

**FIBER YIELD AND LENGTH TRAITS OF F₂ DURAGAY PLANTS
WITH SMALL, TWISTED, AND WRINKLED TYPE****Nuriddinov Asliddin Nurbobo ogli**

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Abstract: *This article presents an analysis of data on the inheritance of fiber yield and fiber length according to the types of seed hair in interline hybrids of a genetically diverse collection of duragay lines, which differ significantly in alternative and genotypic traits. The mean fiber yield values among groups of F₂ duragay plants with MS, PS, and OS types of seed hair were found to vary, with relatively higher fiber yield observed in duragay plants exhibiting PS and OS types of seed hair.*

Keywords: *Cotton, line, fiber yield, hybridization, type, variety, reciprocal hybrids, inheritance, seed hair.*

Introduction:

Research on the genetic control of cotton seed fuzz and fiber coat, i.e., fiber yield, carried out on the cotton genetic collection lines at the National University of Uzbekistan, holds particular significance. Based on these studies, a theory has been developed regarding the combined effect of polygenes in the genetic regulation of cotton seed fuzz and fiber coat. Continuing these investigations is important for studying the inheritance, correlation, variability, and the potential for identifying valuable genotypes of agronomic traits in the F₂ hybrids of new lines from the cotton genetic collection.

Literature Review:

Scientific literature presents data on the inheritance, interrelationships, and the combinative ability of parental sources for quantitative traits of cotton [9,10,11,1,2]. However, the inheritance and correlations of fiber length and other valuable agronomic traits in F_2 hybrids of isogenic and introgressive lines from the UzMU Cotton Genetic Collection have been little studied. In particular, the inheritance of fiber length in F_2 hybrids of lines with alternative fiber length is suggested to be controlled by two groups of genes. The combinative abilities of certain lines in the genetic collection have been investigated for traits such as fiber yield, fiber index, lint weight per boll, and 1000-seed weight; however, studies on large numbers of genetically diverse lines in this direction have not been conducted.

Materials and Methods:

The study utilized the L-34 lines of the cotton genetic collection (seed hair type OS) and the L-70 line with absolute seed hair (seed hair type DAGS) as analyzer lines, along with their F_2 hybrid plants. Several researchers have previously studied the inheritance of fiber yield in *Gossypium hirsutum* L. using interline crossing methods [3,4,5,6,7,8]. In these studies, parental forms included fiberless and dominant hairless seed lines L-72 and L-70 (DAGS), fiberless-recessive hairless seed line L-86 (RAGS), and hairy lines such as L-15 (n-MS type), L-12, L-13, L-14, L-40, and L-47 (OS type).

In our study, we used the L-70 analyzer line with absolute hairless and fiberless seed (DAGS) in combination with hairy and fibered isogenic lines such as L-34 and L-35. The inheritance of valuable agronomic traits in the F_2 hybrid plants was investigated.

Results and Discussion:

In the study, 20 plants of each seed hair type were selected from the F_2 hybrid combinations, and fiber yield and fiber length were examined in the selected plants according to seed hair type. Among the F_2 L-34 $\times$ M_1 L-70 hybrids, plants with TT and ST types of seed hair exhibited the highest fiber yield, with mean values of 28.53–28.71%. The lowest fiber yield corresponded to plants with YU-type seed hair, averaging 12.67%. Additionally, plants with KMT-type seed hair also showed relatively low fiber yield, with a mean of 17.12%. For plants with OMT and NMT seed hair types, fiber yield ranged from 26.13% to 27.37%. Analysis of fiber length in this hybrid combination, depending on seed hair type, showed that plants with ST and TT types of seed hair had higher fiber length, with average values of 32.57 mm and 32.12 mm, respectively. No significant differences in fiber length were observed among the different seed hair types, and the lowest fiber length was recorded in YU-type plants, averaging 29.63 mm. In all other seed hair types, fiber length exceeded 30 mm. These results indicate that, in this hybrid combination, seed hair type has little effect on fiber length but significantly affects fiber yield.

Fiber Yield and Length in F_2 L-34 $\times$ M_1 L-70 Hybrids According to Seed Hair Type

Nº	Types of seed	n	$X \pm S_x$		$X \pm S_x$	
1	YU	20	12,67 $\pm$ 1,45	Fiber	29,63 $\pm$ 0,50	Fiber
2	ST	20	28,53 $\pm$ 0,75		32,57 $\pm$ 3,36	
3	KMT	20	17,12 $\pm$ 1,74		29,75 $\pm$ 0,58	
4	OMT	20	26,13 $\pm$ 0,97		31,65 $\pm$ 0,49	
5	NMT	20	27,37 $\pm$ 0,73		31,08 $\pm$ 0,48	
6	TT	20	28,71 $\pm$ 0,82		32,12 $\pm$ 0,65	

Xulosa



Yuqoridagi natija va tahlillarga ko'ra, F_1 duragay avlod kombinatsiyalarining o'simliklari chigit ustidagi tuklanishiga ko'ra yalang'och bo'lib (YU-tip), F_2 avlodda ajralish ro'y berdi. Tajribalarda chigit ustidagi tuklanish foni asosida tola chiqimi belgisining irsiylanishi o'rganildi. Bunda yuqori tola chiqimiga ega L-34 liniya bilan absolut tolasiz va tuksiz L-70 analizator liniyasi ishtirokidagi F_2 duragay o'simliklarida tolaning chiqimi va uzunligi tahlil qilindi. O'rganishlarga ko'ra, duragaylar orasida *NMT* va *TT* tipdagi chigit tuklanishiga ega bo'lganda, nisbatan tola chiqimi belgisining yuqori bo'lishi aniqlangan.

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