

ANALYSIS OF POPULATION STRUCTURE BASED ON MAIN STEM HEIGHT TRAIT IN THE “KAFOLAT” VARIETY OF MEDIUM-FIBER COTTON

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ABSTRACT

This article presents a detailed description of the statistical analysis of the results obtained from phenological observations conducted in 2020 under the conditions of Tashkent region on the medium-fiber cotton variety “Kafolat” (*G. hirsutum* L.). The study aimed to determine the manifestation of population structure based on plant height indicators.

Keywords: *G. hirsutum* L., variety, population, plant height, population structure, indicators, modificants, analytical results.

O’RTA TOLALI G’O’ZANING “KAFOLAT” NAVIDA BOSH POYA BALANDLIGI BELGISI BO’YICHA POPULYATSIYA TARKIBINING TAHLILI

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ANNOTATSIYA

G. hirsutum L. ning Toshkent viloyati sharoitlarida 2020 yilda ekilib, parvarishlangan o’rta tolali g’o’zaning Kafolat navida o’simlik bo’yi balandligi belgisi ko’rsatkichlari bo’yicha populyatsiya tarkibining namoyon bo’lishini aniqlash maqsadida amalga oshirilgan fenologik kuzatuv ishlaridan olingan natijalarning statistik tahlillari to’g’risidagi ma’lumotlar ushbu maqolada atroflicha yoritilgan.

Kalit so’zlar: *G. hirsutum* L., nav, populyatsiya, o’simlik bo’yi balandligi, populyatsiya tarkibi, ko’rsatkichlar, modifikantlar, tahliliy natijalar.

INTRODUCTION

In recent years, under the conditions of global climate change observed worldwide, the demand for the development of new varieties and hybrids of agricultural crops with improved and positive characteristics has been steadily increasing. In recent years, special attention has been paid to identifying genotypes of cotton adapted to various soil and climatic conditions through the application of classical and population genetics methods, as well as to improving their potential in terms of economically important traits and characteristics [1–5].

RESEARCH AIM

The purpose of this study is to determine the manifestation of population structure based on plant height indicators in the new medium-fiber cotton variety “Kafolat.”

RESEARCH OBJECT

The research object was the medium-fiber cotton variety “Kafolat,” while the variety “Namangan-77” was used as the standard for comparison.

RESEARCH METHODS

Comparative morphology and population analysis methods of genetics were applied in conducting the study. Mathematical-statistical data processing was carried out according to the method of B.A. Dospekhov (M., 1985).

ANALYSIS AND RESULTS

The data obtained as a result of the research were analyzed as follows:

Regardless of the indicators at which plant height is formed in cotton varieties, if no signs of lodging are observed in plants typical of that variety—that is, if the indicators are manifested in the phenotype at a genetically normal level as described in the variety characterization—this trait has neither a positive nor negative effect on yield.

When analyzing the population structure by trait indicators in genotypes, it was found that in the standard variety Namangan-77, during the research year, the overall average indicators were 115.76 ± 0.63 cm, with a population variability of 3.63%. The population structure showed that within the 10 cm measurement unit, plants with a height of 101–110 cm accounted for 12%, those with 111–120 cm for 76%, and those with 121–130 cm for 12%. In the “Kafolat” variety (T-41 line), the average indicators were 121.79 ± 0.92 cm, with a variability of 5.00%. The population structure revealed that plants with a height of 101–110 cm accounted for 7%, those with 111–120 cm for 32%, those with 121–130 cm for 59%, and those with 131–140 cm for 2%.

In conclusion, during the research year, the plants of this cotton variety demonstrated general average values for the main stem height trait, along with the limits of its variation and the extent of population variability. Furthermore, in the formation of the population structure measured in 10 cm intervals, plants belonging mainly to three groups were observed. Among these, two classes—plants with heights of 111–120 cm (32%) and 121–130 cm (59%)—were predominant, thereby dominating the population structure. The remaining groups, with higher or lower values compared to the average, played a supplementary role with small percentages.

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