

Short communication

A rhizobial biofilm with nitrogenase activity alters nutrient availability in a soil

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Abstract

This study investigates the role played by a *Bradyrhizobium japonicum* SEMIA 5019-*Penicillium* spp. biofilm in terms of soil fertility, when it is free-living in a soil. The biofilm increased N and P mineralizations of the soil and showed a high nitrogenase activity even under a very high NO_3^- concentration in the soil, compared to its member microbes. It maintained a low SO_4^{2-} concentration in the soil, which was conducive to the high nitrogenase activity. The application of this microbial association as a biofilmed inoculum is important for sustaining soil fertility as well as survival of such rhizobia in the soil in the absence of their hosts. Further studies are needed to evaluate the performance of the biofilm in terms of soil fertility in the ecosystems.

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