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FIBER YIELD INDICATORS OF FAMILIES AND LINES BASED ON PAIRED AND COMPOSITE COTTON HYBRIDS

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Annotation

It has been established that the correct selection of parental pairs and the use of the compositional hybridization method are important for increasing fiber yield when creating new cotton varieties. In particular, the effectiveness of using hybrids T-3377, T-3378, T-3379, created on the basis of compositional hybridization, in achieving positive results in fiber yield was noted.

Key words

cotton, line, paired hybridization, composite hybridization, mass of raw cotton of one boll, seeds, fiber.

Global cotton cultivation is expected to reach US$46.5 billion by 2027, with an annual growth rate of 2.74 percent from 2020 to 2027. Currently, 90 percent of the cotton fiber produced worldwide comes from G. hirsutum L. In 86 cotton-growing countries, 20-22 million tons of fiber are grown and exported each year. Global cotton cultivation is expected to reach US$46.5 billion by 2027, with an annual growth rate of 2.74 percent from 2020 to 2027. Currently, 90 percent of the cotton fiber produced worldwide comes from G. hirsutum L. In 86 cotton-growing countries, 20-22 million tons of fiber are grown and exported each year.

Global climate change throughout the world, the emergence of new races of pathogens and the great damage caused by insect pests indicate the need to develop new varieties of cotton that are resistant to adverse factors. This problem can be solved by using new donors with unique characteristics in breeding work.

Compared with the cotton varieties cultivated in the largest cotton-growing countries of the world, India, China, Pakistan, the USA and Brazil, the varieties of our republic have a number of advantages in terms of early maturity, fiber quality, yield and some other valuable characteristics. However, most of the developed cotton varieties do not fully meet modern requirements for early ripening, fiber

yield and quality, as well as resistance to biotic and abiotic factors. One of the ways to solve this urgent problem is to develop new early-ripening, productive, disease-resistant cotton varieties with fiber quality that meets the requirements of the modern world market. In our republic, extensive measures are being taken to develop new competitive, high-yielding varieties of cotton. Currently, the development of productive cotton varieties suitable for various soil and climatic regions is relevant for our country and requires a number of studies in this direction. Based on the above, the topic of this work is aimed at fully identifying the effect of compositional crosses. The Decree of the President of the Republic of Uzbekistan No. UP-5853 dated October 23, 2019 "On approval of the Agricultural Development Strategy of the Republic of Uzbekistan for 2020-2030" defines the tasks of "breeding new breeding varieties of agricultural crops adapted to local soil-climatic and environmental conditions." In this regard, when selecting cotton varieties, an important place is to increase the possibility of isolating recombinants, which are the source of new genetic changes arising as a result of transgressive variability during composite hybridization, which allows for the short term development of new varieties with high fiber yield and a complex of positive economically valuable properties. signs.

It is advisable to use them as starting material in further selection and genetic research

Each of these traits is inherited independently of each other, and the mass of raw cotton in one boll of the hybrid depends on the recombination of structural elements. Industrial varieties differ in the weight of raw cotton per boll. In G. hirsutum L. varieties, the weight of raw cotton per boll ranges from 3 to 8-10 grams.

Families O-31 and O-3406, as well as line L-3379, which showed high performance in most yield elements, can be effectively used in practical breeding.

The correct selection of parental pairs and the use of composite hybridization are important when creating new high-yielding cotton varieties. Particularly effective in achieving positive results in the process of breeding productive varieties is the use of the families O-3406, O-3407, O-3398, O-3411 and O-2757, as well as the created lines L-3377, L-3378 and L-379.

According to Table 1, the fiber yield of families obtained on the basis of pairwise hybridization ranged from 38.9% (O-27) to 39.7% (O-31). The fiber yield of the lines created on the basis of composite hybridization was higher than 41%, for the L-3378 line

Fiber yield indicators in cotton families and lines obtained on the basis of pairwise and compositional hybridizations, 2022.

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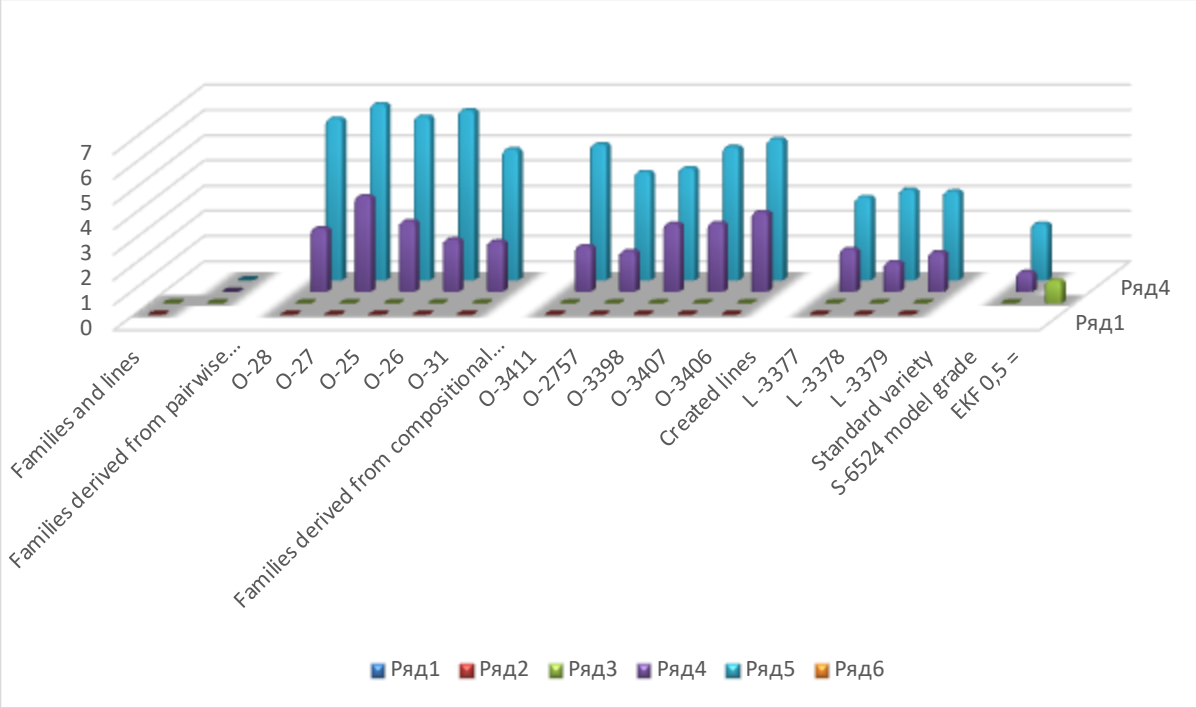

it was 42.8%, for the L-3379 line - 42.4%, for the L-3377 line - 41.8%. The superiority of the created lines over the standard variety S-6524 from 5.6% (L-3377) to 6.6% (L-3378) was noted.

In general, proper selection of parent pairs and the use of composite hybridization technique are essential to improve fiber yield. Naturally, there is a negative correlation between fiber yield and fiber length.

However, in our experiments, positive results were obtained for both characteristics. This indicates that traits are formed depending on the genotypes of the parents.

The results obtained from the wilt resistance studies support the findings from our previous studies using a different convergent hybridization method. That is, as in other crops, in cotton breeding, the method of convergent hybridization is highly effective in increasing disease resistance.

Selected families, the most stable and superior to the standard variety in other economically valuable traits, will be tested in the control nursery of the experimental section of the laboratory and transferred for study in the station and competitive variety testing of the institute.

Conclusion: It was noted that the L-3377, L-3378, L-3379 lines created on the basis of composite hybridization have a high yield and fiber length.

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