

Soil fertility, mineral nitrogen and microbial biomass in upland soils of the Central Amazon under different plant covers

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Amazon is the largest State of Brazil and major area of the State is covered by a largest tropical rainforest of the world. Most soils of the Amazon region soils are characterized as acidic and infertile. When the Amazon forest land is cleared for agricultural use by burning the vegetation, the efficient nutrient recycling mechanism are disrupted. However, nutrient contents in the deforested burn land increased temporarily. The objective of this study was to evaluate the soil fertility, mineral nitrogen and microbial activity of carbon (C), nitrogen (N) and phosphorus (P) resulting from the replacement of the primary forest with pasture (*Brachiaria brizantha*), commercial plantations of rubber (*Hevea* spp.), cupuaçu (*Theobroma grandiflorum*), and citrus trees (*Citrus sinensis*) cultivated in Xanthic Ferralsol and secondary forest under Acrisols Dystric Nitosols. The results showed that ammonium-N predominates in the 0-10 cm soil depth both in primary forest and areas with secondary forest, citrus plantation and pasture. There was no increase in soil fertility with management of the cultivated areas under secondary forest, but in the pasture there was a significant increase in the stock of organic C and total N and high C/N ratios, the inverse of what occurred with the carbon of the microbial biomass. The primary forest had the highest values of C and P of the microbial biomass and the lowest metabolic quotient. Of the successions studied, the rubber trees were the plant cover with the smallest changes in terms of quality of the organic matter in the soil.

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