A STUDY ON THE EFFECT OF MINERAL FERTILIZATION, ON MAIZE PRODUCTION AT SC.AGRO AR PRODUCT BOCSIG, ARAD

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***Abstract*:** *The main research objective was to observe how the application of chemical and foliar fertilizers influence crop yields (grained maize). Maize is an important source of carbohydrates, proteins, vitamins and minerals. The research was conducted in the experimental field of the Agricultural Society AGRO PRODUCT AR Srl, in the village of Bocsig, Arad county and in the laboratory of the Department of Agricultural Chemistry of the Agriculture Faculty. Experiments are stationary type, with wheat - corn - sunflower crops. The field is divided in 4 variants with four repetitions, size 10 x 3m (30 m2). The maize hybrid used for this experiment is MAS 44 A. The study aims rigorous scientific investigation and issues about increasing the hybrids production, soil fertility and decrease environmental pollution on account of controlled use of fertilizers in order to obtain new data and information that serves to change the current concept of agriculture in the direction of a sustainable agriculture. The fertilizers used were: 15:15:15 complex mineral fertilizers, Urea and N28 liquid foliar fertilizer .*

Keywords: *fertilizers, maize, ground experimental field, private farm*

INTRODUCTION

Due to his favorable pedoclimatic conditions , Arad county scores himself among the most favorable regions for maize production in Romania.

Maize is an important crop because its production capacity is with 50% higher than other cereals and it has multiple uses.

The expanding that it has is due to this nutrition value and some agrofitotehnic features of the the crop such as: high productions, the posibility of a fully mechanized culture, it has a better exploitation of fertilizers and irrigation water, it is not demanding to the previous plant and it is a good prior crop to most crops

Due to his high production of dry mass per area unit, maize is a big consumer of nutrients (MARGHITAS şi colab., 2005).

For each 1000 kg of seeds + haulms, maize uses from soil 21-28 kg N, 9-14 kg P205 and 27,3 kg K20.

The proteins from the corn seed embyo have an exceptional quality; they contain essential aminoacids in similar proportions as animal proteinsand they can be considered as an important source of proteins in human alimentation and to balance the proteins low in lysine. (GH. BÎLTEANU ŞI V. BÎRNAURE, 1989).

The vegetation period also influences the protein content; the early hybrids have a more richer protein content than the late ones.

MATERIALS AND METHOD

The experimental variants, ere fertilized with three types of fertilizer in different doses, in pedoclimatic conditions from village of Bocsig.

The variants from the experimental field were as follows:

V1- unfetilized, stander-by

V2-15.15.15 - 150 kg / ha administration by scattering

V3- 15.15.15 - 150 kg / ha administration by scattering + 50 kg localy applied Urea

V4- 15.15.15 - 150 kg / ha administration by scattering + 50 kg localy applied Urea + liquid fertilizer N28 (28% N) - 20L / ha.

The maize plant needs to be fertilized with N even at the end of its vegetation period in order to increase the content of protein in its seeds, so our researches included a leaf treatment with nitrogen liquid fertilizer

After the maize samples have been harvested, were taken to the agrochemistry laboratory in order to make the analysis. The results were recalculated in accordance to current STAS and were processed through analysis variance. The crude protein content was determined with the the following formula: $P_B(\%)=N_t*F_c$.

RESULTS AND DISCUSSIONS :

Due to his high production potential maize consumes big quantities of nutrients. The nitrogen consumption is higher than the potassium one, so it is expected that the N nutrients would have a higher efficiency.

The crude protein is corelated with the quantity of administrated nutrients, implicitly with the harvest.

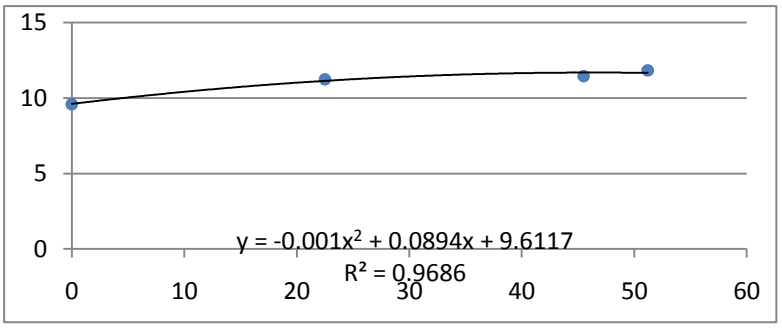

Figure 1. Dynamics of crude protein content from maize grain in 2013 , high correlation coefficient

Table 1

The dynamics of increased production and crude protein from maiz grains depending on total dose of nitrogen in 2013

Fertilization varints	N content kg	Production Kg/ha	Crude protein %
V1	0	4800	9.575
V2	22,5	5850	11.23
V3	45,5	6700	11.45
V4	51,2	8050	11.83

Nitrogen fertilizers have determined an increase of production and crude protein content directly proportional with the amount of fertilizers. Applying high doses of N fertilizer lead to higher productions, mamimum is achieved in V4 variant.

The quality of maize crops is an essential element in the alimenation of humans and animals. Maize crops can have high productions but the protein level is reduced, which lower its nutritional value.

The year 2014, it was a good year, climatic speaking, so the productions were very high ranging between 5040kg/ha(V1) and 9830kg/ha(V4).

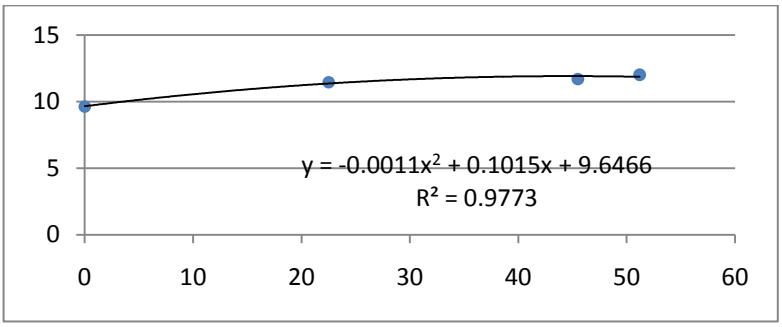

Figure 2. Dynamics of crude protein content from maize grain in 2014 , high correlation coefficient

Tabel 2

The dynamics of increased production and crude protein from maiz grains depending on total dose of nitrogen in 2014

Fertilization variant	N content kg	Production Kg/ha	Crude protein %
V1	0	5040	9.622
V2	22,5	6150	11.44
V3	45,5	7800	11.69
V4	51,2	9830	12.01

CONCLUSIONS:

After the research on mineral fertilization on maize was finished the following conclusion appeared:

- The year 2013 it was lees favorable for maize, the productions ranging between 4800kg/ha(V1) to 8050kg\ha(V4).
- Climatic speaking the year 2013 wass better for maize because the sum of anual precipitations was higher.
- The highest productions were in 2014 ranging between 5040kg/ha(V1) and 9830kg/ha(V4).

- Unlike the nitrogen fertilizers, phosphorus and potassium fertilizer have a lesser influence on the quantity of crude protein in the maize grains and if these fertilizers are applied in high doses they determine a decrease in crude protein value.
- The highest amount of crude protein was determined in 2014, the values ranging between 9,622% in V1 and 12,01% in V4
- It is recommended that the farmers with large areas of maize should use 2-3 hybrids with different precocity groups so that the crops reach maturity in the same time

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