International Journal of Psychosocial Rehabilitation
ISSN:1475-7192

AGRICULTURE OF THE TRANS-CASPIAN REGION OF THE GENERAL-GUBERNATORIES OF TURKESTAN IN THE GERMAN RESEARCH (THE END OF THE 19TH CENTURY - THE BEGINNING OF THE XX CENTURY)

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Abstract-The cultural, economic, and political ties between the peoples of Central Asia and Western Europe have a long history. The interest of European explorers to Central Asia continued from the Middle Ages to the modern times. As a result, valuable scientific materials on the geography, history, ethnography of our country are collected. In addition to the English and French in the area, there were many Germanic people. German researchers traveled to the Turkestan region in the late 19th and early 20th centuries on the orders of the German Empire and the Russian Empire. Among them are naturalists, military topographers, officers, engineers, and orientalists and ethnographers. The commonality of these researchers is that they all received higher education and studied in Berlin, Würzburg, Göttingen, Jena, Magdeburg, Dresden and others. Almost all of the researchers left notes and memories of their travels. Among the researchers interested in Turkistan were representatives from various fields. The following is a summary of German developments based on the case study of the Turkestan governor-general in the Caspian region.

As a result of the military invasion of the 1960s and 1960s, these territories were included in the system of legal, political and socio-economic relations that had been enforced by force. These relationships have undermined traditional relations in the region and their development opportunities on a national basis. There have been cases of land seizures belonging to indigenous people in providing land for specially evacuated by the Tsarist government, as well as arbitrary arrivals to Turkestan.

After the conquest of Krasnovodsk and Mangyshlak by Tsarist Russia, the Caspian division was established (1874), which was then transferred to the Caucasus deputy. With the occupation of the Akhaltekin oasis in 1882 the department was given the status of a province. Later (1890-1897) the Caspian region was transferred directly to the Russian Ministry of Defense. The city of Ashgabat is the administrative center of the region. Administratively, the Caspian region is divided into the provinces of Ashgabat, Krasnovodsk, Mangyshlak, Merv and Tejen. The Turkestan governorship served as a huge raw material base in the economic life of the Russian Empire.

The sale of cotton from Turkestan to Russia began in the 16th-17th centuries. In the second half of the eighteenth century, Asian cotton fiber was suppressed by Western European goods. Central Asian cotton, compressed by British cotton, has been of great importance to the Russian industry since the 50s of the 19th century.

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International Journal of Psychosocial Rehabilitation
ISSN:1475-7192

In Turkestan, cotton processing was practically occupied by women at home. Various fabrics, winter clothes, bedding and paper were made from cotton. German researcher A. Opel speaks about the history of cotton:

Keywords: History, Research, socio-economic, Caspian division, goods, cotton.

I.INTRODUCTION.

Turkestan women, like the Indians, have been working in the cotton industry from ancient times, but their market has collapsed over time with the importation of high-quality and cheap cotton goods from Russia. German researcher Bruno Bidermann in his dissertation "Russian Cotton Industry Supplies" presents interesting facts about farming in Turkestan. He noted that cotton was spread from India to Iran via Iran, and wrote:

"*Cotton existed in Central Asia during the time of Alexander the Great. In the thirteenth century Marco Polo wrote about cotton growing in Kashghar. Turkestan peasants were planting cotton for their own needs, among other crops, in the garden. They cleaned the cotton with the help of a "rod". The surplus was sold to northern regions where cotton was not planted.*"[2]

Central Asia became more important when Europe suffered from a deficit of cotton due to the Crimean War (1853-1856) and the American Civil War (1861-1865). Bidermann writes about this:

"*Due to the American Civil War, cotton was not supplied to Europe. Due to the high demand of the Russian industry for cotton, in the Nizhny Novgorod market in 1861 the price of cotton was 4-5 rubles, and in 1864 it was increased to 23-24 rubles. Of course, this will increase the demand for cotton in Central Asia. In the 1840-1850s, Russia supplied about 200,000 pounds of cotton a year from America to America, while in 1864 700,000 pounds of cotton was supplied from Khiva, Bukhara, and the Kokand khanate.*".[3]

However, sources show that this growth is not constant. In the early 1970s, when 300,000 poods of cotton were delivered to Russia, by 1883 this figure would fall to 20,000 pounds. The German researcher explains the main reason for this decline:

"*In the late 1970s, the world market for raw cotton fell sharply. In addition, food prices have risen in new lands, making other products more profitable than cotton.*"[4].

The formation of commodity cotton production did not happen at once, but was caused by the development of monetary circulation and the growing demand for money by the farmers. Moreover, as with any novelty, the cotton-growing industry had to overcome a number of difficulties inherent in the Turkmen society. In particular, there were features such as the dominance of patriarchal-feudal relations, the intensity of clan traditions and customs, and the dominance of community-based forms of land and water use. Due to the extremely limited water resources and consequently the scarcity of irrigated land, the constant shortage of food and many other factors have hampered the cotton industry in the Turkmen auls. It is well known that the use of land as a collective farm has stifled the economic activity of the peasants. Due to the systematic redistribution of collective land, poorly cultivated, almost completely fertilized, poorly watered, and therefore not fully meet the requirements for planting cotton, as a result of the government and private commercial firms' efforts to persuade the public to engage in cotton production did not give results. German researcher Walter Busse also provides interesting information on land-water relations and sanitation systems:

"Turkmen has private land and collective land, and private land is called property and collective land is sanitary. Unlike private land, farmland is redistributed every autumn. Private land is not sold, it is only possible to

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[3]*BiedermannB. Die Versorgung der russischen BaumwollindustriemitBaumwolleeigenerProduktion. Heidelberg. 1907. S.31*

[4] *BiedermannB. Die Versorgung der russischen BaumwollindustriemitBaumwolleeigenerProduktion.Heidelberg.1907. S.32.*

rent it. Apart from the property, cotton has also been cultivated on sanitary land. However, it has mainly wheat, barley and sesame seeds.

Not only did the species change, but the area under cultivation was expanded. In the year 1886, 30,800 deciles were planted in the Merv oasis and 48,700 in 1906. Of these, cotton was planted in 20,000 villages in 1906. In 1913, the total area of the cotton field in the Caspian region was 43,000 deciles. Merv was the leader in agricultural production, followed by Tedjen and Ashgabat. Merv is producing 600,000-800,000 poods a year, Tejen-200,000 poods and Ashgabat-60,000 poods.

Murghab's state credentials will be established in 1887. Irrigation systems had to be improved to develop farming in the Caspian farms. The Sultanband, completed in 1890, was demolished by a powerful watercourse. Three years later, 20 km. Down the stream, a Hindu section will be built. The Iolotan oasis is irrigated through Kazygliband. Of this, about a quarter were occupied by irrigated plants. In 1994, German researcher Auxagen underwent some changes in economic relations. In the same year a very competent agronomist was appointed to the administration of the faith. The German researcher writes:

"*18 years after its founding, the state's authority became a true agronomist. Of these, 10,000 deciatine is for grain and 5,000 for des. cotton, plus 500 des. alfalfa and the same amount were allocated for horticulture and other home gardens. 500 des. on the given land from 100 deciatin each for cotton and winter wheat, 300 des. Distributed alfalfa for sowing*"[5].

In Murghab imenies, only early varieties of cotton were grown. These cotton varieties are from Fergana. American varieties of cotton were not planted for a long time because of acclimatization caused many difficulties. The old lands were sown with German plows, and the new lands were often planted with plows. The land is cultivated twice with the plow before planting in late fall or winter. It depends on the water. In November, the land was plowed. Otherwise it could be extended until February. V. Busse gives the following information:

"Before the plug, the land was irrigated. Made after the plug. Sown in April. One des. they used 4 pood seeds on the ground. 65 cm between rows, 40 cm between plants. is transplanted. 2-3 times. The relatively narrow rows and denser vegetation provide more shade and more water savings. The crops were irrigated to some extent after their development. The water was not drained through the ditches, but the fields were fully watered. Before 1909, the fields drank only 3 times: 1) 2 months after seeding; 2) 15-20 days later, 3) 20 days later. Future 4 times: it is planned to carry out irrigation works every 15 days. Studyonov has conducted an interesting study on cotton irrigation. The mistake of those who are now engaged in cotton growing is that they will do the opposite in order to increase yields by providing more water to growers. 60-70% of wetness is sufficient for sandy growers ".

The researcher observes that cotton growers report that from September to November, 50 to 60 pounds of cotton were harvested from each desiatine. This number is sometimes said to be 120 or even 150 poods. The new land yielded three consecutive years. After a year's rest, the grain was sown in it for three consecutive years. The fields are relaxed because of the abundance of new land. The author compares agriculture in the Caspian region and other provinces of Turkestan with the state of extensive farming in the German cotton fields of the Germans. In the Turkestan region, in particular in the Caspian region, crops were cultivated on a three-year plan: 1st year - winter wheat, 2nd year cotton, and 3 - year rest. Occasionally irrigated land causes melting of soil components. But there was not enough water. Manure was not dumped in the cotton fields because it did not have enough quantity. A German scientist trying to give a detailed account of Caspian farming describes the situation in Ashgabat as follows:

"The Turkmen used their plows to plow the land, and the Russians to German plows. The second most important crop in the suburbs of Ashgabat is alfalfa. The Turkmen mainly grazed their horses on alfalfa. For several consecutive years, the alfalfa was sown 4-5 times a year. Curculonide Phytonomus murinus, a disease that first infects the quail. Bedfoya is fertilized with manure for 4 years. The salt was not the first alfalfa but the wheat was

[5]*BusseW.Bewaesserungswirtschaft in Turan und Ihre Anwendung in der Landeskultur.Jena.1915.S.308*

sown on salty soil. The grain produced in the region did not meet the needs of the population, so grain was brought from the Ahal-Tekin oasis and from Iran. The 300,000 poods of barley produce account for about 1/3 of the grain grown and are mostly bought by the Cossacks. Grain cultivation here is based on artificial irrigation, with the cultivation of high-quality farming in mountainous areas. ”

Cereals and barley are sown as summer crops. For example, wheat yields from 45 to 50 poods per deciatine (80-100 for better land), barley yield was 180 and 200 poodles in fertile years. Barley is less sensitive than salt to wheat. Barley fields are watered twice more.

Both were not much different, except in barley fields that were harvested in mid-May, wheat in early June. The fields were irrigated once in autumn, and 2-3 times in spring. When the autumn was dry, in December the fields were again watered. Barley is fed as horses, and the rest is sent to Russia. If corn and rice are not planted, millet is planted on the borders of fields and ditches. To protect the crop from sparrows, the Turkmen have surrounded each bush with paper. In the Caspian region, the alfalfa has been planted for up to 7 years in a row. It is believed that melons require more soil cultivation. Caspian horticulture has also been developed since ancient times. Grape and plum, apricot and peach gardens are well received. German authors write about horticulture in the Caspian:

“Peaches are very sick. The late varieties of pear are well preserved. Apples cannot handle dry desert winds and are not well preserved. Pomegranates should be buried in the winter. In addition, the state imports cherries, spicy cherries, pistachios, almonds and peanuts.

The fruits were dried according to California method. Dried fruits are 200 g per 240 liters of water. of boiling water with glycerin for one second. Then they shine. One poodle of peanuts was sold for 8-14 rubles, one pear for 4-6 rubles. Apricot and peach should be watered once a month. They were watered until September. Vineyards are watered 3 times: 1) after burial 2) flowering 3) in August. In November the currents were buried. ”

It claims to be able to provide land with 640,000 deciatines (equivalent to one hectare) without damaging the local population. Locals say that with more water than irrigated land, it is possible to re-irrigate another 150,000 hectares of land. The proposal of the famous engineer Poklyovsky is well-pleasing to Alexander III, and a large area where the irrigation system can be restored and reclaimed is considered the property of the reigning king. As a result, the state symbols of the Holiday (Murghab State Empire) will be created. In the early stages many attempts by the Russians were in vain. Engineer Poklyowski was tasked with restoring the Sultanband. Engineer Andreev will be the head of the construction of the Hindu village. The use of sewage water has been shared between the state and local communities. Imeniega received more water during the winter months and less water during the summer months. Several points have been built on the Murghab River for the development of public confidence (Sultanband, Iolotan, Hindukush). But their benefits were not significant. Engineers such as Studyonov and Barts worked in the state imine. Cotton, winter wheat, cereals, alfalfa, fruits and vegetables are grown in festive imenies. In 1904, the conversion costs amounted to 5,500,000 rubles, and by 1910 the figure was 127,80,000 rubles (28 million German stamps).[6].

German researcher Max Albrecht describes in detail in his book "Murphy's State Images" in his book "Traveling Central Asia - Caspian, Bukhara and Turkestan."

Due to the scarcity of the Murghab water, it is planned to improve the water supply to the Caspian by turning part of the Amu Darya water into the Caspian Sea. The end of the XIX - the beginning of the XX centuries has been a series of fruitless years in the Caspian region. In 1897, a small cotton mill was built at Baxarden and Tejen at the expense of the state treasury. However, the residents do not hand over cotton there because they did not expect to send money from Moscow and Lodzi for cotton fiber sent to them, they sold cotton products to cashiers.

[6] *AlbrechtM.Russisch Centralasien.Reisebilder Transkaspien,Buchara und Turkestan.Hamburg,1896,S.143*

In 1912, 12,000 deciles were planted, and in 1913 about 14,000 deciles. At the festive cotton mill, the raw cotton is done in the American way, with all the latest technology. There were 6 other Armenian small businesses operating in Merv. In addition, Bayramali also has butter.

From October to May, weeding and lubrication work continued, and oil refining continued throughout the year. Low-quality oil soap is made and sold. Pressed cotton seeds were re-milled and sent to Hamburg. In addition to the state implements, there are also exemplary fields on the lands of local people, including European techniques, sowing, and so on. was used.

In addition to the Murghab state imports, it is 4 km from Ashgabat. Not far away was Keshi, a "field of experience" founded in 1899. The annual budget for this experimental field, in addition to costs, is between 4800 and 5,000 rubles. There is also a gardening school in the experimental field. Six teachers taught 42 students (32 Russian and 10 Turkmen) to grow fruits and vegetables, floriculture and silkworm breeding. Bashmakov has been the head of the school since 1903. About 300 sheep are grazed here. Sometimes breeds were brought from Bukhara. Cache, alfalfa and corn were the main ones.

Crop growers watered 40-55 days after seeding. A good result was the receipt of 60 pounds of cotton raw materials for desiatin. In the cache fields, the following crops were planted: 1 year - wheat, 2 years - cotton, 3 years - corn or sunflower, 4 years - cotton, 5 years - beans. These were followed by chronic lucerne planting for 5-6 years. Poles were also planted with melons, but their costs were not high enough.

Cotton of American varieties is planted on the experimental grounds of public lands. For example, in the 1970s, American sorts of cotton were planted around Tashkent as experimental. Regions in the north produced less income than the south because Tashkent yields were lower than Fergana and Samarkand. As an evidence of our opinion, we refer to B.Biner's information on the history of the American varieties:

“The Russians chose the American variety Sea Island (Gossypium barbardense) for planting in Turkestan. This variety gave the best, longest, most beautiful fiber, but it also required a gentle maritime climate. This variety is grown mainly on the shores of South Carolina and Florida. Attempts to grow this variety in Turkestan have been completely eroded. Understanding the importance of cotton growing in newly occupied territories, Governor-General Kaufmann sent a group of specialists to study in the United States in 1874.

This Upland (Gossypium hirsutum) variety is one of the most widely traded varieties in America. This type of cotton was cultivated till 1883 with good results. In 1883 General Chernyaev stopped planting this type of cotton in the experimental fields and began distributing seeds from America directly to local growers. From the well-harvested cotton in the experimental fields, local growers were not familiar with the peculiarities of the American variety because they did not get a good harvest. Biner writes about it:

“After this failure, local growers stopped planting American varieties, and American varieties were more labor-intensive than native ones. After Chernyayev, Governor-General Rosenbach has taken over the introduction of the American variety. A large number of American cotton seeds were purchased and distributed to local growers along with instructions in their own language. One of the main reasons for the introduction of this variety to growers is the presence of a number of large firms that are willing to buy American grade cotton at higher prices than domestic varieties. This is what has prompted many growers to grow their American varieties again. In the 1980s, local cotton seeds began to be snapped up at high speed with the American Upland variety. ”

Below is the area of the American varieties grown fields over the years[7]:

years	**Arable land (desiatina)**
1884	800
1885	1000

[7] *Ўша жойда*

1886	12000
1887	14000
1888	37000
1889	44500
1890	58859

The most widespread area of the new variety was the Fergana region. By the end of the 1980s, this sort had already occupied half of the cultivators. In conclusion, due to the large industrial development and increasing interest in raw materials in Central Russia, Russian traders, along with other provinces of Turkestan governorship, will introduce American cotton, the most profitable product in the early 1990s. American cotton is 12-13 times more than domestic variety.

years	Local cotton varieties (desiatina)	American variety (desiatina)	Percentage of American variety in total yield (%)
1889	22.490	27.906	56
1890	18.649	33.492	64
1895	14.749	89.438	94
1900	12.617	178.763	93
1905	13.900	152.700	92
1906	12.700	162.000	93

Statistical data on cotton growing in Fergana region. As shown in the table, the area under cultivation of local varieties decreased and the American variety increased year by year. The German researcher also wrote:

“Turkestan cotton production has grown largely due to the introduction of American varieties. Currently, the American variety is introduced in the ¾ part of the Turkestan cotton plantation. also began to be sown. In Bukhara and Khiva, cotton was sown mainly by local varieties. The lack of manpower was the main reason why the old variety was not extinct. ”

Compared to the Caspian, Ferghana has a landless population, which is why 90% of American varieties are grown here. The American cotton harvesting system requires a great deal of labor. In Bukhara, where there is no labor force, the old tax system is hampering the expansion of American cotton fields. In Bukhara, the crop is still taxed in the field by the tax officials, who have not yet harvested it. Cotton growers have to wait for the tax to be harvested. After that time, most of the cotton is decayed, as American cotton has to be harvested immediately. Biner says about this:

“By changing the tax system, Bukhara's current income (6-7 million rubles) can be increased by at least three times. Compared to American cotton, American varieties in Central Asia are not far behind in quality, and sometimes even surpass. Cotton in Central Asia is harder than American cotton, but stronger in comparison. Russian factories prefer Turkestan cotton to American cotton. It is used in the manufacture of durable fabrics. That is why there is no difference between the quality of Turkestan's cotton and the quality of cotton imported from the United States. "

Various American varieties include Caucasian (14.50-14.60 rubles), 1st grade Bukhara (10.00-10.75rubl), Iran (8.50-12.00 rubles), 2 varieties (2.50-3.00rubl) and 3rd grade (3.50-4.50rubl).) were cotton. Attempts were made by other countries to introduce varieties of cotton on the state experimental grounds and on the land of large businesses. A German researcher says this:

“For example, there were introduced Peruvian and Mexican cotton varieties in Turkestan, but they were not significant. But the use of Egyptian cotton in the Caspian fields is a remarkable event.

This costly cotton has not been cultivated in other regions as the vegetation period of the plant hindered the maturation of Egyptian cotton. The first grade of American varieties of cotton grown in Central Asia was given 15 rubles at the Moscow cotton exchanges and 16 rubles for imported American cotton.

International Journal of Psychosocial Rehabilitation
ISSN:1475-7192

year	Sowing area (desiatina)	Cotton Harvest (Pudda)
1887	61 000	973 000
1890	90 000	1.570 000
1895	250 000	4.650 000
1900	382000	7.638 000
1906	216000	8.350 000

Cotton harvest is in years

Regions	1900	1900	1906	1906
	The cultivated area	The yield is 1000pud	The cultivated area	The yield is 1000pud
Fergana	189 000	3.850	174.700	4.500
Syrdarya river	43 000	775	27.200	900
Samarkand	22 000	385	15 000	350
The Caspian	12 000	440	-	600
Khiva	51 000	890	-	2000
Bukhara	65 000	1.300	-	2000

This table shows the achievements of the Turkestan provinces in the cotton industry in 1900 and 1906.

In the growing cotton field, the Fergana region is followed by Bukhara and Khiva khanates, Syrdarya, Samarkand and Caspian regions. As mentioned earlier, not very good results. In the late 1980s, a major commercial and industrial group - Konishin, Minder, Boboshko, Kudrin and others - tried to create private cotton plantations in Merv County.

In the district of Ashgabat and Tejen counties, the court system was established in 1893, with many thousands of poor and poor peasants enjoying the system. Minder, Conshin and Peyros's trading firms are launching a wide range of cash and gratuitous seeds for the farmer at a reasonable price for the future crop. More than 3,000 American cotton poods are being distributed.

“The major cotton firms have their headquarters in major cotton producing centers. They are not able to communicate directly with growers. Therefore, the so-called commissioners are responsible for dealing directly with farmers and delivering advances made by large firms to them. Advance systems are attracted by many local traders. Exporters are forced to use such traders in the context of Central Asia's cotton trade. Prepayments are made exclusively for American cotton. Intermediaries pay very high interest to farmers, although they receive interest-free or very low interest rates from firms. 20-40% demanded for 3-4 months. Farmers have signed contracts with their entire village or community. When submitting the cotton to go with less damage to the contract, various heavy objects were put in place, and the weight of the contract was greater than the quality of the product. "

1892-1893 was a turning point in growing cotton growing throughout the Caspian region. By 1897, there were markets in the Caspian region such as Ashgabat, Baxarden, Tejen, Dusak, Kaakhka, Merv, Atamish, Tokhtamish, Iolotan and later Kok-Tepa. Of these, the Merv market was the leader. Favorable natural conditions in Merv County and limited water resources in other farming regions of the province will eventually make Merv County a leading cotton producer. This is stated in German sources:

“The richest farms have not contracted themselves and have their products exported to the market. There are about 30 such markets in the country. The most important of them are Kokand and Margilan in Fergana region, Tashkent in Syrdarya, Samarkand and Kattakurgan in Samarkand, Merv in Caspian Sea. Trading in these markets will begin in late September and reach its peak in October, and will last until the end of January.

”[8]

In 1893, the area under cotton in the Merv county was almost three times larger than in 1892. 3084 decay plantations are being planted in Stopamish and Atamish districts, and 1,018 in Iolatan district. Of the 173,172 poods of cotton harvested throughout the province that year, more than 140,000 account for Merv County. In 1892, the first cotton mill in the city, which began to grow at a rapid pace, was set up in María. By the end of 1989, 5 cotton plants operated in the region, including 3 in Marida and 2 in Ashgabat. During the years, almost all of the cotton was grown in the Merv County and was exported to Central Russia only, but in 1893 it accounted for only 80.2% of the cotton produced in the entire province. Over the next few years this figure has again declined, and in 1895 it has been 59.1%. The branches of the State Bank in Tashkent, Kokand, Bukhara, Samarkand, Ashgabat provide loans:

8-10 million in total The rubles were allocated by banks for 16,000 rubles per farmer. But only large firms have benefited from these funds. It is very difficult for farmers to go to a bank that lends money in central cities and to complete the necessary paperwork. The credit bureaus provided 500,000 rubles while the firms provided 5,000,000 rubles.

In Ashgabat, poorer farmers, most of whom are underrepresented in the cotton fields, have lost their former grain-producing industry. In order to alleviate the land and water problems of Ashgabat aul farmers, the provincial administration will allow some residents to move to the "empty" areas of the Lower Tejen. In 1895 the number of settlers from Akhal to Tejen County was 5,197 yards, or 2,250. Often temporary, these measures did not alleviate the plight of the peasants. In the Tejen oasis, mainly rain-fed and melon crops were planted. With the arrival of commodity-money relations to the land, cotton began to be cultivated in the 1990s. Cotton was mainly planted on public land, as there were favorable irrigation opportunities on public plots. During the summer, when the river level was very low, cotton was dependent on water lifting equipment, especially when it needed a lot of water, such as mechanical pumps and outlets.

“The construction and maintenance of the canal system along with agriculture is one of the main activities of the population, as agriculture is based on artificial irrigation. The fact that the Turkestan irrigation system with great skill, without the use of any technical equipment and tools, will impress even the most experienced specialists of our time, ”B. Bidermann wrote.

It was very difficult for the local population to pump water upstream from rivers and canals. The amount of water produced by the wheel was also small. In the Tedjen river in the Caspian region, several entrepreneurs set up pump pumps for pumping:

“They have irrigated several hundred cotton fields. Due to the success of this work, the fields were expanded this year. Other entrepreneurs sought to rent land from the Caspian administration to plant cotton from the pumping area. The first in Central Asia was the introduction of motor irrigation of fields in the Caspian region, and this method was spread to other regions ”.

The Caspian region is irrigated by the Murghob and Tedjen rivers. The Zarafshan River has provided water to 400,000 deserts with 43 canals with a total length of 1,000 vertices (1 verst = 1,06868 km). also brought. German researcher V. Busse writes:

"The Germans have studied the system of watermelons in Ashgabat, planning to organize irrigation for the corridors in their colonies in South West Africa."

In 1896, L.Timbalenko wrote a book entitled "Die Kaerise des Transkaspischen Gebiets" - "The Cizis of the Caspian Region", devoted to the Caspian Pens. According to another German researcher Schweinitz, cormorants are not a very common method of irrigation. Touching on the Caspian irrigation system, he writes:

[8]*Biedermann B. Die Versorgung der russischen Baumwollindustrie mit Baumwolle eigener Produktion. Heidelberg, 1907, S.74;Бироқ пахтакор-деҳқонлар ўз пахталарини бозорга олиб келиб сотаман дегунча судхўр фирмалар вакиллари жойлардан нақд пулга пахтани сотиб олишга улгурган.*

“There are two types of irrigation systems in the Caspian Sea. One is an underground drainage system and the other is a land irrigation system through rivers and canals. The first one is more expensive and is used in areas where there is no wastewater, as in the Kopeddag slopes. The oases of Merv, Iolotan, Pende are irrigated by Murghab waters. Merv oasis is about 30 km from the city of Merv. It supplies water through Koushutkhanbandi to the south-east. Each channel is owned by the Turkmen tribes. For example, one canal will look at 13 aouls in the past, and another 25 in the village.

Schweinstei stresses that the Caspian system is very complex. He says that water was distributed by special people - mirages - to reach every Turkmen family. In the past, only the poor have decided to settle down, because fieldwork and farming have been ridiculed by the Turkmen. The German researcher describes the process of settling the settler population in the Caspian Sea as follows:

“Formerly wealthy families used slaves or tenant farmers in the fields, and they continued to live nomadic lives. Now things have changed, and in the villages we have seen, there are rich freedmen who grow cotton on their land. Merv's ancient irrigation system feeds millions of people in the oasis. ”

The local population was insufficient to buy agricultural machinery. This situation creates complex rental relationships in Tejen County. Most peasants sought to abandon their collective lands and rent land from public or private plantation. They rented small plots of land to grow wheat, melons, or cotton. The rapid development of cotton growing in Tejen County began in the mid-1990s. But Tejen, because of that water deficit, remained largely a grain crop. Tejenja was also small in size. Not only in the Caspian, but also in all Turkestan, there were fewer than 100 deciduous fields in the Tashkent region of the Syrdarya region. There were about 5000 deciduous growers of the state Murghab state empire. But they are also split into small fields and rented to local farmers or Russian populations.90% of the cotton is produced by small farms. Bidermann writes about the government's efforts to grow cotton:

“Local committees in Turkestan propose to send local landowners to study in the most agricultural areas of Europe in Russia at the expense of the state. The main result can be achieved by expanding the technical depot nationwide. There, farmers could not only buy cheap machinery, but also borrow money. Motor vehicles have not been used in Turkestan yet ”

The soil of Turkestan is very fertile and it is called "lily". Soils contain 10 to 15% of calcium, as well as phosphorus, potassium salts and iron. Turkestan soil completely and very quickly decomposes any organic residue. For this reason, the soil with natural fertilizers is also very high. Cotton growers need a lot of fertilizer, because cotton takes away all the land. There were very few natural fertilizers in Turkestan, the reason being the lack of livestock. Fertilizers can be increased by 20-25%. Clay brought by rivers and canals also increase soil fertility. The top layer of the soil is exterminated and covered with another new layer of soil that has come from a very long distance. This method is also widely used to improve soil fertility. For this purpose, the soil was used on high lands where water was not available. The old buildings and the walls of the walls were also used. The lack of natural fertilization is compensated by artificial fertilization. Finding cheap fertilizers is important for cotton production. In Turkestan, the bones can be broken down and used as fertilizer. Here, the population consumed a lot of mutton, and there were many bones, but no fertilizer production was done. German researchers make this statement:

“The issue of fertilizing the Caspian Sea region is not so acute as there is a lot of fertile land and a low population density, despite the water shortage. It solves the problem of fertilizing the soil and increasing its fertility. Locals are well aware of the secrets of farming. There are no pure cotton farms. Because only other crops are cultivated so as not to sow cotton. Usually, cotton is planted three to four years in succession, and then another crop, mainly corn, then barley, wheat and livestock feed. But sometimes there are places where the land is used for chronic cotton, and then it becomes unsuitable for other crops. ”

Three-field crop rotation on irrigated fields of mountain slopes is underway. Low water availability, early frosts and locusts have severely damaged cotton yields, especially in the province of Ashgabat and Tejen district.

"The locusts do a lot of damage to cotton. Due to the geographical location and the low population density, in some areas locust control is useless. For example, in the desert regions of Syrdarya, Caspian Sea and Samarkand region. The locust comes to the Russian Turkestan from neighboring Bukhara and Iran, where no locusts are taken. With great difficulty, locusts were destroyed in Ferghana. Fighting locusts in low-density areas is ineffective. Grasshoppers are growing every year. Even in some areas - west of the Syrdarya, for example - this led to the suspension of field work altogether. Gradually rewarding locusts in locusts were used, locusts were used. The population of neighboring countries was only partially involved in these activities. In order to make the pest more effective, it was proposed to build etymological stations in these areas to study the methods of pest control. Proposals were also made to force the population to fight pests. As a result of all these measures, cotton growers have grown significantly.

For example, in Syrdarya region 13,200 hectares of cotton were planted in 1905, and by 1906 this figure had risen to 27,200. "[9].

Type of cultivation	**Costs for product development**	**Productivity (Pudda)**	**Yield (in rubles)**	**Brutto**	**Netto (In Ruble)**
Wheat	33.75	45	1.20	54.00	20.25
Barley	33.15	73	0.79	57.60	24.25
Corn	74.55	203	0.60	121.80	47.25
Vegetables	68.50	-	-	164.00	95.50
Cotton 1902/3	75 00	75	3.25	243.75	168.75
Cotton 1903/4	75 00	75	3.60	270.00	195.00

This table shows the proportion of different crops

The development of cotton production in the Caspian region was severely limited due to lack of irrigation resources. Formation of Russian settlements in the mountainous areas made the situation even more difficult. Russian peasants faced difficulties in pursuing farming, such as unfamiliar conditions of nature, ignorance of local cultivation methods, and warm climates. The main difficulty of the early peasants in the settlement was the lack of labor and livestock, especially for the Germans and the comedians. People were not provided with housing, crops were in poor condition, and in the first years the crop was scarce. The head of the Caspian region ANN was personally responsible for organization of agricultural settlements in the Caspian region. Controlled by Kuropatkin. In May 1894, he visited the settlements of Ashgabat and made the appropriate conclusions in order to investigate the situation and take appropriate measures to improve the farms. The growing cities of the region needed not only bread, but other agricultural products, as well as vegetables and fruits. They didn't know about potatoes and cabbage. There were very few vegetables. Small town plots are allotted for homesteads in the villages near the city. But the free people did not cultivate vegetables, they rented their land to the Iranians. They planted onions, beets, and carrots. However, watermelons flourished in every village, and large quantities of melons and watermelons were supplied to cities. In his 1894 order, Kuropatkin pointed out that the garden business was developing very slowly. Only Skobelevians succeed in producing watermelons. The product was sold in Ashgabat and brought good income. Iran provided potatoes from the Samarkand region with the army in the Caspian Sea. Therefore they started planting potatoes in Russian settlements. In Saratovsk, Germab and Kulkulab there were fertile lands for potato cultivation. Potatoes are designed not only for local consumption, but also for sale. In 1989, a good growth of cabbage was noted in Mikhaillovka, a Russian village. It was made from sweet cabbage and sold in Ashgabat. They sold potatoes. They also grow tomatoes in the camps.

[9]*Biedermann B.Die Versorgung der russischen Baumwollindustriemit Baumwolle eigener Produktion. Heidelberg, 1907, S.51-53.*

Great attention is paid to the development of horticulture in places. For example, in the Saratovsk, Visoky, Kozelny, and Vannovsky areas, the gardens were created. Instead of 50 years old trees have been planted. In the Alekseevsky village near Kushka, each house had its own orchard. The first cotton cultivation was undertaken in 1894 in Germab by Vishinsky, the manager of the settlement of Ashgabat. Skobelevians were first engaged in cotton growing. Cotton is widespread in the settlements of the Kara-Kala district in the Sumbar valley. Vasilyev, a cotton-growing instructor at the cotton farm called Parkhay near Kara-Kala, introduced the people to the cotton-growing industry. However, the price of cotton grown here was not so high as it was far from the factories.

Unlike the Russian settlements, the locals treated the earth with primitive equipment. These equipment plowed the ground, but did not break it. Therefore, it was necessary to plow the cotton fields many times (more than ten times). Originally used by modern Russians only in large fields, the local population grew in demand.

"The low utilization of modern agricultural machinery is also reflected in the figures for their entry into the country. For example, in 1898/1899 the machinery of Samarkand was worth 300 rubles, in 1900 - 3000 rubles, and 1901/1902 - 10,000 rubles. The proportion of the local population is negligible. Due to the growing demand for agricultural machinery in Turkestan, the Russian government has set up depots and warehouses of such technical equipment in key areas of the country. "

Such hotspots could buy the tools they need from the warehouses without having to wait for traders or wait for their orders. The Russian settlers or the experimental fields of the state served as an example for them.

In the Caspian region, cotton growing at a much faster rate than in the other provinces of Turkestan. In 1890, cotton production in the Caspian region amounted to 1% of the total cultivated area of Turkestan, and in 1915-1916 this figure increased by 12-15%. In 1910, the Caspian region took the third place in the Turkestan region, leaving behind the Samarkand region. In the Caspian region, which is the second largest in the Turkestan region after the Fergana region, the yield of American varieties of cotton is almost always higher than in other regions of the country, often yielding up to 100 pounds of cotton. In the new environment, cotton, which soon became the most profitable sector, linked economic activities of many farmers to markets and industries, with the city.

In summary, the various agricultural sectors in the Caspian region have been existing since ancient times: cotton growing, gardening and melons. Significant changes have been made in these areas since the conquest of Central Asia by the Russians. Cotton growing in the late 19th century will play a vital role in the agricultural production of the Turkmen auls in twenty years. 1/3 of all cultivated lands. In terms of income, cotton income was much higher than other crops. Cotton has created a lucrative lending system, various loan and credit institutions, associations and banks, revitalized transport activities, and created cotton processing and related industries. Cotton, which led to a wealth of noble peasants, subjected large numbers of dehkan farms to markets, lenders and commerce, placing them in debt and debt. Cotton has increased the importance of agriculture, increased land prices and, consequently, aggravated the struggle for the expansion of irrigated land. Ultimately, this has led to the fragmentation of the agricultural community in Turkestan, significant changes in land and water use patterns, the accumulation of large plots in the hands of the rich, and the depletion of many dehkan farms. Cotton has had a profound effect on the socio-economic and political life of the Turkestan population and has greatly strengthened the social stratification of society. In this regard, the German researches play a special role, and the Turkestan general-governorship at the end of the XIX - early XX centuries plays an important role in reflecting on the transformation processes in agriculture.

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