

## INFLUENCE OF PSEUDOMONAS PUTIDA AF7 INOCULATION ON SOIL ENZYMES ACTIVITIES

Célia Maria M. de Souza Silva<sup>1</sup> \*; Vera Lúcia S. S. de Castro<sup>1</sup>; Pablo Roberto de Oliveira<sup>1</sup>; Aline de H. Nunes Maia<sup>1</sup>.

<sup>1</sup>Embrapa Environment, Rodovia SP 340, km 127.5, 13820-000, Jaguariúna, SP, Brazil.

The soil environment is the focus of many concerns associated with the potential environmental effects of microbial agents. There is some concern that introduction of the microbial agents into the environment may cause adverse perturbations of the native soil microbiota and the nutrient turnover processes they are involved in. However, the test done to demonstrate whether a microbial agent is able to survive or replicate in the environment generally only includes an evaluation of the growth of the agent when introduced into a new environment. The measurement of perturbations with soil biochemical variables, such as enzyme activities, may be an alternative way of monitoring overall effects of the introduced bacteria on the ecosystem, in a more sensitive and comprehensive way. *Pseudomonas* may have potential in degradation of a wide range of xenobiotics, and also may be also used as a biopesticide for management of different plant diseases. In this study, we report the use of soil enzyme assays to evaluate the effect of introduced *Pseudomonas putida* AF7 on functioning of the soil; in order to assess the utility of the biochemical analysis as biological indicator for the study of impact of microbial agents introduced into the soil. *P. putida* AF7 was isolated from the rizosphere of rice. The influence of the inoculation of *P.putida* AF7 was measured on the following enzymes activities: acid phosphatase,  $\beta$ -glucosidase, and protease, for three period of evaluation (7, 14 and 14 days); and three soil types - Rhodic Hapludox (RH), Typic Hapludox (TH); and Arenic Hapludult (AH). Ten subsamples of each soil were taken at random and collected at 0-10 cm depth. In general, the enzymatic activities presented variation among the soils tested. The higher activities of  $\beta$ -glucosidase and acid phosphatase was observed in the RH and AH soils, while, the protease activity was higher in the TH soil. The data presented indicate that soil biochemical properties can be a useful tool for use as indicators of perturbations caused by microbial inoculation. This study suggests some ways to evaluate the potential interactions that could occur before microbial agent introduction in the environment. Appropriate data of putative impacts is an important step to improving the scientific basis for its risk assessments. Thus, the result-interpretation approach drawn from the data obtained are useful to establish baseline information to risk assessment.