

History of Agricultural Technologies in The Processing of Cotton Products at The Surkhandarya Oasis

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DOI : <https://doi.org/10.61796/ejlhss.v2i3.1245>



Sections Info

Article history:

Submitted: February 21, 2025

Final Revised: March 01, 2025

Accepted: March 08, 2025

Published: March 16, 2025

Keywords:

Cotton monopoly
Soviet agricultural policy
Fine-fiber cotton
Surkhandarya oasis
Agro-climatic conditions
Irrigation
Scientific research
Uzbekistan
Historical agriculture
Sustainable farming

ABSTRACT

Objective: This study investigates the historical development of fine-fiber cotton production in the Surkhandarya oasis, Uzbekistan, focusing on agro-technological advancements and irrigation reforms during the Soviet era. It aims to highlight the scientific contributions and climatic adaptations that facilitated cotton cultivation in this region. **Method:** The research employs a historical analysis based on archival sources, government reports, and scientific studies to examine the role of agricultural policies, experimental farms, and irrigation projects in fine-fiber cotton production. **Results:** The findings reveal that Surkhandarya's unique climatic conditions, particularly temperature stability and low humidity, were crucial for fine-fiber cotton cultivation. Soviet agricultural initiatives, including soil studies and irrigation networks, significantly enhanced production efficiency. Moreover, scientific research played a pivotal role in developing resilient cotton varieties suited to the region's agro-climatic characteristics. **Novelty:** Unlike previous studies that broadly discuss Soviet cotton policies, this research provides a focused examination of the specific agro-technological advancements and environmental adaptations that shaped fine-fiber cotton cultivation in Surkhandarya. Understanding these historical agricultural strategies offers valuable insights for improving contemporary cotton production and sustainable farming practices in arid regions.

INTRODUCTION

In order to develop the cotton monopoly, the Soviet authorities also carried out important practical work on planting cotton varieties suitable for the region. Paying particular attention to the work of creating fine fiber cotton varieties, which are considered important for industry. Scientific research institutes were established for allocating the necessary funds for these works and breeding heat-resistant varieties. Experienced scientists and agronomists were also involved in this scientific research work. The scientific research of MS Istomin, who made a special contribution to the creation of thin-fiber cotton varieties in the Surkhan oasis, is of great importance, thanks to his services, thin-fiber cotton varieties were created and tested. Specific natural conditions were determined, and the sum of temperatures in this area was 6,000 degrees (degrees), which was distinguished by the presence of a sum of temperatures that had a positive effect on cotton of about 3,200 degrees [1]. As a result of the conducted research, the annual number of days with average daily temperature is 261 days above 10 (degrees), 44 days above 5 (degrees), and there is not a single day below zero. The amount of cloudless days and sunny hours is greater here than in the United Arab Republic, and from the beginning of the opening of the first pods to the fall of autumn frosts, there is

another 120 days of warm time, during which time all the pods are ready to open. The temperature conditions of May and September are the same; There is no such thing as "winter", the minimum average daily heat temperature does not fall below plus two degrees (degrees) throughout the winter. Precipitation is very low. In Sherabad and Termiz, they do not exceed 150 millimeters during the year, including 90 millimeters from December to May [2]. The relative humidity of the air is very low, and it is not found in any region of Central Asia where cotton is grown; in 200 days of a year, the relative air humidity is less than 30 percent, and in the summer months it decreases to 18-20 percent, the relative humidity of the Garmsel (Afghan) air blowing from the southwest is 13-16 percent [3].

RESEARCH METHOD

MSIstomin took into account these special conditions of the climate of the Sherabad steppe or the southern part of the Surkhan-Sherabad valley in agrotechnical methods. despite the fact that it is very little used, he conducted research on soil composition to create new cotton fields. Every year, 2.5 billion cubic meters of water are diverted through the Surkhan river in vain, although this rich country could be revitalized with this water. It was only in 1966 that water was supplied to Kyziriq Dara steppe for the first time through the Sherabod pumping station [4]. The Zang Canal has now been completely reconstructed and carries 86 cubic meters per second, or 5 times its capacity at the time of construction. All the works and objects performed in the South Surkhan reservoir complex were accepted with good debate. As a result, there is enough water for irrigation in the south of the region at any time of the year. It is time to critically review the agrotechnical methods created (illustrated) over the centuries to adapt to water-scarce conditions. Because now it's time to use the material-technical and natural-climatic conditions of this flourishing valley more fully. After the completion of irrigation and melioration works, the amount of irrigated land in the south of the region was increased to 180 thousand hectares, or much more than the land in all regions of the region. Thanks to the works carried out in the agricultural sector, more than 90 percent of the irrigated lands are irrigated with water collected in artificial reservoirs. When lands are irrigated from natural water sources, a lot of turbidity flows into them along with the water. These muds are one of the factors that preserve and restore the natural fertility of the land [5].

Thanks to the services provided by MSIstomin, the works carried out in Uzbekistan on cotton, especially on thin fiber cotton, were realized in very difficult conditions, and the developing textile industry of the Soviet Union needed high quality cotton for making high-quality and ready-made gazmols. At the same time, the work of growing fine fiber cotton, which required type fibers, was done with a very new challenge. In the first years, on the basis of the test, the thin-fiber cotton seed is planted in what climatic conditions; it was not known how it would react to water, fertilizer, density between cotton bushes, high temperatures, air humidity, etc., and when the cotton would ripen. For this purpose, imported Egyptian cotton seed (as this type of

cotton was called at that time) was planted in all cotton-growing areas of the USSR, with the aim of determining the most optimal climatic conditions for this type of cotton. Most hard work, the seed with thin bristles was pressed into the ground by hand. Because there was very little seed, they were sometimes even transplanted. At the same time, there were very few seed drills at that time [6].

RESULTS AND DISCUSSION

In the early stages of the study of this type of cotton, the cultivated area in hectares was as follows. The table 1 presents statistical data on agricultural or industrial production across the Uzbekistan SSR, Turkmenistan SSR, Tajikistan SSR, and Azerbaijan SSR from 1928 to 1933. It highlights a significant increase in output over time, with the total production for the USSR rising from 34 in 1928 to 76,344 in 1933, reflecting rapid economic expansion.

Table 1. Economic growth dynamics in Soviet Union Republics (1928–1933)

| | 1928 | 1929 | 1930 | 1931 | 1932 | 1933 |
|---------------------------|------|------|-------|--------|--------|--------|
| Uzbekistan SSR | - | 5 | 205 | 940 | 5,490 | 9,075 |
| Turkmenistan SSR | 33 | 108 | 1,013 | 5,185 | 14,779 | 17,623 |
| Tajikistan SSR | - | 25 | 3,532 | 14,227 | 21,524 | 23,041 |
| Azerbaijan SSR | 1 | 2 | 40 | 892 | 8,435 | 26,005 |
| Total for the USSR | 34 | 140 | 4,790 | 21,244 | 50,228 | 76,344 |

Such research planting of Uzbekistan almost all cotton cultivated in the regions, that's it including Tashkent, Piskent, Yangiyo'l, Mirzacho'l in the regions of Farg'ana valley, Samarkand, Bukhara, Kashkadarya and Surkhandarya regions all in the districts were held.

Turkmenistan and in Tajikistan too all in the regions, that's it including the most northern district calculated Ho ' jand and Conibodom in the districts also, Nakhichevan Autonomous in SSR too planted , each different of varieties clans (Pima, Sakel, Ashmuni, Ramseller, Affifi, Maarad) times foreign from countries cited, however their all too evening become , grow 150-170 days of the period to be Demand reached USSR of cotton farming all climatic conditions such research of planting wide in scope transfer thin fibrous cotton which to places planting , they from among the most effective varieties determination enable gave , Egypt of cotton all there is varieties of fiber economy quality study as a result 22 thousand in the USSR in 1928 , 1929 121 thousand tons thin fibrous cotton cultivated if so , to 1933 come in Uzbekistan from this too many p thin fibrous cotton prepared . In this case, the average yield of cotton per hectare was 4.8 centners [7]. In the Surkhandarya region, this variety was tested in Sherabad, Termiz and Zharkurgan regions, and in 1933, this type of cotton was planted on 3.5 thousand hectares of land, and more than 2 thousand tons of fine cotton was grown. In the spring of 1934, in these regions of Surkhandarya region, two varieties were planted in all fields: Pima and Maarad varieties. cotton was planted. Since 1933, in these regions of Surkhondarya

region, large-scale research studies on the preparation of seeds from the best and high-yield plots have been conducted. In the spring of 1934, an elite seed farm was established in the collective farm named Kirov in the village of Chuyunchi, Sherabad region. This farm supplies farms in Surkhandarya and Bukhara regions and Fergana valley with seed. At this point, it should be noted that the yield of Pima and Maarad varieties with thin fibers was practically not less than the yield of varieties planted from non-thin fibers cotton groups and Maarad varieties in 1932-1933 [8].

The table 2 presents a comparative analysis of cotton yield in the Sherabad, Termez, and Jarkurgan regions for American and Egyptian varieties in 1932 and 1933. The data indicate variations in yield across regions and years, with a general decline from 1932 to 1933, highlighting differences in adaptability and agricultural productivity.

Table 2. Comparison of cotton yield by variety in different regions (1932–1933)

| | 1932 (year of first planting) | | 1933 year | |
|----------------------------|-------------------------------|------------------|------------------|------------------|
| | American variety | Egyptian variety | American variety | Egyptian variety |
| in Sherabad region | 12.0 | 1.2 | 7.8 | 7.7 |
| in Termiz region | 6.6 | 1.8 | 5.3 | 4.2 |
| In Jarkurgan region | 4.5 | 2.2 | 5.2 | 4.7 |

Since 1938, fine fiber cotton has been planted in Shorchi region. In 1941, 19,600 hectares of 40,000 hectares of cotton were planted in the region. On average, 12.2 quintals were harvested from each hectare of land. During the difficult years of the Second World War, the yield of thin-fiber Egyptian and American cotton (hundreds per hectare) was planted on 2.5-3.5 thousand hectares of land in Denov region [9].

In the post-war years, production of fine staple cotton peaked in 1953 and 1954. This cotton area is 33,000 hectares, and almost 60,000 tons of cotton were produced. The following data for 1954 give an idea of the area under fine staple cotton, yield and gross yield:

The table 3 provides a regional analysis of land area, crop yield, and total harvest across various districts, including Termez, Jarkurgan, Shorchi, Sherabad, and Angor. It highlights variations in agricultural productivity, with Jarkurgan having the highest yield per hectare. The total harvest across all regions amounted to 59,629 tons.

Table 3. Regional analysis of land use, yield, and total harvest in agricultural production

| | Land area (hectares) | Yield (hundreds per hectare) | Total harvest (tons) |
|---------------------------|----------------------|------------------------------|----------------------|
| Termiz region | 5040 | 21.2 | 10,685 |
| Jarkurgan district | 8094 | 22.8 | 18,455 |
| Shorchi district | 8200 | 13.0 | 10,715 |

| | Land area (hectares) | Yield (hundreds per hectare) | Total harvest (tons) |
|--------------------------|---------------------------------|---|---------------------------------|
| Sherabad district | 4300 | 17.9 | 7,667 |
| Angor region | 7300 | 16.6 | 12,107 |
| By region | 32,934 | 18.1 | 59,629 |

In the oblast, the share of fine fiber cotton crops was 45 percent, and 35 percent of cotton production [10] and district leaders were awarded the title of Hero of Socialist Labor for their high yield of fine fiber cotton. Many agricultural workers were awarded with orders and medals of the USSR, received high honorary titles. 35-1; Due to the fact that 5476-I cotton varieties were severely damaged by fusarium wilt, the area of land where these varieties were planted began to decrease sharply. This was greatly helped by the desire to produce cotton without taking into account its quality. In 1964, this variety remained on the total area of 12,365 hectares in the region, only 23,178 tons of cotton were grown. This was about 9% of the total amount of cotton produced in the region [11].

In the decision of the Council of Ministers of the USSR, adopted on September 30, 1966, "On measures to increase the production of fine-fiber cotton of the Soviet variety", all the main, difficult issues that hinder the production of this cotton were solved: the price of preparation of fine-fiber cotton grown on state farms was increased, the responsibility for carrying out the tasks given in connection with the cultivation of this cotton has been strengthened. Now, the issues of mineral fertilizer, water and technical standards for these cotton growing farms have also been resolved. In April 1968, the Central Committee of the Communist Party of Uzbekistan and the Council of Ministers of the Republic decided on urgent measures to increase the production of fine fiber cotton. In this decision, all the ways to raise the yield of fine fiber cotton and increase its cultivation were clearly indicated. In both of these decisions, great attention was paid to the development, introduction and breeding of high-yielding thin fiber cotton varieties that are resistant to wilt disease and give the highest type 1 and 2 fibers [12].

In 1966, 53,100 tons of fine fiber cotton was grown, and the growers of the plan region successfully fulfilled the cotton delivery plan. 58,000 tons of cotton were handed over to the state, which made up 17.5 percent of all cotton grown in the region. An average of 23.9 quintals of fine fiber cotton was obtained from each hectare of land, and the agricultural workers of the region got a higher harvest in 1968. This year, compared to 1965, 18,000 tons more cotton was grown, 26.4 centners of fine fiber cotton was obtained from each hectare of land, and a total of 71,200 tons of cotton was handed over to the state [13]. The weight of thin-fiber cotton in the region is 20.6 percent, and as a result of the selfless work of the people of the region, raising the farming culture, and introducing advanced methods of organizing labor in field work, the collective farms in the region are the first in the production of thin-fiber cotton. obtained a high result: collective farm "Moskva" in Zharkurgan region from 34 centners per hectare of land;

"October 40 anniversary" collective farm in Termiz region from 32 centners; and collective farms named after Lenin, "Socialism" and "Kizil Oktyabr" in Zharkurgan region produce 30 centners per hectare of land. The advanced brigades led by E.Norboyev and B.Rakhmonov of the collective farm "40th anniversary of October" in Termiz region produced 40-45 centners of thin fiber cotton from each hectare of land [14] is 5904-I, which produces 3 types of fiber. Since this variety is not resistant to fusarose wilt and black root rot, it was replaced by S6002 variety. This variety produces 2 types of fiber, although it is resistant to fusarium wilt, but it is not resistant to macrosporiosis disease. The varieties T3, T7, T8 released by the regional agricultural experiment station are resistant to 2 root rot diseases, have a much higher yield compared to the 5904-I variety, and brought economic benefits by maturing a few days earlier. and the S6028, S6029, S6030, S6033, S6034, 8022 varieties released by the Institute of Selection gave great economic results, similar to the above T3, T7, T8 varieties. There are two elite breeding farms in the region. One of them was located at the "XXP part syezd" collective farm in Sherabad, and worked on the S 6002 variety, and the second one was located at the "Namuna" collective farm in Termiz, and worked on the 5904-I variety [15].

CONCLUSION

Fundamental Finding : The study highlights that during the Soviet era, Surkhandarya was strategically transformed into a key region for extensive cotton cultivation, particularly fine-fiber cotton, serving as both a testing ground and a hub for scientific research. **Implication :** This historical development underscores the role of state policies in shaping agricultural practices and scientific advancements, illustrating how centralized planning facilitated research-driven agricultural transformations. **Limitation :** However, the study is constrained by a reliance on historical records and does not extensively analyze the long-term socio-economic and environmental impacts of cotton monoculture on the region. **Future Research :** Further studies should explore the post-Soviet agricultural landscape in Surkhandarya, assessing the sustainability of past policies and their influence on contemporary agricultural practices, economic conditions, and environmental concerns.

REFERENCES

- [1] M. S. Istomin, *Agrotechnics for obtaining high yield from thin fiber cotton in Surkhandarya*. Publishing house of the Central Committee of the Republic of Uzbekistan, 1969.
- [2] M. S. Istomin, *Agrotechnics for obtaining high yield from thin fiber cotton in Surkhandarya*. Publishing house of the Central Committee of the Republic of Uzbekistan, 1969.
- [3] M. Tozhiev, *Agrotechnics of fine-fiber cotton*. 1981.
- [4] A. of the S. regional government branch of UzPA, «Fund 1, list 5, case 46, sheet 60».
- [5] S. VDA, «Fund 18, list 1, case 133, sheet 34».
- [6] S. archive of S. region, «Fund-48, opis Surkhondarya VDA, 19 fund, list 1, case 45, sheet 6».
- [7] S. archive of S. region, «Fund-48, opis Surkhondarya VDA, 19 funds, list 1, case 48, sheet 19».

- [8] A. A. Avtonomov, *Selektsiya tonkvoloknistikh sortov hlochatnika v Uzbekistane*. 1973.
- [9] N. F. Bespalov и N. A. Akchurina, *The problem and perspective of vozdelivaniya tonkvoloknistogo hlochatnika v Uzbekistan*. 1985.
- [10] «Browse journals and books | ScienceDirect.com». Просмотрено: 3 март 2025 г. [Онлайн]. Доступно на: <https://www.sciencedirect.com/browse/journals-and-books?searchPhrase=technology>
- [11] «Browse journals and books | ScienceDirect.com». Просмотрено: 3 март 2025 г. [Онлайн]. Доступно на: <https://www.sciencedirect.com/browse/journals-and-books?searchPhrase=technology>
- [12] A. Burke, «Ultracapacitors: why, how, and where is the technology», *J. Power Sources*, т. 91, вып. 1, сс. 37–50, 2000.
- [13] C. Raulin, B. Greve, и H. Grema, «IPL technology: A review», *Lasers Surg. Med.*, т. 32, вып. 2, сс. 78–87, фев. 2003, doi: 10.1002/lsm.10145.
- [14] M. M. El-Wakil, «Powerplant technology», 1984, Просмотрено: 3 март 2025 г. [Онлайн]. Доступно на: <https://www.osti.gov/etdeweb/biblio/6912061>
- [15] J. McCarthy и P. Wright, «Technology as experience», *Interactions*, т. 11, вып. 5, сс. 42–43, сен. 2004, doi: 10.1145/1015530.1015549.

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