

IMPACT OF VERMICOMPOST EXTRACT APPLICATION INTO SOIL AND ON PLANT LEAVES ON MAIZE PHYTOMASS FORMATION

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ABSTRACT

Nowadays in scientific literature many opposing data are presented of the impacts of vermicompost extract on the quantity and quality of crop production. Therefore, the principal objective of two independent experiments was to study the effects of vermi-extracts, which were applied before maize sowing into soil and during the growing season on the maize leaves, on its phytomass formation. The first, field experiment consisted of 9 variants. Variant 1 was the control one without the extract application. We studied the effect of the rising doses (90, 130, 170, 210 dm³·ha⁻¹) of vermi-extract applied into soil before the maize sowing in the variants E₁, E₂, E₃, E₄. In the variants E₁+E, E₂+E, E₃+E, E₄+E along with the rising doses of vermi-extract was also applied the uniform dose of vermi-extract (40 dm³·ha⁻¹) at the growth stage BBCH 15. The second, pot experiment was pursued in the vegetation cage and comprised 3 variants: variant 1 was the control, in the variants 2 and 3 the foliar application of vermi-extract was used. The vermi-extract was applied once (growth stage BBCH 12) in the variant 2 and in the variant 3 it was used twice (at growth stages BBCH 12 and BBCH 16). The achieved results show that the vermi-extract applied in the presowing period increased the yield of maize grains if the application doses were 130–170 dm³·ha⁻¹. The positive or negative impact of the foliar application by vermi-extract on the yield of maize grains depended on the period of application and the grown cultivar. In order to increase the starch content in grains it was more suitable to carry out the presowing vermi-extract application than during the growing season. The presowing application and the foliar application of vermi-extract tended to decrease the nitrogen content in grain. The foliar application of vermi-extract had the positive impact on the plant height and stalk thickness of the maize plants only in short term. The information obtained from the first half of maize growing season related to the plant height and stalk thickness was not the appropriate indicator for the assessment of maize grain yields.

Keywords: vermicompost, vermi-extract, foliar application, maize.