Influence of different types of green manure on the soil biology

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Agricultural practices that improve agricultural sustainability are needed particularly for brown luvic soil. Soil enzyme activities can provide information on how soil management is affecting the processes in soil such as decomposition and nutrient cycling. Soil enzyme activities (actual and potential dehydrogenase, catalase, acid and alkaline phosphatase) were determined in the 0–10, 10–20, and 20–30 cm layers of a brown luvic soil submitted to a complex fertilization experiment with different types of green manure. It was found that each activity decreased with increasing sampling depth. It should be emphasized that green-manuring of maize led to a significant increase in each of the five enzymatic activities determined. The enzymatic indicators of soil quality calculated from the values of enzymatic activities showed the order: lupinus + rape + oat > lupinus > vetch + oat + ryegrass > lupinus + oat + vetch > unfertilized plot. This order means that by determination of enzymatic activities valuable information can be obtained regarding fertility status of soils. There were significant correlations of soil enzyme activities with chemical properties.