. It was decided that the control against this pest would be covered from the budget allocated to the Ministry of Agriculture for the Culling of Vicious Animals. In addition, since the control against the pink bollworm requires all farmers to act together, the Council of Justice has also expressed the opinion that those who do not comply with the law should be penalized with fines. In addition, this law envisaged both the control against the pest and the breeding of seeds. The law imposed a number of responsibilities on citizens, local authorities, law enforcement agencies and Ministry of Agriculture personnel.[84] In this context, experts were employed to work in laboratories to contol pink bollworm.[85]

In the process of implementing the law, it was deemed necessary for the governor or district governor to form a commission consisting of the Director of Agriculture, the President of the Chamber of Agriculture, some members of the municipalities and members of the Administrative Council after the presence of pink bollworm was detected by agricultural officers. If the pest spread to a wider region, it was decided that the male population between the ages of 18 and 50 would be put to compulsory labor. It was even decided that if the number of civil servants was not sufficient in the control, officers and soldiers from the nearest military corps would also be assigned. As for citizens, in the event that pink bollworm infected cotton,

82 BCA, 30.10.0.0/185.277.2

83 *TBMM Zabıt Ceridesi*, Term 2, Vol. XI/ 28. Session, 29 December 1924, p. 282; "Öğleden Sonra Meclis Müzakeratı", *Yeni Adana*, 31 December 1924.

84 İyriboz, *ibid*, p. 18.

85 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 34. Session, 8 January 1925, pp. 60-63.

both farmers and ginning factory owners were obliged to clean their cottonseed within the time period announced by local authorities, and the transportation of these cottonseed to areas where the disease was not present was prohibited. As part of the restrictions, imports of cotton bolls, cottonseed or cotton seedlings were banned, just as in Egypt. It was decided that controls at the borders would be carried out by customs officers and in rural areas by village councils of elders and country guards. It was decided that farmers and fabricators who violated the law would be fined from 100 liras to 500 liras. In addition, ginning factories that failed to comply with the law twice within a month were deemed appropriate to be closed down. In such a case, it was decided that the Ministry of Agriculture would examine the official objection of the factory owner. Village councils of elders, civil servants and law enforcement officers were subject to fines ranging from 50 liras to 100 liras if they failed to fulfill their duties. The responsibilities of landowners and monitoring whether the recommendations of experts were fulfilled were among the duties of the agricultural pest control commission.[86] Since the law covered a wide range of areas, from agricultural production to local administrations, from criminal proceedings to commercial activities, it was the responsibility of the Ministry of National Defense, the Ministry of Interior, the Ministry of Justice, the Ministry of Finance and the Ministry of Agriculture. The 10-article draft law was shared in the national press as well as in the local press of the time, and the seriousness of the situation was communicated to the public.[87] On March 21, 1926, the request for amendments to some articles of the law on the breeding of seeds within the scope of the control against diseases and pests infecting cotton agriculture, which was adopted by the parliament on January 12, 1925, first came to the agenda of the Council of Ministers.[88] The variety and uniformity of the cotton seed has an impact on the quality, length and shortness of the fiber.[89] On May 28, 1927, Articles 1, 6,7,8 and 9 of the relevant law were discussed and accepted, the penal provisions were reorganized and the Magistrate Courts were authorized. However, in the event of a disease or pest infecting the cotton crop, scientific measures continued to be strictly enforced from cotton field to trade of cotton and factory.[90]

86 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 34. Session, 8 January 1925, pp. 60-68.

87 "Kanun" *Amasya Gazetesi*, 25 February 1925.

88 BCA, 30.18.1.1/ 18.21.16.

89 *İkinci Adana Pamuk Kongresi Zabıtnamesi*, p. 162.

90 *TBMM Zabıt Ceridesi*, Term 2, Vol. XXXII/73. Session, 28 May 1927, p. 635.

According to Adana Deputy Mr. Zamir, 200,000 hectares of land were prepared for cotton cultivation in 1924 thanks to 200 tractors and machinery, a significant portion of which arrived in Çukurova. In fact, according to the estimates of American, British and French agricultural experts, Çukurova had the potential to produce two million bales of cotton. In contrast to these expectations, the pink bollworm pest caused a decline in production. By the same token, the pink bollworm reduced production from 16,000,000 bales to 12,700,000 bales in the USA. However, thanks to advanced agricultural mechanization in the USA, cotton fields were sprayed by airplane. Since pink bollworm had a negative impact on both farmers' earnings, and the Republic of Türkiye's foreign trade, the solution to the foreign exchange problem was delayed.[91]

The Law No. 541 on the Destruction of Pests Infecting Cotton Crop stipulates that cotton producers and ginning factory owners were obliged to take measures in the event that pest infects cotton grown within the Republic of Türkiye. In this context, it was obligatory to exterminate and treat the pest in cotton, cottonseed, bolls and agricultural fields within the period permitted by the local authorities as a result of the proposal of the agricultural departments and the determination of the control commissions. In the second article of the relevant law, when a pest or infectious disease was seen in cotton, the agricultural officers there were obliged to report the situation to the highest local administrative authority. In this case, the local administrative authority was also ordered to establish a control commission consisting of agricultural officers, agricultural chambers and members to be elected from the municipality. The third prohibits the trade of dew, cotton or cotton seedlings in areas where pink bollworm is observed. However, the fourth imports were allowed for both the breeding of varieties by the Ministry of Agriculture and the supply of cotton needed by the hospitals of the Ministry of Health. The fifth article of the law is about the public order and supervision of country guards, council of elders and customs officers. While the sixth article regulates the penalties for those who violate the law, the seventh article stipulates the administrative cash fines that these officers, who will ensure supervision, may face in case they violate their duties.[92] Adana Deputy Mr. Zamir intervened in the

91 In 1924, cotton production in Çukurova decreased from 120,000 bales to 90,000 bales. Thus, a production loss of 33 per cent was experienced.

92 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/34. Session, 8 January 1925, pp. 70-73; "Pamuklara Arız Olan Haşerat ve Emrazın İmha ve Tedavisi ve Tohumlarının Islahı Hakkında Kanun", *Resmi Ceride*, 25 January 1925.

debate on whether the penalties should be imposed by judicial or administrative authorities, emphasizing that the law should be strictly enforced and that an urgent solution should be found against the pest. It was also decided that the fines would be imposed by administrative units in line with the views of the commission.[93]

The Egyptian experience in the control against pink bollworm had been instructive for Türkiye. During the debates in the parliament of Türkiye, the experiences of Egypt and the USA were frequently emphasized. Speaking on the subject, Izmir Deputy Mr. Rahmi emphasized that, in the experience of Egyptians, the removal of the pest from the cottonseed constituted 90% of the treatment. Mr. Hasan Fehmi, the Minister of Agriculture at the time, even stated that 80% of the pest was found in the seed, 10% in the soil and 10% in the plant. Pink bollworm primarily settles in the cottonseed and feeds on the stalks, husks and fibers of cotton. At this point, ginning factories have a responsibility to install cleaning machines and to employ more workers. Otherwise, spraying and 30 cm deep ploughing in the field requires more intensive labor, more time and expenditure.[94] In the first place, due to uncleaned seed, both the Egyptian and the US governments lost time in the control against pink.[95] In the US, cotton seedlings were uprooted in areas where pink bollworm was found, and cotton cultivation in these areas was strictly controlled.[96] Similarly, in Egypt, which had been controlling with pink bollworm since 1906, cotton cultivation was banned for three years and a measure was taken to starve and kill the pink bollworm.[97]

It was decided that the equipment necessary for the control against pink bollworm would be supplied by the Ministry of Agriculture. However, Bolu Deputy Mr. Şükrü and Erzurum Deputy Mr. Raif emphasized how 300,000 Turkish Liras would be allocated from the budget and from which companies the machinery would be purchased, why this process was not discussed in the parliament and whether the deworming could be completed in time for cotton planting. Trabzon Deputy Mr. Muhtar stated that cotton brought in between 20 million and 30

93 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 35. Session, 12 January 1925, p. 104; *Resmi Ceride*, 25 January 1925.

94 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 34. Session, 8 January 1925, p. 72; Haydar İrtel, *Yeşilkurt ve Diğer Pamuk Yaprak Zararlıları*, Seyhan Ziraat Mücadele İstasyonu, Adana 1950, p. 9.

95 TBMM Zabıt Ceridesi, Term 2, Vol. XII/ 34. Session, 8 January 1925, p. 72; İrtel, *ibid,* p. 9.

96 İyriboz, *ibid*, p. 30.

97 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 34. Session, 8 January 1925, p. 72; İrtel, *ibid,* p. 9.

million Turkish Liras, taking into account both its industrial dimension and its foreign trade dimension. Therefore, he stated that the law should be passed urgently and the budget allocated for the law should be more than 300,000 TL. In response, Minister of Agriculture Mr. Hasan Fehmi said that cotton heating machines were produced only by a company in London and that orders were made in line with the decision taken by the Council of Ministers. He stated that the necessary budget was met from the Agricultural Support Fund allocated for the import of breeding bulls. He added that the Ministry of Agriculture could not wait in the face of such a serious pest and took immediate action.[98]

On December 18, 1924, with the proposal of the Ministry of Agriculture and the Decree of the Council of Ministers dated December 21, 1924, it was accepted to purchase three machines to be used in the control against pink bollworm from England for 1,500 British Pounds and to pay 2,000 British Pounds for transportation costs.[99] After the supply of the machines, the pesticides Cyclone B, which would be used in the control against pink bollworm, was began to be produced by the Germans during the WW I. It was decided by the Council of Ministers upon the proposal of the Ministry of Agriculture to purchase the pesticides from Mr. Kemal from Ohrid, who had a pesticides dealership in the Galata District of Istanbul, through the bargaining.[100] Moreover, since no one other than Mr. Kemal's pesticides dealership had Cyclone B and its machine, this dealer had a monopoly on the sale of Cyclone B.[101] The German pharmaceutical company sent experts to Adana to teach the use of the pesticides and the pesticides were stacked in storehouses in Istanbul, which was used as a transit center, before being brought to Çukurova. Since the use of the pesticides required the cotton collected to be stored and sprayed, some buildings in Adana, Tarsus and Mersin were rented as storehouses.[102] Due to the spraying technique, three sprays were made at one week intervals.[103] There were also some debates about the efficiency of the imported machines. Minister of Agriculture Hasan Fehmi Bey stated that the three machines in Adana removed 500,000 kilograms of cottonseed and 4,000

98 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 34. Session, 8 January 1925, pp. 78-80.

99 BCA, 30.18.1.1/12.63.9; Temel-Baş, ibid, p. 171.

100 BCA, 30.18.1.2/12.64.17; *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 34. Session, 8 January 1925, pp. 79-80.

101 BCA, 30.18.1.1/14.32.8

102 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 34. Session, 8 January 1925, pp.79-80

103 Kişmir, *ibid*, p.13.

kilograms of pesticides disinfected 4,000,000 kilograms of cottonseeds in a period of one month.[104] The relevant law was supported by 130 deputies, rejected by 16 deputies, and two deputies were abstained in the session held on January 12, 1925 with the participation of 148 deputies.[105] The law entered into force after being published in the Official Gazette on January 25, 1925.[106] However, although the control against pink bollworm necessitated some legal sanctions in one aspect, it was also the main basis of agricultural modernization in another. Due to the economic importance of cotton in the national income, a legal obligation was imposed on the ginning factories throughout the country to provide disinfectant machines, and the Agricultural Bank was engaged to meet the credit needs of the factories as they did not have sufficient capital. At this point, it was estimated that 50 or 60 disinfectant machines would cost 200,000 liras.[107] According to the statements made at the Second Adana Cotton Congress, the pests in Adana and its environs were of various origins. In response to the devastation caused by these pests imported to Çukurova through different routes, a law was enacted by the parliament to determine the methods of pest control. However, neither the factory owners nor the farm owners could provide the necessary equipment to control the pests. In addition to the pests, it was emphasized that frequent inspections should be carried out to prevent infectious diseases in cotton regions outside Çukurova.[108]

The Role of Pink Bollworm Control in Agricultural Modernization

Since cotton was regarded as a symbol of rural development, industrialization, railway construction, and an export product,[109] special attention was paid to its production and conducting scientific studies. First, after the WW I, Mr. Cevdet, the Director of Adana Agricultural School, was sent to Cairo, Egypt for research on pink bollworm. Similarly, in 1924, Agricultural Engineer Kemal Sezen, an expert in fiber crops, was sent to Cairo to research irrigated cotton cultivation,[110] while

104 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 34. Session, 8 January 1925, p. 81.

105 *TBMM Zabıt Ceridesi*, Term 2, Vol. XII/ 35. Session, 12 January 1925, p. 108.

106 *Resmi Ceride*, 25 January 1925.

107 BCA, 30.10.0.0/185.277.6

108 *İkinci Adana Pamuk Kongresi Zabıtnamesi*, pp. 108-109.

109 Ersin Gürdamar, "Atatürk Döneminde Yürütülen Pamuk Politikalarının Dokuma Sanayisi ve Kalkınmaya Olan Etkileri", *History Studies*, Vol. XIII/No. 3, 2021, p. 849; Tahsin Demiray, "Pamuk Sanayi ve Müthis Fabrikalar" *Resimli Mecmua*, Vol. II/ No. 31, 1926, p. 64.

110 Sezen, *Pamuk ve Diğer Mühim Lifli Nebatlar,* p. 1

Agricultural Engineer Dr. Marcus and İyriboz was sent to the USA.[111] Sezen, Marcus, and Mediterranean Region Agricultural Inspector Celal İyriboz played an important role in the establishment of Adana Seed Breeding Station under the Ministry of Agriculture in 1925. The station was established in Köprülü, four kilometers from the city. It was located on the same campus as the Adana Agricultural School. The station consists of a laboratory and a ginning unit. [112] Agricultural Engineers Mr. Clarck and G. Bailleux, specialists in fiber crops from the USA and Belgium, also worked in this institute.[113]

Secondly, Mersin Agricultural Control Laboratory Directorate was established by the Ministry of Agriculture in 1926 to solve entomological problems and conduct fauna research within the scope of pink bollworm control.[114] It is also known that the Agricultural Control Branch Directorate under the Ministry of Agriculture was established in 1924 and the first agricultural control training was started in 1928 at Halkalı Higher Agricultural School.[115] Thus Mersin Agricultural Control Laboratory is one of the first institutions. In the first years of the institution, studies were carried out on pink bollworm in cotton, rust in wheat, and sting bug. In 1931, the institution moved from Mersin to the Adana Agricultural School and continued its researches as the Seyhan Agricultural Control Station under the direction of Haydar İrtel, an expert who had studied entomology in Germany. With an area of 100 decares, the institution has 70 decares of citrus orchard, 3.5 decares of glass and plastic greenhouses, 38 production rooms, three cold storages and 10 laboratories. Thus, he pioneered the establishment of the Adana Agricultural Control Research Institute.[116] As a result of all these scientific studies, a new method was followed in cotton farming in terms of seed variety breeding and distribution new varieties to producers. In order to grow the cotton needed by the weaving industry, there were attempts to breed cotton varieties under the leadership of Dr. Marcus in 1925.[117]

111 Gürdamar, ibid, p. 849.

112 Yaktı, *ibid*, p. 26; Mete, *ibid*, p.- 82.

113 Gürdamar, *ibid*, p. 849.

114 *Adana Zirai Mücadele Araştırma Enstitüsü*, p. 1.

115 İ. Elmas et al., "Çukurova Bölgesinde Zirai Mücadele İlaç Kullanımının Genel Değerlendirilmesi", *II. Ulusal Zirai Mücadele İlaçları Sempozyumu Bildiriler*, 18-20 Kasım 1996, Tarım ve Köyişleri Bakanlığı, Ankara 1996, p. 65.

116 *Adana Zirai Mücadele Araştırma Enstitüsü*, pp. 1-5.

117 İlhan Tekeli-Selim İlkin, "Devletçilik Dönemi Tarım Politikaları", *Türkiye'de Tarımsal Yapılar*

In terms of agricultural technique, the expansion of mechanization and industrial initiatives between 1923 and 1929 were important.[118] However, under the conditions of the Great Depression of 1929, the increase in input costs such as oil and mechanization, the shortage of spare parts and repairs, and the decline in the prices of crops interrupted the mechanization of agriculture in Çukurova. Therefore, land was cultivated with draught animals.[119] In the mid-1920s, the first steps were taken to promote mechanized agriculture with Agricultural Bank loans to encourage cotton production in Türkiye.[120] As in Europe and the United States, agricultural mechanization was critical to increase the production capacity of peasants.[121] One of the efforts to develop cotton in Çukurova was the Second Adana Cotton Congress (the Adana National Cotton Congress) held on November 11, 1925. The organization of the cotton congress in Adana was widely covered in the press of that period months in advance. Accordingly, it was written that a commission would be organized under the chairmanship of the Adana Governor's Office (Governor Hilmi Uran) and that the congress would address many issues ranging from seed, labor, production, mechanization, pest, credit and industry to trade and development of cotton. For this reason, it was foreseen that cotton producers and agricultural engineers as well as cotton merchants would attend the congress, and it was stated that in line with the orders of the Ministry of Trade, discounted tariffs would be offered on railroads upon the submission of documents obtained from the Chambers of Commerce.[122] In fact, at the Congress with the participation of farmers, merchants and industrialists, it was emphasized that cotton could provide an important income for Türkiye's textile industry and the solution of foreign exchange problems. Due to the share of cotton in the national economy and its role in economic development during the foundation years of the Republic, Minister of Trade Ali Cenani considered cotton as a national cause.[123] Between September and December 1925, the Soviet Union made inspections in

(1923-2000), eds. Şevket Pamuk-Zafer Toprak, Yurt Yayınları, Ankara 1988, p. 51.

118 Yaktı, *ibid*, p. 25

119 Okan Ceylan, "1929 Dünya İktisadi Buhranı'ndan İkinci Dünya Savaşı'na Atatürk Döneminde Çukurova Ziraatı", *Çukurova Tarihi Araştırmaları I*, eds. Şenay Atam-Ahmet Caner Çatal, Kriter Yayınevi, İstanbul 2022, p. 329.

120 Gürdamar, ibid, p. 849.

121 A. Nazım, *İbid.,* p. 6.

122 "Pamuk Kongresi" *Amasya Gazetesi*, 15 July 1925.

123 *İkinci Adana Pamuk Kongresi Zabıtnamesi*, pp.102-117; Yurtseven-Özarslan, *ibid*, pp. 179-181; Karaman, ibid, pp. 230-231.

the cotton production areas where cotton could be imported from Türkiye for the cotton weaving industry in order to develop cotton cultivation as part of the control against pink bollworm.[124] Cotton is directly related to the economy of Adana and its surroundings. However, in early 1925, in order to increase the trade volume of Istanbul, the export of Adana cotton to Istanbul instead of Mersin Port was put on the agenda. Therefore, the loss of cash and time during transportation and technical difficulties in exporting Adana cotton to Istanbul were discussed in the Adana Press of the period. [125] Since the control against pink bollworm improved the cotton production technique in Çukurova in the second half of the 1920s fumigation was established by Mersin Agricultural Bank in 1933 to clean the cotton to be sent to the cotton factories in İzmir and Western Anatolia[126] for a period of six months to conduct research and get their opinions in the control against pink bollworm.[127]

Conclusion

Although pink bollworm may seem like an entomological and agricultural problem at first, it is also a very serious social, economic, and global issue when the share of cotton in agricultural modernization, rural development, and foreign trade are taken into account. In fact, after the Lausanne Peace Treaty signed on July 24, 1923, cotton production and exports were important both for the payment of its foreign debts of the Republic of Türkiye. Therefore, the measures taken against the pink bollworm which had been effective on a global scale since the second half of the 19th century, necessitated legal regulations, scientific activities, institutional innovations and agricultural modernization.

Cotton cultivation, settlement, taxation, infrastructural investments, production, and labor have significantly shaped the socio-economic history of Çukurova. Cotton that is an indispensable part of the history of Çukurova promoted agricultural modernization in this region. Thus it reveals the interdependence between the agricultural and biological properties of cotton and the desires of human being. It is also very interesting in terms of indicating the commonalities and close relationship between the social sciences and the natural sciences.

124 Yaktı, ibid, p. 25.

125 "Ankete Gayet Muhtasar ve Müskit Bir Cevap" *Yeni Adana,* 1 January 1925.

126 BCA, 30.18.1.2/40.73.18; Temel- Baş, ibid, p. 171.

127 BCA, 30.18.1.2/76.57.14; Temel- Baş, ibid, p. 171.

Historically, the international scientific cooperation in the control against pink bollworm in the interwar period, when the world was closed inward, is also very interesting. As a matter of fact, the legal and scientific measures taken in the USA and Egypt served as a guide for the Republic of Türkiye. Pink bollworm guided the establishment and scientific studies of two agricultural research institutes such as Mersin Agricultural Control Laboratory Directorate and Adana Seed Breeding Station in the mid-1920s.

The most important limitation of this study is that it fails to reveal the everyday life experiences of peasants. The legal, agricultural and scientific measures taken in the control against pink bollworm are mainly explained, but the economic losses of cotton producers, merchants and weaving mill owners are not sufficiently analyzed. However, this study offers a multidisciplinary perspective. In the 1920s, different ministries acted jointly at the institutional level in the control against pink bollworm. In conclusion, pink bollworm was highly influential in the modernization of the production of cotton in Çukurova in the early 20th century, but has not been sufficiently emphasized until today. In this respect, this study contributes to the cotton history of Çukurova from entomological, agricultural, economic and sociological perspectives.

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APPENDICES

Map 1: Çukurova



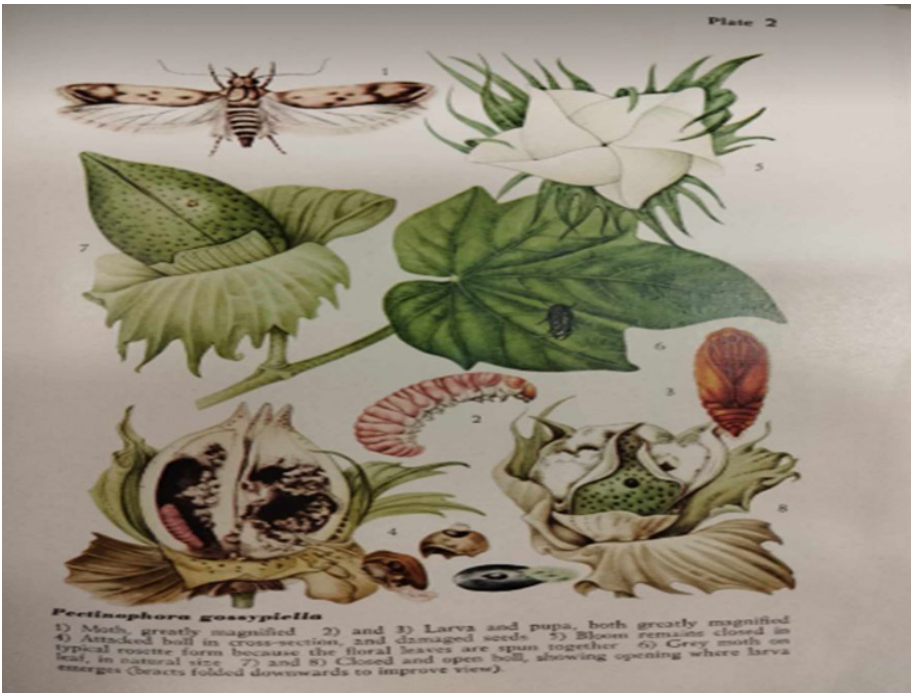
Source: "Adana" Institut Français d'études Anatoliennes, KDD7FC7C95

Photo 1: Adana Agricultural Pest Control Research Institute


Enstitümüzün Seyhan Zirai Mücadele İstasyonu Adı ile Kurulduğu İlk Hizmet Binası

Source: *Adana Zirai Mücadele Araştırma Enstitüsü*, Tarım ve Köy İşleri Bakanlığı Adana Zirai Mücadele Araştırma Enstitüsü Adana 1998, p. 2.

Photo 2: The Phases of Pink Bollworm



Source: O. T Robertson, et al., *Kill of Pink Bollworms the Cotton Gin and the Oil Mill*, Texas Agricultural Experiment Station, Texas, 1959.