

Annotation

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The content and balance of trace elements and heavy metals in the soil after a long application of fertilizers in the crop rotation

Data on the content of trace elements and heavy metals in the podzolized chernozem for a long-term use (50 years) and different levels of fertilizers in crop rotation systems are given. It was found that the different fertilizer systems in different ways affect the content of trace elements and heavy metals in the soil. Concerning the system of mineral fertilizers of the third level, the ferrum content significantly increased to 70.6 mg/ kg against 15.2 mg/ kg of reserves. Also, manganese content in the soil layer increased from 0-20 cm to 34.4 mg/ kg against 11.0 mg/ kg of reserves; boron content increased to 1.82 mg/ kg, containing 1.01 mg/ kg of reserves. The conditional balance of trace elements and heavy metals has been calculated for crops of the field crop rotation. On the basis of the balance calculations it is found that micro elemental composition of crops of the field crop rotation, as well as the ratio of the removal of trace elements and heavy metals is varied and it is primarily due to the biological characteristics of the plants. On the basis of the balance calculations for 50 years it was found that a positive balance is formed concerning most trace elements and heavy metals.

Key words: *trace elements, heavy metals, conditional balance, mineral fertilizers, organic fertilizers, prolonged use of fertilizers.*