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INHERITANCE AND VARIABILITY FIBER EXIT AT RIGID WATER DEFICIENCY CONDITIONS

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ABSTRACT

It is studied the characteristic of inheritance and variability of an exit of a fiber at hybrids F_1- F_2- F_3 in the conditions of rigid water deficiency (0-1-0). It used the lines contrast differing on an exit of a fiber (36.7 %-39.0 %) as parental forms. In the majority of the used lines the fiber exit was high enough and made 37.5 % -39.0 % on water deficiency.

KEYWORDS: Fiber, Water Deficiency, Polymorphic Hybrids, Heterozis

INTRODUCTION

The fiber exit is one of the basic economic-valuable signs of grades of cotton. Productivity of a clap-fiber is a set of economic-valuable signs. Therefore, productivity of a fiber can be considered, how a development indicator cotton and all complex of the country.

The primary factor providing a high exit of a fiber, there is a genetic potential of a grade to which the constant attention is paid from selectors. For us also it was important will find out character of inheritance and variability from this sign at the studied hybrids at crossing and their cultivation in the conditions of the rigid irrigation deficiency, received on base difficult the remote hybridization within kind Y. Hirsutum. L.

METHOD AND RESULTS

We used the lines contrast differing on an exit of a fiber (36.7 %-39.0 %) as parental forms. In the majority of the used lines the fiber exit was high enough and made 37.5 % -39.0 % on water deficiency.

In studied hybrid lines F_1 (Table 1.), in the conditions of the given background the indicator of an exit of a fiber made 36.0 % of 41.8 %. At the majority of combinations (in 9 from 11) it was in limits of values of 38.2 %-41.8 %.

But an example of the highest exit were 7 combinations which exit has made 40.0 %-41.8 % (on the average 1.5-2.0 % above initial forms). It isn't in those combinations where participate in each combination a little (2-3) cultivars - Namangan-77, paumaster-266, short cat and deltapine-16 and versions punctatum, morilli, richmondi. From 11 in 7 combinations the high effect heterozis was observed, the indicator dominate has made hp^1 - 47.0; hp^1 - 8.7; hp^1 - 5.4; hp^1 - 4.7; hp^1 - 2.

In two cases hybrids turned side a high exit the parent (hp^1 - 1; hp^1 - 0.5), irrespective of in what quality of the parent it acted. (2) presence negative effect heterozis (36.8 %-37.2 %) which exit was affected by lines Acala 1517-70 participating in hybridization, marie galante took place and a grade 108-f, which didn't show high percent of an exit of a fiber.

Initial lines as we see on the table data the big role also participation heighty exit grades have played.

The line (yucatanenze x punctatum) - 36.7 % had the lowest exit of a fiber. Here and not followed expect presence of high percent of an exit of a fiber. These versions didn't possess high percent of an exit of a fiber. And only thanks to hybridization and long selection at the expense of a recombination of genes, to authors of the given combination (Alihodjaeva S.S., etc.) which have given us a material for our researches, was possible to increase further an exit of a fiber to 38.0 % -39.0 %. They practically for a short way have repeated an evolutionary way which takes place wild and ruder forms in the natural nature.

Table 1: Degree of Domination an Exit of a Fiber (%) at Hybrids F_1, F_2 in Comparison with Parental Forms at their Cultivation in the Conditions of Rigid Water Deficiency (0-1-0)

Hybrid Combinations	F_1	hp	F_2	S	V	h^2	P_1	P_2
(Acala 1517-70 x m.galante) x [And.60 x (108-F x C-9070)]	40,0±0,35	47,0	37,5±0,41	1,90	7,43	-0,05	37,6	37,7
(Acala 1517-70 x m.galante) x [(Deltapine 16 x Morilli) x (Paumaster-266 x Richmondi)]	38,2±0,29	0,5	37,2±0,37	1,65	6,64	-0,05	37,6	38,4
(Acala 1517-70 x m.galante) x [(Paumaster-266 x Yucatanenze) x (Deltapine 16 x Richmondi) x (Paumaster-266 x Richmondi)]	40,0±0,21	2,0	38,4±0,40	2,01	5,45	-0,03	37,6	39,2
(Deltapine 16 x Morilli) x [(Paumaster-266 x Richmondi) x (Acala 1517-70 x m.galante)]	37,2±0,25	-2,0	37,0±0,34	1,87	6,38	-0,04	38,4	37,6
(Deltapine 16 x Morilli) x [(Paumaster-266 x Richmondi) x (108 Ф x C-9070) x (Deltapine 16 x Morilli)]	36,0±0,28	-9,0	36,4±0,31	1,76	4,15	-0,08	38,4	39,0
(Deltapine 16 x Morilli) x [(Paumaster-266 x Richmondi) x (108-F x S-9070) x (Namangan 77 x (Paumaster-266 x Punctatum)]	**41,1±0,45**	**8,7**	**38,1±0,76**	**3,26**		-0,05	38,4	37,7
(Deltapine 16 x Morilli) x [(Paumaster-266 x Richmondi) x (Ycatanenze x Punctatum)]	**41,0±**	**4,1**	**38,4±**			-0,02	38,4	36,7
(Ycatanenze x Punctatum) x [(Namangan 77 x (Deltapine 16 x Morilli) x (Paumaster-266 x Richmondi)]	41,8±0,19	5,8	38,3±0,23	2,14	4,87	-0,04	36,7	38,2
(Paumaster-266 x Punctatum) x [(Paumaster-266 x Punctatum) x 0226)]	41,0±0,40	5,4	37,4±0,90	2,31	7,54	-0,09	38,6	37,5
Schortcat x [(Deltapine 16 x Morilli) x (Paumaster-266 x Richmondi)]	40,1±0,39	4,7	39,8±0,41	2,64	6,77	0,03	39,0	38,4
Schortcat x (Ycatanenze x Punctatum)	39,0±0,23	1,0	37,9±0,36	2,48	5,39	-0,02	39,0	36,7

Heterozis on an exit of a fiber at hybrids F_1 it is more often noted at use in crossings of lines when as initial components were used a little high exit cultivars (2-3) and versions of the remote origin punctatum, morilli and richmondi which are gen origin a high exit of a fiber.

At crossing even different in an indicator of an exit of a fiber of initial forms, at hybrids F_1, as a rule, it was observed in most cases heterozis and sign super domination. At that time, presence negative heterozis with the assistance of parental lines at which blood there are grades 108-F and marie galante, possessing in small percent of an exit of a fiber took place. At the overwhelming majority of hybrids F_2 (10 from 11), heterozis on the fiber exit, observed in F_1 was absent in a kind of strong splitting and complexity of their origin.

But at the same time it is necessary to underline that in F_2 the average exit of a fiber fluctuates basically from 37.5 %-39.8 %, in a single instance of 36.7 %. Scope of variability of a sign was wide, and the variation factor has made in most cases from V % 4.15-4.8 depending on a combination. The lowest exit hybrids F_2 (36.4 %), besides, as well as F_1 (synthesized 36.0 %) in hybrid combinations with domestic grades 108-f, S-9070 and versions morilli and richmondi. Participation of other domestic grades specify that they is visible, possess high combinational ability in transfer of this sign. Only in one case, at participation high exit grades short cat, deltapine-16, paumaster-266 and versions morilli and richmondi hybrid lines have kept.

Basically heritability went a side high exit the parent, irrespective of in what quality of the parent it acts. It is especially important that those hybrid combinations at which it was observed high heterozis on a fiber exit to a lesser degree, have lowered the indicators to this sign in F_2.

The exit at hybrids already in F_3 fluctuated on the average within values of 36.5 % - 39.5 %. In process of increase of number of generations the fiber exit became more and more sharply expressed.

The variation factor (V %), in F_2, made 4.15-7.54 values while already in F_3 it was much less than 1.78-5.39, the lowest factor of a variation has made V %-1.78. Homozygosis increase was characteristic for a combination (deltapine-16 x morilli) x (paumaster-266 x richmondi) with a variability range in 4 classes. Low enough was the factor of a variation and at a hybrid combination (paumaster-266 x punctatum) x [(paumaster-266 x punctatum) x0226] - V %-2.26. All it testifies to the beginning of stabilization of a sign.

The highest scope of variability (from 9-11 classes) on a fiber exit has been noted at hybrids F_3 - (Acala 1517-70 x m.galante) x [Andijan-60 x (108-f x S-9070)] - V %-10.45 and (deltapine-16 x morilli) x (paumaster-266 x richmondi) x (Acalal517-70 x m.galante), here the big role was played by a line (Acala 1517-70 x m, galante). At these hybrids the amplitude of fluctuation of an exit of a fiber exceeds indicators of an initial material that testifies to possibility of creation of lines with a high exit of a fiber.

Lines of genetically remote origin, and also hybrid gen lines of a difficult genetic origin as it is visible, can serve as valuable donors for deducing of grades with higher exit of a fiber.

Data shows that homozigotization a sign of an exit of a fiber at different hybrids can occur in different generations. At some it begins already with F_3, and at others rough splitting that testifies to value of a genotype of initial forms in terms of splitting and sign stabilization proceeds.

CONCLUSIONS

Proceeding from reached, we come to conclusion that in the conditions of water deficiency:

- For creation of the polymorphic hybrids possessing in high percent of an exit of a fiber, obligatory participation, as the components, several (2-3) initial forms or the lines possessing in high percent of an exit of a fiber (38.5 % 40.0 %), irrespective of in what quality of components they act when in F_1 it is in most cases observed under dominate and high inheritance is necessary.
- It took place and at different indicators of the given sign. Negative heterozis it is observed in cases when there are grades 108-f and ssp.marie-galante;
- For creation height exit lines, it is necessary to use grades short cat, Namangan-77 and a line (deltapine-16 x morilli) x (paumaster-266 x richmondi);
- The essential role is played by expressiveness of the given sign within versions ssp.yucatanense, punctatum, morilli, richmondi, possessing the big polymorphism to this sign;
- Despite complexity of an origin and scope of variability, an indicator of an exit of a fiber decreases slightly at the given polymorphic hybrids (37.5 %-39.8 %), i.e. inheritance goes on type high ex.it the parent, is independent in what quality of a component it acts.