EFFECTS OF MICROGRANULATE STARTER FERTILIZERS ON GRAIN CORN

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ABSTRACT

Oltenia, one of the most important agricultural regions of the country, is also one of the regions with extreme weather, which puts crop plants under stress.

That is why it is important that the crop plants have all the necessary nutrients from sowing. Starter microgranulate is a fertilizer that does this.

The use of a starter fertilizer for sowing corn is a wide spread practice in Europe. This type of fertilization shows good results for poor, sandy, acidic or basic soils, ensuring a good initial vigor and a better homogenity of the emergence.

In corn, there is a close correlation between the development of the root system and the growth of the foliar apparatus. As phosphorus stimulates root growth, it turns out that the easily assimilable phosphorus present in the soil in the first part of the vegetation can positively influence the production.he abstract in English (max.10 lines) focusing on the results of the research.

INTRODUCTION

Maize (*Zea mays* L.) is an important cereal crop of the Poaceae family due to nutritional value and its biological characteristics, being the second crop worldwide after wheat. In Romania, maize occupies around 2,442 thousand hectares with total production of 18,664 thousand tonnes and grain yield of 7,641 kg/ha (Bonea, 2020 a; b).

Nutrients are provided for plants from existing reserves in the soil, from organic and chemical fertilizers produced industrially.

The starter-type microgranulate is a fertilizer that is administered in direct contact with the seed at the time of sowing, it has the role of providing especially the phosphorus, a key element for root development.

Plants under the effect of microgranulate emit adventitious roots faster, so microgranulate accelerates the physiological process of plant metabolism, being known that a corn crop is better if it has two or three levels of adventitious roots.

Another advantage of microgranulate is that on the cold soil on which we performed the experiment, the reaction between the water in the soil and the microgranulate results in an increase in temperature of up to one degree celsius at the seed compared to the control.

MATERIAL AND METHOD

A microgranulate with a content of N 11%, P_2O_5 47% (of which 43% soluble in water), Zn 1%, in an amount of 35 kg / ha was used.

The sowing was done on April 14 with hybrid corn seed from the F.A.O. 420.

The precursor plant was the pea that leaves the soil rich in nitrogen and the basic complex fertilizer N16P16K16 was 150kg / ha. A dose of ammonium nitrate in amounts of 200kg / ha was applied to 10 leaves of the plant.

We used a precision seed drill, of the latest generation, equipped with a distributor for microgranulate fertilizers capable of ensuring a flow of 35 kg./ha.

No pre-emergent herbicide was used, but due to the fact that the starter fertilizers also benefited from the weed seeds in the soil, we were forced to apply a herbicide based on nicosulfuron, mesotrione and pyridate on two or three corn leaves. In the control variant, the microgranulate was not used.

RESULTS AND DISCUSSIONS

The emergence was more uniform and faster in the variant where the microgranulate was used compared to the control that emerged a few days apart.

The difference in growth was maintained throughout the vegetation. The effect of the starter was most visible in the first weeks after sunrise.

At maturity, the control waist was smaller and the cobs that were analyzed before harvesting were also smaller in size, with incomplete cobs and slingshots. . The production obtained was 10,300 kg / ha compared to the control where a production of 8980 kg / ha was recorded.

The difference in production can be attributed to the dose of starter-type microgranulate fertilizer that provides the amount of phosphorus needed for good rooting and rooting.

Unlike other conventional fertilizers, the microgranulate has a very complicated and homogeneous structure, so that once in the soil, the release of active substances is gradual and uniform, creating a comfort zone for seed germination and root system development.

The microgranulate used shows the rapid availability of nutrients, the absorption occurs at 2.5 mm from the root. Losses by blocking phosphorus on acidic or alkaline soils are avoided due to the presence of humic acid which contributes to improving the quality of the structure and humus in the soil.

The contact that the seed makes with the fertilizer is 4-5 times higher than with a classic fertilizer. Due to the development of the root system, the resistance to drought and to the attack of phytopathogens also improves.

CONCLUSIONS

Microgranulate provides excellent initial rooting, rapid and sustained formation and development of secondary roots that better extract nutrients from the soil for development. The soil is very well phosphated especially in turn.

We also found that the roots of plants that were attacked by pathogens had a faster regeneration, so the subsequent development of the plant.

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