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SOIL CARBON DYNAMICS AFTER PRIMARY FOREST CLEARING WITH CHOP AND MULCH METHOD IN FRENCH GUIANA

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Land use change, especially forest conversion to cropland under tropical and equatorial climate, may decrease soil organic matter content. High organic inputs deforestation method as an alternative to slash and burn could improve agroecosystems sustainability. We assessed the fate of soil organic carbon (SOC) in French Guiana after forest clearing by "chop and mulch" method and cropland establishment. At the experimental site of Combi, primary forest was cut down in October 2008; woody biomass was chopped and incorporated to soil surface (0-15 cm). Soil was amended with aglime and NPK fertilizer. After one year of legume and grass cover, three land managements (four replicates) were studied: grassland (*Brachiaria ruziziensis*), maize/soybean crop rotation with surface tillage and mulch-based soybean/maize rotation with direct seeding. Carbon cycle compartments (soil, water, gas) were followed during 2,5 years after deforestation. SOC stocks were calculated up to 30 cm depth for initial forest and then for agricultural treatments, after each crop cycle. Organic carbon inputs (large woody chips, crop residues, root biomass) were estimated. Soil percolation water was collected at a depth of 60 cm with passive capillary samplers, allowing water organic carbon losses assessment. CO₂ fluxes measurements were obtained with the non-steady-state chambers technique. We observed a seventy percent loss of large woody chips mass. SOC stocks increased significantly. Carbon losses through water were negligible. CO₂ emissions were similar under forest and direct seeding, and higher under grassland and surface tillage.



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SOIL CARBON DISTRIBUTION AND STABILITY IN SEMI-ARID, SUCCULENT-THICKET ECOSYSTEM FROM SOUTH AFRICA

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SOIL CARBON POOLS AND THEIR DYNAMICS ALONG A SOIL BIOSEQUENCE DEVELOPED ON CARBONATE-RICH SANDS

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SOIL ORGANIC MATTER (SOM) DENSITY FRACTIONATION OF ANDIC HORIZONS FROM THE SOUTH OF ITALY

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SOIL ORGANIC MATTER AS AFFECTED BY PINUS AFFORESTATION IN SOUTH BRAZIL

Deborah Pinheiro Dick, Porto Alegre - Brazil

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SPATIAL DISTRIBUTION AND STABILIZATION OF ORGANIC CARBON WITHIN MACROAGGREGATES FROM ARABLE LUVISOLS UNDER DIFFERENT SOIL MANAGEMENT

Anneka Mordhorst, Kiel - Germany

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THE IMPORTANCE OF ECTOMYCORRHIZAL FUNGI FOR CARBON SEQUESTRATION IN FOREST SOIL

Håkan Wallander, Lund - Sweden

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THE ROLE OF MINERAL-BOUND FUNGAL LACCASES IN SYNTHESIS AND STABILIZATION OF HUMIC ACIDS IN SOILS

Anna Zavarzina, Moscow - Russian Federation