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INHERITANCE OF GROWTH DURATION IN DOMESTIC AND INTERSPECIFIC F1 PLANTS

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ABSTRACT

This article discusses inheritance of growth duration in domestic and interspecific f1 plants. Scientists have noted that the shorter and more compact the height of the cotton plant, the higher the number of seedlings, the better the flowering and ripening levels, as well as in some hybrid combinations, the character of early maturity of cotton has a weak and moderate correlation with the character of plant height.

KEYWORDS

Growth duration, domestic plants, interspecific plants, cotton plant, number of seedlings, hybrid combinations, moderate correlation.

INTRODUCTION

Early maturity is an important characteristic of cotton in the economy. Prematurity is a complex trait and is determined by the duration of the vegetative phase.

In the research of scientists, when the varieties close to each other in terms of the length of the growing season of cotton were crossed, the state of heterosis was observed in F1 plants. When varieties that differ sharply in this character were crossed, the F1 combinations showed an intermediate state of character inheritance [1].

A.N. Akhmedjanov and others observed cotton Tashkent-6 (*G. hirsutum*) and C-6037 (*G. barbadense*) cross-species, F1, F2 and F3 hybrids on wilt-infested and saline background. Then they carried out research on improving the precocity and economic characteristics of L-27 (Tashkent-6 and C-6037). For this purpose, hybrids Fb and Fb1 were resistant to diseases when they were re-crossed with Tashkent-6 variety. The L-118 line, which is early, disease-resistant, and has high fiber quality indicators, has now been upgraded to the "Ishanch" grade [2].

THE MAIN FINDINGS AND RESULTS

According to H.K.Allanov, J.U.Abdullaev, the sudden change in climate causes the flowering-harvest phases of cotton varieties to be delayed by 18-20 days on average. It was found that the speed of the phases increased somewhat with the increase in seedling thickness, but on the contrary, with the increase in the number of irrigations, ripening was slightly delayed [3].

G.A. Dusmatova and others determined that the selection of parental forms before hybridization will be successful in selection, especially the selection of parental forms by the ecological-geographical method,

depending on the structure of characters and elements of productivity, will give good results [4].

Scientists have noted that the shorter and more compact the height of the cotton plant, the higher the number of seedlings, the better the flowering and ripening levels, as well as in some hybrid combinations, the character of early maturity of cotton has a weak and moderate correlation with the character of plant height [5].

S.M. Nabiev and others observed the highest indicators of plant height, number of harvest branches, length of sowing-flowering, sowing-ripening periods, pod weight, and the lowest indicators of total and opened pods in the T-2006 line. Marvarid and Surkhan-103 varieties have the shortest planting-flowering period and duration of planting-ripening periods, L-5918 line showed the lowest indicators in terms of plant height and the number of harvest branches, pod weight, Surkhan-14, Marvarid varieties and L-5445 line found that it is more productive than other varieties and lines [6].

G.R. Kholmurodova, Sh.E. Namazov, S.G. Boboevlar fast cooking is a complex polygenic sign, the length of periods that determine it varies to different degrees. Fast cooking stated that it is calculated by the duration of the period from planting the seed and the beginning of plant development to the formation of seeds in the plant and the opening of the pod [7].

It is known that the duration of seed germination is different in different genotypes, and this indicator affects the length of the growing season.

In our experiments, we studied the duration of the period from planting to tillering in parental forms and F1 plants (Table 1). On the basis of the analysis of the

obtained results for the period up to the sowing period, we divided the studied lines and varieties into 3 groups according to this indicator. The first group includes Marvarid variety (44.2 days) and the L-20 (limited branching type) line (45.2 days), the second group includes lolatan-14 (Turkmenistan), Namangan-77, 75007-11 (47.8 days) varieties, the UzASc-703 (49.5 days) variety, which ripened longer than the third group, was introduced.

In F₁ hybrids, the duration of the period until the flowering period is different, Marvarid x Namangan-77 (40.7 days), lolatan-14 x UzASc -703 (42.5 days), lolatan-14 x L-20 (42.9 days), Marvarid x 75007-11 (42.6 days), lolatan-14 x Marvarid (43.7 days), Marvarid x UzASc -703 (43.2 days), 75007-11 x Marvarid (43.5 days), Marvarid x L-20 (43.7 days), L-20 x Marvarid (43.6 days). It was found that L-20 x UzASc -703 hybrid was cultivated for a relatively long time (48.24 days). Marvarid x lolatan-14 (44.7 days), lolatan-14 x Namangan-77 (45.6 days), Namangan-77 x lolatan-14

(44.3 days), UzASc -703 x lolatan (46.0 days)), lolatan-14 x 75007-11 (44.0 days), 75007-11 x lolatan-14 (44.7 days), L-20 x lolatan-14 (44.5 days), Namangan-77 x Marvarid (44.3 days), UzASc -703 x Marvarid (46.0 days), Namangan-77 x UzASc -703 (45.5 days), UzASc -703 x Namangan-77 (47.5 days), Namangan-77 x 75007-11 (46.1 days), 75007-11 x Namangan-77 (46.0 days), Namangan-77 x L-20 (45.7 days), L-20 x Namangan-77 (45.8 days), UzASc -703 x 75007-11 (47.5 days), 75007-11 x UzASc-703 (45.7 days), recorded in hybrids UzASc -703 x L-20 (45.9 days), L-20 x UzASc -703 (48.2 days), 75007-11 x L-20, L-20 x 75007-11 (46.7 days) (Table 1).

The analysis showed that in the inheritance of the trait from planting to tillering, positive incomplete dominance was observed in hybrids L-20 x UzASc -703 ($h_p = 0.4$), 75007-11 x L-20 and L-20 x 75007-11 ($h_p = 0.1$), negative incomplete dominance UzASc -703 x Marvarid ($h_p = -0.2$), Namangan-77 x L-20 and L-20 x Namangan-77 ($h_p = -0.5$), UzFA-703 x L-20 ($h_p = -0.6$),

Table 1

Inheritance of the tillering time marker in F₁ plants of parental forms

♀ ♂	lolatan -14	Marvarid	Namangan-77	75007-11	UzASc -703	L-20
lolatan -14	47,2±0,7	43,7±0,5	45,6±0,6	44,0±0,5	42,4±0,4	42,9±0,3
\bar{b}	4.9	3.8	4.3	3.7	2.7	2.3
h_p		-1.3	-6	-8.7	-4.8	-3.3
Heterosis, %		92.5	95.7	91.8	85.6	90.8
Marvarid	44,7±0,6	44,2±0,4	40,7±0,5	42,5±1,0	43,1±0,4	43,7±0,6
\bar{b}	4.1	2.9	3.6	6.7	3.2	4.3
h_p	-0.6		-2.8	-1.7	-1.3	-2.0
Heterosis, %	94.6		85.5	88.9	87.0	96.8

Namangan-77	44,2±0,4	44,2±0,7	47,6±0,5	46,0±0,4	45,5±0,6	45,6±0,3
σ	2.6	4.8	3.5	2.8	4.1	2.6
h _p	-10.6	-0.8		-17.0	-3.4	-0.5
Heterosis c, %	92.8	92.8		96.1	91.8	95.8
75007-11	44,7±0,7	43,5±1,0	46,0±0,8	47,8±0,7	45,6±0,6	46,7±0,7
σ	4.9	6.9	5.5	4.7	4.4	5.1
h _p	-7.0	-1.3	-18.0		-3.7	0.1
Heterosis, %	93.4	90.8	96.1		92.1	97.5
UzASc -703	46,0±0,7	46,0±0,4	47,5±0,8	47,5±0,7	49,5±0,5	45,9±0,5
σ	4.8	2.8	5.4	4.7	3.8	3.7
h _p	-1.9	-0.2	-1.2	-1.5		-0.6
Heterosis, %	92.8	92.8	95.9	95.8		92.7
L-20	44,5±0,3	43,6±0,7	45,7±0,4	46,7±0,6	48,2±0,3	45,1±0,6
σ	2.5	4.9	2.6	4.1	2.5	4.4
h _p	-1.7	-2.0	-0.5	0.1	0.4	
Heterosis, %	94.1	96.7	96.0	97.5	97.3	

Note: 1. The average indicator of the sign in F₁ plants, day;

2. Standard deviation – σ; 3. Dominance level indicator (h_p) 4. Heterosis % was observed in Marvarid x lolatan-14 (h_p= -0.6), Namangan-77 x Marvarid (h_p= -0.8) hybrids.

75007-11 x Namangan-77 (h_p=-18.0), Namangan-77 x 75007-11 (h_p=-17.0), lolatan-14 x Pearl (h_p=-1.33), lolatan-14 x Namangan- 77 (h_p=-6.0), Namangan-77 x lolatan-14 (h_p=-10.6), lolatan-14 x UzFA-703 (h_p=-4.8), UzASc-703 x lolatan-14 (h_p=-1.9), lolatan-14 x 75007-11 (h_p=-8.7), 75007-11 x lolatan-14 (h_p=-7.0), lolatan-14 x L-20 (h_p= -3.3), L-20 x lolatan-14 (h_p=-1.7), Marvarid x Namangan-77 (h_p= -2.8), Marvarid x UzASc -703 (h_p=

1.3), Marvarid x 75007-11 (h_p=-1.7), 75007-11 x Marvarid (h_p=-1.3), Marvarid x L-20 (h_p= -2.0), L-20 x Marvarid (h_p=-2.0), Namangan- 77 x UzASc -703 (h_p=-3.4), UzASc -703 x Namangan-77 (h_p=-1.2), UzASc -703 x 75007-11 (h_p=-1.5), 75007-11 x UzASc -703 (h_p=-3.7) it was found that this trait was inherited in the case of negative superdominance in hybrids.

W.A. Jatoti showed that there is a strong relationship between the low location of the crop branch and parameters such as early ripening and heat resistance in cotton plants [8], K.N. Shah et al. In their research, they found out that morphological and physiological characteristics, external environmental conditions, and genetic links influence early ripening in cotton plants [9].

According to the above, it was observed that the reciprocal hybrids of the Marvarid variety bloomed in shorter periods (40.5; 42.9; 43.6 days) compared to the parental forms. When the UzASc-703 variety is interspecies crossed, the F1 hybrids are bred in shorter periods, and the stander hybrids are bred in longer periods. Thus, the prematurity trait was inherited mainly in negative superdominance and intermediate states.

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