

RESEARCH REGARDING THE INFLUENCE OF SOME ORGANIC PRODUCTS ON YIELD AT POTATO IN ENVIRONMENTAL CONDITIONS OF ASTRA TRIFESTI SRL, IAȘI

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Abstract

The experience was located in 2011 in the Trifesti village, Bivolari microzone who are in an area with temperate climate and is characterized by cold winters and hot summers, with irregular winds, most common in north-west and north - winter and southeast and east - especially in spring, with sufficient rainfall - especially in early summer. It was installed on trifactorial experiences in 3 repetitions of the type 4Ax3Bx2C, being studied five varieties of potato. In this paper we present partial results of three varieties.

Factors are studied, A Factor – Foliar fertilizing, with graduations, a₁- not fertilized, a₂ – NPK, a₃- ECO 1, a₄- ECO 2, B Factor– Foliar fertilizing : b- Adora A, România, variety, b₂ - Volumia E, Olanda, variety, b₃- Red Scarlet A, Factorul C – vegetation treatment with organic herbicide: c₁- treatment with Novodor (4l/ha), c₂ treatment with NeemAzal (2l/ha).

The analysis of data, it was found that the three varieties, Adora A, România –Volumia E, Olanda, Red Scarlet A, România, behaved positively registering positive differences from not fertilized variant.

Key words: fertilisation, yields, potato

Potato (*Solanum tuberosum* L.) are of special importance in human food, animal feed and processing in industry.

It is grown on every continent, but particularly in Europe, which holds about 50% of the world. (Bîlteanu G., 2001).

The people nutrition potato is used fresh or dry form and cooked products.

It is basic and complementary food for much of the population of Europe and other countries.

Protein content in the potato tuber is moderate, but is of high quality protein.

Quantity of 200g boiled potatoes provide 16-18% of human organism protein for 24 hours. Composition of potato protein has a wide spectrum of essential amino acids and free, the most important of which are tryptophan, lysine and isoleucine. (Berindei M., 1995).

Direct indicative annual consumption of potatoes per person in different countries varies between 44 and 140 kg: Ireland - 140 kg, Netherlands - 138 kg, -130 kg Germany, Spain - 120 kg, Belgium - 118 kg, -108 kg France, England - 95 kg, Switzerland - 87 kg, Italy - 65 kg etc. Annual per person consumption in Romania is about 100 kg tubers.

Potatoes are used in the food industry, resulting in dry products: flour, flakes, dehydrated

meal, toasted products: potato chips (thin slices fried in oil, crunchy), "frites pommes" (frozen) French fries. Starch and alcohol industry, a tonne of tubers to obtain 100 kg 140 kg starch or dextrin and 95 l alcohol. (Muntean L.S., 2003).

Currently attention is given to the growing environment, and current concerns are to find viable solutions to reduce the negative effects and pressures which they carry agriculture on the environment. Organic products are a viable alternative to protect the environment, maintaining biodiversity, preserving natural resources.

Potato is one of the most important crops, which have a high ecological plasticity, being grown on all continents, in over 140 countries, which are grown mainly for food, but also for industrial and animal feed.

Potatoes for human consumption occupies the fourth place in the world after wheat, rice and corn, using fresh or as dried and cooked products.

The experience of using a potato in the Netherlands. Potato is an important crop for Netherlands agriculture industry.

It occupies almost a quarter of the country's arable land and almost half of total production value realized on farms with arable land (Van der Zaag, 1992).

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MATERIAL AND METHOD

The experience was located in 2011 in the village Trifesti, micro area Bivolari who are in an area with temperate climate and is characterized by cold winters and hot summers, with irregular winds, most common in north-west and north - winter and southeast and east - especially in spring, with sufficient rainfall - especially in early summer.

Geographical area in which the micro Bivolari is characterized by a temperate climate, with specific particularities of Russian steppe climate influence and is part of the province Dfbx climate (Koppen's classification after), characterized by boreal climate, with cold winters and cold, with temperature of the coldest months and temperatures below-33°C the warmest months, 25-27°C.

In this micro area, 5% of the area is planted with potatoes, which mostly has the Trifesti Astra Commercial Society

Trifactorial experience is carried out in three repetitions of the type being studied AxBxC five varieties of potato. We present partial results of three varieties.

Factors studied are:

A Factor – Foliar fertiliozing:

- a1- not fertilized; a2 – NPK; a3- ECO 1;
- a4- ECO2.

B Factor – variety:

- b1- Adora A, România, variety;
- b2 - Volumia E, Olanda, variety;
- b3- Red Scarlet A, România, variety.

C Factor – vegetation treatment with organic herbicide:

- c1- treatment with Novodor (doza 4l/ha);
- c2 -treatment with NeemAzal(doza 2l/ha).

At harvest were sampled to determine production and productivity features.

- Statistical processing of data was performed using analysis of variance.
- In this paper are presented results obtained on potato production in 2011.

RESULTS AND DISCUSSIONS

Regarding the influence of fertilization treatment and variety analyzing data from table 1 we notice that the highest yields are recorded version fertilizată classic variety is the difference compared to the control volume is 174.02%.

Regarding fertilization with organic products, it appears that variant has been applied to ecological ECO1, tuber production increased very significantly compared to the control,% compared to the control was 158.52%.

In 2011 apicarea traditional fertilizers and the very significant environmental gains brought production to control variant fertilized.

Thus the fertilized variants classic production was 33033 kg / ha for variety's volume, compared with the control variant, which were fertilized obtained 19244 kg / ha.

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So, the classic fertilized variants production was 33033 kg / ha for Volume E variety, compared with the control variant, not fertilized,obtained 19244 kg / ha.

Regarding fertilization with organic products, in Table 2 show that both versions were used where these products have received very significant production increases, respectively, where we used variants ECO 1, the Volumia E variety has been were obtained 3044 kg / ha, and the variant used where ECO 2, the Volumia E variety has been obtained 29305 kg / ha.

Volume E, gave the largest production increases in all cases, be a great alternative to potato producers in our country.

Influence on the variety of potato production in 2011, is seen from Table 3, that the variety Adora, we obtained the highest yield% compared to the control was 120.02%.

Analyzing table 4, notes that the variant fertilized with Novodor combinație classic in function to obtain the production increase

CONCLUSIONS

From the data presented can make the following conclusions:

The potato can obtain high yields of tubercles using traditional fertilization and organic fertilization.

Influence of organic fertilization on the production of tubercles in 2011, was manifested by significant production increases compared with control variant.

Analysis of variance results of experimental soy reveals by F test, the production of tubers was significantly influenced both by classical fertilization and organic fertilization.

Table 1

The influence of fertilization treatment and variety on potato production in 2011

Variant		Production (kg/ha)	% Compared to the control	Dif.(kg/ha)	Signif.	
Not fertilized	Novodor	Adora A Martor	19205.0	100.00	martor	***
		Volumia E	24854.8	129.42	5649.8	
		Red Scarlet	18930.0	98.57	-275.0	
	NeemAzal	Adora A Martor	19282.5	100.40	77.5	***
		Volumia E	24999.8	130.17	5794.8	
		Red Scarlet	19110.0	99.51	-95.0	***
NPK	Novodor	Adora A Martor	27118.5	141.21	7913.5	***
		Volumia E	33420.8	174.02	14215.8	***
		Red Scarlet	29609.8	154.18	10404.8	***
	NeemAzal	Adora A Martor	27658.5	144.02	8453.5	***
		Volumia E	32644.3	169.98	13439.3	***
		Red Scarlet	28779.8	149.86	9574.8	***
ECO 1	Novodor	Adora A Martor	26391.0	137.42	7186.0	***
		Volumia E	30444.3	158.52	11239.3	***
		Red Scarlet	27774.0	144.62	8569.0	***
	NeemAzal	Adora A Martor	26391.0	137.42	7186.0	***
		Volumia E	30246.8	157.49	11041.8	***
		Red Scarlet	28541.5	148.61	9336.5	***
ECO2	Novodor	Adora A Martor	25469.3	132.62	6264.3	***
		Volumia E	29304.8	152.59	10099.8	***
		Red Scarlet	23441.8	122.06	4236.8	***
	NeemAzal	Adora A Martor	22969.3	119.60	3764.3	***
		Volumia E	27499.8	143.19	8294.8	***
		Red Scarlet	21661.8	112.79	2456.8	
MEDIA		26073 kg/ha				
DL 5% =		989,1 kg/ha				
DL 1% =		1338,3 kg/ha				
DL 0.1% =		1779,8kg/ha				

Table 2

Influence the interaction between fertilization and variety on potato production in 2011

Fertilization	Variety	Production (kg/ha)	% Compared to the control	Dif. (kg/ha)	Signif.
Not fertilized	Adora A Martor	19244	100.00	martor	***
	Volumia E	24927	129.53	5683.5	
	Red Scarlet	19020	98.84	-223.8	***
NPK	Adora A Martor	27389	142.32	8144.8	***
	Volumia E	33033	171.65	13788.8	***
	Red Scarlet	29610	153.87	10366.0	***
ECO 1	Adora A Martor	26391	137.14	7147.3	***
	Volumia E	30444	158.20	11200.5	***
	Red Scarlet	28542	148.32	9297.8	***
ECO 2	Adora A Martor	25469	132.35	6225.5	***
	Volumia E	29305	152.28	10061.0	***
	Red Scarlet	23442	121.81	4198.0	
MEDIA		26073			
DL 5% =		960.7 kg/ha			
DL 1% =		1309.5 kg/ha			
DL 0.1% =		1761.7 kg/ha			

Table 3

The influence of variety on potato production in 2011

Variety	Production (kg/ha)	% Compared to the control	Dif. (kg/ha)	Signif.
Adora A Martor	24311	100.00	martor	
Volumia E	29177	120.02	8113.2	***
Red Scarlet	24731	101.73	3667.4	***
MEDIA	26073			
DI 5% =	253.8 kg/ha			
DI 1% =	337.9 kg/ha			
DI 0,1% =	437.4 kg/ha			

Table 4

The influence of the interaction between fertilization and foliar treatments

Fertilization	Tratament foliar	Production (kg/ha)	% Compared to the control	Dif. (kg/ha)	Signif.
Nefertilizat	Novodor	20997	100,00	martor	
	NeemAzal	21131	100,64	134,2	
NPK	Novodor	30050	143,12	9053,1	***
	NeemAzal	29694	141,42	8697,6	***
ECO 1	Novodor	28203	134,32	7206,5	***
	NeemAzal	28393	135,23	7396,5	***
ECO 2	Novodor	26072	124,17	5075,3	***
	NeemAzal	24044	114,51	3047,0	***
MEDIA	26073 kg/ha				
DI 5% =	681,2 kg/ha				
DI 1% =	938,8 kg/ha				
DI 0,1% =	1286,7 kg/ha				

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