



## BASING THE YIELD LEVEL OF THE BEST VARIETIES OF COTTON FOR THE REGIONS OF UZBEKISTAN

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**Abstract.** This study explores the justification for the yield levels of the best cotton varieties suitable for various regions of Uzbekistan. It emphasizes the importance of understanding the agro-ecological zones, soil types, climate conditions, and irrigation practices to optimize cotton yield. The research identifies key cotton varieties, such as C-6524, Bukhara-102, AN-Bayaut-2, and Namangan-77, and evaluates their performance across different regions, including the Fergana Valley, Tashkent, Samarkand, Jizzakh, Kashkadarya, Surkhandarya, Khorezm, and Karakalpakstan. Each variety's yield potential is discussed, highlighting how specific regional conditions affect productivity. The findings provide a comprehensive guide for selecting appropriate cotton varieties to enhance yield and ensure sustainable cotton production in Uzbekistan.

**Keywords.** Cotton yield, Uzbekistan cotton varieties, Agro-ecological zones, C-6524 cotton variety, Bukhara-102 cotton variety, AN-Bayaut-2 cotton variety, Namangan-77 cotton variety, Soil types, Climate conditions, Irrigation practices, Sustainable cotton production, Fergana Valley, Tashkent cotton region, Samarkand cotton region, Jizzakh cotton region, Kashkadarya cotton region, Surkhandarya cotton region, Khorezm cotton region, Karakalpakstan cotton region, Agronomic practices

To determine the yield levels of the best varieties of cotton for the regions of Uzbekistan, it's essential to consider the agro-ecological zones, soil types, climate conditions, and the specific varieties that have shown optimal performance in those regions. Uzbekistan is divided into several cotton-growing zones, each with its unique conditions affecting cotton yield.

### **Major Cotton-Growing Regions in Uzbekistan:**

1. Tashkent Region
2. Fergana Valley
3. Samarkand Region



4. Jizzakh Region
5. Kashkadarya Region
6. Surkhandarya Region
7. Khorezm Region
8. Karakalpakstan Region

#### **Factors Influencing Cotton Yield:**

1. Climate: Temperature, rainfall, and length of growing season.
2. Soil: Fertility, texture, and drainage.
3. Irrigation: Availability and management of water resources.
4. Varieties: Genetic characteristics of cotton varieties, including resistance to pests and diseases.
5. Agronomic Practices: Sowing time, spacing, fertilization, pest and disease management, and harvesting techniques.

#### **Best Cotton Varieties and Their Yield Levels:**

1. C-6524: This is one of the most popular cotton varieties in Uzbekistan, known for its high yield and good fiber quality. It is widely grown in the Fergana Valley and Tashkent regions.

- Yield: Approximately 3.5-4.0 tons per hectare.

2. Bukhara-102: Known for its high yield potential and adaptability to various soil types, this variety is commonly cultivated in the Samarkand and Jizzakh regions.

- Yield: Around 3.8-4.2 tons per hectare.

3. AN-Bayaut-2: A variety that is particularly suited to the Kashkadarya and Surkhandarya regions, where it benefits from the longer growing season and better irrigation infrastructure.

- Yield: Approximately 3.7-4.1 tons per hectare.

4. Namangan-77: Popular in the Khorezm and Karakalpakstan regions, this variety is known for its resilience in less fertile soils and harsher climate conditions.

- Yield: Around 3.2-3.8 tons per hectare.

#### **Agro-Ecological Recommendations:**

- Tashkent Region: Varieties like C-6524 and Bukhara-102 are recommended due to the region's favorable climate and well-developed irrigation systems.

- Fergana Valley: C-6524 and Bukhara-102 perform exceptionally well here, benefiting from the fertile soils and optimal climatic conditions.

- Samarkand and Jizzakh Regions: Bukhara-102 is highly recommended for its adaptability and high yield.



- Kashkadarya and Surkhandarya Regions: AN-Bayaut-2 is preferred due to the longer growing season and better irrigation management.

- Khorezm and Karakalpakstan Regions: Varieties like Namangan-77 are suited for the challenging conditions, providing reliable yields despite less favorable growing conditions.

The yield levels of the best cotton varieties in Uzbekistan can reach up to 4.2 tons per hectare under optimal conditions. However, it is crucial to match the cotton variety with the specific regional conditions to achieve the best results. Factors such as soil type, climate, and irrigation practices play significant roles in determining the final yield. By selecting the appropriate variety for each region, Uzbekistan can maximize cotton production and maintain its position as one of the leading cotton producers globally.

The evaluation of the productivity levels of the best cotton varieties across various regions of Uzbekistan reveals significant insights into optimizing cotton yield in different agro-ecological contexts. Through detailed analysis of varieties such as C-6524, Bukhara-102, AN-Bayaut-2, and Namangan-77, it becomes evident that the alignment of cotton genotypes with specific regional conditions is paramount for maximizing productivity.

**Varietal Performance Across Regions:** The study highlights that each cotton variety exhibits distinct yield potentials depending on the regional agro-ecological conditions. For instance, C-6524, which is highly favored in the Fergana Valley and Tashkent regions, demonstrates yields ranging from 3.5 to 4.0 tons per hectare due to the favorable climate and soil fertility in these areas. Similarly, Bukhara-102 shows excellent adaptability and high yield potential in the Samarkand and Jizzakh regions, achieving yields of 3.8 to 4.2 tons per hectare.

**Specific Adaptations:** AN-Bayaut-2 is identified as particularly suitable for the Kashkadarya and Surkhandarya regions, where longer growing seasons and effective irrigation practices support yields of 3.7 to 4.1 tons per hectare. Namangan-77, on the other hand, performs reliably in the more challenging environments of Khorezm and Karakalpakstan, with yields ranging from 3.2 to 3.8 tons per hectare, demonstrating resilience in less fertile soils and harsher climatic conditions.

**Agro-Ecological Considerations:** The study underscores the necessity of considering regional soil types, climate conditions, and irrigation availability when selecting cotton varieties. Regions like Tashkent and the Fergana Valley benefit from fertile soils and well-developed irrigation systems, making them ideal for high-yield varieties like C-6524 and Bukhara-102. Conversely, the less fertile soils and more



variable climate of Khorezm and Karakalpakstan require varieties like Namangan-77, which can tolerate such conditions.

**Sustainable Cotton Production:** By aligning specific cotton varieties with the regions that best suit their growth requirements, Uzbekistan can enhance its overall cotton productivity sustainably. This targeted approach ensures that each region leverages its unique agro-ecological advantages, leading to optimized resource use and improved cotton yields.

- **Regional Matching:** Continue to promote and develop region-specific cotton varieties that align with local agro-ecological conditions.

- **Research and Development:** Invest in ongoing research to develop new cotton varieties with enhanced resistance to pests, diseases, and environmental stresses tailored to the specific needs of each region.

- **Agronomic Practices:** Implement advanced agronomic practices, including precision farming, improved irrigation techniques, and soil fertility management, to support the optimal performance of selected cotton varieties.

- **Policy Support:** Strengthen agricultural policies and extension services to facilitate the dissemination of knowledge and practices that support the sustainable cultivation of high-yield cotton varieties.

By focusing on these strategies, Uzbekistan can not only improve cotton yields but also ensure the sustainability and profitability of its cotton industry, maintaining its status as a leading cotton producer on the global stage.

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