

OSCILLATION INDUCED BY AGRICULTURAL INPUTS IN MICROBIAL COMMUNITIES FORMED IN SOYBEAN RHIZOSPHERE

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Abstract

Rhizosphere is the area with the most intense microbial activity, under the direct influence of plant species and soil type. Changes in activity and functional diversity of microorganisms can represent powerful parameters in the analysis of soil quality. Usage levels of carbon sources by functional groups of microorganisms is found in the changes of microbial community structure, crop plants stimulating the activity of specific groups. This paper aims to assess the oscillations of activation / inactivation of microbial functional groups specific in the rhizosphere of soybean, correlating the activity of whole microbial community with the amount of applied agronomic inputs. Soybean plants were grown on a phaeosiom argic in the hilly area of Transylvania, experimental field being located in Turda, Cluj county. Detection plates of microbial activity were inoculated with soil according to the method Microresp and incubated for a period of 6 hours. Typical soil microbial community present in soybean plants is dominated by α -Ketoglutaric acid. Codominant of this group in the community are decomposers of D-fructose, L-malic acid and citric acid. Microbial functional dynamics in unfertilized soil is dominated by microorganisms involved in the nitrogen cycle, enhancing the accumulation of soil organic nitrogen. Microorganisms from the rhizosphere of soybean crop have a strong reaction to associated fertilization, zeolite acting as a buffer for disruption caused by the mineral component of fertilizer recipes.

Key words: soybean, rhizosphere, microbial communities, substrate decomposition