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PROSPECTS FOR FINE-FIBER COTTON CULTIVATION

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Annotation: *this work explores the development and future prospects of fine-fiber cotton cultivation, focusing on its historical context, challenges, and achievements in the Surkhandarya region and the Uzbek SSR. It highlights advancements in breeding disease-resistant varieties, the expansion of irrigated lands, and the critical role of reservoirs like Southern Surkhan and Uchqizil in ensuring water supply. The study also examines production trends, the significance of Surkhandarya as a leading region, and the potential for increasing yield and expanding cultivation areas in response to economic and agricultural demands.*

Keywords: *Fine-fiber cotton, Surkhandarya region, Irrigation systems, Fusarium wilt resistance, Soviet cotton varieties, Agricultural development.*

The Surkhandarya region of the Uzbek SSR is one of the most intensively developed agricultural zones for cotton cultivation. Based on climatic conditions, the region is divided into two zones: the northern zone, which includes Sariosiyo, Denov, and Shurchi districts, and the southern zone, which comprises Jarkurgan, Termez, and Sherabad districts [2]. One of the unique features of cotton cultivation in the region is that all the necessary conditions for achieving high yields of fine-fiber cotton are available here. Fine-fiber cotton varieties are primarily grown in the southern parts of Surkhandarya, where natural conditions are highly favorable, with a warm climate. In the flat areas of the Surkhandarya and Sherabad river basins, the average annual temperature exceeds 17°C. In the mountainous areas of the region, the temperature

ranges around 15–16°C [3]. Even in Boysun, located 2,000 meters above sea level, the average annual temperature is 14.6°C, which is 1°C higher than in Tashkent, situated 450–500 meters above sea level. During January, the coldest month, temperatures do not fall below +2°C. Such high temperatures are only found in the southern regions of Turkmenistan and Tajikistan.

Due to these climatic conditions, the opening period of cotton bolls and the average date for the first autumn frost – marking the end of the cotton vegetation period – provide a long and productive growing season. In the flat areas of Surkhandarya, the high temperatures create significant opportunities for cultivating fine-fiber cotton. The cotton fruiting period lasts a long time and coincides with warm days.

Additionally, the Sariosiyo and Denov districts are among the region's highest-altitude areas. Most of the land in Sariosiyo consists of brown soils, while the rest is composed of brown semi-soils. A significant portion of these brown semi-soil areas is located in Denov. The lands in Shurchi and Jarkurgan districts are primarily composed of brown soils. However, gray and black soils are also found here, located close to groundwater levels.

Termez and Sherabad districts are classified as lowland deserts. In these areas, the land is mostly saline and semi-saline. Significant measures have been taken in Surkhandarya region to restore existing irrigation networks, construct new canals, reservoirs, and water storage facilities. Particular attention was given to the construction of the Southern Surkhan Reservoir. Additionally, extensive work was carried out to line and fortify irrigation networks, led by the Uchqizil Reservoir.

In the Surkhandarya region, considerable efforts were made to cultivate fine-fiber cotton. The commissioning of the Southern Surkhan, Uchqizil, and Degrez reservoirs significantly improved the water supply for the region's collective and state farms. During periods of water scarcity, the needs were met at 100% of the planned levels. This created bright prospects for cultivating fine-fiber cotton varieties in the region. It is worth noting that the cultivation of fine-fiber cotton in the Uzbek SSR began several years earlier. The first few hundred hectares of such varieties were

planted in the Surkhandarya region during 1930–1931. At that time, only seeds imported from abroad were used, particularly Egyptian varieties such as "Maarad," "Sakilaridis," "Pima," "Ashmuni," and others [1].

This was because Soviet breeders had not yet developed fine-fiber cotton varieties. However, due to the low yield and late maturation of the aforementioned varieties, by 1939–1940, faster-maturing and higher-yielding varieties developed by Soviet breeders – such as 35-1, 36-2, 2-3I, and others – began to be cultivated. Nevertheless, by the early 1940s, even these varieties, which had occupied over 60,000 hectares in the republic, had to be abandoned because they were highly susceptible to fusarium wilt disease. The lack of fine-fiber cotton varieties resistant to fusarium wilt at that time led to a significant reduction in the area planted with fine-fiber cotton in the republic.

By 1954, the area planted with fine-fiber cotton returned to its pre-war size, as Soviet breeders had developed new varieties resistant to fusarium wilt, such as C-10964, C-2836, C-2850, and 5904-I [1]. Gradually, the 5904-I variety became the primary fine-fiber cotton grown in the republic. Although this variety was somewhat susceptible to wilt disease and its fiber quality was not very high, it matured quickly, was high-yielding, and well-suited for machine harvesting.

By 1966, the republic produced 87,000 tons of fine-fiber cotton, of which 54,000 tons were grown by the hardworking people of Surkhandarya region. This demonstrates that Surkhandarya was well-adapted for fine-fiber cotton cultivation and had accumulated considerable experience in the field. The region accounted for 62.1% of the fine-fiber cotton produced in the republic and 12% of the total production in the USSR. It was projected that fine-fiber cotton production in the Uzbek SSR would increase by approximately 1.6 times by 1970. By then, Surkhandarya was expected to contribute 19% and Kashkadarya 22% of the total yield [2]. Thus, Surkhandarya continued to serve as the base for fine-fiber cotton production in the Uzbek SSR. The region had significant reserves for expanding cultivation areas and increasing the productivity of this valuable raw material. Due to the development of new lands and

intensified irrigation efforts in the Sherabad area, it became one of the major centers for fine-fiber cotton cultivation in the country. Similarly, the Karshi steppe offered unparalleled opportunities for fine-fiber cotton cultivation. Despite this, the plans for fine-fiber cotton cultivation and planting in the republic were not consistently met year after year. For example, in 1963, Surkhandarya region planted only 36,000 [1] hectares of the planned 40,700 hectares. In 1964, only 13,600 hectares were planted compared to the planned 40,600 hectares, achieving just 33.5% of the target. In 1963, 60,600 tons of fine-fiber cotton were harvested, but in 1964, the yield dropped to 23,600 tons, or 44.5% of the planned target. In 1965, a total of 47,300 tons of fine-fiber cotton was produced, amounting to 44.5% of the planned target. The regions of Bukhara and Kashkadarya also failed to meet their assigned quotas for planting and cultivating fine-fiber cotton. Consequently, the plan for fine-fiber cotton production across the republic was fulfilled at 86.9% in 1963, 33% in 1964, and only 79% in 1965. This underachievement occurred despite the fact that profits from fine-fiber cotton were significantly higher than those from ordinary cotton. For example, in the southern regions of the Surkhandarya province, 63.2% of the cultivated land was allocated to fine-fiber cotton during 1959–1965 [2], and the income generated from these crops accounted for 74.6% of the total revenue. In 1966, collective farms in Jarkurgan, Termez, and Sherabad districts harvested an average of 22.4 centners per hectare from the 5904-I variety of fine-fiber cotton, compared to 29.8 centners per hectare from medium-fiber varieties. However, the income per hectare was 1,363.8 rubles for fine-fiber cotton and 1,165.4 rubles for medium-fiber cotton. This data demonstrates that although the yield of fine-fiber cotton was 22.8% [3] lower than that of ordinary cotton, the revenue from fine-fiber cotton was 16.7% higher. This is because the state paid higher prices for fine-fiber cotton. For example, advanced farms in the region earned 500–700 rubles more per hectare from fine-fiber cotton compared to ordinary cotton. Therefore, cultivating fine-fiber cotton was economically more advantageous than growing medium-fiber cotton. Other benefits of fine-fiber cotton should also be noted. It produces significantly more fabric per kilogram of fiber compared to ordinary cotton.

According to data from the Central Research Institute of the Cotton Industry, one ton of the 108-F variety of ordinary cotton yields 8,620 meters of fabric, while the first and second grades of fine-fiber cotton yield 15,150 meters per ton. From each hectare of fine-fiber cotton, 9,090 meters of high-quality fabric can be obtained, compared to 6,723 meters from the 108-F variety of ordinary cotton [4].

In conclusion the cultivation of fine-fiber cotton holds significant economic and industrial potential due to its superior profitability and efficiency in textile production. Despite historical challenges in meeting production targets, advancements in disease-resistant varieties, improved irrigation systems, and the economic advantages of fine-fiber cotton have demonstrated its viability as a key agricultural sector. Fine-fiber cotton not only provides higher income for farmers compared to ordinary cotton but also produces more fabric per unit of fiber, making it essential for the textile industry.

Regions like Surkhandarya, with their favorable climate, established irrigation infrastructure, and experience in fine-fiber cotton cultivation, are well-positioned to remain at the forefront of production. Expanding cultivation areas, adopting advanced agricultural practices, and enhancing research on resistant and high-yielding varieties can further strengthen the prospects of fine-fiber cotton. As demand for high-quality textiles continues to grow, fine-fiber cotton represents a vital resource for sustaining agricultural profitability and supporting the economy.

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