

RESEARCH ON ECOLOGICAL PROTECTION EFFECT ON THE ENVIRONMENT ENSURED BY FERTILIZATION WITH NEW RANGE OF LIQUID FERTILIZERS

IULIA ANTON*, A. DORNEANU*, DANIELA DANA*, GEANINA BIREESCU**, L. ILIE***, VALENTINA COTEȚ*, IOANA OPRICĂ*, DANIELA MIHALACHE*, ADRIANA GRIGORE*

*National Research and Development Institute for Soil Science, Agrochemistry and Environmental Protection of Bucharest

**Research Institute of Biology of Iasi

***University of Agronomic Sciences and Veterinary Medicine of Bucharest

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Abstract

With the application of natural fertilizers and the products industry fertilizers, as a link technology required to increase crop yields, the risk generally involves degradation of environmental components (soil, groundwater, plants), through phenomena of chemical pollution, mainly due to dissipation entropy of nutrients in environment; these phenomena are always followed by low levels of productive use by crop nutrients in the fertilizers applied.

INTRODUCTION

The phenomena of chemical pollution of the environment with nutrients and ions accompanying their, may occur when fertilization is applied in the soil on a scientific based (DOE) due to the adsorption phenomena, ions nutritive fixation on colloids of soil and the leaching NO^3 , Cl^- , which contributes to lowering the degree of utilization of nutrients applied to crop.

In fact, through classical methods of fertilization in the soil, the peak levels of annual use of crop nutrients are: 60-80% in the case of N sources, 15-20% in the case of sources of phosphorus and 70-75% for potassium salts. Incomplete productive use in harvest, by nutrients of fertilizers applied, to determine such the increase incidence by the phenomenon chemical pollution in environment.

In this context, the fertilizers method experimented and the foliar fertilization compositions researched, was tested, were tested as methods and means of fertilization of plants, intended to supplement and correct nutrition of crops in greenhouses and prevent pollution of the environment plant production.

MATERIAL AND METHODS

Activity test experimental fertilizers acquiring organic liquids has been to SC SERE SA Codlea, Braşov in 1374/2003-2006 AGRAL the project, contracted by INCDPAPM-ICPA, and after the completion of this project, aimed at fertilization greenhouse crops in the period from planting seed to physiological maturity of plants. Chemical composition of such fertilizers is presented in table 1.

The biological material used for testing the type of liquid fertilizer made from INCDPAPM - ICPA, Fertec B and K Fertec, especially for vegetables grown under glass, was bell pepper, *Carpatia* cultivar (2007). For each variant to ensure a minimum number of 3-4 rehearsals.

Experiments were located in the plots of 200 m² to 50 m² each in 14 glasshouse. Soil was fertilizer base 100 tonnes/ha half ferment manure during vegetation and were incorporated into the soil 100 kg/ha potassium monophosphate 0-52-34 and 40 kg/ha of magnesium sulphate 16.2% MgO.

Table 1

Chemical composition of liquid fertilizers with ecological features manufactured by RISSA

Components	UM	Fertilizers types	
		FERTEC-B	FERTEC-K
N	g/l	30	30
P ₂ O ₅	g/l	30	30
K ₂ O	g/l	30	30
Mg	g/l	0.5	0.5
S	g/l	3.6	3.6
Plant extract with amino acids and auxine	ml/l	80	-
Sea algae extract with auxine and kinetina	ml/l	-	80
Density	g/cm ³	1.109	1.105

Foliar fertilizers were given 4 treatments during the growing season of plants, in concentrations of 0.5%, the quantity of solution used to dilute a single treatment was 2000 l/ha. These applications were made in the months May to July, at 3 - 4 weeks.

RESULTS AND DISCUSSION

In tables 2 and 3 are present apparent productive use grades of the nutrients from fertilizers applied foliar (GAUPEN_{ICF}) and productive use grades of the nutrients

from soil reserves (GUPENsol) in crops produced in greenhouses, the culture of bell pepper as a result application of foliar fertilization method.

Analyzing the data obtained can be seen that the apparent levels of use in crop production of the nutrients from foliar treatments (GAUPEN_{ICF}) present value of the order of hundreds and even thousands, which shows that foliar treatments had an intense physiological stimulation of plants and led to additional consumption of nutrients from soil reserves and fertilizers applied in soil.

Degrees apparent productive use of the harvest of the nutrients from foliar treatments were, in general, an increase commensurate with the increase of harvest, values having the greater the intake of nutrients foliar treatment was minimal, the high degrees of apparent productive use of the nutrients from foliar treatments applied being determined in particular by the large export of nutrients with the crop increases from low intake and nutrient foliar treatments applied (kilos order to macronutrients) (table 2).

Also, degrees of productive use of the nutrients from the soil (GUPENsol) presented in all of the foliar treatment, more than 100, which highlights the effect of stimulating root nutrition plant provided by foliar treatments (table 3). Levels of productive use of the nutrients from the soil (GUPENsol) recorded in variants fertilized with foliar compositions, had high values, which attest the superiority of these means on the fertilization and prevent the phenomena of chemical pollution of the environment.

CONCLUSIONS

1. In practical terms, using this method of fertilization and foliar application of foliar fertilizers in greenhouses, from bell pepper crop, is obtained, in addition to significant production increases, and significant effects to reduce the phenomenon of chemical pollution environment.
2. Incomplete productive use in a crop nutrients from fertilizers applied to determine the incidence of such phenomenon of increasing chemical pollution of the environment.
3. However, high consumption of soil nutrients, such methods and means of fertilization, in conditions of poor soil supplied with nutrients (fertilization without basic soil) can contribute to degradation of soil fertility.

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Table 2

The apparent productive use degrees of the nutrient from foliar fertilizers to bell-pepper crop, Carpatia cultivar, second cycle, grown in greenhouse at S.C. SERE S.A. Codlea-Braşov, year 2007

Variant	Fertilizer type	No. treatment	Concentration solution (%)	Quantity of fertilizer used (liters/ha)		Production of fruits (t/ha)	Yield increases (t/ha)	GAUPEN _{ICF} (%)		
				one treatment	all treatments			N	P ₂ O ₅	K ₂ O
1	Control	-	-	-	-	52.0	-	-	-	-
2	FERTEC B	4	0.5	10.0	40.0	61.8	9.8	2368	817	3675
3	FERTEC K	4	0.5	10.0	40.0	63.5	11.5	2779	958	4313

Table 3

The productive use degrees of the nutrient from soil in obtained yields of bell-pepper, Carpatia cultivar, second cycle, grown in greenhouse at S.C. SERE S.A. Codlea-Braşov, year 2007

Variant	Fertilizer type	No. treatment	Concentration solution (%)	Quantity of fertilizer used (liters/ha)		Production of fruits (t/ha)	Yield increases (t/ha)	GUPEN _{SOIL} (%)		
				one treatment	all treatments			N	P ₂ O ₅	K ₂ O
1	Control	-	-	-	-	52.0	-	-	-	-
2	FERTEC B	4	0.5	10.0	40.0	61.8	9.8	118	117	118
3	FERTEC K	4	0.5	10.0	40.0	63.5	11.5	121	120	122