



Study of the Genetic Relationship of Cotton in the F₂ Hybrid Generation on Some Economic Traits (Correlation)

E. E. Holliev

Doctoral student, Research Institute of Plant Genetic Resources

A. K. Yusupov

Doctor of Philosophy in Agricultural Sciences, Senior Researcher, Research Institute of Plant Genetic Resources

M. Kh. Talebaeva

Laborant, Research Institute of Plant Genetic Resources

Kh. Y. Nazarmetov

Laborant, Research Institute of Plant Genetic Resources

Abstract: *The article presents experimental data on the genetic relationship between economically valuable traits and productivity of backcross and simple hybrids of medium-fiber cotton, early maturity, the number of fertile branches, the distance between fertile nodes, the weight of one capsule, the weight of 1000 seeds and the fiber yield.*

Keywords: *Breeding, lineage, productivity, medium fiber, fiber yield and quality, backcross and simple hybrids, stem, cotton seeds.*

Based on the research of many scientists, it was concluded that some negative correlations between the traits that are valuable for the economy can be eliminated through different hybridization methods. At the same time, according to scientists, there is an inverse correlation between productivity and speed.

Taking into account the above, our scientific research was focused on the study of the genetic relationship between productivity, quickness and several valuable economic traits in common and backcross hybrids obtained on the basis of lines of different origins.

If we pay attention to the results of the correlation between productivity and quickness traits, a weak positive correlation was found in the simple and backcross F₂ T-782 x LX-777, F₂ V1(F1T-782 x LX-777)xLX-777 hybrids with T-780 in the paternal form. , the correlation coefficient $r = 0.23$, respectively; $r = 0.11$. Most of the remaining common and backcross hybrids had a weak negative correlation coefficient. Only two F₂ T-773 x T-510 and F₂V (T-773 x T-510) x T-510 hybrids were observed to have a moderate positive correlation, their correlation coefficient $r = -0.26$; $r = -0.37$.

It was found that the correlation coefficient between yield and the spacing of yield branches per stem was negative in all common and backcross hybrid combinations. Among hybrids only F₂ T-773 x T-510, F₂ V1(F1T-774 x T-780)xT-780, F₂ V1(F1T-782 x LX-777)xLX-777, F₂V (T-773 x T-510) x T-510 combination has a moderate negative ($r = -0.42$, -0.43 , -0.36 and -0.51) correlation, while all other simple and backcross hybrids have a weak negative correlation, and the correlation coefficient reported $r = -0.25$ to $r = -0.31$. Correlative dependence of this sign on the negative side indicates that the sign deviates to the positive side.



Between-pair correlation coefficients of productivity and yield branch, i.e., the degree of correlation increased in backcross breeding compared to normal breeding. For example, in the simple hybrid $F_2T-773 \times T-510$, the correlation coefficient was weakly negative ($r = -0.20$). A moderate negative ($r = -0.39$) change in the $F_2V (T-773 \times T-510) \times T-510$ correlation coefficient when the same hybrid was backcrossed with the T-510 line or a weakly negative ($r = -0.31$), the correlation coefficient of $F_2V (T-782 \times LX-777) \times LX-777$ was changed to medium negative ($r = -0.42$) in the hybrid obtained by backcrossing with LX-777. Correlative dependence of this sign on the negative side also indicates that the sign deviates to the positive side.

Correlation coefficients between productivity and pod weight have a weak positive correlation level, like the previous signs. That is, if the hybrids obtained on the basis of simple crossing had a partial positive correlation, it was found that the degree of correlation increased when backcrossed. For example, the correlation coefficient of the simple hybrid $F_2T-773 \times T-510$ was weakly positive ($r = 0.16$), but when this hybrid was crossed with the T-510 line, the correlation coefficient of $F_2V (T-773 \times T-510) \times T-510$ was moderately positive. change ($r = 0.39$) or in the $F_2T-782 \times LX-777$ normal hybrid with a weak negative ($r = -0.08$) correlation level in the backcrossed hybrid with LX-777 $F_2V (T-782 \times LX-777) \times LX-777$ correlation coefficient was found to be weakly positive ($r = 0.21$).

When the relationship between productivity and 1000 seed weight was studied, the effect of backcross breeding was clearly shown. In the combination of $F_2T-782 \times LX-777$ from normal hybrids, the correlation coefficient was weakly positive ($r = 0.10$). A strong positive correlation was observed between productivity-1000 seed weight traits in Bekcross $F_2V (T-773 \times T-510) \times T-510$ hybrid, the correlation coefficient was $r = 0.67$. The correlation level of the remaining backcross hybrids ranged from $r = 0.34$ to $r = 0.42$, indicating a moderate positive correlation.

The new varieties being created are required to be productive and fast-growing, as well as having high fiber yield and quality. Because there is an inverse correlation between most economic signs, that is, a sharp increase in productivity causes a decrease in fiber yield and quality, it has been emphasized by many scientists.

Therefore, if we analyze the relationship between the studied productivity and fiber yield, a weak negative correlation coefficient was noted in 3 out of 8 studied simple and backcross hybrids. That is, they are $F_2T-785 \times T-554$, $F_2T-7732 \times T-510$ and $F_2V (T-785 \times T-554) \times T-554$ hybrids, their correlation coefficient is $r = -0.15$, respectively; $r = -0.04$; $r = -0.11$. According to the relationship between these characters, it was found that the correlation coefficient was moderately positive ($r = 0.35$) in the $F_2V (T-782 \times LX-777) \times LX-777$ backcross hybrid. In all other hybrids, the degree of correlation was found to be weakly positive.

The obtained results indicate that the direction and degree of correlation between the traits "productivity-fiber yield" and "productivity-fiber length" depends on the genotype of the lines involved in the crossbreeding, and it is possible to carry out selection work on these characters based on the correlation coefficient.

References

1. Allashov B. Ibragimov Sh., Ibragimov P., Shadrainov E. The study of correlative relationships between udder weight and other characters in the T-550 line obtained by double hybridization method "The current state of selection and seed production of cotton, problems and ways to solve them "collection of the international scientific and practical conference. - Tashkent, 2007. - P. 91-93.
2. Tuychiev. X.Yu. Correlation of the number of crop branches per plant in cotton varieties and ridges with speed //Achievements of genetics and selection of signs of early maturity and



resistance of agricultural plants to biotech and abiotic environmental factors dedicated to the 100th anniversary of Academician S.S. Sadykov. - Tashkent, 2011. - P. 80-82.