

# CREATION OF NEW COTTON VARIETY RESISTANT TO VERTICILLIUM DAHLIAE USING DNA MARKERS

*DSc. Kurbonov Abrorjon Yorkinovich, Xojaqulova Naima Shaxriqizi*

*Cotton Breeding, Seed Production and Agrotechnologies Research Institute (CBSPARI), Republic of Uzbekistan. Tashkent region, Kibrai district, University street. e-mail: kurbonov.abrorjon@mail.ru. mobile phone: +998977113400*

**Abstract.** This article presents the results of research on the creation of a new cotton variety C-6602, resistant to pathogens of the *Fusarium* and *Verticillium*, using modern methods of molecular genetics, biochemistry and phytopathology.

**Keywords:** *G.hirsutum* L., *F.oxysporum*, *V.dahliae*, phenotypes, DNA marker, peroxidase, morphology, pathogenicity, strains, variety, hybrid, generation, molecular genetics, selection,

Pathogens of the genera *Fusarium* and *Verticillium* are the most harmful pathogens among those affecting harvest and product quality in cotton. Species of the genus *Fusarium* Lk. cause damage to seeds after sowing, root rot at the germination stage, and additional damage to seedlings and young cotton plants. The harmful effects of seed and seedling damage are exacerbated by the fact that 80% of the future cotton yield is determined within 30 days from the date of seedling emergence.

Purpose of research: in this study, the molecular genetic diversity of several cotton breeding lines was analysed using DNA markers, and phytopathological and biochemical evaluations of lines resistant to *Fusarium* and *Verticillium wilt* were carried out. Four hybrids were identified as having the most potential with regard to the trait “resistance to *V.dahliae* and *FOV*” after evaluation: F<sub>11</sub> [F<sub>6</sub>(L-101 x L105) x JL-106], F<sub>11</sub> [F<sub>6</sub> (L-105 x L-106) x L-104], F<sub>7</sub> [L-175/276 x Namangan-102] and F<sub>7</sub> [Jarkurgon x Namangan-34]. Eight predefined SSR markers were used for the DNA analysis. These DNA markers were identified in previous studies as being correlated with resistance to *Fusarium* and *Verticillium wilt*. The genotyping results, especially those for three primer pairs (BNL4003, CM209, TMB0161), showed that the best prospective hybrid was F<sub>11</sub> [F<sub>6</sub> (L-101 x L-105) x L-106] because the largest number of individuals within this line were identified as having candidate loci linked to wilt resistance traits. Based on a biochemical analysis using marker proteins as well as a cytochemical study of the roots of various cotton lines, the hybrids F<sub>11</sub> [F<sub>6</sub> (L-101 x L-105) x L-106] and F<sub>7</sub> [Zharkurgon x Namangan-34] were characterized as the most resistant to *V. dahliae*.

The results of molecular and biochemical research under laboratory conditions revealed that from the analysed selection material, line L-1077 exhibited high resistance to *V.dahliae* and *FOV*. This line was separated from the complex, interlinear hybrid combination F<sub>11</sub>[F<sub>6</sub>(L-101 x L-105) x L-106]. L-1077 produces fibre that meets the type IV fibre quality standards, produces high fibre yields and is highly resistant to *V.dahliae* and *Fusarium*. Moreover, an application (NAP 2020 0007 from 31.01.2020) for a patent for this line has been issued by the Intellectual Property Agency of the Republic of Uzbekistan under the cotton variety name C-6602.

## REFERENCES

1. Atakxanov R. S. Karakalpak of the fergana valley: migration and integration processes //ACADEMICIA: An International Multidisciplinary Research Journal. – 2021. – T. 11. – №. 5. – C. 586-596.
2. Sotvoldievich A. R. FAMILY-RELATED TRADITIONS AND RITUALS IN FERGANA VALLEY KARAKALPAK: TRADITION AND MODERNITY //Web of Scientist: International Scientific Research Journal. – 2021. – T. 2. – №. 05. – C. 747-755.
3. Абдуллаев У. С., Каримова М. А. Обряды, связанные с посещением мазаров у женщин Ферганы: традиция и современность //Международный научно-исследовательский журнал. – 2015. – №. 6-4 (37). – С. 72-74.
4. Abduqayumovna K. M. INTERACTION OF OBJECT, SUBJECT AND SYNERGETIC CATEGORIES IN SCIENTIFIC WORK //Spectrum Journal of Innovation, Reforms and Development. – 2022. – T. 3. – C. 25-29.