MACRONUTRIENTS ACCUMULATION IN TOMATOES FRUIT AFTER MINERAL FERTILIZATION

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Tomato are a great vegetable loaded with a variety of vital nutients. (http://whfoods.org)

It was analyzed the distribution of some macronutrients (Na, K, Ca, Mg) in two tomatoes species in different precocity steady: early (Export II) and middle tardy (Campbell and Ace Royal) cultivated in field in the west region of Romania using differentiated fertilizations doses: Control, $N_{30}P_{30}K_{30}$, $N_{45}P_{45}K_{45}$, $N_{60}P_{60}K_{60}$, $N_{120}P_{60}K_{60}$. The experience was done in a cambic cernosium soil, with low acidity reaction and the high natural fertility potential favorable vegetables cultivation. Nitrogen (N), phosphorus (P) and potassium (K) are in quantitative terms the most important minerals for the tomato fruit as they account for more than 90% of the mineral content (Kinet J.M., 1997). Na and K were determinate by atomic emission spectroscopy and Ca and Mg by atomic absorption spectroscopy using Continuum Source Atomic Absorption Spectrometer contrAA®300 by Analytik Jena. We used the work protocol that is stipulated in the AOAC standards. In table 1 was presented macronutrients in tomatoes samples.

Table 1.Macronutrients concentration in tomatoes varieties

Tomato varieties	Fertilization doses	Na [ppm]	K [ppm]	Ca [ppm]	Mg [ppm]
EXPORT II	Control	58.00	2419.95	70.55	201.85
	$N_{30}P_{30}K_{30}$	68.70	2145.95	46.60	217.90
	$N_{45}P_{45}K_{45}$	71.30	2039.86	37.93	161.25
	$N_{60}P_{60}K_{60}$	22.00	2125.94	39,10	120.80
	$N_{120}P_{60}K_{60}$	51.50	2418.44	98.65	212.25
ACE ROYAL	Control	54.85	2386.44	49.30	185.85
	$N_{30}P_{30}K_{30}$	67.50	2380.94	79.60	241.85
	$N_{45}P_{45}K_{45}$	58.00	2620.94	15.16	228.10
	$N_{60}P_{60}K_{60}$	69.90	2206.44	15.25	201.15
	$N_{120}P_{60}K_{60}$	64.10	1872.44	83.35	142.15

The highest values were observed for K, Mg, Ca, Na. The highest content of K is observed in control samples (without fertilizers) in two tomatoes varieties. Highest Ca accumulation content is observed in two sorts by fertilization doses $N_{120}P_{60}K_{60}$. Optimum fertilization doses for Na accumulation in tomatoes samples is $N_{45}P_{45}K_{45}$ for Export II and $N_{60}P_{60}K_{60}$ in Ace Royal varieties; for Mg optimum fertilization doses is $N_{30}P_{30}K_{30}$. The mineral fertilization doses and the precocity steady of tomatoes influence the content of macronutrient in tomatoes fruit.

REFERENCES

Kinet, J.M., Peer, M.M.,(1997), Tomato in: Wien, H.C.(eds.), The Phisiology of vegetable Crops , CAB international, Cambridge, p.208-258

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***AOAC International.Methods and Conventions of Nutrient Analysis