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THE CONNECTION BETWEEN THE TYPE AND COLOR OF THE SEEDS AND THE AGRONOMIC VALUABLE TRAITS OF F5 HYBRIDS OF G. BARBADENSE L.

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Abstract
The research results showed that, we could conclude that the type and color of seeds do not significantly affect the main of agronomic valuable traits. There was a weak correlation between some traits. The type and color of the undercut can be used as a marker attribute in breeding.

Keywords: Uzbekistan, cotton, lines, a raw cotton weight of one boll, fiber output, fiber length, correlation.

Introduction

Cotton is not only the oldest plant among technical crops but also the most valuable product and a major source of raw materials. It is mainly grown for its fiber, making it an essential sector of the economy.

Polymer genes control the main quantitative characteristics of cotton, and their differentiation and integration processes are very complex. When creating new cotton varieties, it is important to use hybrids from different varieties and types. In subsequent generations of these hybrids, new organisms with various abilities may emerge, such as plastic genotypes, heterogeneous and heterozygous biotypes (polymorphs), with a wide range of morphine and economic properties [1]. The pubescence of cotton seeds is formed as a result of a combined type of exposure to non-allelic genes [2].

Dusmatova G.A. and others found that the color of the undercutal of hybrid cotton seeds could vary from brown to green to white, as noted in the literature.

In the Namangan-77 variety, 84% of the sowing seeds had a brown undercut, while the remaining 16% were white. In the UZFA-703 variety, 88% of the seeds were brown, with 12% being green. In the TPR-16 variety, 72% of the seeds were brown, and the remaining 28% were green. In the 75007-11 and Marvarid varieties, all the seeds were brown. Finally, in the Iolatan variety, 96% of the seeds had a brown pubescent, while 4% had a green micropyle part.

As noted in the literature, observing such a variety of cotton seeds directly affects the relationship

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between the quality of the fiber and the agronomic valuable traits [3].

The study of how of agronomic valuable traits are inherited, depending on the color and type of seeding, is of practical and theoretical interest. This research allows us to release families and cotton lines with a combination of useful characteristics. These lines can then be used as a source of material for breeding and genetic studies.

Methods

In 2020, in the Tashkent region, a combination of hybrids was used to produce long-staple cotton. The hybrid was created by crossing F_5 [(F_4 (F8 L-817 x 010972) x L-817) x Surkhan-16)] X (F_2 Surkhan-16 x Surkhan-18).

The experiment involved 20 plots, with three repetitions. The studied plants were divided into 6 groups of type and color. 1- in the micropyle part, gray or green, in the presence of completely pubescent green seeds; 2- fully glying seeds in the presence of seeds with the lowers of the micropyle part of gray and green; 3- sinus-seeded or completely pubescent gray; 4- cavity seeds pubescent gray in the presence of seeds with a greening of green color; 5- seeds with the pubescence of the micropyle part of gray and green; 6- Seeds are completely glying or with a gray undercut.

The resulting digital material was statistically processed using a set of Microsoft Excel programs. As can be seen from the above combination of the hybrid during crossing, a wild form sample 010972 was used with a strict photoperiodic reaction. In the studied combination, we studied 427 plants of which 33.0% of plants belonged to 1 group of plants, 29.0% K of the second, 3.1% to the third, 10.8% to the fourth, 20.1% to the fifth and 4, 4, and 4, 0% to the sixth group of plants.

Table 5 shows the indicators of agronomic valuable traits and the correlation coefficients in the studied groups (G-1-G-6) of plants, depending on the type and color of the underfloor.

Table 5 Indicators of household values and correlation coefficients in plant groups, depending on the type and color of the undercut.

	G -1	G -2	G -3	G -4	G -5	G -6
raw cotton weight of one boll, g	3,2±0,03	3,2±0,03	3,1±0,06	3,4±0,05	3,3±0,04	3,4±0,11
The limit of variability	2,2-4,0	2,4-4,5	2,6-3,5	2,4-4,0	2,6-4,3	2,7-4,7
Homeostatic coefficient	28	28	40	36	29	25
fiber output, %	38,0±0,15	38,2±0,19	37,4±0,42	38,0±0,31	38,0±0,19	37,7±0,48
The limit of variability	32,5-42,8	33,5-43,2	34,9-40,6	32,8-42,2	34,5-43,5	35,2-41,4
Homeostatic coefficient	768	672	895	687	785	710
weight of 1000 seeds, g	110±0,68	110±0,78	113±2,58	114±1,58	110±0,96	113±2,76
The limit of variability	88-134	98-141	101-132	95-140	99-140	100-143
Homeostatic coefficient	1492	1396	1374	1207	1351	1120
Fiber index	6,69±0,04	6,81±0,06	6,73±0,12	6,93±0,10	6,76±0,07	6,81±0,15
The limit of variability	5,45-8,58	5,64-9,08	5,99-7,6	5,71-8,65	5,36-9,42	5,72-7,76
Homeostatic coefficient	85	65	103	69	73	75
fiber length, мм	40,2±0,08	40,3±0,09	40,0±0,32	40,3±0,15	40,3±0,11	40,3±0,21
The limit of variability	37,6-43,4	38,0-43,0	38,0-43,0	38,0-43,2	38,4-43,4	38,0-41,6
Homeostatic coefficient	1555	1492	1356	1506	1676	1843

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	Correlation coefficient					
raw cotton weight of one boll – fiber output	-0,15	-0,02	-0,03	0,17	0,16	0,11
raw cotton weight of one boll – weight of 1000 seeds	0,46	0,35	0,14	0,34	0,39	0,29
raw cotton weight of one boll – fiber length	0,09	-0,02	-0,02	0,07	0,05	0,36
fiber output - weight of 1000 seeds	-0,45	-0,28	-0,61	-0,39	-0,11	-0,5
fiber output - fiber length	-0,13	-0,28	-0,33	-0,28	-0,11	0,07
weight of 1000 seeds - fiber length	0,13	-0,33	0,01	0,04	-0,06	0,24

As can be seen in table 5, the raw cotton weight of one boll for plants in groups 1–3 was lower by 0.2–0.3 grams compared to plants in groups 4–6. The highest indicators of the raw cotton weight of one boll were recorded for plants in groups G-4 and G-6, with values of 3.4 grams. The widest range of variation for this characteristic was observed in groups G-2 and G-6, ranging from 2.4 to 4.7 grams.

The homeostatic indicators for groups G-3 and G-4 were between 36 and 40, while in the remaining groups this indicator was lower by approximately for 11.

The fiber output is a particularly important characteristic for long-staple cotton. In the studied groups of plants, the average fiber output ranged from 37.3% to 38.2%. The highest values were observed in groups G-1, G-2, and G-4, where the indicator reached 38.0%, while groups G-3, G-5, and G-6 saw a decrease of 0.5–0.9%.

The limit of variability for this characteristic in groups G-1, G-2, and G-3 ranged from 32.5% to 43.2%. However, in other groups of plants, the limit of variation was already in the range of 34.5–43.5%.

The homeostatic coefficient for this characteristic was found to range from 672 to 895, with the highest value observed in the G-3 group of plants.

The average weight of 1000 seeds was between 110 and 114 grams. In groups 3, 4, and 6, the weight of 1000 seeds was 3-4 grams higher. The range of variation for this feature was from 88 to 143 grams.

In groups G-3, G-4, and G-6, a low homeostatic coefficient of between 1207 and 1120 was observed. In other groups of plants, the homeostatic coefficient for this feature ranged from 1492 to 1396.

The average indicators of the fiber index were depending on plant groups 6.69-6.93 with a variable limit of 5.36-9.42. The widest limit of the variability of the indicators of the fiber index was observed in G-2 and G-5 plants. The indicators of the homeostatic coefficient of the sign of the fiber index were in the range of 65-103. At the highest values in groups G-1 and G-3.

As shown in Table 5, the data fiber length for the studied groups of plants did not show significant differences and ranged from 40.0 to 40.3 mm. The range of variability in the length of the fiber varied depending on the group of plants, from 37.6 to 43.4 mm. The coefficient of homeostaticity for the fiber length ranged from 1492 to 1843. The highest values of the homeostatic coefficient were observed in groups G-5 and G-6.

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The study of the relationship between traits is crucial for selection. This knowledge helps determine the strategy for selecting plants.

When we looked at the correlation coefficient between traits in each group of plants, we found that there was either a negative or insignificant correlation between the raw cotton weight of one boll and the release of fiber in the first three groups of plants. However, in groups four to six, there was a positive correlation, albeit weak.

In contrast, the correlation between the raw cotton weight of one boll and the weight of 1000 seeds was positive on average, except for the third group of plants.

Between the signs, the mass of raw cotton weight of one boll and the fiber length in the studied groups of plants, with the exception of the 6 group of plants, was noted a positive or negative insignificant relationship. Between the signs, the fiber output is a weight of 1000 seeds in most groups marked a moderately negative correlation dependence. Similar results were obtained between the signs of the fiber output - the fiber length. Between the signs there are a weight of 1000 seeds - the fiber length in 1 and 6 groups of plants observed a poorly positive relationship, in the 2nd group of plants, the correlation of the plants was not significant in the rest of the studied plant groups.

Conclusions

Based on the results obtained, we can conclude that the type and color of the seeds have no significant impact on the indicators of the main agronomic valuable traits. There was a weak correlation between some signs. The type and color of the undercut can be used as a marker attribute in selection.

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