The International Conference of the University of Agronomic Sciences and Veterinary Medicine of Bucharest
AGRICULTURE FOR LIFE, LIFE FOR AGRICULTURE
June 3 – 5, 2021, Bucharest, Romania

COMPARATIVE PERFORMANCES OF ORGANIC FERTILIZERS ON DIFFERENT CROPS IN CLIMATIC CONDITIONS OF ARGEȘ COUNTY

Roxana Maria MADJAR[1], Nicolae IONESCU[2], Traian Mihai CIOROIANU[3], Gina VASILE SCĂEȚEANU[1*]

[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, Faculty of Agriculture, Bucharest, Romania;
[2]Agricultural Research and Development Station Pitești, Pitești, Romania;
[3]National Research and Development Institute for Soil Science, Agrochemistry and Environment - ICPA Bucharest, Bucharest, Romania.
Corresponding author email: gina.scaeteanu@agro-bucuresti.ro

Keywords: crop, foliar application, organic fertilizer, yield component

INTRODUCTION

Nowadays, organic farming is equally recognized by scientists and consumers as well, as a suitable manner to generate healthy food products by avoiding chemical fertilizers and pesticides and to contribute therefore to decrease of environmental pollution. Having in view the importance of organic agriculture from both environmental and consumers' perspectives, it was designed an experiment with the purpose ***to investigate the efficiency of two fertilizers accepted for organic agriculture*** (CODAMIX - F1 and ECOAMINOALGA - F2) ***on autumn wheat, sunflower, maize, soybean crops*** and to compare their effects on yield performances.

MATERIALS AND METHODS

The experimental study was developed during 2019-2020 in Albota, Argeș County, where the dominant soil type is albic luvisols. Albota is located in the south part of Argeș County, at 10 km far from Pitești.

Table 1. Fertilization scheme

Experimental crop	**Autumn wheat**	**Sunflower**	**Maize**	**Soybean**
Preceding crop	Sunflower	Wheat	Maize	Wheat
Basal application	Bio Enne* 250 kg/ha	Bio Enne* 250 kg/ha	Bio Enne* 250 kg/ha	$N_{30}P_{30}$ + $CaCO_3$ 1.5 t/ha
First treatment application (phenophase)#	25.05.2020 (grain filling)	25.05.2020 (6-7 leaves)	25.05.2020 (7-8 leaves)	25.05.2020 (3rd trifoliate leaf)
Second treatment application (phenophase) #	-	19.06.2020 (12 leaves)	09.06.2020 (8 leaves)	09.06.2020 (4th trifoliate leaf)

*Bio Enne contains: 12% organic nitrogen, 23% water soluble sulphuric anhydride, 35% organic carbon
#Foliar application; 2.5L solution 0.5%/ha/treatment; applied volume 150L.

RESULTS AND DISCUSSIONS

1. *The efficiency of foliar fertilization with CODAMIX and ECOAMINOALGA on* ***autumn wheat*** *yield parameters*

Experimental variant (dose; number of treatments)	**Total biomass, kg/ha**	**Spikes biomass, kg/ha**	**Seeds biomass, kg/ha**	**TKW, g**
Control	4413	2293	1095	30.0
F1(2.5L/ha; 1)	5053	2520	1393	30.8
F2(2.5L/ha; 1)	6507*	3387*	1684	32.2
DL 5% =	1958	1013	678	5.1
DL 1 % =	3247	1681	1124	8.5
DL 0.1% =	6072	3144	2101	15.8

F1*=CODAMIX;* ***F2****=ECOAMINOALGA;*
significant difference;*distinct significant difference ***very significant difference.*

2. *The efficiency of foliar fertilization with CODAMIX and ECOAMINOALGA on* ***sunflower*** *yield parameters*

Experimental variant (dose; number of treatments)	**Total biomass, kg/ha**	**Calatidium biomass, kg/ha**	**Seeds biomass, kg/ha**	**TKW, g**
Control	10533	5700	3100	40.8
F1 (2.5L/ha; 2)	11967**	6235***	3435***	45.7
F2 (2.5L/ha; 2)	13035***	6000**	3200**	38.9
DL 5% =	475	104	57	12.5
DL 1 % =	787	172	94	20.7
DL 0.1% =	1473	322	177	38.7

F1*=CODAMIX;* ***F2****=ECOAMINOALGA;*
significant difference;*distinct significant difference ***very significant difference.*

3. *The efficiency of foliar fertilization with CODAMIX and ECOAMINOALGA on* ***maize*** *yield parameters*

Experimental variant (dose; number of treatments)	**Total biomass, kg/ha**	**Cobs biomass, kg/ha**	**Seeds biomass, kg/ha**	**TKW, g**
Control	12370	7467	5667	318
F1 (2.5L/ha; 2)	17669***	7870**	6000**	296
F2 (2.5L/ha; 2)	21200***	9670***	7367***	328
DL 5% =	901	228	198	35
DL 1 % =	1495	378	328	59
DL 0.1% =	2796	706	613	110

F1*=CODAMIX;* ***F2****=ECOAMINOALGA;*
significant difference;*distinct significant difference ***very significant difference.*

4. *The efficiency of foliar fertilization with CODAMIX and ECOAMINOALGA on* ***soybean*** *yield parameters*

Experimental variant (dose; number of treatments)	**Total biomass, kg/ha**	**Siliques biomass, kg/ha**	**Seeds biomass, kg/ha**	**TKW, g**
Control	4930	2570	1230	91
F1 (2.5L/ha; 2)	5110	2660*	1280	102*
F2 (2.5L/ha; 2)	5120	2680*	1290	105*
DL 5% =	104	85	76	9.5
DL 1 % =	154	126	112	14.0
DL 0.1% =	238	195	173	21.6

F1*=CODAMIX;* ***F2****=ECOAMINOALGA;*
significant difference;*distinct significant difference ***very significant difference.*

CONCLUSIONS

❖The investigation of the efficiency of CODAMIX (F1) and ECOAMINOALGA (F2) on different field crops (wheat, sunflower, maize, and soybean) evidenced positive effects on yield parameters in comparison with control variant.
❖For **autumn wheat**, it was noticed a significant increase of total biomass and spikes biomass after F2 treatment, precisely with 47.45% and 47.71% respectively, as against control variant and with 28.77% and 34.40% respectively, as against F1 treatment.
❖Concerning **sunflower** crop, all yield parameters, excepting total biomass were higher after F1 treatment in comparison with F2. For total biomass, the treatment F2 produced an increase with 23.75% and 8.92% as against control and F1, respectively. Nevertheless, application of F1 and F2 evidenced positive influence on all yield parameters.
❖For **maize**, the most important increase (71.38%) after F2 treatment in comparison with control variant was recorded for total biomass parameter. After F2 treatment, cobs biomass increased with 29.50% and 22.87% in comparison with control and F1, respectively. Seeds biomass presented similar increases: with 30% and 22.78% as against control and F1, respectively.
❖For **soybean**, the effects of F1 and F2 inputs on yield parameters were similar, the results being close between F1 and F2 and slightly higher than those recorded for unfertilized variant.

ACKNOWLEDGEMENTS

This paper was financed by the Faculty of Agriculture, University of Agronomic Sciences and Veterinary Medicine of Bucharest.
This work is consistent with research directions and guidelines specified by Ministry of Agriculture and Rural Development in the project ADER 1.4.4. *Identification, evaluation, testing, development and validation of analysis methods of nutrients and contaminants from inputs usable in organic agriculture*.

REFERENCES (*selection*)

Regulation (EC) No 2003/2003 of the European Parliament and of the Council of 13 October 2003 relating to fertilizers.