Enzymatic activity of soil in the rhizosphere of selected varieties of fruit-trees

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Biochemical processes taking place in the soil of the rhizosphere play a functional role in the dynamics of the nutritional cycle in plants. The aim of this study was to compare the enzymatic activity of the soil of the rhizosphere and the soil beyond the rhizosphere for selected varieties of fruit-trees. The study was carried out in orchards of apple-trees, cherry-trees, plum-trees and pear-trees, on podzolic soil (Haplic Luvisol). The results obtained showed that independently of the tree's variety, the activity of investigated enzymes (dehydrogenases, phosphatases, urease and protease) in the soil of the rhizosphere was significantly higher than in the soil beyond the rhizosphere. The beneficial effect of the rhizosphere on the enzymatic activity of soil was revealed most clearly in the cherry-tree orchard, especially with phosphatases. The stimulation observed of enzymatic activity of the rhizosphere soil was accompanied by an increase in organic carbon content and in total quantity of nitrogen. The rhizosphere soil was characterised by lower contents of mineral nitrogen and assimilable phosphorus than the soil beyond the rhizosphere.