THE INFLUENCE OF ORGANIC FERTILIZATION OVER GROWTH AND FRUCTIFICATION ELEMENTS OF TOMATOES – RADA HYBRID

INFLUENȚA FERTILIZĂRII ORGANICE ASUPRA UNOR ELEMENTE DE CREŞTERE ŞI FRUCTIFICARE LA TOMATE - HIBRIDUL RADA

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Abstract. *In order to realize an ecological cultural environment, we proposed that for tomatoes, Rada hybrid, to use organic materials as fertilizers, which can be gathered from natural sources. Using for planting hole fertilization garden-mould, fermented marc and forest soil, both simple and in mixes, we were able to record differences regarding growth and development rate of the plants, as well as productivity increases, especially early productions. As a result, we studied the growth rate dynamic, which at the time of the top removal for fertilized variants, recorded an increase compared to the witness of up to 21,7% for the height of the plants, up to 17,9% for the diameter and up to 25,4% for leaf numbers. The number of inflorescences per plant was between 5,4 – 6,8% with an increase of up to 25,9%, while the productivity differences were up to 26,4%.*

Rezumat. *Pentru realizarea unui mediu de cultură cât mai ecologic, ne-am propus ca pentru tomate, hibridul Rada, să utilizăm ca fertilizanți, materiale organice, care pot fi procurate din resurse naturale. Folosind pentru fertilizarea la cuib mranița, tescovina fermentată, pământul de pădure – simple sau în amestecuri, s-a reuşit a se obține diferențieri în privința ritmului de creştere şi dezvoltare al plantelor şi sporuri de producție, în special timpurie. Ca atare s-a urmărit în dinamică creşterea plantelor, care în momentul cârnitului la variantele fertilizate s-au înregistrat sporuri față de martor de până la 21,7% pentru talie, de până la 17,9% pentru diametru şi de până la 25,4% pentru numărul de frunze. Numărul de inflorescențe pe plantă a oscilat între 5,4 – 6,8%, cu un spor de până la 25,9%, iar diferențele de producție s-au ridicat la 26,4%.*

MATERIAL AND METHODS

The researches were carried at the vegetables growth sector of the Horticulture Faculty from Craiova, within Banu Mărăcine Didactical Station.

Five variants were taken into study (V1 – V5), of which specific is represented by the use of organic materials, composted in advance, simple or mixed and which represented the base for organic fertilization, alongside an witness variant that wasn't organically fertilized (V6).

The experiments were set up in the field, early culture, by using Rada hybrid, which was planted at the beginning of may, taking into account the environmental conditions. The experiment had three repetitions.

During the vegetation period, growth and fructification elements of the tomato hybrid were studied in accordance with the specific of the variants. This specific is presented with the help of tables that present data of the analyzed elements.

RESULTS AND DISCUSSIONS

Based on determinations and observations recorded in dynamic, values of morphological and production elements were recorded which are presented in tables 1 and 2 as well as chart number 1.

A synthesis of growth elements that report to height variations, diameter and medium number of leafs, under the aspect of absolute and relative values and with the absolute differences per variants are presented in table 1.

It is ascertainable that regarding the height, the witness variant (V6) was surpassed by all the organic fertilized variants, with absolute values of 4,0 – 30,2cm, the highest values being recorded for V5, which surpassed the witness by 30,2cm (21,7%) and V4 with a difference of 18,6 cm (13,5%).

Regarding the diameter of the plants, the values are between 9,36 – 10,82 mm for the organic fertilized variants, compared with 9,18mm recorded by the witness, and the absolute values were 0,18 – 1,64 mm (2,0 – 17,9%) with smaller differences in report with the witness, but with the highest recorded values for the same variants.

Differences were recorded regarding the number of leafs per plant, with absolute values of 1,4 – 4,0 and relative values of 9,8 – 28,2%.

The most obvious differences were manifested in the case of variants fertilized with garden mould mixed with forest soil, but are also considered the values recorded by the variants of garden mould mixed with marc, the latter being found in sizeable quantities within the station due to the presence of a winery.

Table 1

THE INFLUENCE OF ORGANIC FERTILIZATION OVER THE GROWTH ELEMENTS OF TOMATOES, RADA HYBRID, AT THE TIME OF TOP REMOVAL

Variant	Specif. var.	Height			Plant diameter			No. of leafs		
		cm	± d. cm	%	mm	± d. mm	%	Nr.	± d nr.	%
V1	Fert. with garden mould	146,0	8,0	105,8	9,36	0,18	102,0	16,0	1,8	112,7
V2	Fert. with marc	148,0	10,0	107,2	9,42	0,24	103,1	16,2	2,0	114,1
V3	Fert. with forest soil	142,0	4,0	102,3	9,88	0,70	107,6	15,6	1,4	109,8
V4	Fert. with g. mould + marc	156,6	18,6	113,5	10,74	1,56	117,0	17,8	3,6	125,4
V5	Fert. with g. mould + forest soil	168,0	30,2	121,7	10,82	1,64	117,9	18,2	4,0	128,2
V6	Mt. - unfertilized	138,0	Mt.	100,0	9,18	Mt.	100,0	14,2	Mt.	100,0

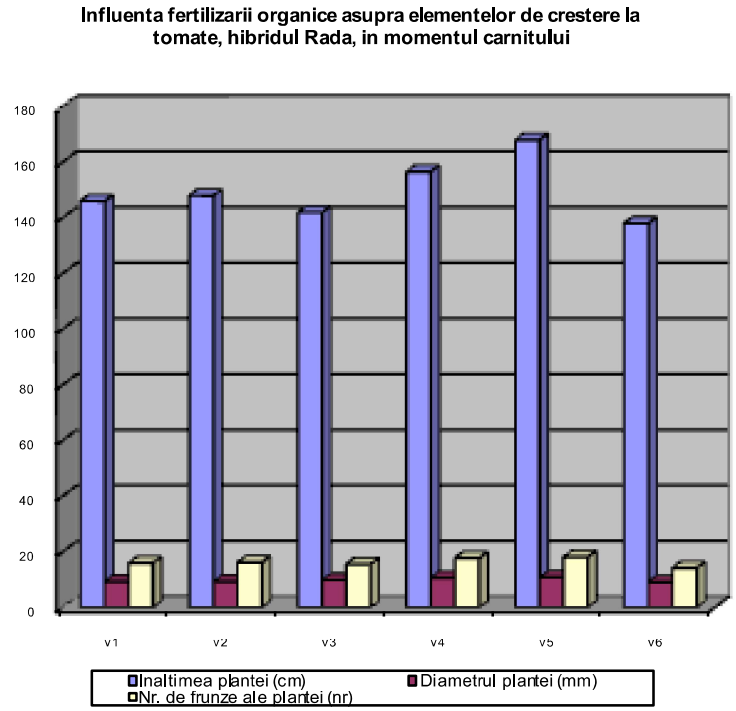

Fig.1 – The influence of organic fertilization over the growth elements of tomatoes, Rada hybrid, at the time of top removal

The fructification elements are presented in table 2 and are reported to the number of inflorescences, number of harvestable fruits, medium weight of the fruits, respectively obtained and statistically calculated productions.

Tabelul 2

THE INFLUENCE OF ORGANIC FERTILIZATION OVER THE FRUCTIFICATION ELEMENTS OF TOMATOES (Rada F1)

Var	Inflorescences/ plant		Harvestable fruits/ plant		Medium weight of the fruit		Production / plant	
	Nr.	%	Nr.	%	g/fruit	%	kg	%
V1	5,8	107,4	21,0	105,0	70,2	106,36	1,474	111,67
V2	5,8	1107,4	22,0	110,0	64,2	97,27	1,412	107,00
V3	5,7	105,5	21,0	105,0	66,4	100,61	1,394	105,60
V4	6,6	122,2	21,0	105,0	74,4	112,73	1,562	118,33
V5	6,8	125,9	22,0	105,0	75,8	114,85	1,668	126,40
V6	5,4	100,0	20,0	100,0	66,0	100,0	1,320	100,0

Differences were recorded regarding the fructification elements, the most prolific variants being, as it can be noticed from table 2, variants 4 and 5 which surpassed the witness with up to 25,9% regarding the number of inflorescences, and up to 14,85% regarding the medium weight of the fruits, the medium number of harvestable fruits per plant recording smaller differences.

The medium production per plant varied between 1,394 – 1,668 kg at V1-V5 compared to 1,320 kg at V6 (Wt) the percentage difference being up to 26,40%.

The recorded and statistically calculated production (table 3) presents high values, between 55,76 – 66,74 t/ha at V1 – V5 compared to 52,80 t/ha at V6 (Wt). The absolute production differences are between 2,96 – 13,94 t/ha, which represents a percentage increase of 5,60 – 26,40%, increases that are statistically assured as significant at V1, distinctly significant at V4 and very significant at V5.

Tabelul 3

THE FRUIT PRODUCTION PER HECTAR – UNDER THE INFLUENCE OF THE ORGANIC FERTILIZATION (Rada F1)

Var.	The specific of the variants	Production		%	Significance
		t/ha	±d. t/ha		
V1	Fert. with garden mould	58,96	+ 6,18	111,67	X
V2	Fert. with marc	56,48	+ 3,68	107,00	–
V3	Fert. with forest soil	55,76	+ 2,96	105,60	–
V4	Fert. with g. mould + marc	62,48	+ 9,68	118,33	XX
V5	Fert. with g. mould + forest soil	66,74	+ 13,94	126,40	XXX
V6	Mt. - unfertilized	52,80	Mt.	100,0	–

CONCLUSIONS

Morphological elements of the plants, per variant have presented differences between them as well as the witness that are explained as a result of the organic fertilization.

Compared to the witness the height of the plants presented increases of up to 21,7%, the diameter an increase of up to 17,9% and the medium number of leafs increased up to 18,2%.

The values of the fructification elements for the fertilized variants were situated with 25,9% over the witness regarding the medium number inflorescences per plant, with up to 14,85% regarding the medium weight of a fruit.

The production increase per plant as well as production per variant, presented different values, the increases being of 5,60 – 13,94 t/ha and the relative differences being of 5,6 – 26,4%, the best statistical assurance being at V4 – distinctly significant and V5 very significant.

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