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THE CREATING PERSPECTIVE MATERIAL OF EGGPLANT FOR SELECTION, WHICH HAVE ALREADY BEEN USED THE METHODS OF BIOTECHNOLOGY

This article has presented the results of research on a new original material of eggplant with the methods of cell selection. The breeding material of eggplant already combines high productivity, genetic stability with adaptability to wilt disease and high air temperatures produced by biotechnological methods. The Lines has promise for the creation of new competitive genotypes. Presented a method of assess. It allows for different stages of organogenesis in the laboratory to establish the level of heat resistance of samples of eggplant.
Keywords: *eggplant, cell selection, promising lines, fusarium wilt, heat resistance*

Introduction. Eggplant is one of the most popular vegetable crops in the world, which is in volume production ranks fourth after cabbage, tomatoes and onions. In Ukraine, this vegetable crops grown on an area of 7.8 thousand hectares, of which 80-90 % of the area is concentrated in the Steppe and the southern part of Forest-Steppe zone [1].

To provide ever increasing demand for products of eggplant, you must direct the breeding work to broaden the range of varieties and hybrids suitable for cultivation in different agro -climatic zones of Ukraine. In this special importance is given to the creation of new highly resistant to pathogens varieties and hybrids [2]. Improve plant productivity of eggplant is based on the achievements of the cell selection in recent years. The advantage of cell selection over traditional methods of plant breeding is the lack of seasonality in the work, the opportunity to work with a large amount of starting material [3]. The most widely cell selection is used for selection of resistant plants to biotic and abiotic factors. This possibility is particularly relevant today, as the constant variability of environmental factors required to accelerate breeding for environmental sustainability [4]. With the help of cell selection has been established lines resistant to fusarium solanaceous crops withering: tomato [5], eggplant [6].

The aim of our research was to create the original material of eggplant for breeding for resistance to fusarium wilt and heat using cell selection.

Materials and methods. The study was conducted during the 2012-2013 at the laboratory of biotechnology, genetic resources and theoretical foundations of breeding at the Institute of Vegetables and Melons of NAAS. The starting materials were 82 samples of eggplant. As a selective agent for selection of resistant to fusarium wilt forms used filtrate culture fluid (FCR) complex of fungi of the genus *Fusarium* Link., which was added to the culture medium MS in 40 % concentration [7]. In a culture *in vitro* viability assessment was performed callus clones influenced them to high temperature of 45 ^{0}C for 6 hours for the selection of resistant forms of eggplant. To confirm the reliability of the results of the selection of resistant to high temperatures forms of eggplant also conducted laboratory evaluation of heat resistance breeding forms according to the method of F. F. Matskov [8]. Conduct evaluation of new breeding of eggplant samples was carried out according to the methods of field experiments in vegetable and melon [9]. Assess the stability of the samples to fusarium wilt of eggplant, conducted in 9 point scale classifier CEV [10].

Results and discussion. During 2012-2013 were analyzed genotypes of eggplant on a natural background, which were selected by two-stage selection on the selective fond while adding 40 % of FCR fungi of the genus of *Fusarium* Link. As a result, estimates of breeding genotypes of eggplant, were selected 2 lines of eggplant *S. m.* 62, *S. m.* 63 is a resistant to fusarium wilt and 2 lines of *S. m.* 79, *L* 21 is a sign of heat resistance. Woven characterization of new lines of eggplant has been shown in the table.

Table

The economic characteristics of promising lines of eggplant for resistance to *Fusarium* wilt and heat resistance, average of the years 2012-2013

Indicator		Almaz-st	*S. m.* 62	*S. m.* 63	*S. m.* 79	*Л 21*
The height of plant, cm		60,69±1,44	62,42±4,48	62,91±4,27	64,12±4,44	51,91±2,14
The fruit	the quantity, pcs.	9,33±0,11	8,20±0,13	8,40±0,16	8,61±0,15	8,50±0,36
	the length, cm	15,6±0,16	15,72±0,15	14,57±0,16	13,40±0,24	18,40±0,36
	the weight, g	170,3±0,41	214,58±3,81	217,93±0,38	213,33±5,36	210,20±6,36
The growing season, days		120	120	120	120	120
The degree of resistance to fusarium wilt on a scale of CEV		7	7	7	5	5
The degree of heat resistance, %		67,2	66,7	67,1	87,06	90,1
The total yield, t/ha		23,3	33,6	30,5	30,2	26,4
Marketability, %		97,9	99,7	99,3	99,7	98,4

Thus, the method of cell selection was created 4 advanced line of eggplant with resistance to wilt disease and heat resistance.

Line *S. m.* 62 is characterized by large violet fruit with glossy skin. The fruit is pear-shaped, with greenish flesh. Plant height is 62.42±4.48 cm. Line *S. m.* 62 is different varieties of Almaz higher yield fruit, which is 33.6 t/ha (standard - 23.3 t/ha) and 99.7 % of marketability. The degree of resistance to fusarium wilt is 7 points.

Line *S. m.* 63 is different cylindrical fruits with a violet color, glossy skin and green flesh. Plant height is 62.91±4.27 cm. Line *S. m.* 63 is characterized by high fruit yield of 30.5 t/ha and 99.3 % of marketability. The degree of resistance to fusarium wilt is 7 points.

Plants of line *S. m.* 79 are form oval fruit with light purple color and a glossy skin, white flesh. Plant height is 64.12±4.44 cm. Line *S. m.* 79 is different varieties of higher yield fruit of Almaz 30.2 t/ha and 99.7 % of marketability. The degree of heat resistance is 87.06 %.

The line *L* 21 are characterized by oval fruits, milky white color with matte skin and white flesh. Plant height is 51.91±2.14 cm, fruit yield is 26.4 t/ha and the 98.4 % of marketability. The degree of heat resistance is at 90.1 %.

Conclusions. As a result of the research has already been created 4 new lines of eggplant. They combine wilt disease resistance and high temperature air and soil, with high rates of economic traits. Promising lines of eggplant *S. m.* 62 and *S. m.* 63 are resistant to fusarium wilt score level 7, and the degree of heat resistance lines *S. m.* 79 and *L* 21 are from 80.6 % to 90.1 %. The new lines are recommended as sources of disease resistance and fading heat resistance. These lines can be used when creating varieties of eggplant for an open ground.

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Анотація

Мозговська Г. В., Івченко Т. В., Шабетя О. М.

Створення перспективного селекційного матеріалу баклажана із використанням біотехнологічних методів

У статті наведено результати досліджень із створення нового вихідного матеріалу баклажана методами клітинної селекції. Отриманий за допомогою біотехнологічних методів селекційний матеріал баклажана, поєднує в собі високу продуктивність, генетичну стабільність із адаптивністю до хвороб в'янення та високих температур повітря. Лінії є перспективними для створення нових конкурентоспроможних генотипів. Наведено також допоміжний спосіб оцінки, який дозволяє на різних етапах органогенезу в лабораторних умовах встановити рівень жаростійкості зразків баклажана.

Ключові слова: *баклажан, клітинна селекція, перспективні лінії, фузаріозне в'янення, жаростійкість*

Аннотация

Мозговская А. В., Ивченко Т. В., Шабетя О. Н.

Создание перспективного селекционного материала баклажана с использованием методов биотехнологии

В статье приведены результаты исследований по созданию нового исходного материала баклажана методами клеточной селекции. Полученный с помощью биотехнологических методов селекционный материал баклажана, сочетает высокую продуктивность, генетическую стабильность с адаптивностью к болезням увядания и высоким температурам воздуха. Линии перспективны для создания новых конкурентных генотипов. Представлен также вспомогательный метод оценки, который позволяет на разных этапах органогенеза в лабораторных условиях установить уровень жароустойчивости образцов баклажана.

Ключевые слова: *баклажан, клеточная селекция, перспективные линии, фузариозное увядание, жароустойчивость*