

Impact of the tillage system on the soil enzymatic activity

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Abstract

The aim of this study was to determine the effect of the soil tillage system on soil enzymatic activity. The performed investigations, employing two soil tillage system: classical (ploughing) and simplified (no-tillage), were carried out on Luvisols and Arenosols differing typologically, with regard to their kind and species. The activity of the following five enzymes was determined in soil samples: dehydrogenases, acid phosphatase, alkaline phosphatase, urease and protease. The applied enzymes tests turned out to be good indicators differentiating the examined soil objects depending on the employed tillage system. The employment of the simplified tillage system stimulated significantly the activity of the analysed enzymes irrespective of the soil type. This effect was particularly apparent in the top layer (0-10 cm) of the soil. An exceptionally wide range of activity was obtained for dehydrogenases indicating the usefulness of this group of enzymes for the evaluation of changes in the soil environment under the influence of the soil tillage system. The observed activity stimulation of the examined enzymes was accompanied by advantageous changes in soil chemical conditions.

Key words: soil tillage system, enzymatic activity

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