II INTERNATIONAL WORKSHOP ON

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Centro de Ciências Agrárias, UFPI, Teresina - PI

15 a 17 de abril de 2024

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BIOLOGICAL ATTRIBUTES OF THE SOIL DEPENDING ON DIFFERENT SOURCES AND FORMS OF APPLICATION OF POTASSIUM IN CORN INTERCROPPED WITH BRACHIARIA IN THE CERRADO OF MARANHÃO STATE, BRAZIL

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Brazil is highly dependent on potassium (K) imports, in this context the need to seek alternative sources and increase the efficiency of fertilizer use is assumed, with agrominerals being possible alternative sources of K. The aim was to evaluate different sources and forms of K application in the influence of soil biological attributes under corn-brachiaria intercropping. The experiment was carried out in Brejo, Maranhão, in a first-year (Argisol) area (2022/2023), with the cultivation of NK555 VIP3 Syngenta corn, intercropped with *Urochloa brizantha* cv. Marandu. The design adopted was in randomized blocks in a 5 x 2 factorial scheme, with five sources of K (agromineral A with 12% K_2O, B with 8% K_2O and C with 1.6% K_2O, KCl with 60% K_2O and control without K_2O, and two forms of application (incorporated and superficial). The applied dose of the different agrominerals was equivalent to 240 kg ha^{-1} K_2O (applied once at planting) and 80 kg ha^{-1} of K_2O for KCl (with a fixed dose for the following years). Soil correction, fertilization with other nutrients and cultural treatments were standardized for all plots. Carbon was evaluated (CBM), nitrogen (NBM), basal respiration (RBM) and microbial biomass metabolic quotient (CMB). For CBM and RBM, the means of the K_2O sources factor did not differ from each other, but the forms of application differed, with the application surface, standing out with 93.27 g Kg^{-1} and 65.88 mg CO_2 g^{-1} day^{-1} respectively. The NBM and CMB variables presented statistically equal means in both factors. It is concluded that the way in which K_2O sources are applied changes the biological parameters of the soil, with emphasis on surface application.

Keywords: agromineral; rock dust; *Zea mays*.

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