

INHERITANCE OF SOME MORPHOLOGICAL CHARACTERISTICS IN INTERSPECIFIC COTTON HYBRIDS

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Abstract

It is important to study the morphological characteristics of the hybrids obtained on the basis of cross-breeding of different types of cotton, and to scientifically substantiate aspects such as the order in which the laws are passed. Because each variety has its own morpho-biological characteristics, and in most cases, morpho-biological characteristics (type of branching, leaf shape, shape and color of pods, the presence of anthocyanin spots on the petals, color of pollen, etc.) are taken into account when evaluating the variety. Also, on the basis of phenotypic analysis of the hybrids obtained by hybridization of varieties and species that are sharply different from each other in terms of morphological characteristics, it is possible to make a clear conclusion about the manifestation of morphological characteristics of one or another variety in hybrid plants. In order to successfully carry out breeding and create new hybrid plants that incorporate the best characteristics of the initial varieties, it is necessary to know the laws of passing morphological characteristics from one generation to the next, along with the valuable economic characteristics of cotton.

According to O. Matyaqubov, the hybrids obtained as a result of cross-species hybridization with their unique characteristics and properties are the starting material for selection research, as well as for enriching the cotton gene pool, and at the same time, conducting research on families and lines from the created varieties,



their use will be very effective in this regard. For this reason, the initial variety was formed based on the general appearance of the plants, the height of the bush, the type of crop branches, the number of leaves, the speed of ripening, the yield, the tolerance to pests and insects, and the number of bolls, the size, the degree of opening, the adhesion of cotton to the bolls, the output and length, thinness of the fiber, the amount of oil in the seed, and, in order to avoid ineffective combinations, special importance is given to the distance of the initial varieties in terms of geographical origin and the differences in their morphological indicators.

Since the morphological characters of cotton are phenotypically clearly visible, it is possible to identify them using organoleptic methods, and it will be possible to distinguish between the characters in plants and whether they are heritable.

In the course of the research, varieties specific to the species *G. hirsutum* L. and *G. barbadense* L. were crossed. New hybrids were obtained, and seeds of hybrid combinations were planted in field conditions with the parent forms and maintained under the same conditions. Phenological observations and analysis were carried out. If we pay attention, there is a big difference between the medium and thin fiber varieties involved in hybridization, and among them it is necessary to include the type of branching. *G. hirsutum* L. cultivars participating in the maternal form belong to SP-1303, Baraka, ATM-1 and T-91/21 ridges of the I-II branching type, while *G. barbadense* L. cultivars participating in paternity belong to Surkhan-14 and Surkhan-9 varieties are varieties with a limited branching type, and the crop elements are attached to the main stem. This was also confirmed in the conducted experiments.

Another important morphological indicator is the shape and color of pods. In hybrid plants, the inheritance of *G. hirsutum* L. varieties with intermediate or high indicator of pod size was determined, but in some combinations, the superiority of *G. barbadense* L. varieties in pod structure was noticed. In some combinations, the dominance of *G. hirsutum* L. varieties was observed. In other words, it was observed that in hybrid plants, the shape of pods was relatively elongated or pointed, corresponding to that of Surkhan-14 and Surkhan-9 varieties, while in some hybrids, it was found that there are plants with a pod shape close to the maternal shape or relatively different. In addition, it was determined that the surface of the pods was relatively rough, and the color of the pods was dark green, which indicated the



superiority of *G. barbadense* L. varieties. In Baraka x Surkhan-9 hybrid combination, it was found out that the pods are relatively smooth and the color is lighter green. Also, in this hybrid combination, it was found that in the F₂ generation there are plants with a different shape of the pods from the parental forms (Figure 1).

So, in the inheritance of pod shape and color, in the F₁ hybrid combinations involving *G. hirsutum* L. and *G. barbadense* L. species, the dominance of the parental form with more intermediate and high indices in pod size was determined, and the superiority of *G. barbadense* L. varieties in the inheritance of pod shape and color were observed.

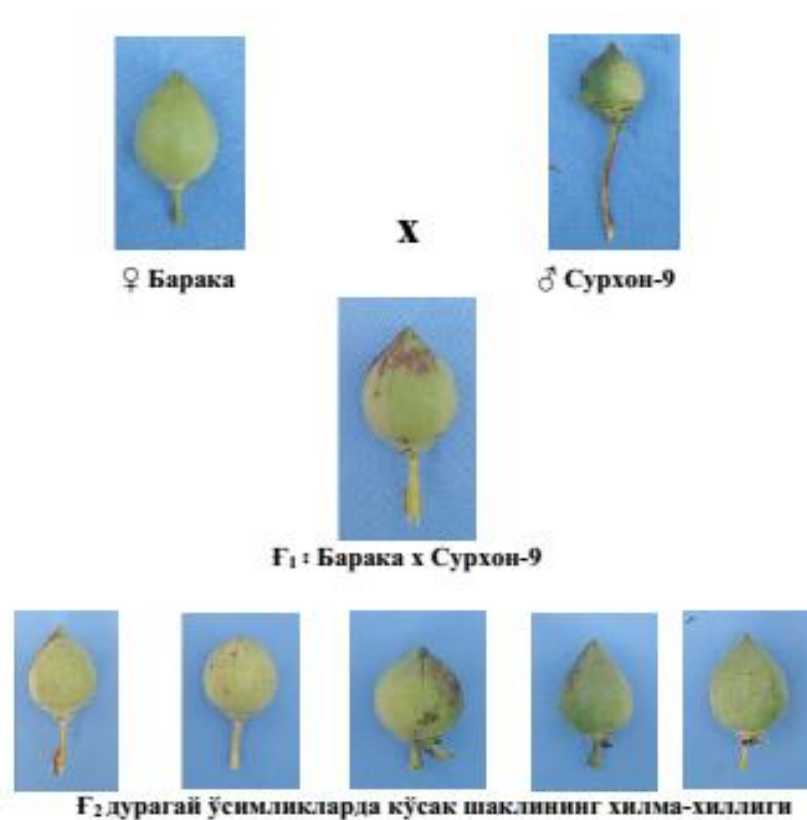


Figure 1. Inheritance of pod shape in parental and F₁, F₂ generation plants

Another distinguishing feature is the color of the petals, pollen color and the presence of anthocyanin spots on the petals. It was found that the varieties belonging to the *G. hirsutum* L. species involved in hybridization have white and pale yellow

petals and yellow pollen, while the varieties of *G. barbadense* L. have yellow petals and orange pollen. The yellow petals of the hybrid combinations with their participation were large and relatively yellow, corresponding to the varieties of *G. barbadense* L. Furthermore, in the Baraka x Surkhan-9 hybrid combination, it was found that the color of petals and pollen, the absence of anthocyanin spots on petals, is based on the dominance of the maternal form (Figure 2).



Figure 2. On the left is a flower of the maternal plant, on the right is a flower of the paternal plant, and in the middle is a flower of the F1 hybrid plant.

In the hybrid plants obtained with the presence of other varieties of the *G. hirsutum* L. species that participated in the hybridization, it was observed that the color of the pollen is light yellow or orange, and the absence or partial presence of anthocyanin spots on petals.

Summary:

Based on the experiment, intermediate inheritance was observed in the F1 generation obtained from interspecies hybridization in terms of the shape of the pod, while F2 hybrid plants showed that a plant with a different shape can be formed, according to Mendel's law of independent assortment. Also, depending on the combinations, it was determined that the trait is inherited based on the superiority of the Baraka variety, which is the maternal form, in the combination of F1 Baraka x Surkhan-9 hybrid in the color of petals and pollen, the absence of anthocyanin spots on petals.

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