

СЕКЦІЯ 1.

СЕЛЕКЦІЯ І ГЕНЕТИКА СОРТІВ РОСЛИН

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MALII Aliona

Institute of Genetics, Physiology and Plant Protection, Republic of Moldova

e-mail: malii.aliona@mail.ru

EFFECT OF INDUCED MUTAGENESIS IN SOYBEAN PRODUCTIVITY IN THE REPUBLIC OF MOLDOVA

Climate change in recent years in Republic of Moldova leads to a change in the structure of the soybean crop. An increase in temperature, an uneven distribution of precipitation during the growing season of plants, as a result of frequent droughts, lead to a decrease in its potential productivity. In this regard, the task of creating and introducing high-yielding varieties capable of realizing the genetically incorporated productivity potential with high seed quality in conditions other than optimal is brought to the forefront. The solution of this problem largely depends on the gene pool of the initially material. Improvement food crops in the world rests majorly on mutation. Experimental mutagenesis methods are used successfully to obtain it of the initially valuable material. One of these methods is the gamma-ray-induced mutagenesis.

In our studies, induced mutagenesis was used-a treatment with gamma rays, followed by individual selection of the desired valuable forms. The investigated material presents lines obtained in M_6 generation. For comparative analysis, was two cultivars ('Zodiac' and 'Alina') of soybean, approved in Moldova were used as standard samples. Dry seeds were irradiated with gamma rays, with doses of 100, 150, 200 and 250 Gy. The treated seeds were sown on the experimental field according to generally accepted methods for this culture. The studies were conducted in three different years of 2013–2015.

From the progeny M_3 - M_6 , individual lines were selected, which by total yield differ significantly from plants of the control samples. During the three years of field research (2013–2015), these forms demonstrated a wide variation in seed productivity per plant and mass of 1000 seeds. The obtained results based on the calculation of yield showed that some lines, depending on the conditions of the year, exceeded the values of standard samples, while others were inferior to them. Similar results were obtained on the basis of the 1000 seeds mass. These differences are most pronounced in the years 2014–2015, which were characterized by severe drought.

The results of research have shown that the use of induced mutagenesis-gamma radiation in soybeans made it possible to obtain new lines characterized by higher rates, both in productivity and seed quality. The selected lines will be included in the work programs for subsequent deeper breeding and genetic studies. On their basis new high-yielding varieties will be obtained with improved seed quality, is resistant to adverse environmental factors and their further introduction into production.

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ȘIROMEATNICOV Iulia, COTENCO Eugenia

Institute of Genetics, Physiology and Plant Protection, Republic of Moldova

e-mail: siromeatnicov@yahoo.com

MORPHOLOGICAL PARTICULARITIES IN THE NEW *SOLANUM LYCOPERSICUM* L. TOMATOES OBTAINED *IN VITRO*

In the agrarian sector, hybrids, lines, varieties, which had high uniformity, distinctiveness and stability of fruit productivity and quality in different environmental conditions, were of particular importance. The most important trend in the strategy of plant breeding at the stage of adaptive intensification in agriculture was combining the resistance of the varieties to the stress-producing abiotic factors of the environment with high levels of fruit productivity and quality.

The determination of the genetic complex of quantitative characters, including drought resistance, hindered the success of the breeding process, the purpose of which was to create genotypes combining many valuable characters. As a result of distance hybridization, interest for the breeder also presents the spectrum of genetic variability, which increases the efficiency of genotypes selection with high productivity and increased resistance to environmental stressors. One of the main tasks of amelioration was grandiose blending in the same variety of high productivity and resistance to stress factors (drought).

Literature data demonstrated that the long-term impact of 30-35°C on tomatoes during fruit forming resulted in plant sterility. The most sensitive phase of developing tomatoes at high temperatures is from the beginning of flowering to the fruit forming. Thus, the research goal consisted in obtaining the new tomato genotypes with valuable characters, useful for the breeding process.

As a result, new lines with valuable economic characters were created, producing high yields of fruits with lower vegetation periods compared to the check variants. As a source of initial research material, 10 performance lines of tomatoes were used ('L.4', 'L.20', 'L.25', 'L.44', 'L.47', 'L.48', 'L.49', 'L.55', 'L.63', 'L.317') created in the plant resistance genetics laboratory and three varieties as a check ('Peto-86', 'Novinca Pridnestrovia' and 'Elvira').