New Variety of Sweet Pepper (*Capsicum annuum* var. *Grossum*) Obtained at V.R.D.S. Buzău

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Abstract

Obtaining new varieties of sweet peppers has been a major and permanent concern at V.R.D.S. Buzău. Autochthonous assortment in this species is relatively small compared to other species which led to the crop extension of foreign varieties that are commercialized at high prices without the expected results. Researches carried out during the period 1996-2017 aimed to contribute at the enrichment and diversification of autochthonous germplasm collection and also allowed introducing new valuable cultivars according to the market requirements nowadays.

Keywords: breeding, genotypes, Ideal

Introduction

There is a huge kinds of peppers (*Solanaceae*) grown worldwide with different shapes and colors. The pepper usage is as diverse as the types of *Capsicum* fruits (Albrecht et al., 2012). Peppers are an important source of nutrients in the human diet (Shetty et al., 2013), and it can be consumed fresh or dried. They promote health benefits such as reducing obesity and diabetes (Vasconcelos, 2016). Moreover, pepper are noted for their antiaging and cognitive enhancing properties. Also, recent studies suggest that a possible dietary means of managing Alzheimer's disease (Ogunruku et al., 2017). Under Romania's pedoclimatic conditions, pepper behaves like an annual plant, being sensitive to extreme environmental conditions and to the attack of pathogens. Currently, the sweet pepper crops hold one of the major areas of cultivated vegetable, but, unfortunately, most of the cultivars belong to foreign origin. In Romania, there is a small number of autochthonous varieties, but most of them with

limited yield potential and that is why it has been highlighted the necessity to improve the existing assortment of cultivars.

Aims and objectives. The aim of this study was to achieve new variety of sweet pepper suitable for specific pedoclimatic conditions of Romania and also to the market requirements nowadays.

Materials and methods

The experiments were carried out in Vegetable Research and Development Station Buzău (V.R.D.S.) site. The germplasm collection of V.R.D.S. Buzău consists of 214 accessions of *Capsicum* spp. grouped by degree of genetic stability: stable, advanced and segregating. After evaluating the germplasm collection, a special attention has been granted to *Capsicum annuum* var. *grossum*. Researches have been completed so far with the achievement through repeated individual selection of a new genetically stabilized variety that exhibits features with limited variability that

Figure 1. Plant detail

Table 1. Main characteristics of plant

Character/years	2013	2014	2015	2016	Average
Average plant height (cm)	85,3	92,5	98,8	112,1	97,17
Average bush diameter (cm)	70,2	73,1	75,7	71,9	72,72
Average number of main shoot/sprout	3,1	3,2	3,4	4,7	3,6
Average number of second shoot/sprout	6,2	7,5	8,7	8,3	7,675

Table 2. Main fruit characteristics

Character/years	2013	2014	2015	2016	Average
Average numbers of fruits /plant	21,4	22,2	21,4	24,1	22,27
Average fruit mass (g)	95,2	126,4	129,7	131,4	120,67
Average fruit wall thickness (cm)	0,6	0,6	0,7	0,7	0,65
Average pulp weight (g)	105,2	108,8	111,1	113,7	109,7
Average yield/plant (kg)	2,037	2,806	2,775	3,166	2,70

accomplish the specific targets for breeding. The breeding material used in obtaining this variety was accession no. 3. The statistical analysis had been made and mean and standard error of mean had been calculated. Due to results obtained, there have been made appreciations on the variability of the studied characters and selection works have been carried out.

Results and discussion

After the breeding work was finalized, the variety had been cultivated and studied in the experimental field between 2013 - 2016 and it had been subjected to conservative selection work. Over a 4-year period (2013-2016), peppers were grown in greenhouse following current recommendations for sweet pepper production. Care was taken to ensure similar agrotechnical conditions in each year. In table 1 are presented the main characteristic of plants.

Sweet pepper variety has a medium-strong growth habit, with woody stem that grows brightly colored fruits, as seen in Figure 1. The fruits can be harvested in both stages: green (unripe) when fruit has reached length of 12,2 cm and red (ripe) when fruits records an average of 15,3 cm. At physiological maturity, the taste and aroma are more pronounced, giving the variety a better feature. The fruit has a triangular shape, with two lobes and a red carmine color at physiological maturity. In Table 2 are presented three of the main components of plant productivity: the average weight of fruit, the number of fruits on plant and fruits yield on plant. Also, there are fruits characteristics like pulp weight and thickness wall.

As a result of the selection process, the variability limits characters decreased significantly from year to year and an increase in the yield on the plant was observed, reaching a significant increase up to 1.129 kg/plant. In addition to the positive

effect of the selection process the pedoclimate conditions of 2016 were favorable which has also led to an increase of the yield.

Conclusion

The researches ended with the creation of a new sweet pepper variety that passed the final test at ISTIS and is being patented as 'Ideal.' It is particularly characterized as a medium-sized plant with a medium-strong growth habit, suited for greenhouses, with attractive fruits suitable for both green and red stage. Fruits have a firm fruit wall and a leathery peel, when fruits ripen tend to be sweeter than in immature green stage. Promotional seeds and seedlings were offered in the main vegetable centers in Romania and the results are encouraging. This new variety contributes to the enrichment of the Romanian

genetic patrimony, especially for the yield in greenhouses.

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