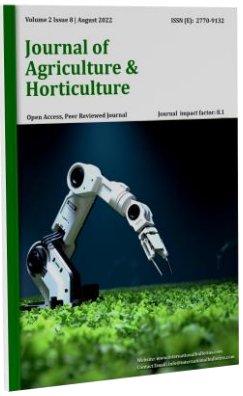

INHERITANCE, VARIABILITY AND FORMATION OF FERTILITY ELEMENTS IN COTTON

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Abstract. Quantitative characteristics of cotton include many important economic characteristics - fiber length, quantity, boll size, etc. To evaluate such signs, it is necessary to measure, weigh, count them. A variation series is generated based on these measurements. Quantitative traits are polygenic, that is, the development of the same trait is determined not by a pair of genes, but by several genes acting in the same way.
Keywords: Gossypium hirsutum; Gossypium barbadense method, cotton, varieties, plant, cultivat, fiber maturity; micronaire; fiber length; color grade; database; regional climatic.

In our republic, extensive measures are being taken to create competitive, high-yielding new cotton varieties. Today, the creation of productive cotton varieties suitable for different soil and climate regions is urgent in our country, and a number of researches are required in this regard. Today, 90 percent of the cotton fiber grown in the world belongs to the cultivated G.hirsutum L. type. In 86 countries where cotton is grown, 20-22 mln. Tons of fiber are collected and exported. One of the important problems in cotton breeding is the creation of high-yielding, fast-maturing varieties with high fiber yield and quality and their wide use in production. Due to the increase in the number of people on earth and the reduction of irrigated arable land, it is important to get a high quality harvest suitable for different soil and climate regions without expanding the arable land in the agriculture of the countries of the world.

The path coefficients analysis of yield components and their effect on yield are presented in Table 3. The significant and positive association between lint yield and seed cotton yield was mainly due to high positive direct effect of lint yield. Sumathi and Nadarajan (1995) also reported similar findings. The direct influence of other traits was found to be negligible. Similar finding was also reported by Murthy (1999). The traits viz., plant height, number of sympodia per plant and boll weight, although had positive association with seed cotton yield showed low direct effect on seed cotton yield. Thus, from these studies it can be inferred that plant height, number of sympodia per plant, boll weight and lint yield had greater influenced on seed cotton yield and in the cotton improvement programme due weightage could be given to these four traits while selecting high yielding lines of cotton.

This project had two objectives: (1) to evaluate the response in investigated traits (lint percent, fiber length and strength) under direct selection pressure and (2) to compare the re-selected populations for yield and fiber quality performance under differing levels of abiotic stress. With respect to the first objective, it is well known that a negative association between fiber quality and lint yield exists. Furthermore, that a negative association exists between fiber length and strength and lint percent. However it should be noted that the degree of the

negative association is population specific and each genotype does not respond the same to the selection pressure; which highlights the importance of determining relationships among desired traits during the selection process for breeding advancements. When selecting for fiber length and strength, a corresponding drop in lint percent was noticed depending on the genotype. Furthermore, negative correlations between fiber length and strength and lint percent were noticed, varying among populations and the year. There were more significant correlations of fiber length and lint percent noticed in 2017 than 2016, which could be due to the environment causing more variability in fiber length and thus resulting in significant correlations being inconsistent. Significant positive correlations between fiber length and strength were also noticed in some populations, suggesting simultaneous improvements in fiber length and strength in these populations.

Conclusions. It is necessary to underline that the analysis of fiber output and fiber length formation in the cotton families exhibit the possibility to find positive recombinant plants on the trait through broaden the size of population and to take a large size selection works to determine positive transgression. Efficiency of using families 0-622, 0-125, 0-580 and lines L-33-35\18, L-25- 27\18 to increase fiber output and on the fiber length 0-125, 0-445, 0-580 and L-54-56\18 was presented. The inheritance of these families in comparison of their parental genotype found its evidence and it proves its superiority on the trait. In general, it was obvious that the positive results of superiority on the fiber output and fiber length in integration with suitability of varieties to different soil-climatic region were noted.

One of the main components of productivity is the weight of cotton per bag. The weight of cotton in one boll is a complex character and depends on the number of pods (the number of nests in the boll), the number and weight of the seed, and the fiber index. In the varieties of G. hirsutum L., the weight of cotton in one bag is mostly 5-10 grams. If varieties that differ sharply from each other in terms of the size of the cyst are crossed, the first generation hybrids occupy an intermediate position between the parental forms. When varieties with the same index of this sign are crossed, heterosis is often observed in F1 hybrids.

According to the size of the cup, the superiority of the hybrids over the parent form is shown by the increase of seed number, absolute weight or fiber index, or all of them change in unity. In the second term, separation occurs at the expense of quantitative signs, as a result of which an infinite series of variations is formed. At the same time, sorting in F2 and F3 joints is very effective

Boll fineness (the weight of cotton in one boll) is a complex characteristic and depends on the number of bolls (the number of nests in the boll), the number and weight of the seed, and the fiber index. Each of these characters is inherited independently of each other, and the weight of cotton per boll of a hybrid depends on the recombination of structural elements. G. In varieties of hirsutum L., the weight of cotton in one bag is from 3 g to 8-10 grams. O. barbadense L., and the weight of cotton in one bag varies from 2 to 4 grams. If varieties that differ sharply from each other in terms of the size of the pods are crossed, the first generation hybrids occupy an intermediate position between the parental forms.

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