THE INFLUENCE OF PLANTING DISTANCES, ON THE QUANTITY AND QUALITY OF THE PRODUCTION IN THE EGGPLANT CROP CULTIVATED IN THE FIELD

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Abstract:

Eggplants are not consumed raw, but only in various forms. Eggplants have a low energy value, but they are rich in vitamins, mineral salts, anthocyanins and other substances beneficial for health. The density of the plants in the crop, influences the quantity and the quality of the production. The research aimed at finding an optimum density that satisfies the demands of the cultivators, both quantitatively and qualitatively. The studied varieties react differently at certain distances between the rows, both in terms of quantity and quality. The superior quality of the eggplant has a decisive influence on the price of recovery.

Keywords: eggplant, density, varieties

INTRODUCTION

Cultivated eggplant, Solanum melongena L., var. esculentum Dun., originate from a similar ancestral species, which was found in tropical and subtropical areas of Asia, India and Burma, between the parallels 100-300 north latitude, along with the similar spontaneous varieties S. melongena L. var. insanum and lime. incanum (Chaux and Foury, 1994.)

These cultures were widespread throughout the geographical area of the Indo-Burmese climate and then migrated through China (500 BC), and later through Persia and the Middle East to countries around the Mediterranean Sea (Apahidean, 2016).

From the eggplants the fruits are consumed to the maturity of consumption, being used in the preparation of different dishes: salad, moss, pot, breaded eggplant.Mixed with other vegetables are used in the preparation of preserves (Ciofu, 2004).

Fruits contain 7-10% carbohydrate dry matter 3.5%, carbohydrates 1-1,6%, carbohydrates 4.8 g, fat 0.2%, fiber 2.58 g, 100 g fresh product, the rest of 93.3% being water (Apahidean, 2016). Eggplants have a relatively low energy value of 24-28 kcal / 100g.

Eggplants, especially those with dark skin, are rich in antioxidant pigments from the anthocyaninscategory.The concentration of anthocyanins

in eggplants varies between 8-85 mg / 100g depending on the variety (Saurabh, 2015). Eggplant bark is edible even though the vast majority of people remove it. This is the main natural source of nasunin. Nasusina belongs to the category of anthocyanins, and has a high antioxidant activity (Saurabh et al., 2015).

MATERIAL AND METHOD

The objective of the present research is to establish the optimum density for the eggplant culture in the field, cultivated in a conventional system. In order to reach the proposed objective, in 2018, in a locality from NW Romania (Husasau de Tinca) in a vegetable microfarm, a mono factorial experience was implemented with 21 variants in 3 repetitions. Each variant had 10 plants. The variants were placed using the subdivided blocks method. The biological material was represented by seven varieties of eggplant, namely; Zaraza, Violeta di Firenze, Black Beauty, Japanese Pickling, Dourga, Monstruese NY, Listed by Gandia. For each variety there were three planting distances, 50cm, 40cm, 30cm.

RESULTS AND DISCUSSION

The experimental culture was established in the last decade of April, through seedlings planted on mulch with black foil, provided with drip irrigation.

Table 1

Production of eggplant(Husasău de Tinca, 2018)

Crt. no.	Variant And the distance between the raws(cm)		Absolute production of eggplant kg/m^2	Relative production of eggplant %	± d kg/m^2	Signifi cance
1	Zaraza	50	6.25	101.29	+0.08	-
2	Zaraza	40	5.31	86.06	-0.86	oo
3	Zaraza	30	9.86	159.80	+3.69	xxx
4	Violeta di Firenze	50	9.71	157.37	+3.54	xxx
5	Violeta di Firenze	40	6.64	107.61	+0.47	-
6	Violeta di Firenze	30	6.29	101.94	+0.12	-
7	Black Beauty	50	5.81	94.16	-0.36	-
8	Black Beauty	40	5.20	84.27	-0.97	oo
9	Black Beauty	30	5.90	95.62	-0.27	-
10	Japanese Pickling	50	3.83	62.07	-2.34	ooo
11	Japanese Pickling	40	4.34	70.34	-1.83	ooo
12	Japanese Pickling	30	4.89	79.25	-1.28	oo
13	Dourga	50	6.26	101.45	+0.09	-
14	Dourga	40	6.81	110.37	+0.64	-
15	Dourga	30	7.65	123.28	+1.48	xxx
16	Monstruese NY	50	5.31	86.06	-0.86	oo
17	Monstruese NY	40	7.57	122.69	+1.4	xxx
18	Monstruese NY	30	7.84	127.06	+1.67	xxx
19	Listada da Gandia	50	4.20	68.07	-1.97	ooo
20	Listada da Gandia	40	4.89	79.25	-1.28	oo
21	Listada da Gandia	30	5.15	83.46	-1.02	oo
22	Media Mt.		6.17	100.00	0.00	-

$LSD_{5\%}$=0.74 $LSDl_{1\%}$=0.97 $LSDl_{0.1\%}$=1.29

Table 1 shows the eggplant production, for each variant, obtained until the beginning of September, when the crop was abolished. The witness was the average of the experience. Analyzing the production of the eggplant as a whole the 21 variants, it can be observed that compared to the average of the experience there were differences both in the positive and in the negative sense, while some variants approached the witness.

The best eggplant harvest was obtained at V3, the Zaraza variety planted at 30 cm, with a production increase compared to the average of 59.80%, a statistically significant positive difference. A short distance from V3, the second place was obtained by the variety Violeta di Firenze. The difference from the witness was greater with 57.37%, which was ensured statistically very significant positive. Other variants that have obtained positive productions, which are worth mentioning are: V15, Dourga variety at 30 cm, New York Monsters V18 at 30 cm and V17 at 40 cm. In all these varieties, the differences from the witness were very statistically significant positive.

The variant that recorded the lowest production was V10, Japanese Kipling 50 cm between the rows. In absolute production it obtained 3.83 kg / m2 and only 62.07% of the average production experience. The difference was ensured statistically, very negative negative. Low strength productions also obtained the V11 and V19 variants, in which the differences from the control were provided with very significant negative statistics. Also small productions also recorded variants V2, V8, V16, V20 and V21. In these, the differences from the witness were somewhat smaller and were provided statistically, significantly distinct negative. The other variants obtained eggplant productions close to the control, smaller or larger, but the difference from the average of the experience did not exceed the 5% threshold, not being statistically assured.

Establishing the quality of the eggplant fruit is an essential element in the general characterization of a variety. Table 2 of the present experience presents, in all 21 variants, the three-step quality distribution of eggplant production. Of these, the extra category represents the most important step, because these fruits are valued at the highest price. From this point of view, the V19 Listada da Gandia variant at 50 cm between rows managed 70% of the total production to be of extra quality. This was followed closely by the same variety but at the distance between 40cm rows, from the V20 variant

It can be appreciated that all the varieties from six varieties registered more than 50% of the total production, fruits of the extra quality. It should be noted that all varieties from the variety Violeta di Firenze, and from Black Beauty, had extra quality fruit of over 60%. The Zaraza variety, with all three variants, had the lowest quality. At these the production of extra quality was below 50%. Along with the varieties of the Zaraza variety,

a single variant, respectively V12, Japanese Pikling at 30 cm between the rows, had 49, 69%, extra quality fruits. In many variants, even if in absolute production, the values were higher than in others, the percentage situation completely changed the hierarchy of values. Thus, the V3 variant obtained the highest production of extra quality in absolute value, of 4.25 kg / m2, and in percentages they represented only 43.10%, the lowest value.

Quality I, in all variants registered lower percentages compared to the previous qualitative stage. Specifically, the values were from 14.72% at V20, respectively Listada da Gandia and 34.65% at V14 the Dourga variety spaced between rows at 40 cm.

The quality of the II had even lower values, this denotes that the eggplant production in all the variants taken into consideration is of quality. At this level of quality the values were between 10.17% at V17 Monstruos of New-York, at 40cm between rows and 28.43% at V2 Zaraza with 40 cm between rows.

Table 2

The quality of the eggplant production(Husasău de Tinca, 2018)

Cr no.	Variant and the distance between the raws (cm)	Absolute production kg/m^2	Extra quality out of total		1st quality out of total		2nd quality out of total	
			Kg/m^2	%	Kg/m^2	%	Kg/m^2	%
1	Zaraza 50	6.25	3.12	49.92	2.05	32.80	1.08	17.28
2	Zaraza 40	5.31	2.60	48.96	1.20	22.59	1.51	28.43
3	Zaraza 30	9.86	4.25	43.10	3.25	32.96	2.36	23.93
4	Violeta di Firenze 50	9.71	5.88	60.55	2.15	22.14	1.68	17.30
5	Violeta di Firenze 40	6.64	4.07	63.00	1.45	23.23	1.12	16.86
6	Violeta di Firenze 30	6.29	3.89	61.84	1.25	19.87	1.19	18.91
7	Black Beauty 50	5.81	3.79	65.23	1.31	22.54	0.71	12.22
8	Black Beauty 40	5.20	3.41	65.57	1.03	19.80	0.76	14.61
9	Black Beauty 30	5.90	3.85	62.25	0.96	16.27	1.09	18.47
10	Japanese Pickling 50	3.83	1.97	51.43	1.05	27.41	0.81	21.14
11	Japanese Pickling 40	4.34	2.17	50.00	1.15	26.49	1.02	23.50
12	Japanese Pickling 30	4.89	2.43	49.69	1.31	26.78	1.15	23.51
13	Dourga 50	6.26	3.48	55.59	2.12	33.86	0.66	10.54
14	Dourga 40	6.81	3.55	52.12	2.36	34.65	0.90	13.21
15	Dourga 30	7.65	3.84	50.19	2.51	32.81	1.30	16.99
16	Monstruese NY 50	5.31	3.12	58.75	1.35	25.42	0.84	15.81
17	Monstruese NY 40	7.57	4.19	55.35	2..61	34.47	0.77	10.17
18	Monstruese NY 30	7.84	4.23	53.95	2.50	31.88	1.11	14.15
19	Listada da Gandia 50	4.20	2.94	70.00	0.78	18.57	0.48	11.42
20	Listada da Gandia 40	4.89	3.35	68.50	0.72	14.72	0.82	16.76
21	Listada da Gandia 30	5.15	3.31	64.27	0.93	18.05	0.91	17.66

CONCLUSIONS

Research on the influence of density on the quantity and quality of eggplant production, on several varieties cultivated in the field has revealed some conclusions, namely:

1. The distance between the rows has a greater influence on the production than on its quality.
2. In some varieties, regardless of size, the production increases exceed the average of the experience (Violeta di Firenze), and in others (Monstruos de New-York), there are variants that exceed the production of the control and variants that do not reach its production.
3. The highest production of eggplants of 9.86 kg / m2 with a production increase of 59.80%, was realized at V3 the variety Zaraza, with the distance between rows of 30 cm.
4. From the Japanese Pikling variety, cultivated 50 cm between rows, from the V10 variant, 3.83 kg / m2 was harvested, respectively 70.34% of the control production. This was the weakest productive variant.
5. Some variants had productions close to the average of the experience, respectively V1, V5, V6, V9, V13 and V14.
6. The highest quality production of the total production, was found at V19 Listada da Gandia variant, with 70%.
7. The highest quality harvest in absolute production of 4.25 kg / m2 was obtained at V3 Zaraza variety.

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