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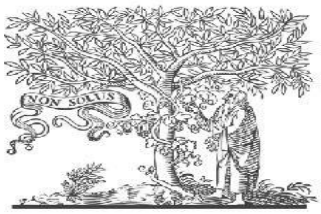

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THE GENETIC NATURE OF FOOD TYPE HERITISM IN THE COTTON LEAF PLATE

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Abstract: This article provides data on the hereditary nature of the hair plate type on the leaf plate of cotton hybrids and provides genetic analysis.
Keywords: G.tomentosum Nutt. ex Seem., G.hirsutum L, hair type, heredity.

Introduction

The genus *Gossypium L.* is distinguished by its species diversity and their morphological specificity. This series is still of great interest among scientists conducting research in the field of genetics, selection and seed production of cotton.

G.tomentosum Nutt ex Seem., a wild polyploid species that grows in the Hawaiian Islands of Gaza. is distinguished by its unique species aspects. In hybrids of this species with samples of *G.hirsutum L.* the mutual similarity of both species has been studied to some extent. However, the inheritance and genetic analysis of the beneficial traits of this wild species have not been performed. This is of great importance in studying the nature of these positive traits, in assessing their chances of survival in generations.

G.tomentosum Nutt. ex Seem. the high fiber quality of the species, its complex nature, which prevents it from being infested by sucking pests (especially spiders), and its resistance to wilt and drought are of great importance in solving current problems.

According to the literature, the number of hairs at the leaf surface in the genus *G.tomentosum Nutt ex Seem* is controlled by polygens. According to Kh. However, genetic control of the hair type, i.e. the hereditary nature of the trait, has not been studied.

Research methods.

G.tomentosum Nutt ex Seem. a wild polyploid species that grows in the Hawaiian Islands of Gaza. and hybridization between the ridges of *G.hirsutum L.* and the ridges of *G.hirsutum L.* between the ridges of *G.hirsutum L.* and the ridges of *G.tomentosum Nutt. ex Seem.* A number of field and laboratory analyzes were performed to determine the heredity of traits that provide resistance to sucking pests. In the ridges and hybrids, the type of hair follicle on the leaf blade was determined individually in all plants for each hybrid combination during the flowering period of plants, the type of hair was studied, the nature of heredity, their variability was genetically analyzed.

Results obtained and their analysis.

In our experiments, *G.tomentosum Nutt. ex Seem.* in order to study the hereditary nature of the type-specific hair type, the type of hair on the 1 mm^2 level of the leaf blade in hybrids was studied.

The studied parental forms could be divided into two phenotypic classes ("simple" and "spiral") according to the type of hair (Figure 1).

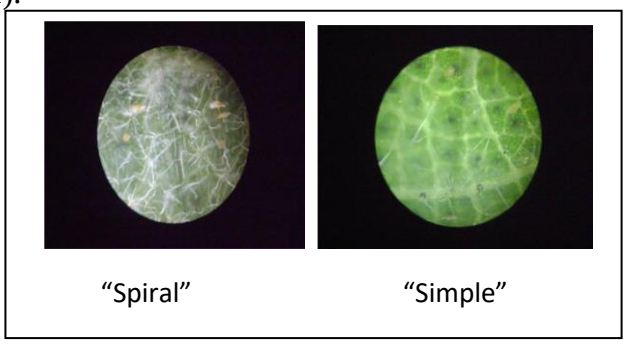

Figure 1. Type of hair in parental forms

Based on the evidence obtained, only one ridge L-001 was of the "simple" hairline type in terms of leaf-level hairs, which we conditionally designated as homozygous. Other ridges T-5/8, T-21/24, T-25/27, and T-26

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identified the second alternative phenotype as the "twist" type.

Plants in all ("Spiral" x "Simple"), ("Spiral" x "Spiral") combinations according to the type of hairs studied in F1 were found to have a phenotype specific to the "Spiral" type of leaf surface hairs of F1 plants without a reciprocal difference. This means that F1 plants are completely dominated by "Spiral" type hair.

In other words, in the F1 plants we studied, the leaf-type hairs were of the "Spiral" type, indicating that this type was completely dominant by phenotype, regardless of the direction of hybridization, and that the gene was located on the nuclear chromosome.

The "Spiral" x "simple" phenotypic groups obtained by self-pollination of F1 plants gave a 3:1 separation in F2 hybrid combinations (Table 1).

Table 1

Inheritance of the type of hair on the leaf blade of the "Spiral" and "simple" ridges in F2 plants

№	F_2 and F_B combinations	n	Spiral	Present	Theoretically expected ratios	χ^2	P
1	2	3	4	5	6	7	8
1.	F_2Л-001 x T-5/8	125	98	27	3:1	0,77	0,50-0,20
2.	F_B(Л-001 x T-5/8)xЛ-001	80	49	31	1:1	4,05	0,05-0,01
3.	F_2Л-001 x T-21/24	116	80	36	3:1	2,25	0,25-0,10
4.	F_B(Л-001 x T-21/24)xЛ-001	74	28	46	1:1	4,36	0,05-0,01
5.	F_2Л-001 x T-25/27	118	91	27	3:1	0,28	0,75-0,50
6.	F_B(Л-001 x T-25/27)xЛ-001	95	44	51	1:1	0,52	0,50-0,25
7.	F_2Л-001 x T-26	120	89	31	3 :1	0,04	0,99-0,95
8.	F_B(Л-001 x T-26)xЛ-001	62	25	37	1:1	2,32	0,25-0,10
9	F_2T-5/8 x Л-001	111	85	26	3:1	0,14	0,75-0,50
10	F_B (T-5/8 x Л-001)xЛ-001	67	38	29	1:1	1,2	0,50-0,25
11	F2T-21/24 x Л-001	118	90	28	3 :1	0,09	0,99-0,95
12	FB(T-21/24 x Л-001)xЛ-001	71	30	41	1:1	1,71	0,25-0,10
13	F2T-25/27 x Л-001	110	81	29	3 :1	0,10	0,75
14	FB(T-25/27 x Л-001)xЛ-001	68	29	39	1:1	1,46	0,25-0,10
15	F2T-26 x Л-001	133	101	32	3 :1	0,06	0,99-0,95
16	FB(T-26 x Л-001)xЛ-001	80	43	37	1:1	0,45	0,50

Focusing on the table evidence, the experimental evidence suggests that the observed 3: 1 theoretical ratio is consistent.

In some of the second-generation hybrids "Spiral" x "Spiral" there was no separation on the basis of character (Table 2). This indicates that the gene that provides the trait belongs to a series and is homozygous.

15: 1 part of F2 combination plants are in "simple" hairs, and the remaining 15/16 parts are in "twist" type phenotype plants.

The ridges involved in the hybrid combinations "Spiral" x "Spiral" that separated in F2 are T-26, T-5/8, T-21/24, T-25/27 different non-allelic states of the genes that control the type of hair on the leaf surface. The difference in H_A and H_D loci of gene-controlling genes in F1 plants obtained in their presence was due to the fact that these plants were digeterozygous H_A h_A H_D h_D, which allowed the population to show 15 "spiral" and 1 "simple" types of markers in F2.

Table 2

Inheritance of hairy type on leaf plate of "Spiral" and "Simple" ridges in F2 plants

№	Parental form and F_2	n	Spiral	Present	Theoretically expected ratios	χ^2	P
1	T-5/8 x T-26	124	114	10	15:1	0,70	0,50-0,20
2	T-26 x T-5/8	119	110	9	15:1	0,22	-0,50
3	T-21/24 x T-26	115	106	9	15:1	0,49	0,50
4	T-26 x T-21/24	158	147	11	15:1	0,14	0,70-0,50
5	T-25/27 x T-26	136	126	10	15:1	0,28	0,70-0,50
6	T-26 x T-25/27	122	113	9	15:1	0,26	0,70-0,50

For F1 and F2 plants, their genotypes and phenotypes can be written as follows::

P T-5/8, T-21/24, T-25/27 (spiral) x T-26 (spiral)

$H^S_A H^S_A h^s_D h^s_D$ x $h^s_A h^s_A H^S_D H^S_D$

F_1 $H^S_A h^s_A H^S_D h^s_D$ - spiral

Genotypic class phenotype phenotypic class

F_2	1. $H^S_AH^S_AH^S_DH^S_D$ - 1	spiral	1
	2. $H^S_AH^S_AH^S_D h^s_D$ - 2	spiral	2
	3. $H^S_Ah^s_AH^S_DH^S_D$ - 2	spiral	2
	4. $H^S_A h^s_AH^S_D h^s_D$ - 4	spiral	4
15	spiral		
	5. $H^S_AH^S_Ah^s_D h^s_D$ - 1	spiral	1
	6. $H^S_Ah^s_Ah^s_D h^s_D$ - 2	spiral	2
	7. $h^s_Ah^s_AH^S_DH^S_D$ - 1	spiral	1
	8. $h^s_Ah^s_AH^S_Dh^s_D$ - 2	spiral	2
	9. $h^s_Ah^s_Ah^s_Dh^s_D$ - 1	simple	1
1	simple		

In conclusion, the "spiral" type of hair loss is manifested in the heterozygous and dominant homozygous state of the gene. No intermediate inheritance was observed on the trait.

Separation of F2 plants, depending on whether they were mono or digeterozygous, was observed in a 3: 1 or 15: 1 ratio phenotype, 1: 2: 1 and 1: 2: 2: 4: 1: 2: 1: 2: 1 by genotype. At the same time, in the combinations “spiral” x “spiral” F1 plants have hair on the leaf surface in the phenotype "Spiral", and in some combinations in F2 all plants are twisted type, and in some plants are divided into two phenotypic groups. x The observation of a 3: 1 to 15: 1 separation in “simple” F2 proved to be differentiated by the dominant alleles of the genes that provide the hair type in the ridges.

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