

Rhizobial Diversity in Rain Forest, Natural Reclamation and Cultivated Areas

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Rhizobia are soil bacteria which possess a nitrogenase complex capable to fix atmospheric nitrogen. These bacteria interact with leguminous plant forming root nodules.

This work aims to evaluate rhizobia richness four treatments of the agroforestry experiment, a neighbouring area covered by rain forest and another in process of natural reclamation. The agroforestry experiment proposes use for devastated and abandoned areas in the amazon region. In this situation, rhizobia population may represent an important contribution to the system when associated with leguminous plants helping to achieve sustainable levels by increasing N input without application of N fertiliser.

The four treatment plots were a five year old natural reclamation area enriched with four native species (*Hevea* spp., *Swietenia macrophylla*, *Carapa guianensis* and *Schizolobium amazonicum*), a cultivated plot with a polyculture systems (*Hevea* spp., *Theobroma grandiflorum*, *Bactris gasipaes* and *Carica papaya*) and a cupuaçu (*Theobroma grandiflorum*) monoculture plot. Rhizobia were isolated from cowpea, siratro and kudzu tropical nodules cultivated in soil samples from the areas described above. The nodules were sterilised and isolated on yeast/manitol medium and the individual colonies were characterised according to growth rate, size, form, elevation, optics, surface, consistency of mucous and pH of media. The isolates were arranged in thirteen different groups. Rhizobia richness seems to correlated well with floristic richness, being higher in soil samples collected from the rain forest area and the enriched reclamation area. Furthermore, our data suggest that the process of enriching the reclamation area contributed of the improvement of microbial diversity when compared to the natural reclamation area.