

Effect of Soil Depth on the Enzyme Activity in Different Crops in Brazilian Cerrado

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INTRODUCTION: The Brazilian Midwest has been featured in the agricultural scenario of the country, especially the state of Goiás, which has been growing its production, but altering the physical, chemical and biological soil properties. The enzymes can be used as soil quality indicators for responding quickly to changes in different types of soil management. **OBJECTIVES:** This present study aims to evaluate the effect of depth on enzyme activity in Cerrado soils with different crops. **MATERIALS AND METHODS:** Soil samples of native Cerrado, sugarcane and cotton crops areas were collected at 0-10, 10-20, 20-50 and 50-100 cm in six points of the state of Goiás and were evaluated the activities of α and β -glucosidase and acid phosphatase. Data were analyzed by two-way ANOVA, considering $p < 0.05$. **RESULTS AND DISCUSSION:** The larger α -glucosidase and phosphatase activity values were found in native Cerrado soils. The activity of β -glucosidase was higher in areas of cultivation with cotton. Soil depth influenced the activity of β -glucosidase and acid phosphatase ($p = 0.0001$). The enzyme activity is varied in the different layers of soil, in response to decrease on microbial respiration, influencing the content of organic matter and consequently the availability of nutrients, which interferes on enzyme activity. Land use also showed to be important for β -glucosidase ($p = 0.0312$). **CONCLUSION:** To know the dynamics of enzyme activity in soils can be an effective indicator of soil quality research, because they are sensitive land use, soil chemical composition and substrate availability, responding quickly to any changes and changes in the environment caused by human action.

keywords: soil enzyme activity, sugarcane, biological indicators

Support: FAPEG - Fundação de Amparo a Pesquisa de Goiás