Annals of the University of Oradea, Fascicle: Environmental Protection, doi.org/10.5281/zenodo.4362307, **Vol. XXXV, 2020**
Analele Universităţii din Oradea, Fascicula: Protecţia Mediului, doi.org/10.5281/zenodo.4362307, **Vol. XXXV, 2020**

RESEARCH ON THE INFLUENCE OF CULTIVARS AND CROP SYSTEM ON EGGPLANT GROWTH AND PRODUCTION IN SOLARIUM

Ienciu Andrada*, Cărbunar Mihai, Cărbunar Mihaela Lavinia**, Vidican Oana Maria****

*SC RONAQUA SRL Oradea, Romania, ienciu _andrada@yahoo.com
*University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea; Romania, e-mail:carbunar@yahoo.com

Abstract

The Bengal area is considered an important center of origin, with secondary centers in China, where they have been known for over 1500 years. The nutritional value of eggplant is lower compared to other vegetables. The research focused on growth, the number of leaves per plant and the number of branches on eggplants grown in the solarium, in two different systems, conventional and ecological. These are some parameters needed to have a complex image of a cultivar, ultimately influencing productivity. The results obtained show us the differences between the conventional and ecological system.

Key words: eggplant, cultivar, solarium

INRODUCTION

Vegetables are juicy foods with a high water content (75-95%), the rest being dry matter, represented by both plastic purpose and energetic substances (proids, carbohydrates, lipids) and biocatalytic substances, especially vitamins and minerals (Apahidean, 2016).

In a proportion of 5-10% it is recommended to cover with protein from vegetables and the reduced need for vitamins of 1-5 mg / day for the body is ensured from vegetables in a high proportion of 30% for complex B, 80-90 and 100% in case vitamins A, C, respectively P and E (Ciofu, 1994, Soare, 2008). Chen and Li (1996), mention that eggplants come from India where they have been known for a long time, there are many types with small fruits, sometimes known as Solanum melongena, var. insanum from Bengal, India. Because there is a diversity of varieties with different shapes and colors, widespread in Southeast Asia this area is considered an important center of origin. Vavilov (1928), quoted by Chen and Li (1996), mentions that the center of origin for eggplants is the Indo-Burmese region, but there are secondary centers in China, where eggplants have been known for more than 1,500 years.

The nutritional value of eggplants, due to their chemical composition, is lower compared to other vegetables, yet they have a special organoleptic value (Radu and Chilom, 1996, Drăghici, 2002).

Baked eggplants can be kept frozen for winter consumption (Duță, 2005). Eggplant fruits contain 92.7% water, 1.1% protein, 4.56% nitrogen-

free extracts (Ceaușescu et al., 1980, Horgoș, 2000). They also contain 7-10% dry matter represented by carbohydrates 3.5%, proteins 1-1.6%, vitamins C, 5-10 mg, B1, B2, PP, P, mineral salts: K 200-220 mg, P 25-40 mg, Ca 15-20 mg, Mg 16 mg, per 100g fresh product and food salts, substances that partially retain and eliminate toxins and cholesterol from the digestive tract (Apahidean, 2000).

MATERIAL AND METHOD

The present research was carried out in 2017, in an ecological micro-farm and an adjacent vegetable garden, in a conventional system, in Husasău de Tinca, a locality located in the NW of the country. In two solariums, in ecological and conventional system, two experiments with 10 variants were placed, each variant having 10 plants, the witness was the average of the experience. The placement of the variants was done according to the method of subdivided blocks. The biological material was represented by 10 varieties, respectively: Zaraza, Violeta di Firenze, Black Beauty, Japanese Pickling, Dourga, Monstruese NY, Listada da Gandia. JiloTingua Verde, Carina, Orange de Turquie.

RESULTS AND DISCUSSION

The experiences were set up in early April. The first aspect analyzed was plant growth.

The height of eggplant plants grown in solarium in different systems (conventional and ecological) was influenced by the cultivar used but also by the cultivation method (table 2). The eggplant plants had the most successful size on the Orange variety of Turkey (30.01 cm and 34.77 cm) and the largest on the Zaraza variety (77.65 cm and 79.72 cm). Compared to the average experience (58.30 cm) the plant height was higher for the varieties Zaraza, Violeta di Firenze, Dourga and JiloTingua Verde. In general, eggplants grown in the solarium system, in an ecological system, had a smaller size compared to plants grown in the conventional system.

Table 1

The influence of the cultivar on the growth of eggplant plants grown in solarium, in different systems (2017)

Variant		Plant hight		± d	The significance
Variety	System of crop	cm	%	cm	of the difference
Zaraza	Ecologic	77.65	133.19	19.35	***
	Conventional	79.72	136.74	21.42	***
Violeta di Firenze	Ecologic	68.39	117.30	10.09	**
	Conventional	72.45	124.27	14.15	***
Carina	Ecologic	57.92	99.35	-0.38	-
	Conventional	58.23	99.87	-0.07	-
Black Beauty	Ecologic	42.93	73.63	-15.37	ooo
	Conventional	44.77	76.79	-13.53	ooo
Japanese Pickling	Ecologic	62.16	106.63	3.86	-
	Conventional	65.31	112.02	7.01	*
Dourga	Ecologic	63.38	108.71	5.08	*
	Conventional	64.53	110.68	6.23	*
Orange de Turquie	Ecologic	34.77	59.63	-23.53	ooo
	Conventional	30.01	51.47	-28.29	ooo
Monstruese de New York	Ecologic	49.90	85.59	-8.40	oo
	Conventional	52.56	90.15	-5.74	o
Listada da Gandia	Ecologic	41.98	72.00	-16.32	ooo
	Conventional	43.75	75.04	-14.55	ooo
JiloTingua Verde	Ecologic	76.93	131.96	18.63	***
	Conventional	78.79	135.14	20.49	***
Average		58.30	100.00	-	-

LSD (P 5%) 4.53
LSD (P1%) 7.49
LSD (P 0.1%) 10.55

The next aspect analyzed was the number of leaves per plant.

The number of leaves per plant was on average 26.43, being between 11.25 pieces and 36.25 pieces depending on the cultivar and the cultivation method (table 2.2). The number of leaves was lower for the Orange de Turquie variety, 11.25 pieces / plant, in the ecological system and 13.50 pieces / plant, respectively, in the conventional cultivation system. The maximum number of leaves was registered for the Zaraza variety, this being 32.75 pieces / plant, in the ecological system, respectively 36.25 pieces / plant, in the conventional cultivation system. The average number of leaves per plant exceeded the average experience in the varieties Violeta di Firenze and Monstruese of New York, in both cropping systems.

Table 2

The influence of the cultivar on the number of leaves/plant on eggplants grown in solarium, in different systems (2017)

Variant		Number of leaves/plant		± d pieces	The significance of the difference
Variety	System of crop	pieces	%		
Zaraza	Ecologic	32.75	123.91	6.32	***
	Conventional	36.25	137.16	9.82	***
Violeta di Firenze	Ecologic	29.00	109.72	2.57	*
	Conventional	31.75	120.13	5.32	***
Carina	Ecologic	27.25	103.10	0.82	-
	Conventional	28.75	108.78	2.32	*
Black Beauty	Ecologic	23.75	89.86	-2.68	oo
	Conventional	25.50	96.48	-0.93	-
Japanese Pickling	Ecologic	30.00	113.51	3.57	**
	Conventional	22.75	86.08	-3.68	oo
Dourga	Ecologic	31.25	118.24	4.82	**
	Conventional	32.75	123.91	6.32	***
Orange de Turquie	Ecologic	11.25	42.57	-15.18	ooo
	Conventional	13.50	51.08	-12.93	ooo
Monstruese de New York	Ecologic	29.50	111.62	3.07	*
	Conventional	32.75	123.91	6.32	***
Listada da Gandia	Ecologic	24.00	90.81	-2.43	o
	Conventional	27.00	102.16	0.57	-
JiloTingua Verde	Ecologic	18.00	68.10	-8.43	ooo
	Conventional	20.75	78.51	-5.68	ooo
Average		26,43	100,00	-	-

LSD (P 5%) 2.06
LSD (P1%) 3.11
LSD (P 0.1%) 4.86

The average number of sprouts per plant was 2.69, which varied between 1.50 (Orange de Turquie, in ecological system) and 4.75 (Monstruese de New York, in conventional system), (table 3). In the conventional system, the number of sprouts per plant was higher in most varieties (Zaraza, Carina, Black Beauty, Dourga, Monstruese de New York), the differences from the average experience being ensured statistically.

Table 3

The influence of the cultivar on the degree of branching of the eggplant plants grown in the solarium, in different systems (2017)

Variant		Average number of sprouts/plant		± d	The significance of the difference
Variety	System of crop	pieces	%	pieces	
Zaraza	Ecologic	2.75	102.23	0.06	-
	Conventional	3.00	111.52	0.31	*
Violeta di Firenze	Ecologic	2.00	74.349	-0.69	oo
	Conventional	2.25	83.64	-0.44	o
Carina	Ecologic	2.75	102.23	0.06	-
	Conventional	3.00	111.52	0.31	*
Black Beauty	Ecologic	2.50	92.94	-0.19	-
	Conventional	3.25	120.82	0.56	**
Japanese Pickling	Ecologic	2.00	74.35	-0.69	oo
	Conventional	2.25	83.64	-0.44	o
Dourga	Ecologic	2.50	92.94	-0.19	-
	Conventional	3.00	111.52	0.31	*
Orange de Turquie	Ecologic	1.50	55.76	-1.19	ooo
	Conventional	1.75	65.06	-0.94	ooo
Monstruese de New York	Ecologic	2.25	83.64	-0.44	o
	Conventional	4.75	176.58	2.06	***
Listada da Gandia	Ecologic	2.25	83.64	-0.44	o
	Conventional	2.25	83.64	-0.44	o
JiloTingua Verde	Ecologic	2.00	74.35	-0.69	oo
	Conventional	2.75	102.23	0.06	-
Average		2,69	100.00	-	-
LSD (P 5%)		0.27			
LSD (P1%)		0.55			
LSD (P 0.1%)		0.73			

CONCLUSIONS

The researches carried out in the NW of the country on the cultivation of eggplants grown in solarium in the conventional and ecological system, highlighted some conclusions, namely:

1. Plant height, number of leaves per plant, number of branches, are influenced by the cultivar, both in the conventional and in the ecological system.

2. Eggplants grown in solarium, in ecological system, had a smaller size compared to plants grown in conventional system.

3. Compared to the average experience (58.30 cm) the plant height was higher for the varieties Zaraza, Violeta di Firenze, Dourga and JiloTingua Verde.

4. The average number of leaves per plant exceeded the average of the experience in the varieties Violeta di Firenze and Monstruese of New York, in both cropping systems.

5. The maximum number of leaves was registered for the Zaraza variety, this being 32.75 pieces / plant, in the ecological system, respectively 36.25 pieces / plant, in the conventional cultivation system.

6. In the conventional system, the number of sprouts per plant was higher in most varieties (Zaraza, Carina, Black Beauty, Dourga, Monstruese de New York)

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