RESEARCH ON THE INFLUENCE OF CULTIVAR ON THE PRODUCTION OF EGGPLANTS GROWED IN SOLARIUMS

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Abstact

Eggplants have had many names throughout history. The largest quantity of eggplants is produced in Asia. In addition to culinary qualities, eggplant is also highlighted by a number of medicinal properties. The research aims at the production potential of 10 eggplant cultivars, grown in a conventional and ecological system. The results showed a better flowering and fruiting in conventional culture. Some varieties had yields above the experience average, while others were below this average. Production is higher in the conventional system compared to the ecological one.

INTRODUCTION

Eggplants have had several names throughout history, worldwide. The name eggplant (in English) dates back to the British occupation of India, when the egg-shaped white fruits of the species were very popular in some areas of the British kingdom, although some british people now use the name in the French version of eggplant: aubergine (Daunay Marie -Cristine and Janik, 2007).

In the tropical and subtropical regions, eggplant ranks, as a share in vegetable production, in sixth place after tomatoes, melons, onions, cucumbers and cabbage. Eggplants are also among the 35 most cultivated plants, considered to be very important for global food security, being included in Annex 1 of the International Treaty on Plant Genetic Resources for Food and Agriculture (Fowler et al., 2003, cited by Plazas et al., 2019).

The countries where large quantities of eggplant are produced are: China, India, Egypt, Indonesia, the Philippines, Japan, Spain and Italy (Ciofu et al., 2004).

Fruits that have reached ripe consumption are used in the preparation of various recipes with high potential and as a raw material for canneries and dehydrated products (Chen and Li, 1996).

Eggplant peel is edible although the vast majority of people remove it. In it is found the main natural source of nasunin, this is the substance that provides the dark pigment in the eggplant fruit and has the role of protecting it from damage caused by solar radiation or other sources of radiant energy. Nasusin belongs to the category of anthocyanins and has a high antioxidant activity (Saurabh et al., 2015). Eggplant consumption is highly recommended

for people with diabetes or rheumatic, kidney, liver diseases, eggplants having hematopoietic, diuretic, anti-inflammatory properties.

Since ancient times, Ayurvedic medicine, originally from India, recommends eggplant for diabetic and asthmatic patients (Khan, 1979, quoted by Daunay, 2007). It seems that the medicinal and aphrodisiac properties of eggplant are attributed to the bitter substances contained in the fruit (Daunay, 2007). Their preparation by boiling or baking, gives the fruit some medicinal features such as neutralizing iron or healing ear infections (Daunay, 2007, quoted by Bărbuță, 2014).

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 village located in the NW of the country. The study aims to analyze the production capacity of 10 eggplant cultivars, grown in a conventional and ecological system. 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, Japanesse Pickling, Dourga, Monstruese de New York, Listada da Gandia, JiloTingua Verde, Carina, Orange de Turquie.

RESULTS AND DISCUSSION

From the data presented in table 1, it is found that the flowering and fruiting of the plants was better for the crop cultivated in the conventional system, where a higher number of buds, flowers and fruits / plant was registered, compared to the organic cultivation system. Compared to the average experience, flowering and fruiting was better for the varieties Zaraza, Violeta di Firenze, Black Beauty, Dourga and Monstruese of New York.

Table 1

Flowering and fruiting of some varieties of eggplant grown in the solarium

Variant		Buds/plant		Flowers/plant		Fruits/plant	
Cultivar	System of crop	Pieces	% compared to the average	Pieces	% compared to the average	Pieces	% compared to the average
Zaraza	Ecologic	1.75	127.27	14.00	155.56	4.00	238.81
	Conventional	2.00	106.67	14.75	151.67	4.50	206.90
Violeta di Firenze	Ecologic	1.50	109.09	10.75	119.44	2.25	134.33
	Conventional	2,25	120,00	11,25	115,68	2,50	114,94
Carina	Ecologic	1,50	109,09	5,50	61,11	1,50	89,55
	Conventional	2,00	106,67	6,00	61,70	1,75	80,46
Black Beauty	Ecologic	1,00	72,73	6,25	69,44	2,00	119,40
	Conventional	1,75	93,33	7,00	71,98	2,25	103,45
Japanese Pickling	Ecologic	1,75	127,27	10,25	113,89	1,25	74,63
	Conventional	2,25	120,00	10,75	110,54	1,75	80,46
Dourga	Ecologic	1,25	90,91	10,50	116,67	2,00	119,40
	Conventional	1.75	93.33	11.00	113.11	2.50	114.94
Orange de Turquie	Ecologic	1.50	109.09	7.75	86.11	0.25	14.93
	Conventional	2.00	106.67	8.25	84.83	1.00	45.98
Monstruese de New York	Ecologic	1.25	90.91	13.75	152.78	1.75	104.48
	Conventional	1.75	93.33	14.50	149.10	2.25	103.45
Listada da Gandia	Ecologic	1.50	109.09	6.25	69.44	1.25	74.63
	Conventional	2.00	106.67	6.75	69.41	2.00	91.95
JiloTingua Verde	Ecologic	0.75	54.55	5.00	55.56	0.50	29.85
	Conventional	1.00	53.33	7.00	71.98	1.25	57.47
Average	Ecologic	1.38	100.00	9.00	100.00	1.68	100.00
	Conventional	1.88	100.00	9.73	100.00	2.18	100.00

Analyzing the unilateral influence of the cultivar on the eggplant production made in the solarium, it is found that on average, the production was 49.50 t / ha, with limits between 24.15 t / ha and 71.15 t / ha (table 2). The yields exceeded the average experience for Black Beauty varieties by 43.73%, Violeta di Firenze by 41.92%, Monstruese de New York by 24.04%, Dourga by 16.26%, the differences in production being very significant, respectively distinctly significant. The lowest yields were recorded for the JiloTingua Verde, Orange de Turquie and Carina varieties, where the differences from the control were very significant negative. (Table 2).

Table 2

The influence of the cultivar on the production of eggplant cultivation in the solarium

Cultivar	Production		± d t/ha	The signification of the difference
	t/ha	%		
Zaraza	46.35	93.63	-3.15	o
Violeta di Firenze	70.25	141.92	20.75	***
Carina	28.10	56.76	-21.40	ooo
Black Beauty	71,15	143,73	21,65	***
Japanese Pickling	48,85	98,68	-0,65	-
Dourga	57,55	116,26	8,05	**
Orange de Turquie	24,15	48,78	-25,35	ooo
Monstruese de New York	61,40	124,04	11,40	***
Listada da Gandia	50,00	101,01	0,50	-
JiloTingua Verde	37,25	75,25	-12,25	ooo
Average	49.50	100.00	-	-

LSD (P 5%) 3.07
LSD (P 1%) 6.12
LSD (P 0.1%) 8.75

The cultivation system applied to the eggplants from the solariums influenced the registered productions so that for the ecological culture, the production was of 47.14 t / ha, compared to 51.85 t / ha obtained for the conventional culture, the difference between the two cultivation systems being significant (Table 3).

Table 3

The influence of the cultivation system on the production of eggplant cultivation in the solarium

System of crop	Production		± d t/ha	The significance of the difference
	t/ha	%		
Ecologic	47.14	90.92	-4.71	o
Conventional	51.85	100.00	-	-

LSD (P 5%) 3.52
LSD (P 1%) 7.26
LSD (P 0,1%) 9.45

The eggplant production obtained from cultivars used for solarium crops averaged 49.50 t / ha (Table 4). It was found that in all cultivars the production was higher in the conventional cropping system, compared to the organic one. In the conventional cultivation system there were increases of 44.84% for the Violeta di Firenze variety, 47.67% for the Black Beauty variety, 21.62% for the Dourga variety, 27.47% for the Monstruese de New

York variety and 6, 06%, in which the production differences compared to the control variant were very significant, respectively significant. The varieties Carina, Orange de Turquie and JiloTingua Verde registered very significant negative production differences in both cropping systems. In the organic culture system, the production was higher for the varieties Violeta di Firenze, with 38.90%, Black Beauty with 39.79%, Dourga with 10.90% and Monstruese de New York with 20.60%, the differences of production being very significant, respectively significant.

Table 4

The combined influence of the cultivar and the cultivation system on the production of eggplants grown in the solarium

Variant		Production		± d t/ha	The significance of the difference
Variety	System of crop	t/ha	%		
Zaraza	Ecologic	42,30	85,45	-7,20	oo
	Conventional	50,40	101,82	0,90	-
Violeta di Firenze	Ecologic	68,80	138,90	19,30	***
	Conventional	71,70	144,84	22,20	***
Carina	Ecologic	26,90	54,34	-22,60	ooo
	Conventional	29,10	58,78	-20,40	ooo
Black Beauty	Ecologic	69,20	139,79	19,70	***
	Conventional	73,10	147,67	23,60	***
Japanese Pickling	Ecologic	45,80	92,52	-3,70	o
	Conventional	51,90	104,84	2,40	-
Dourga	Ecologic	54,90	110,90	5,40	*
	Conventional	60,20	121,62	10,70	***
Orange de Turquie	Ecologic	21,50	43,43	-28,00	ooo
	Conventional	26,80	54,14	-22,70	ooo
Monstruese de New York	Ecologic	59,70	120,60	10,20	***
	Conventional	63,10	127,47	13,60	***
Listada da Gandia	Ecologic	47,50	95,96	-2,00	-
	Conventional	52,50	106,06	3,00	-
JiloTingua Verde	Ecologic	34,80	70,30	-14,70	ooo
	Conventional	39,20	80,20	-9,80	ooo
Average		49,50	100,00	-	-

LSD (P 5%)	3,25
LSD (P1%)	6,82
LSD (P 0,1%)	9,37

CONCLUSIONS

The researches regarding the influence of the cultivar on the eggplant production from the solarium, allowed the elaboration of some conclusions, namely:

1. Compared to the average experience, flowering and fruiting was better for the varieties Zaraza, Violeta di Firenze, Black Beauty, Dourga and Monstruese of New York
2. The unilateral influence of the cultivar on the eggplant production made in the solarium, shows that on average, the production was 49.50 t / ha, with limits between 24.15 t / ha and 71.15 t / ha.
3. The products exceeded the average experience for Black Beauty varieties by 43.73%, Violeta di Firenze by 41.92%, Monstruese de New York by 24.04%, Dourga by 16.26%.
4. In organic farming, the production was 47.14 t / ha, compared to 51.85 t / ha obtained in conventional cultivation, the difference between the two cropping systems being significant.
5. All cultivators in the conventional system recorded higher yields than in the organic system.

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