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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## 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'*).

The evaluation of the lines was carried out according to the most phenolphasic valuable indices of the phases which determined the period of vegetation (emergence – single blooming, blooming-blooming in the mass, single-rising-fructification, baking-baking single breading-baking, morphological characters fructum, fruit shape, pericarp and mesocarp thickness, pedicle length and biochemical characters (fruit acidity, dry matter content, sugar content and total harvest). It was necessary to emphasize that the selective analysis of the most successful tomato lines showed that during the study period, recombinant lines with various types of precocity (early, early and late average) were revealed.

The results obtained showed that the early tomato lines ('L.63' and 'L.317') exhibited a lower precocity period compared to the (11–7) days of the check variety ('Peto-86'). Investigations performed on early medium-grain tomato lines ('L.44' and 'L.47') demonstrated the longevity of the reduced maturity period (11 and 10) days compared to the check variant (,*Novinca Pridnestrovia'*). For the medium-term lines ('L.4', 'L.20', 'L.25'), the precocity ratio was lower than the control ('Elvira') with (12.4, 10.4, 7.0) days. Two lines ('L.48' and 'L.49') were at the check level.

Analyzing the preliminary results, it was concluded that the performance of tomato obtained *in vitro* with various types of precocity showed a lower fruit maturity period compared to the check varieties

Based on the experimental data obtained, it was apparent that in tomato promising lines the plant's height varied within the limits of the values (45.1–77.4) cm, the blank forms (55.4–67.5) cm. The plants of the studied lines were characterized by a high vigor, with higher level, which resulted in a better adaptation of the fruit in the unfavorable conditions of the environment. In most in vitro lines, the descendants of the populations were genotypes of the native type, inclined towards the characters of the parent plant, at the same time another set of genotypes was composed of paternal descendants where most of the morphological characters predominated from the plant and a source of genotypes that predominated intermediate inheritance characters from both genitors.

This mode of heredity of the plant's height occupied an intermediate position and played the leading role both in plant evolution and in the amelioration of a certain character, which was defined as an attribute of an individual in a population by which it differed from other individuals in another population or taxon, any morphological, physiological or biochemical particularity of an individual or group of individuals that was determined by a gene or group of genes in interaction with environmental conditions.

The preliminary analysis of the performance lines showed that during the research period the lines ('L.20', 'L.25', 'L.49' and the control variety ('Elvira') were highlighted with maximum values of the fruit mass, (123.4, 112.7, 110.3 and 125.0 grams respectively).The smallest values were accumulated in the lines ('L.317', 'L.63', 'L.48', 'L.4') compared to check varieties ('*Peto-*

*86' and 'Novinca Pridnestrovia'*). The shape of the fruit varied according to the genotype from round to cylindrical. From the bibliographic data it was known that the thickness of the pericarp was an important feature that depended on the quality of the fruits. In this contest, the tomato lines had more pronounced values (0.6–0.8mm) than the check (0.4–0.7mm).

According to the results of the mesocarp thickness, there was an increase compared to the check variant ('L.20', 'L.25', 'L.49') compared to the check variant *('Peto-86', ,Novinca Pridnestrovia' and 'Elvira'*). It was found that tomato lines with thickness indices of pericarp greater than 6 mm and the thickness of the 8 mm mesocarp were destined for the transport of the fruits. An especially important role was for the character of the fruit pedicel. The pedicel was without and with a geniculate joint where some fruits were easily detached from it while other were detacheed more difficult.

Due to the data obtained on the biochemical quality of the fruit, it was clear that the content of dry substances was largely dependent on the conditions of the year. Under dry conditions, the dry matter content was high and in the rainy weather dry matter wais low in fruit. However, in some lines the level of dry matter was greater than that of the check varieties.

Concomitantly, the fruit sugar content in some lines showed an advantage of 6.23–6.43 % compared to the check varieties of 5.23–5.63 %. Productivity on promising lines was peaked at 49.5–58.7 t/ha. compared to 33.9–50.7 t/ha. Analysis of *in vitro* tomato populations demonstrated that remote hybridization was indeed a method incompatible with other methods in the transformation of nature into heredity of crop plants.

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## VARIABILITY AND EQUALITY OF BIOCHEMICAL QUALITATIVE CHARACTERISTICS IN NEW TOMATO VARIETIES OBTAINED *IN VITRO*

0ne of the most important issues of breeding is development of new varieties in which to assemble more valuable characters, high productivity, increased resistance to unfavorable environmental factors and precocity with large and qualitative fruits. However, to accelerate the process of creating such varieties, it is necessary to apply new selection methods and technologies.

We mentioned that a real perspective in this aspect was presented by the modern biotechnology methods and techniques, based on the principles of molecular genetics, genetic and cellular engineering, cell cultures and vegetal tissues, accelerated micro-propagation, induced variability and somaclonal variability, remote hybrids.