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Research Article

INHERITANCE OF FLOWERING PERIOD IN STANDARD AND INTERSPECIFIC F1 HYBRIDS OF G. HIRSUTUM L. AND G. BARBADENSE L

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ABSTRACT

During the years of independence in our republic, based on the creation of a number of new varieties of medium and fine fibers with a complex of valuable economic characteristics of cotton, concrete results are achieved in the creation and introduction into production of sustainable medium and fine fiber varieties of cotton, genetically enriched to the impact of various extreme factors of cotton growing.

KEYWORDS

Marvarid, Namangan, Iolatan, G. hirsutum L. x G. barbadense L., Niyat, Hurma, Rakhmad, Darkham, G. mustelinum x "Beshkhahramon", Heterosis.

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INTRODUCTION

In our conditions, early ripening determines the amount of harvest, the quality of cotton and fiber. In particular, after flowering, especially during the flowering period, the growth and development of cotton accelerates.

According to the literature, the duration of the growing season in F1 plants crossbred G. barbadense L. varieties with G. darwini Watt was found to be inherited in dominant, super-dominant and intermediate states [1].

Boboev S.G'., Namazov Sh.E., Kholmurodova G.R., in their research on improving early ripening in hybrids involving several wild and cultivated types of cotton, mentioned that the involvement of early maturing varieties as fathers gives good results [2].

When studied by G.A.Dusmatova, I.T.Kakhorov, the level of heredity of the coat hair color indicators of interspecies (G. hirsutum L. x G. barbadense L.) and hybrid seeds obtained by cross-breeding is different, in most cases, reciprocal differentiation was determined, and the degree of heritability was shown to be related to the origin and genotype of their parental forms and the direct interaction of non-allelic genes [3].

In research, when ecologically distant forms of a species are interbred, their traits are inherited according to the same law as in ordinary hybridization. In this case, there is more opportunity to choose, and the varieties formed in very different conditions are expected to have some valuable traits (such as disease resistance, high fiber quality, large pods) that are not characteristic of local varieties [4].

The Main Findings and Results

According to scientists' research, the plant height of the Marvarid cotton variety in the optimal water regime is 100.7 cm, the number of bolls in one plant is 37.2 pieces, the biological maturity is 124.3 days, the weight of cotton in one boll is 3.5 g, the September cotton yield is 59.0 g/plant, the fiber length is 38.5 mm, 1000 the weight of the seed is 115.0 g, and 94.7 cm in water shortage, respectively; 36.5 units; 121.9 days; 3.2 g.; 60.6 g/plant; It was 37.7 mm and 110.1 g. The fiber of the variety belongs to the I-type, and its micronaire is 3.8-4.0. The variety is resistant to drought, pests (spider mite, bollworm, autumn nightworm) and is distinguished by rapid opening of bolls. In addition to the southern regions of our republic, it is also recommended for planting in regions with a water shortage and a temperate climate [5].

Kadyrov Sh.Yu. and others to study the correct selection of parental pairs when 7 varieties (Niyat, Hurma, Rakhmad, Darkham, AN-519, Davr, Khorezm-127) and 2 ridges (L-86, L-14) were crossed with incomplete diallel , it was observed that plants with high ripening speed, pod opening speed and high productivity were obtained from hybrid populations [6].

A.A. Mamaroziev and others show that early ripening and fiber yielding traits of cotton are inherited in dominant and intermediate cases [7], Rafieva F.U. and Rizaeva S.M. when they analyzed the inheritance of the sign of requirement for day length in interspecies G. mustelinum x "Beshkhahramon" hybrid combinations, F1 hybrids showed a wide range of variation in flowering, flowering and fruiting under long day conditions, and in F2 hybrids under long day conditions [8].

Scientists have identified 10 promising G.barbadense L. species CCB-5, CCB-11, CCB-17, CCB-26, CCB-27, CCB-28, CCB-29, CCB-30, CCB-33 and CCB-36 those who evaluated their genotypes positively according to speed. Among them, 3 genotypes CCB-5, CCB-29 and CCB-36 were found to ripen faster in terms of the lower location of the first crop branch, the shorter period until the first flower and the first bud opening [9].

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The time from planting to flowering of parental forms and F1 hybrids in our experiments was earlier Marvarid (69.9 days), Namangan-77, L-20 (71.2 days), 75007-11 (72.4 days), Iolatan-14 (73.6 days), in the UzFA-703 variety it was -75.4 days (Table 1).

F1 Marvarid x Namangan-77 (65.4 days), Iolatan-14 x L-20 (67.4 days), Iolatan-14 x UzFA-703 (67.3 days), Iolatan-14 x 75007-11 (68.8 days), L-20 x Iolatan-14 (68.4 days), Marvarid x UzFA-703 (68.0 days), Marvarid x 75007-11 (68.6 days) the first flower opened the earliest in hybrids, UzFA-703 x Marvarid and UzFA-703 x Namangan -77 (73.0 days) and in hybrids, it was found that it was opened for the longest time.

The average duration of the opening of the first flower Iolatan-14 x Marvarid (69.1 days), Marvarid x Iolatan-14 (70.3 days), Iolatan x Namangan-77 (70.6 days), Namangan-77 x Iolatan-14 (70.2 days), UzFA-703 x Iolatan-14 (71.3 days), 75007-11 x Iolatan-14 (69.6 days), Namangan-77 x Marvarid (69.4 days), 75007-11 x Marvarid (69.7 days), Marvarid x L-20 (69.9 days) , L-20 x Marvarid (69.4 days), Namangan-77 x UzFA-703 (71.9 days), Namangan-77 x 75007-11 (69.3 days), 75007-11 x Namangan-77 (71.3 days), Namangan-77 x L-20 (69.2 days), L-20 x Namangan-77 (70.4 days), UzFA-703 x 75007-11 (72.2 days), 75007-11 x UzFA-703 (70.9 days), UzFA-703 x L -20 (71.1 days), L-20 x UzFA-703 (72.6 days), 75007-11 x L-20 (70.8 days), L-20 x 75007-11 (71.5 days) (Table 1).

Table 1

Inheritance of the planting-flowering time marker in F1 plants of parental forms

♀ / ♂	Iolatan -14	Marvarid	Namangan -77	75007-11	UzFA -703	L-20
Iolatan -14	73,5±0,6	69,0±0,6	70,6±0,8	68,8±0,6	67,3±0,5	67,4±0,5
б	4.5	4.0	5.5	4.2	3.6	3.4
h_p		-1.3	-2.3	-7.0	-8.0	-4.1
Heterosis, %		93.9	96.0	93.5	89.2	91.6
Marvarid	70,3±0,8	69,9±0,6	65,4±0,5	68,6±0,9	68,0±0,5	69,9±0,6
б	5.7	4.2	3.3	6.5	3.3	4.2
h_p	-0.7		-5.5	-1.9	-1.6	-0.8
Heterosis, %	95.5		90.9	94.8	90.2	98.2
Namangan -77	70,2±0,8	69,4±0,8	71,9±0,8	69,3±0,5	71,9±1,0	69,2±0,3
б	5.8	5.6	5.3	3.3	7.0	2.5
h_p	-2.7	-1.5		-9.3	-0.8	-5.7
Heterosis, %	95.4	96.5		95.7	95.4	96.2
75007-11	69,6±0,7	69,7±0,9	71,3±0,9	72,3±0,9	70,9±0,9	70,8±1,0
б	4.7	6.3	6.3	6.1	5.9	6.8

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h_p	-5.6	-1.0	-2.6		-1.9	-1.3
Heterosis, %	94.6	96.3	98.5		94.1	97.9
ЎзФА-703	71,3±0,8	73,0±0,6	73,0±1,0	72,1±0,6	75,4±0,7	71,1±0,5
б	5.8	4.4	7.1	4.4	4.7	3.7
h_p	-3.5	0.1	-0.3	-1.1		-1.0
Heterosis, %	94.5	96.8	96.8	95.7		94.3
Л-20	68,4±0,5	69,4±0,8	70,3±0,4	71,5±1,1	72,6±0,6	71,2±0,8
б	3.3	5.6	3.2	7.2	3.9	5.5
h_p	-3.3	-1.5	-2.7	-0.5	-0.3	
Heterosis, %	93.0	97.4	97.8	98.8	96.3	

Note: 1. The average indicator of the sign in F1 plants, day;
2. Standard deviation – б; 3. Dominance rate index (hp)
4. Heterosis %

Inheritance of the period from planting to the first flower opening depending on the parent forms incomplete positive dominance in the UzFA-703 x Marvarid hybrid (hp=0.14), UzFA-703 x Namangan-77 and L-20 x UzFA-703 (hp=-0.3), Marvarid x Iolatan-14 (hp=-0.7), Namangan-77 x UzFA-703 (hp=-0.8), L- 20 x 75007-11 (hp=-0.5), incomplete negative dominance in Marvarid x L-20 (hp=-0.8) hybrids, negative complete dominance in 75007-11 x Marvarid and UzFA-703 x L-20 hybrids (hp=-1.0), Namangan-77 x 75007-11 (hp=-9.3), Iolatan-14 x UzFA-703 (hp=-8.0), Iolatan-14 x Marvarid (hp=-1.3), Iolatan-14 x Namangan-77 (hp=-2.3), Namangan-77 x Iolatan-14 (hp=-2.7), UzFA-703 x Iolatan-14 (hp= -3.5), Iolatan-14 x 75007-11 (hp= -7.0), 75007-11 x Iolatan-14 (hp= -5.6), Iolatan-14 x L-20 (hp= -4.1), L-20 x Iolatan-14 (hp= -3.3), Marvarid x Namangan-77 (hp=-5.5), Namangan-77 x Marvarid (hp=-1.5), Marvarid x UzFA-703 (hp= -1.6), Marvarid x 75007- 11 (hp=-1.9), L-20 x Pearl (hp= -1.5), 75007-11 x Namangan-77 (hp=-2.6), Namangan-77 x L-20 (hp=-5.7), L- 20 x Namangan-77 (hp=-2.7), UzFA-703 x 75007-11 (hp=-1.1), 75007-11 x UzFA-703 (hp=-1.9), 75007-11 x L-20 (hp= -1.3) and in hybrids, it was inherited in a state of negative extreme dominance.

CONCLUSION

In short, it has been established that the inheritance of the time from sowing to flowering occurs in cases of negative extreme dominance and negative incomplete dominance, and the first flower opens in shorter periods in hybrids compared to parental forms. In particular, the flowers of interspecific hybrids Iolatan-14 x UzFA-703 and Iolatan-14 x L-20 (67.4 days) opened the earliest. The flowering period of UzFA-703 variety was the longest, i.e. 75.4 days on average, when this variety was taken as a maternal form in interspecies hybrids, and in stand hybrids, the flowering period was longer.

REFERENCES

1. Amanov B.Kh., Ernazarova Z.A., Rizaeva S.M. Interspecies (G. barbadense L. x G. darwini Watt) F1 plants inheritance of early ripening character/ / Republican scientific-practical conference “Achievements of genetics and

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selection in the field of precocity and resistance of agricultural plants to biotic and abiotic environmental factors" - Tashkent, 2011. -p. 33-36.

2. Boboev S.G., Namazov Sh.E., Kholmurodova G.R. Formation and variation of early maturity trait in early generations of intergenomic cotton hybrids // Mater. Rep. scientific-practical conf. "Achievements of genetics and selection in the field of precocity and resistance of agricultural plants to biotic and abiotic environmental factors." - Tashkent, 2011. -p. 42-45.
3. Dusmatova G.A., Kakhkharov I.T. "Inheritance of color parameters of the seed undercoat in cotton hybrids of the species G. hirsutum L. and G. barbadense L." // Scientific Review - Biological Sciences Russia. 2019. No. 4. –p. 10-14.
4. G. A. Dusmatova et al. Morpho-economic differences of forms of the species g.barbadense l. Before crossing // Jundishapur Journal of Microbiology 2022. Vol. 15, No.1 -P. 6258-6263.
5. Khamdullaev Sh.A., Chorshanbiev N.E., Shavqiev .Sh., Matniyazova H.Kh., Nabiev S.M., Azimov A.A. Prospects for cultivation of fine-fiber cotton varieties in the central regions of the republic// Mater. Int. conf. young scientists "Science and innovations". - Tashkent, 2019. -p. 118-120.
6. Kadyrov Sh.Yu., Masharipova R.B., Akkujin D.A., Jumaniyazov F.Q. Productivity indicators of diallel hybrids// Resp. on "Integration of fundamental science and practice: Problems and prospects" scientific-practical conference mater.-Tashkent, 2018. -p. 50-52.
7. Mamaruziev A.A., Akhmedzhanov A.N., Akkuzhin D.A., Abdumavlanov O.A. Refinement and reproduction of new adaptive varieties of cotton according to a complex of economically valuable traits, with priority on yield, early maturity and fiber quality// Resp on "Integration of Fundamental Science and Practice: Challenges and Prospects". scientific-practical conference mater.–Tashkent, 2018. –p. 230-231.
8. Rafieva F.U., Rizaeva S.M. Inheritance of the morphobiological marker of day length requirement in interspecies F2 hybrids// Resp. on "Integration of fundamental science and practice: Problems and prospects". Scientific-practical conference materials. Tashkent, 2018. -p. 39-41.
9. Dhamayanthi K.P., K.Subashree. Assessment of yield and yield related traits to determine earliness in Egyptian cotton (G.barbadense L.)//Electronic Journal of Plant Breeding. 2016. vol 7(3). -P.771-777.