

soil nitrogen, which have been measured both under forest and under agricultural vegetation. In tree crop agriculture and agroforestry, nitrogen cycling can be further increased through the inclusion of leguminous cover crops. Under a *Pueraria* cover crop, significantly increased rates of nitrogen mineralization and nitrogen concentrations in the soil solution indicated a pool of readily available nitrogen for perennial crops - within the limits of their root systems. This latter condition is critical, as the spatial separation of nitrogen supply and demand caused by excessive spacing of tree crops and limited lateral development of their root

systems may lead to leaching losses of nitrate from the soil in the interspaces between the trees. Optimum tree spacing, inclusion of semiperennial crops in the inter-tree spaces during the initial development of the trees, and encouragement of the lateral root development of the trees through appropriate management measures can reduce unproductive nitrogen losses and improve the nitrogen supply of the trees. If such measures are taken, a productive tree crop agriculture on central Amazonian oxisols does probably not depend on external nitrogen inputs.

Abundance, Biomass and Diversity of the Soil Fauna in Degraded Areas under Recuperation in the Central Amazon Region

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The soil fauna plays an important role in the stability of decomposition processes and as a result its abundance, biomass and species composition, may influence the nutrient cycles in agroecosystems. Therefore abundance, functional group - composition and biomass of the these organisms were studied in plots of polyculture forestry systems and in plots of nearby secondary and primary forest. Evaluation of macrofauna from Berlese samples shows a substitution of several faunal groups in the

anthropogenic systems when compared with primary forest. In primary forest social soil insects (ants, termites) and earthworms appeared with larger individual numbers, whereas in the polycultures, other decomposer groups like isopods and diplopods had higher abundances. Roughly the same trends are confirmed by biomass calculations, although some groups (e.g. ants, diplopods) behave quite differently in biomass than in abundances.