SCREENING OF TOMATOES GERMPLASM CULTIVATED IN ROMANIA IN ECOLOGICAL SYSTEM CULTURE

PREZENTAREA SORTIMENTULUI DE TOMATE CULTIVATE ÎN SISTEM ECOLOGIC ÎN ROMÂNIA

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Abstract. *Tomatoes in various forms, fall within the daily diet of the population being consumed fresh, prepared, canned or dried very well appreciated in all world cuisines. Tomatoes are providing nutrients (carbohydrates, proteins, lipids, organic acids), minerals, vitamins (A, B1, B2, B6, C, PP, E, K) and are one of the most balanced fruit in rational nutrition. In this research paper we discuss aspects regarding type of growth, vigurozity, production potential (t/ha), precocity, plant resistance to pathogens, some fruit characteristics like: shape, color, weigh, lodge number, firmness, storage and split resistance. Our observation and determinations were made on a range variety on tomatoes cultivated in ecological system culture.*

Key words: *Lycopersicon esculentum*, biodiversity, organic farming

Rezumat. *Tomatele sunt unele dintre cele mai apreciate legume în toate bucătăriile lumii fiind consumate proaspete sau preparate. Tomatele sunt cele mai echilibrate fructe din punct de vedere nutriţional ele furnizând nutrienţi (carbohidrati, proteine, lipide, acizi organici), minerale, vitamine (A, B1, B2, B6, C, PP, E, K). În aceasta lucrare sunt prezentate aspecte cu privire la tipul de crestere, vigurozitatea, potenţialul de producţie, precocitatea, rezistenţa la atacul patogen, cât şi câteva caracteristici precum forma, culoarea si greutatea fructelor, fermitatea, rezistenţa la păstrare şi la crăpare. Observaţiile au fost efctuate la o gamă de tomate cultivate în sistem ecologic.*

Cuvinte cheie: *Lycopersicon esculentum,* biodiversitate, agricultură ecologică

INTRODUCTION

Organic agriculture meets increasingly higher organic products. Consumers are convinced that these products contribute directly to improving the health of humans and animals. Prices of products organic are beneficial to producers (1.5 - 3 times), they compensate the fact that production is reduced by 15-30%. By definition, the organic products are not the result of an industrial process and criteria that the consumer does not choose physical characteristics (size, symmetry, color uniformity etc.) Primarily important is biological quality of production.

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MATERIAL AND METHOD

Due to high demands for healthy food and economic efficiency, ecological culture system has become popular and wanted by beneficiaries of organic horticultural products. The biological material was represented by a number of 28 cultivars of tomatoes. We made observations and measurements regarding morphological and biological characteristics of a range variety of tomatoes. Our observation regards: precocity and production potential (t/ha) of culture, some plant characteristics: type of growth and vigurozity, fruit characteristics: shape, color weight (g) lodge number firmness, split and storage resistance. A very important analyzed issue in condition of ecological farming was plant resistance to pathogens.

RESULTS AND DISCUSSIONS

In organic farming the use of resistant varieties and local populations to attack of pathogens is required (Calin Maria, 2010). Thus in the VRDS Bacau has been studied a large number of tomatoes cultivars in order to establish best for organic. Studies were focused on field crops and protected areas (Brezeanu P. M).

As we can see in all presented tables and also in figure 1 we have studied a number of 28 varieties and we group them in three different categories: varieties for fresh consumption, varieties for fresh consumption and industrialization, varieties for industrialization. In table 1 all analyzed items can be observed.

By using a genetically diverse biological material it can be created and placed in culture a significant number of varieties and hybrids (Ambăruş Silvica, 1990).

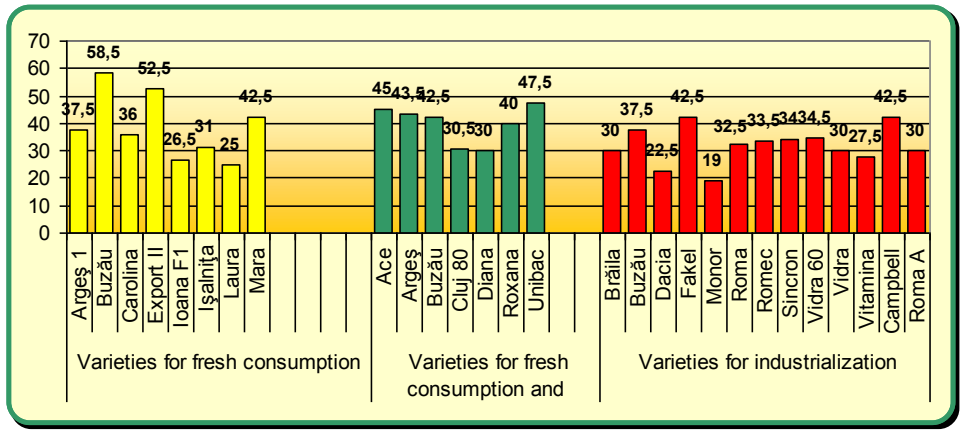

Fig. 1 – Obtained production in ecological system culture

The studied varieties from **the first group** were: early tomatoes: Argeş 1 F_1, Export II F_1, Ioana F1, Işalniţa 50 and semi late varieties: Buzău 1600, Carolina, Laura, Mara – all presented an indeterminate type of growth. Number of lodges varies from 3 to 4-5 per fruits and the color registered different shades of red. Due to the high content of b carotene fruits of Carolina variety were yellow orange. Fruits of Buzau 1600 and Mara were the fruit with the greatest weight 185

– 260 g. Arges variety developed the fruits with lowest weight, 40-50 g. The very important analyzed item for culture in organic system was the plant resistance to pathogens. Export II F_1 and Mara varieties were most tolerant to specific diseases.

The second group, of varieties for fresh consumption and industrialization includes early varieties: Cluj 80, semi late varieties Argeş 428, Roxana, Unibac, and late varieties: Ace Royal, Buzău 22, Diana. Four varieties (Ace Royal, Buzău 22, Roxana, Unibac) were tolerant to specific diseases. The fruits were colored in deep, dark, bright red. The number of seed's loge varies from 2-5 at Cluj 80 to 7-8 at Diana. All varieties presented split and store resistance. Arges 428 developed fruits with weight 200 -300g.

Table 1

Short description of analysed varieties

No	Variety	Fruit characteristics							
		Vigurozity	Shape	Color	Weight (g)	Lodge number	Firmness	Resistance	
								Split	Storage
a. Varieties for fresh consumption									
1	Argeş 1 F_1	Vigorous growth, size of 110-130 cm	Round flat	Red brick	40-50	4-5	B	R	-
2	Buzău 1600	Plant robust, the size of 90-110 cm	Round globular	Red uniform	190-260	3-4	G	R	-
3	Carolina	Vigorous growth, size of 100-125 cm	Globose, slightly ovoid	Yellow orange	90-100	4-5	G	R	M
4	Export II F_1	Medium vigurosity, size of 90-100cm	Round, flat globose	Red uniform	70-90	4-5	VG	R	-
5	Ioana F_1	Vigorous, with great possibilities of shoots	Round flat	Dark red	75-80	4	VG	R	-
6	Işalniţa 50 F_1	Very vigorous, rich bush	Round globose, with green spot	Deep red	100-110	4-5	G	R	-
7	Laura	Vigorous growth, lush foliage	Globose, with Æ size 5,2 – 7,2 cm	Bright red, smooth	100-110	4	G	R	B

b. Varieties for fresh consumption and industrialization									
1	Mara	Very vigorous, uniform	Round flat, uniform	Dark red	185-230	3-4	G	R	M
2	Ace Royal	Vigorous, with compact bush	Round flat	bright red	80-120	3-4	VG	R	M
3	Argeş 428	Medium vigurosity, size of 80 cm	Round flat	Bright red	200-300	4-5	G	R	M
4	Buzău 22	Medium vigurosity	Spherical, slightly flattened	Deep red, uniform	120-200	3-4	VG	R	M
5	Cluj 80	Very vigorous, size of de 95-125 cm	Large, spherical, size 6 cm	Deep red, smooth	75-80	2-5	G	R	M
6	Diana	Vigorous growth, size of 60/70 cm	Round flat, smooth	Red uniform	120-140	7-8	G	R	M
7	Roxana	Medium vigurosity	Round least flattened	Deep red, uniform	120	4-5	G	R	M
8	Unibac	Medium vigurosity size of 60-70 cm	Flattened ball	Deep Red brick	63-86	4-5	G	R	M
c. Varieties for industrialization									
1	Brăila 405	Very vigorous	Elongated ovoid	Red spotless	45-50	3-4	VG	R	G
2	Buzău 47	Vigorous growth, size of 60-70 cm	Globular, symmetric	Red uniform	90-100	5-6	G	R	G
3	Dacia	Semierecte bushes, with 4 -6 shoots	Flattened ball	Deep red,	110-120	3-4	VG	R	M
4	Fakel	Very vigorous	Round flat	Deep red, uniform	60-70	3-4	VG	R	G

5	Monor	Medium vigurosity, leaves little	Round flat to globular	Deep red, glossy	60-70	3-5	VG	L	G
6	Roma VF	Vigorous, semierect port	Elongated oval	Deep red, uniform	40-70	4	VG	R	G
7	Romec 554 r J	Medium vigurosity size of 60-70 cm	Ovoid, ovoid-square	Bright red, smooth	50-60	3	G	R	G
8	Sincron	Medium vigurosity, lying/repent port	Round flat	Red yellow	50-80	4	G	R	G
9	Vidra 60	Medium vigurosity size of 55-60 cm	Globular, slightly flattened	Red yellow	40-60	2-3	VG	R	G
10	Vidra 533	Erect port, size 50-65 cm	Elongated pear	Bright Red	60-65	4	VG	R	G
11	Vitamina	Almost erect port, size of 50-60 cm	Globular, slightly flattened	Red uniform	90-100	6-7	G	R	M
12	Campbell 1327	Very vigorous, with compact bushes	Round flat	Deep red, spotless	100-120	4-5	VG	R	M
13	Roma A r	Medium vigurosity, semierect port	Elongated oval	Deep red,	30-60	4	VG	R	VG

The third group studied was the one of tomatoes for industrialization. We took in observation a number of thirteen cultivars with different precocity: 0 – Monor, 1- Brăila 405, Sincron, Vidra 60, Vitamina, 2 - Vidra 533, Roma Ar and 3 – Dacia, Campbell 1327, Romec 554 rJ, Roma VF. All cultivars presented determinate type of growth with a medium to strong vigurozity. Fruits were colored in red spotted or uniform, bright or glossy. Sincron and Vidra 60 presented red yellow fruits. Regarding shape of fruits diffrent types were detected: elongated shape at Brăila 405, Roma A r, Roma VF, Vidra 533, Romec 554 rJ, globular at Buzău 47, Vitamina, Vidra 60, more or less round at Dacia, Fakel, Monor, Sincron, Campbell 1327. The smaller fruits with a lower level of weight (g) were the fruit of Roma Ar 30-60 g. Dacia and Campbell 1327 varieties presented fruits with a higher weight 100-120g per fruit. All fruits presented good and very good firmness. Dacia variety was very sensitive to pathogens attack and

Buzău 47, Fakel, Vitamina, Campbell 1327, Roma A r presented tolerance to pathogen attack.

The experience in organic farming in VRDS Bacau and results presented in this paper confirm that the organic farming is possible (Stoian, 2005).

CONCLUSIONS

1. The highest yield production in case of group varieties for fresh consumption of was obtained at: Buzău 1600 52-65 t/ha.

2. Export II F_1 and Mara varieties were tolerant to specific diseases.

3. The highest yield production in case of group varieties for fresh consumption and industrialization of was obtained at: Buzău 22: 40-45 t/ha and Unibac 40-55 t/ha

4. The varieties: Ace Royal, Argeş 428, Buzău 22, Cluj 80, Diana Roxana and Unibac were tolerant to specific diseases.

5. Fakel and Campbell 1327 obtained the highest production in case of the industrialization group of tomatoes, 40-45 t/ha.

Acknowledgements. *This work was cofinanced from the European Social Fund through Sectorial Operational Programme Human Resources Development 2007-2013 project number POSDRU/I.89/1.5/S62371 "Postdoctoral Schole in agriculture and Veterinary Medicine area".*

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