

of gramíneas, with five repetitions each treatment. Vases were used with 8 dm³ and without hole, which received the treatment with 2,4-D+picloram herbicide, of individual form in surface of each vase, in pre-emergence, fifteen days after application proceeded itself the seeding of gramíneas. At fifty days after seeding, the forages were harvested and evaluated their phytoremediator potential. This was segregated in part area and root, analyzing the parameter of fresh biomass (g), dry biomass (g) and height (cm) of segregated parts for each treatment. After the withdrawal of phytoremediation plants, it was accomplished the transplant, in each vase, of radish. At five, ten, fifteen and twenty days after the emergence (DAE) was evaluated the visual phytotoxicity of radish plants and at twenty DAE it determined itself the accumulation of green and dry material (g), height of plant (cm), the analyzes were used following the same analyze procedure of forages. The results demonstrated that the evaluated gramíneas present phytoremediator characteristic for auxinic herbicides, with highlight at capim-Braquiarião. The radish present itself as bioindicator potential of presence from 2,4-D+picloram herbicide, presenting pronounced symptoms at five DAE, when cultivated in contaminated soil without previous acting of gramíneas.

Keywords: Herbicide, Contamination, *Urochloa brizantha* cv. Braquiarião, *Panicum maximum* cv. Mombaça, Bioindicator.

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(8343 - 1223) Planosols developed under rainfall gradient in the Brazilian semi-arid region

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In regions with limits imposed by climatic conditions, such as in the arid and semi-arid regions, soils are poorly developed in the pedogenetic point of view and are generally shallow to little deep. The objective of this work was to evaluate the influence of the rainfall gradient on the development of three Planosols, in different soil forming environments, in the state of Paraíba, considering three climatic subtypes according to the annual average: very dry (≤ 400 mm), dry ≥ 400 and ≤ 600 mm) and sub-humid (≥ 600 mm). In each climatic subtype, where trenches were open for sampling of soil, which were characterized as their physical properties (particle size distribution, clay dispersed in water, soil and particle density, flocculation degree and porosity), and chemical (Ca, Mg, Na and K, Al, H + Al, COT, P and pH). It was not possible to observe the relationship between soil depth and the climatic conditions because they are soils formed from rocks of differential resistance to weathering. On the other hand, rainfall was important in the formation of diagnostic horizons (Bt), with clay content proportional to rainfall; there was no clear influence of climate on the availability of nutrients. In some horizons of the studied soils, high levels of salinity were verified in the deeper horizons (B and C), with predominance of Na. This element in high concentrations can impair the productive capacity of soils, as it promotes clay dispersion, pore obstruction and makes it difficult to infiltrate water and air in soils, besides the toxic effects on plants. Considering the values of CTC it is possible to verify that a behavior related to the humidity conditions of each environment, with lower value present in the soil of the subhumid condition, this possibly is due to the base leaching promoted by the higher precipitation indices. The imperfect drainage conditions, due to the presence of impermeable layers especially in arid or semi-arid regions, with low rainfall and high evapotranspiration contribute to increase the concentration of soluble salts in the soil solution (salinity) and, or increased sodicity (PST), interfering with the normal development of plants. The Planosols studied have a salic character, that is, electrical conductivity greater than 7 dS / m within 120 cm of the soil surface.

Keywords: soil classification, pedogenesis, soil fertility

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(5943 - 2908) Principal Component Analysis for urban groundwater characterization

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Groundwater for public supply is a usual alternative, which has grown worldwide. However, different land uses, such as urban, agricultural and manufacturing activities, have modified the chemical properties of groundwater. Quality monitoring and preservation of aquifers are indispensable, in order to maintain their sustainability. This work assesses the chemical characteristics variation of groundwater from 27 wells used for public supply located in the northeast of Guarani Aquifer System, in São Carlos (SP), Brazil. Specifically, we aimed to identify parameters affected by human activities. For the chemical characterization, the following parameters were analyzed: pH, electrical conductivity, redox potential, temperature, major ions and metals in groundwater samples collected from pumping wells, according to Standard Methods for the Examination of Water and Wastewater (APHA, AWWA). A set of quantitative analytical data from the Guarani Aquifer System was processed by descriptive statistical analysis and a multivariate statistical method; Principal Component Analysis (PCA), in order to investigate the groundwater composition. The experimental matrix consisted of 25 physical and chemical variables, determined in 27 groundwater samples. PCA allowed finding out associations between variables, thus reducing the dimensionality of the data table in a 2D matrix. The samples were distributed in two main groups in a Principal Component Analysis (PCA) describing 62.7% of the total samples variability. In the first group, 14 groundwater samples were assigned to 38.7% of the variability, related to geochemical evolution processes, which are characterized by: bicarbonate, calcium, dissolved organic carbon, pH, electrical conductivity, sodium, temperature and magnesium. The second group (5 samples) represents 24% of the variability and consists of chloride, nitrate, Eh, potassium, sulfate and fluoride, which may be associated to anthropogenic origins. It was observed nitrate in 6 samples varying from 0.26 to 2.68 mg.L⁻¹ of N-NO₃. Although the concentrations are below the maximum value allowed by CONAMA 357/2005 standard (10 mg.L⁻¹), it is important to identify their source since groundwater in a confined aquifer should not be in contact with human sources of contamination. This preliminary groundwater characterization may assist the water resources management by the local Water Supply Company and support future studies on the identification of environmental contamination sources.

Keywords: Hydrochemistry Water quality conservation PCA Contaminant

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(4749 - 398) Quality reference values for trace elements in soils of Alta Floresta – Mato Grosso, Brazil

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Differences between quality reference values (QRV), established at the state and regional level, have been described in the literature. In this context, the objective was to quantify the natural concentrations and establish QRV for As, Cd, Cu, Fe, Mn, Pb and Zn in typical soils of Alta Floresta, Mato Grosso, Brazil. It was collected twenty soil samples in native forest area with minimal human influence, the layer of 0.00 to 0.20 m. The digestion of the soil samples was based on the SW-846 3050B method, and the determination was carried out by ICP-AES. The results were submitted to descriptive analysis and agglomerative hierarchical cluster analysis (AHA). The QRV, in mg kg⁻¹, obtained from