

INTERDEPENDENCE OF VALUABLE FARM TRAITS IN G₂ HYBRIDS OF DIFFERENT COLORS OF SEED COAT

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ANNOTATION

The article presents the results on the correlation of some economically valuable traits in interline hybrids of F₂ cotton with various colors of seed puffs. Revealed positive average correlations between the productivity of plants and the weight of raw cotton one boll; strong negative to strong positive - between 1000 seeds and fiber yield; weak, medium and strong - between 1000 seeds and fiber length.

Key Words: cotton plant, line, variety, color of seed down, correlation, oil content of seeds, productivity, raw weight of one box, weight of 1000 seeds, yield and length of fiber.

INTRODUCTION

In connection with the increase in the population on the globe, one of the most important tasks of agriculture is to obtain a high and high-quality crop of agricultural crops without expanding the sown area. In the world cotton growing, much attention is paid to the creation of high-yielding, early maturing varieties of cotton that are tolerant to unfavorable environmental conditions and have high fiber quality.

Geneticists and breeders of our country, as a result of many years of research, an increase in fiber yield from 28-32 to 37-40%, fiber length - from 26-28 to 33-35 mm, weight of raw cotton of one box - from 4-5 to 6.5-9.0 g. Despite this, the expansion of research work on the development of theoretical foundations for the creation of new varieties of cotton that meet production requirements; the creation of new unique donors based on the use of modern methods does not lose its significance at the present time.

Proceeding from the foregoing, carrying out interlinear cotton with different colors under filling of seeds of dialogic crosses of cotton, studying the inheritance of economically valuable traits in hybrids and regularities of the relationship with other economic traits, as well as identifying families with a

complex of useful traits among the third generation hybrids is an urgent problem. In this regard, studies were carried out on the creation of initial and breeding materials on the basis of increasing the efficiency of individual selections by hybridizing lines with different colors of seed pads, a comparative analysis of families and lines with a complex of useful traits.

Hybridization of cotton lines with different colors of seed puffs led to an enrichment of the genotype of hybrids, wide variability of economically valuable traits and an increase in selection efficiency, on the basis of which a number of lines with a complex of useful traits were identified. They are of great importance for breeding and provide sufficient diversity for genetic research.

MATERIALS

The studies used the method of dialled hybridization. Hybrids F_{1-3} was studied in a biological nursery, and hybrids F_{4-5} - in a breeding nursery. On the basis of plants F_6 , families were identified that exceeded the standard cultivar in terms of economically valuable traits and in 2012-2013. Transferred to a pre-breeding nursery. Created in 2014, the lines were tested in the station test nursery, and in 2015-2016. - Competitive variety testing. The degree of dominance (ph.) in F_1 hybrids is determined by the formula S. Wright, given in the work of Abdul Jalal Hassan Muhammad Al Haran (1985). Statistical analysis of the results obtained was carried out according to B.A. Dospekhov (1985).

DISCUSSIONS AND RESULTS

Many researchers have identified positive and negative correlations between the morpho-economic traits of cotton and made conclusions about the possibility of overcoming negative correlations using hybridization methods. It is known that when making selections for cotton, it is important to pay attention not only to a single trait, but also to a complex of traits. In our studies, we studied the relationship between some economically valuable traits in interline hybrids F_2 with different colors of seed pads.

In interline hybrids F_2 , a positive correlation was established between the productivity of one plant and the weight of raw cotton of one boll (Fig. 1).

Positive correlations of an average degree between these characters were revealed in hybrid combinations F_2 L-17(grey.) \times L-19 (emerald); F_2 L-19 (emerald) \times L-18 (cream); F_2 L-20 (dark br.) \times L-18 (cream.); F_2 L-17 (grey.) \times L-20 (dark br); F_2 L-18 (cream) \times L-20 (dark br); F_2 L-20 (dark br) \times L-19 (emerald); F_2 L-20 (dark br) \times L-17 (grey); F_2 L-19 (emerald) \times L-20 (dark br) ($R = + 0.55$; $+0.42$; $+0.41$; $+0.40$; $+0.38$; $+0.36$; $+0.35$; $+0.34$ respectively).

Basically, weak correlations were established between the productivity of one plant and the fiber yield, with coefficients from $r = -0.33$ to $r = + 0.17$. The relationships between the productivity of one plant and the fiber length, as well as the oil content of the seeds, were also moderately negative to weakly positive.

The interrelationships from weak negative to weak positive were established between the characteristics of the weight of raw cotton of one boll and the fiber yield, fiber length, oil content of seeds.

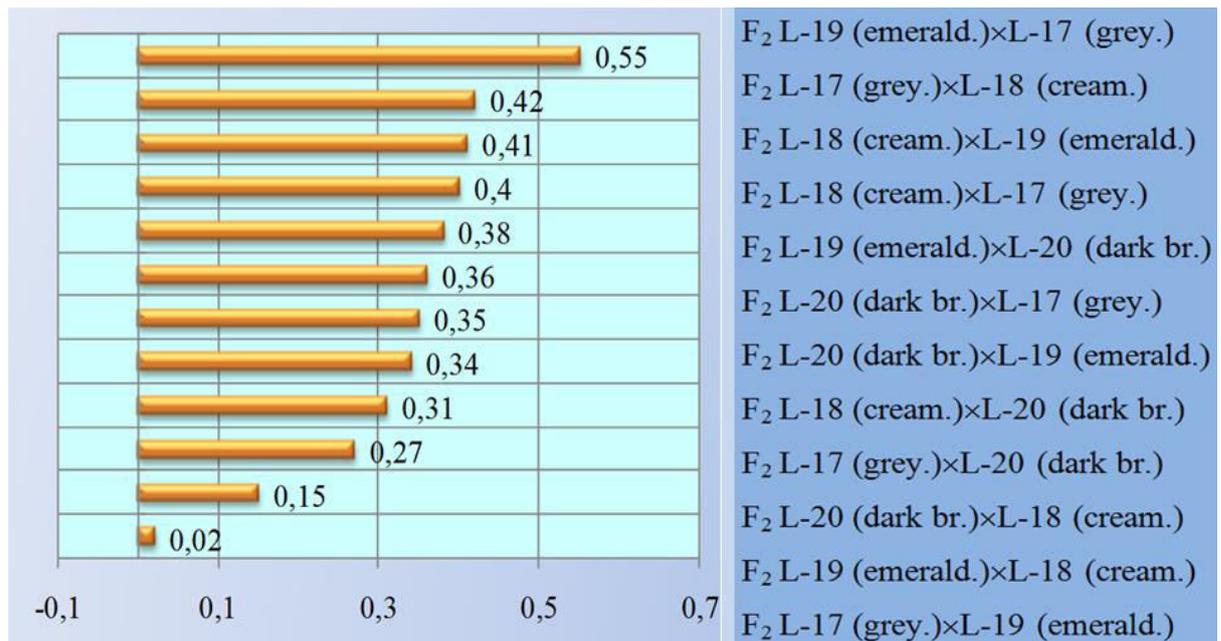


Figure: 1. The relationship between plant productivity and weight raw cotton one box in hybrid combinations F₂

NOTE:
 grey. - line with gray coloring;
 cream. - line with cream coloring down;
 emerald. - line with emerald coloring down;
 dark br. - line with dark brown coloring down

The correlations between yield and fiber length were weak negative and positive. The fiber yield and seed oil content in the combination F₂ L-17 (grey.)× L-20 (because cor.) Had an average negative relationship ($r = -0.40$), and in other combinations, there was no relationship between these characters.

An average positive correlation between the traits oil content of seeds and fiber length was noted only in the combination F₂ L-17 (grey.)×L-19 (emerald) ($r = + 0.34$), in other combinations the relationship between these traits was either weakly negative, or positive.

Table 1. Relationship between the mass of 1000 seeds with the yield and length of the fiber in interline hybrids F₂ obtained with the participation of lines with different colors of seed

№	Hybrid combinations	N	Weight of 1000 seeds					
			Fiber output			Fiber length		
			R	m	T	R	m	t
1	F ₂ L-19 (emerald.)×L-17 (grey.)	108	-0,65	0,5	-1,2	0,70	0,5	1,4
2	F ₂ L-17 (grey.)×L-18 (cream.)	138	0,82	0,4	2,0	0,09	0,7	0,1
3	F ₂ L-18 (cream.)×L-19 (emerald.)	120	-0,10	0,7	-0,1	0,84	0,4	2,2
4	F ₂ L-18 (cream.)×L-17 (grey.)	114	0,12	0,7	0,2	0,75	0,5	1,6
5	F ₂ L-19 (emerald.)×L-20 (dark br.)	136	-0,07	0,7	-0,1	0,90	0,3	-3,0
6	F ₂ L-20 (dark br.)×L-17 (grey.)	112	-0,81	0,4	-2,0	0,99	0,1	13,3
7	F ₂ L-20 (dark br.)×L-19 (emerald.)	112	-0,60	0,6	-1,1	0,91	0,3	-3,0
8	F ₂ L-18 (cream.)×L-20 (dark br.)	176	0,27	0,7	0,4	0,77	0,5	1,7
9	F ₂ L-17 (grey.)×L-20 (dark br.)	120	-0,55	0,6	-0,9	0,44	0,6	0,7
10	F ₂ L-20 (dark br.)×L-18 (cream.)	166	0,22	0,7	0,3	0,88	0,3	2,6
11	F ₂ L-19 (emerald.)×L-18 (cream.)	190	-0,58	0,6	-1,0	0,25	0,7	0,4

12	F ₂ L-17 (grey.)×L-19 (emerald.)	122	-0,17	0,7	-0,2	0,55	0,6	-0,9
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The correlation between the weight of 1000 seeds and the fiber yield was from strong negative to strong positive (Table 1). For example, in the combination F₂ L-18 (cream)×L-20 (because cor.) ($r = -0.81$), a strong negative connection was established, in the combination F₂ L-17 (ser.)×L-19 (emerald) ($r = 0.82$) a strong positive relationship, and in other combinations the correlations were weakly positive negative, and the relationship between the mass of 1000 seeds and the length of the fiber was weak, medium, and generally strong positive. In 8 combinations, strong positive relationships were found, where the correlation coefficients ranged from $r = 0.70-0.99$.

CONCLUSION

- 1.The positive average correlations between the productivity of plants and the weight of raw cotton of one boll have been determined; strong negative to strong positive - between 1000 seeds and fiber yield; weak, medium and generally strong between 1000 seeds and fiber length.
- 2.The absence of correlations between the main commercially valuable traits makes it possible to distinguish recombinants with different colors of seed puffs with high indicators of commercially valuable traits.

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