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how total soil micronutrients vary across the field. A variety of approaches have been used to survey and map the geographic distribution of soil micronutrient content at scales ranging from global to sites within single production fields. The present study investigates the spatial variation of soil micronutrients in a 63 ha pasture area located at Nova Vida Ranch, Rondonia, Brazil. A regular 100 m grid was used for collecting a total of 195 soil samples at the 0-10, 10-20 and 20-30 cm layers. Soil samples were analyzed for Zn, Cu, Fe, Mn contents and also pH, total C, total N, P, K, Ca, Mg, and Al. Conventional statistical methods and geostatistics were performed in order to analyze soil properties spatial dependence. The spatial structure of the studied nutrients was analyzed and variogram models with a nugget component and two spatial components were found to fit the experimental results. Semivariograms were best fitted by spherical and exponential models. Two types of validation (cross and external) were conducted, indicating a lack of bias for the used prediction models. Contour maps made by block kriging allowed to identify micro-regions with significantly high or low extractable nutrient contents. Maps of total soil micronutrient content can show where low micronutrient concentrations may cause deficiencies in plants and in the livestock that subsist on them.

28.4-P: Effects of different land use systems in carbon, nitrogen and phosphorus cycles: comparison between slash-and-burn and chop-and-mulch systems.

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In the traditional system of small-scale agriculture in Eastern Amazonia, land preparation prior to cropping is done by slashing and burning the fallow vegetation, to have access to nutrients, mainly phosphorus (P), from the ashes. With the intensification of land use the fallow period has been shortened, affecting consequently the biogeochemical functions of secondary vegetation, leading to its degradation. The alternative system, chop-and-mulch of the fallow vegetation, associated to the improvement of the fallow vegetation by planting fast growing leguminous trees, appears as an option to shorten the fallow period, increasing carbon accumulation (including soil organic matter) and nutrient cycling, while keeping the fallow vegetation roots which act as a barrier to nutrient leaching. The consequences of burning to biogeochemical processes have been reasonably studied, but little is known about the impact on carbon and nutrients accumulation derived from the mulch, and on the mineralization or fixation promoted by the soil biota. To study these processes two plots (2 ha each) were set up with the following treatments: *i*) traditional slash-and-burn system; *ii*) alternative chop-and-mulch system (with fertilizer application). In both maize and cassava were cropped followed by a fallow phase (improved by planting two leguminous tree species in the alternative system). We are evaluating: microbial biomass, C and N, activity of enzymes associated to N and P mineralization, organic carbon accumulation and soil organic matter, NH_4^+, NO_3^- and P availability, and organic P species, as well as vesicular arbuscular mychorrhizas (VAM) activity. Two years after land preparation, the results show that the measured variables in the alternative system seem to be closer to what is found in the original secondary vegetation.

28.5-P: Response of the Soil Microbial Community to Fertilization Practices in Agricultural and Native Cerrado Systems in Brazil

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Agricultural practices in the Cerrado (tropical savannah) and Amazon regions in Brazil have increased drastically during the last decade causing dramatic changes in the nutrient and carbon cycling of native areas, and producing changes on the microbial community structure. We compared microbial communities under a range of management practices which included different native areas (savannah and forest), an agricultural site, and a Cerrado area subjected to fertilization treatments (N, P, N+P, Ca) using phospholipid fatty acid analysis (PLFAs) and fungal to bacterial ratios. In the native Cerrado, samples were collected 10, 20 and 40 days after fertilizer application from four plots (15 x15m) per treatment in a completely randomized design. Although the total PLFA concentration did not show significant differences among the sites, principal component analysis indicated that the structure of the microbial community varied as a function of the fertilization treatment and management practice ($p<0.0001$). In the fertilization experiment, N, P, and N+P treatments had a higher concentration of Gram positive biomarkers than the control and exhibited similar microbial communities. P amendments produced a higher fungal:bacterial ratio after 10 days of fertilization and was the only treatment showing a significant difference in the ratios. Fungal:bacterial ratios were also significantly higher in the pasture site when compared to the ratios observed in the native savannah and Amazon soils. The higher ratio in the pasture site correlated with lower availability of nitrogen and was a function of a decrease in the % composition of bacterial PLFAs. The results suggest a phosphorus limitation on the fungal community inhabiting native Cerrado soils, while in pastures, nitrogen seems to limit the bacterial community, but has no effect on the fungi.

28.6-P: Effect of ash deposition on soil nitrogen availability in burned savannas of the Gran Sabana, Venezuela.

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En la Gran Sabana, Parque Nacional Canaima (30000 km2), existe una alta incidencia de incendios, la mayoria de los cuales se inician en reas de sabanas. Los suelos de sabana son pobres, siendo el nitrogeno, uno de los nutrientes mas afectados por el fuego. Este afecta el ciclo del nitrogeno del suelo directamente por calentamiento o indirectamente mediante la adicion de cenizas. En este trabajo se estudio el efecto de la deposicion de cenizas sobre la dinamica de nitrogeno inorganico del suelo, a traves de incubaciones aerobicas en suelos de sabanas quemadas y no quemadas bajo distintos tratamientos: a) adicion de cenizas provenientes de la combustion de biomasa, b) adicion de solucion de sacarosa, c) no adicion de fuente de carbono. Tanto en suelos quemados como no quemados la adicion de cenizas no afecto la amonificacion, mientras que la desaparicion del nitrato parece haber sido estimulada solo en los suelos quemados, como producto quizas, de aumentos en la desnitrificacion e inmovilizaci¢n microbiana. La adicion de sacarosa provoco la inmovilizacion de la mayor parte del nitrogeno inorganico en el suelo sin quemar, mientras que en suelo quemado solo se inmovilizo el amonio y se produjo un aumento del nitrato. Los resultados muestran una interaccion entre la adicion de cenizas y la quema, haciendo especifico el efecto de las cenizas sobre los procesos transformadores de nitrato, ademas de