

STUDY OF NEW ORGANIC FERTILIZER INFLUENCE ON SOIL MICROFLORA AND POTATO PRODUCTIVITY

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The paper presents the results of an experiment with a new type of organic fertilizer – BB (biogenic basis). BB is a by-product of the liquid bio-agents production from farmyard manure and lowland or transitive peat for plant fertilization. BB is characterized by a high number of ammonifying ($n \times 10^8 \dots n \times 10^9$ CFU g^{-1}) and amylolytic ($n \times 10^8$ CFU g^{-1}) microorganisms, as well as microorganisms mobilizing organophosphates ($n \times 10^8 \dots n \times 10^9$ CFU/g). It contains all basic plant nutrients (total nitrogen – not less than 1.2%, total carbon – not less than 30%, P_2O_5 – not less than 1.4%, K_2O – not less than 1.3%) and physiologically active substances (amino acids, vitamins, sugars, etc.). In a small-scale experiment with potato BB has been introduced locally at the rate of 2, 4, 6 and 8 t ha^{-1} . Soil samples have been taken from the arable horizon three times during the potato growing season. After that an accounting of ammonifying and amylolytic microorganisms, as well as microorganisms mobilizing organophosphates were carried out in the soil samples. A linear relationship between the abundance of soil microflora and the potato yield has been revealed. It was found that it is expedient to introduce BB in a rate of 2 or 4 t ha^{-1} . In this case the number of soil microflora in the key phases of the potato plants development was at its maximum and the greatest increase in potato yield was achieved (28,0–29,4% compared to the control treatment without fertilizers). The intensity of mineralization processes in the soil under potato and the change in the level of soil fertility were estimated by the coefficients of mineralization and transformation of organic matter. It was revealed that at the local application of BB during potato planting, the intensity of mineralization processes in the soil decreased by 20–34%, and the value of the coefficient of organic matter transformation was about 2 times higher than under control treatment without fertilizers. These circumstances are favorable for the accumulation of organic matter in the soil and contribute to the preservation of the soil fertility.

Key words: organic fertilizer, BB (biogenic basis), number of microorganisms, soil, coefficient of mineralization.