

Use of arbuscular mycorrhiza for perennial crops in Amazonia

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Inadequate agriculture land use has resulted in extensive areas with different degradation levels in the Amazon region. The development of ecological and economical land uses adapted to the humid tropical climate and to very weathered and acidic soils, common in the region, is a great challenge. The key question is how to improve the efficiency of natural resources use. Therefore, agroforestry systems with adapted perennial species may be an alternative for the actual agriculture land use. In that sense, arbuscular mycorrhiza (AM) could be a good approach to improve the uptake efficiency of reduced content of available nutrients, mainly P in the Amazon soils.

Researches have demonstrated the mycorrhizal dependence of some perennial species, such as *Theobroma grandiflorum*, *Theobroma cacao*, *Swietenia macrophylla*, *Hevea brasiliensis* etc, with potential to be cropped in the region. The results have indicated that the inoculation with MA fungi during the nursery production of perennial plants had economic effect by reducing the production cost, plant losses and fertilization requirements.

The introduction of selected AM fungi is restrained by the competition of native fungi communities at field conditions. In this case, the management of the native fungi community seems reasonable alternative. Practices of traditional agriculture, such as slash-and-burning, as well as of modern agriculture, such as heavy soluble phosphate fertilization, pesticides application and conventional tillage have reduced the occurrence of AM association and the diversity of AM fungi. The consequences of such effects for effectiveness of the symbiosis in those conditions are not clear yet.