

TITLE: ENZYMATIC ACTIVITY OF SOIL MICRORGANISMS FROM RHIZOSPHERE OF *Jatropha curcas* L.

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ABSTRACT

Purging nut (*Jatropha curcas* L) is native to Central America. It is suitable for agrofuel production in tropical and subtropical regions. The crop yield of *J. curcas* L. may be enhanced by employing microorganisms that improve plant growth, once they have demonstrated functional properties in the soil. By producing phosphatases, the soil microbial biomass hydrolyses various forms of organic phosphorus formed or stored in the soil, thereby releasing inorganic phosphorus that will be immobilized by plants and microorganisms. The objective of this study was to evaluate the enzymatic activity of native microbiota on *J. curcas* L. in soil with or without the addition of rock dust. Soil was sifted in a 5-mm mesh sieve before weighing (18 kg/pot), then fertilized with variable dosages of rock dust 1 month before planting. Plants for the analysis of only native microbiota were characterized by absence of rock dust. Enzyme activity was determined by means of the evaluation of the β -glucosidase, acid phosphatase, and arylsulphatase enzymes in the soil for 210 days. Phosphatase exhibited the highest values, indicating the relevance of the first enzyme for nutrient cycling. The best values for phosphatase activity and other enzymes were observed in plants with native microbiota. Enzymatic activity of native soil microorganisms was higher than observed for bacteria inoculum. In parallel, the plant produced greater dry biomass when the rock dust was not used, with or without PSB, suggesting the relevance of the native microbiota in growth promotion. The isolation of native microorganisms and microbial activity assays will reveal other specific potential of bacteria and fungi to promote plant growth, as organic acid production; such microorganisms will ultimately be employed in new and improved inocula.

Key words: Phosphate, Rhizosphere, *Jatropha*, Rock Dust, Enzymatic Activity

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