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Analysis Of Morphobiological Characteristics In Certain Varieties Of Cotton

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Abstract: In the development of early-maturing, high fiber-yielding, long-fiber, high-yield, and disease- and pest-resistant cotton varieties, as well as in the identification of hybrids, it is essential to focus on studying their morphobiological and agronomic characteristics. In this regard, the effective use of hybridization methods in research is required.

Keywords: Cotton, early-maturing, variety, hybrid, morphological, cotton weight per boll, weight of 1000 seeds.

Introduction: After the independence of our country, significant attention has been given to the selection of agricultural crops.

Currently, all focus is directed toward the creation of early-maturing, high-yielding, high-quality fiber, disease- and pest-resistant cotton varieties. As a result, while maintaining high productivity, the areas allocated for cotton cultivation have been reduced, and plans are in place to plant other crops.

In cotton genetics and breeding, it is crucial to utilize forms that differ from each other based on their origin, productivity, and other valuable agronomic traits. This approach has been confirmed in the scientific research of many scholars.

S. Mirakhmedov identified that the resistance of wild Mexican cotton to verticillium wilt is inherited in its hybrid offspring. As a result of his research, early-maturing cotton varieties with high yield and fiber quality, as well as resistance to wilt, were developed. When creating Tashkent varieties, the Mexicanum subspecies, which had brown-colored fibers, was used for hybridization. In the offspring of these hybrids, biotypes with white fibers were identified. It was also established that the Mexicanum subspecies of cotton is not only resistant to wilt, but also has high yield, drought resistance, high fiber output, and fiber quality [7].

The analysis showed that in the C-6524 variety of cotton, 57-89% of the weight of cotton per boll is determined by genes, and 11-43% is influenced by

external factors [6].

In the experiment, by using topcross hybridization, the inheritance of major agronomic traits in F1 hybrids from both the parental lines and varieties, as well as the general and specific combining abilities of the parental lines, were observed to differ from each other.

The analysis of the dispersion of the inheritance of valuable traits, such as the number of bolls, the period from germination to maturity, the cotton weight per boll, fiber yield, fiber length, and plant height in the F1 hybrids, was conducted. The results of this analysis were clearly identified [1].

According to the analysis of the results, in the second generation, many agronomic traits deviated from the indicators of the parent forms, thus expanding the selection potential [2].

In research conducted by Akhmedov J.Kh. and Mirzarasulov M., it was found that in the F2 hybrid population, cotton yield was associated with boll weight, number of bolls per plant, fiber yield, and fiber length. It was determined that the yield was related to the number of bolls per plant and boll weight. This finding emphasizes the need to intensify breeding research aimed at creating varieties with high boll aggregation and large boll size. However, since the correlation between yield and fiber output and length was low, it was demonstrated that these traits inherited independently in the F2 hybrids [3].

At the same time, it was established that fine-fibered cotton is slower to mature, yields less, has rounder bolls, and is more demanding in terms of temperature, irrigation, and fertilization requirements compared to medium-fibered cotton. Furthermore, it was found to be more resistant to biological stresses, including verticillium wilt, aphids, and thrips [3].In the research by M.D. Nosirova, it was found that in fields where mung beans were cultivated, cotton yield, along with fiber yield, increased by 0.7–1.0%, and fiber length increased by 0.6–1.6 mm compared to the control variety.

After mung bean cultivation, cotton planting led to a reduction in the incidence of wilt, and improvements were observed in the technological quality indicators of the fiber [4].

CONCLUSION

In summary of the literature review, it can be stated that the new cotton varieties being developed today are not only high-yielding, early-maturing, and resistant to diseases, pests, and adverse environmental factors, but also exhibit high fiber yield. Furthermore, the fiber quality, including micronaire value, must meet the requirements of the textile industry.

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