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INDICATORS IN SIMPLE AND COMPLEX INTERSPECIFIC COTTON HYBRIDS G_3

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ABSTRACT

Data on fiber yield and productivity indicators of G‘$_3$ simple and complex hybrids using the local cotton varieties G. hirsutum L. and G. barbadense L. are presented.

Keywords: Cotton, simple hybrid, complex hybrid, fiber quality indicators, fiber yield, productivity, breeding, boll weight.

G‘O‘ZANING TURLARARO G‘$_3$ ODDIY VA MURAKKAB DURAGAYLARIDA TOLA CHIQIMI VA MAXSULDORLIK KO‘RSATKICHLARI

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ANNOTATSIYA

Mahalliy paxta navlari G. hirsutum L. va G. barbadense L. ishtirokida yaratilgan G‘$_3$ sodda va murakkab duragaylarning tolasi hosildorligi va mahsuldorlik ko‘rsatkichlari bo‘yicha ma’lumotlar keltirilgan.

Kalit so‘zlar: paxta, sodda duragay, murakkab duragay, tola sifati ko‘rsatkichlari, tola hosildorligi, mahsuldorlik, seleksiya, ko‘sak vazni.

INTRODUCTION

As is known, research is being conducted in all cotton-growing countries of the world on cotton maturity, productivity, fiber yield, and quality indicators.

In cotton breeding It is important to create new varieties and initial forms *that are fast-maturing, productive, resistant to various diseases and pests,* and have high fiber yield, index, and fiber quality based on the analysis of *the main valuable economic traits of* hybrid offspring

resulting from the crossing of G. hirsutum L. and G. barbadense L. species. For high cotton yield, it is important that the cotton raw material per plant is high.

Cotton varieties were distinguished by their high productivity, early maturity, high-quality fiber, and high fiber yield. Cotton fiber is one of the valuable traits for farming, and they recognized that the transmission of this trait from generation to generation is a complex process [1; pp. 6–7]. According to scientists who conducted research on fiber yield, it is necessary to repeatedly conduct individual selection to increase this trait [2; pp. 5, 4; pp. 97–102].

According to A. Khakimov et al., based on the results of a study of the fiber yield characteristics of the medium-fiber cotton varieties Namangan-77 and UzFA-711, the UzFA-711 variety can be considered one of the new genotypes with high fiber yield, since in 2021 the characteristics of the UzFA-711 variety in the analysis showed data that were 1.60% higher than the standard [8; pp. 33-35].

In the studies conducted by P.Sh.Ibragimov et al. [5: 83-86 p.], when comparing the Australian varieties Carmen and Flora with the standard variety Namangan-77, the foreign varieties were 12-15 cm lower in plant height than the standard variety . The number of sympodial branches was almost the same as the Namangan-77 variety, and the number of cotyledons was 2.5 fewer. In addition, the vegetation period was extended by 10-14 days in the Carmen and Flora varieties. The yield was 1-5 s/ha higher in the foreign varieties, and at the same time the productivity also increased by 1.7 g., and the researchers recommended involving the Carmen and Flora varieties in the selection process for fiber quality and yield.

Sh. Namozov, A. Siddiqov [6; 52-53 p.] observed that in F_1 complex hybrids obtained with the participation of amphidiploid K-58 and K-59 forms with cultural forms, the parents expressed the characteristics of fiber yield and length, and deviated from them. In the studied complex hybrids, fiber yield and length were compared with productivity and its components, which showed small paratypical variability. Almost high variability was observed in fiber yield in F_2-F_3.

RESEARCH METHOD

Mathematical statistical analysis of valuable economic traits of complex hybrids obtained as a result of crossing medium- and fine-fiber cotton in the studies was carried out based on BA Dospechov's "Methodology of field experiments" [3; B.351.] and *Excel* software.

RESULTS AND DISCUSSION

One-bush plant productivity is one of the main characteristics, and many studies have been conducted on this characteristic in foreign countries and our Republic. Few studies have been conducted on the results of simple and complex hybridization of medium and fine-fiber cotton varieties and on the basis of the analysis of hybrid generations for the main valuable economic characteristics. In the experiments, a variational analysis of one-bush plant productivity in plants in G'_3 simple and complex hybrid families obtained with the participation of medium and fine-fiber local varieties was carried out. In terms of productivity, plants were arranged in 7 classes (K=15 g) in the variational series in G'_3 simple and complex hybrid families, in the range of 41-130 grams.

interspecific G' $_3$ simple hybrids of cotton, the average yield per bush was from 76.5 grams in the G' $_3$ (Omad x Surkhon-14) combination, up to 105.5 grams in the G' $_3$ (Omad x Termez-34) combination, and 88.2 grams in the standard S-6524 variety, and 91.6 grams in the Surkhon-14 variety. According to this characteristic, the main plants were located in classes 3-5 in the range of 71-115 grams, and in G' $_3$ simple hybrids, the presence of plants in these classes ranged from 66.6 to 82.3 percent, and in complex hybrids - from 63.1-83.3 percent. In the studied interspecific G' $_3$ simple hybrids, it was found that on the left side of the variation rows in terms of plant productivity per bush, i.e. up to 71 grams in the G' $_3$ (S-2609 x Surkhon-100) combination, there were 4 families (25.0%) and in the G' $_3$ (Omad x Surkhon-114) combination, there were 5 families (33.3%), which were plants with slightly lower productivity compared to other simple hybrids. According to the variational analysis of the productivity trait, families with 116 grams and above were recorded in the G' $_3$ (S-2609 x Surkhon-14) and G' $_3$ (Omad x Termez-34) combinations. The coefficient of variation in terms of plant productivity in the interspecific G' $_3$ simple hybrid families was in the range of 26.8-34.3%.

In experiments, the productivity of a single plant is G' $_3$ complex It was noted that in hybrid families, plants weighing 116 grams and above, that is, in classes 6-7, were slightly higher than in simple hybrids and standard varieties. In these classes, it was found that 36.8% of plants were isolated in the G' $_3$ [(S-2609 x Surxon-100) x (S-2609 x Surxon-14)] combination and 33.3% in the G' $_3$ [(Omad x Termiz-34) x (Omad x Surxon-100)] combination. It was shown that the coefficient of variation in productivity in interspecific G' $_3$ complex hybrid families was in the range of 20.6-33.8%.

In the studies on the productivity of a single plant, it can be concluded that from the G' $_3$ hybrid families obtained with the participation of interspecific varieties, families with a productivity of up to 85 grams on the left side of the variation row were discarded, and *families with a productivity of 86 grams and higher on the right side of the variation row were retained. Based on various selection selections in* the G' $_3$ hybrid families, early-maturing, large-flowered and productive plants *were selected* based on the analysis of other main valuable economic traits to select starting materials that embody the main traits in one genotype .

The fiber yield characteristic of cotton varieties is one of the main indicators, and the fact that new varieties created in recent years have a yield higher than 40 percent is one of the main tasks for cotton breeders. One of the ways to achieve this task is to cross medium and fine-fiber cotton varieties and conduct individual selections for fiber yield characteristics in hybrid generations. In the studies, fiber yield was analyzed in $_3$ simple and complex hybrids and standard varieties obtained as a result of crossing local medium and fine-fiber cotton varieties . It was noted that plants with fiber yield characteristics in the range of 33-41 percent were found in 9 classes (K=1) (table).

Table 1 Cotton interspecific G' 3 in simple and complex hybrid families Variational analyses on fiber yield

Interspecific simple and complex G' 3 hybrids	K = 1%									n	M±m	δ	V%
	34	34	35	36	37	38	39	40	41				
G' 3 (S-2609 x Surkhan-100)		1	2	1	7	3	2			16	37.4 ±0.53	1.69	4.52
G' 3 (S-2609 x Surkhan-14)			1	1	3	6	4	2	1	18	38.8±1.17	1.65	4.26
G' 3 (Omad x Surkhan-14)		1	2	2	5	3	1	1		15	36.9±1.33	1.89	5.12
G' 3 (Omad x Surkhan-100)	1	1	2	3	7	2	1			17	36.5±1.12	1.59	4.37
G' 3 (Omad x Termez-34)				1	4	6	3	2	1	17	38.6±1.11	1.57	4.08
G' 3 [(S-2609 x Surkhan-100) x (S-2609 x Surkhan-14)]				1	3	3	7	3	2	19	38.5±1.15	1.62	4.23
G' 3 [(Omad x Surkhan-14) x (Omad x Surkhan-100)]			1	2	4	7	3	1		18	37.6±1.15	1.63	4.34
G' 3 [(Omad x Termez-34) x (Omad x Surxon-100)]				1	1	4	8	4	3	21	39.9±1.04	1.48	3.70
St. S-6524	1	2	6	4	1	1				15	35.8±1.05	1.49	4.17
St. Surkhan-14				1	1	2	3	4	3	14	39.9±1.08	1.53	3.85

In classes 8-9 of the variation lines according to the fiber yield characteristic, that is, 40-41 percent , 7 families were isolated from G' 3 simple hybrids, and 13 families were isolated from G' 3 complex hybrids, for a total of 20 families.

According to this characteristic, the combination G' 3 (Omad x Termiz-34) from the G' 3 simple hybrid families, and the combination G' 3 [(S -2609 x Surkhon-100) x (S-2609 x Surkhon-14)] and G' 3 [(Omad x Termiz-34) x (Omad x Surkhon-100)] from the complex hybrids, had more plants than other hybrids and the standard S-6524 variety. The coefficient of variation for fiber yield was 4.08-5.12 percent in the G' 3 simple hybrid families, and 3.70-4.34 percent in the complex hybrid families.

it can be concluded that from the G' 3 simple and complex hybrid families obtained with the participation of local varieties with medium and fine fiber, the following can be concluded: from the G'3 hybrid families obtained with the participation of interspecific varieties, the families with a productivity of up to 85 grams located on the left side of the variation row were discarded, and *the families with a productivity of 86 grams and above located on the right side of the variation row were retained* . Plants located on the left side of the variation row in terms of fiber yield, i.e., below 37 percent, were discarded, and plants in new families with a productivity of 38 percent and above, i.e., located on the right side of the variation row, were isolated.

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