



RIO18
21st World Congress
of Soil Science

21 WORLD CONGRESS OF SOIL SCIENCE
Sunday 12 – Friday 17 August 2018
Rio de Janeiro, Brazil

Rio de Janeiro August | 12 - 17

ORGANIC AND INORGANIC PHOSPHORUS IN YELLOW LATOSOL UNDER CHRONOSEQUENCE OF CROPS UNDER NO-TILLAGE SYSTEM IN EASTERN AMAZON

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Phosphorus deficiency (P) is one of the main limiting factors of productivity in Brazilian soils. However, soil management under no-tillage (NT) system may alter soil P availability. The objective was to evaluate the organic and inorganic fractions of P in a Yellow Latosol (Oxisol), in chronosequence of crops under no-tillage system in the Eastern Amazon. The study was conducted in the Paragominas city, southeast Pará, in a chronosequence of crops under NT, using a completely randomized experimental design in subdivided plots. The plots were constituted by the management systems and the subplots corresponded to the depths (0-10, 10-20, 20-30 and 30-40 cm). The management systems were: NT with nine (NT9), eleven (NT11), thirteen (NT13), fourteen (NT14) and fifteen (NT15) years of adoption, plus one area under conventional tillage (CT) and another with native forest (NF). The soil samples were submitted to the chemical fractionation of P and the obtained fractions were classified in inorganic P - Pi (sum of Pi_{RTA} , Pi_{BIC} , $Pi_{Hid0,1}$, Pi_{HCl} and $Pi_{Hid0,5}$) and organic P - Po (sum of Po_{BIC} , $Po_{Hid0,1}$ and $Po_{Hid0,5}$). In general, the organic fractions were predominant in the NT, while the inorganic fractions were the predominant ones in the area under CT, suggesting that in the soil managed under NT the P accumulates, preferably, in organic forms. In the layers 0-10 and 10-20 cm, all the areas under NT presented values of Pi highest to the CT, while in the layers 10-20 and 20-30 cm no difference was observed between the treatments. Considering the 0-10 cm layer, there was significant increases in the content of Po, in function of the time of NT adoption, with mean values of 256, 297, 319, 324 and 333 mg kg⁻¹, respectively, for treatments NT9, NT11, NT13, NT14 and NT15. The Pi fraction presented similar behavior, but with absolute values in a smaller magnitude, with mean values of 133, 142, 180, 242 and 253 mg kg⁻¹, respectively, for the same systems. In the result of the higher organic matter input, soil non-tillage system and higher nutrient cycling, the NT promotes greater availability of the Po fraction when compared to CT.

Keywords: P fractionation, management systems, organic phosphorus.

Financial Support: Embrapa Amazônia Oriental



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