



EXPRESSION OF CERTAIN ECONOMIC TRAIT INDICATORS IN THE “BARQAROR HOSIL” VARIETY OF GOSSYPIUM HIRSUTUM L.

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Abstract

This article presents a comparative analysis of the average values of valuable economic traits such as 1000-seed weight, cotton mass per boll, fiber yield, and fiber length in the medium-fiber cotton variety “Barqaror Hosil,” developed by breeders of the Republic of Uzbekistan, in comparison with the standard varieties Namangan-77 and S-6524. The study was carried out in 2023 under the soil and climatic conditions of the Tashkent region based on scientific observations.

Keywords: *G. hirsutum* L., variety, 1000-seed weight, boll, cotton, weight, fiber yield and length, indicators.

Introduction

In hybrid generations, new plastic genotypes with diverse capabilities are formed, and numerous polymorphic biotypes characterized by a wide range of variability in traits are observed [1, 3, 4].

Based on the in-depth analysis of biological processes occurring in the initial forms, expanding the variability range through the formation of biotype complexes under conditions of genetic equilibrium, as well as developing plant groups with plastic characteristics, is considered to have significant scientific and practical importance.



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It has been reported that high levels of heterogeneity and heterozygosity in populations ensure the dynamic nature of population structure and increase the effectiveness of individual selection methods.

A thorough study of population processes occurring in the initial lines plays a decisive role in identifying stable plant groups [2].

Researchers have investigated the expression of genes responsible for the inheritance of quantitative traits in cotton and demonstrated that characteristics such as plant height, number of sympodial branches, and fiber quality can be improved through breeding. In addition, the phenomenon of heterosis has been emphasized as playing an important role in the genetic progress of traits such as the number of monopodial branches and bolls, fiber yield, and seed cotton weight per boll [5].

Research Objective:

The purpose of this study was to determine the differences in the average values of traits such as 1000-seed weight, cotton weight per boll, fiber yield, and fiber length in the new medium-fiber cotton variety “Barqaror Hosil,” developed at the Institute of Genetics and Experimental Plant Biology, in comparison with the standard varieties Namangan-77 and S-6524, and to evaluate their breeding significance.

Analysis and Results:

In the study, economically important traits of the “Barqaror Hosil” variety were comparatively evaluated against the Namangan-77 and S-6524 varieties. The obtained results are presented in the following table-1



Table 1 Indicators of Certain Economic Traits in Cotton Genotypes

No.	Varieties	Traits	X ± m	σ	v
1	2	3	4	5	6
2	Namangan-77 (Standard-1)	1000-seed weight (g)	119.2±0.24	1.58	1.33
	S-6524 (Standard-2)		122.5±0.27	1.80	1.47
	Barqaror Hosil		119.6±0.48	3.16	2.64
3	Namangan-77 (Standard-1)	Cotton weight per boll (g)	5.10±0.08	0.52	10.2
	S-6524 (Standard-2)		5.80±0.09	0.60	10.3
	Barqaror Hosil		6.40±0.10	0.67	10.5
4	Namangan-77 (Standard-1)	Fiber yield (%)	37.9±0.27	1.81	4.78
	S-6524 (Standard-2)		34.5±0.31	2.02	5.87
	Barqaror Hosil		38.7±0.31	2.06	5.33
5	Namangan-77 (Standard-1)	Fiber length (mm)	33.5±0.17	1.15	3.42
	S-6524 (Standard-2)		34.4±0.16	1.08	3.13
	Barqaror Hosil		34.4±0.17	1.10	3.19

According to the table, the 1000-seed weight was recorded as 119.2 g in the Namangan-77 variety and 122.5 g in the S-6524 variety. In the “Barqaror Hosil” variety, this trait was 119.6 g, which was almost identical to Namangan-77 but slightly lower than S-6524. The coefficient of variation ranged from 1.33 % to 2.64 %, indicating a low level of variability for this trait.

In the analysis of cotton weight per boll, the values were 5.10 g in Namangan-77, 5.80 g in S-6524, and 6.40 g in the “Barqaror Hosil” variety. This indicator was higher in the new variety compared to the standard varieties, showing an advantage of 1.30 g and 0.60 g, respectively. The coefficient of variation ranged from 10.2 % to 10.5 %, indicating a moderate level of variability for this trait.

Regarding fiber yield, the recorded values were 37.9 % in Namangan-77, 34.5 % in S-6524, and 38.7 % in the “Barqaror Hosil” variety. These results indicate that the new variety exceeded Namangan-77 by 0.8 % and S-6524 by 4.2 %. The coefficient of variation ranged between 4.78 % and 5.87 % across the genotypes, suggesting that the trait was relatively stable.

In the analysis of fiber length, the values were 33.5 mm in Namangan-77, 34.4 mm in S-6524, and 34.4 mm in the “Barqaror Hosil” variety. Thus, the new variety showed an advantage of 0.9 mm over Namangan-77 and demonstrated nearly



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identical performance to S-6524. The coefficient of variation ranged from 3.13 % to 3.42 %, indicating low variability for this trait.

Overall, the analysis results demonstrated that the “Barqaror Hosil” variety possesses superiority over the standard varieties in several important economic traits, particularly cotton weight per boll and fiber yield. This suggests that the genotype can be recommended as a promising source for breeding programs and practical agricultural production.

References:

1. Kahhorov I.T. “Indicators of fiber yield traits in geographically distant F₂ hybrid populations of cotton species *Gossypium hirsutum* L.” // Uzbek Biological Journal. Tashkent – 2006. No. 6. pp. 55–58.
2. Lobashev M.E. “Genetic processes in populations”. // Genetics. Leningrad: Leningrad State University Publishing House, 1967. 138 p.
3. Mukhitdinov T.I., Choriev A.K., Jumaev S.K., Kodirova Sh.N. “Fundamentals of studying fiber yield and fiber length in parental forms and hybrids within the species *Gossypium hirsutum* L.” // Proceedings of the Republican Scientific-Practical Conference “Integration of Fundamental Science and Practice: Problems and Prospects”. Tashkent – 2018. pp. 233–235.
4. Musaev D.A. “Genetic collection of cotton”. // FAN Publishing House. Tashkent – 1979. 112 p.
5. Ali M.A., Abbas A., Younas M., Khan T.M., Hassan H.M. (2009). “Genetic basis of some quantitative traits in upland cotton (*Gossypium hirsutum* L.)”. // Plant Omics Journal. Vol. 2(2). pp. 91–97.