

Oculant for solubilizing soil Phosphorus in a forage of *Cenchrus purpureus* (Schumach.) Morrone cv. BRS Kurumi under irrigation in Tocantins

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This study was performed to analyze the effect of an inoculant on the forage production of *Cenchrus purpureus* (Schumach.) Morrone cv. BRS Kurumi under sprinkler irrigation. The inoculant is composed of microorganisms of the genus *Bacillus* that can solubilize the Phosphorus adsorbed by the soil. The field research was set up at Palmas – TO (10°24' S, 48°21' W, 222 m ASL) in an Oxisol, clayey texture with 45.5% sand, 13.2% silt and 41.3% clay, pH (H₂O) 5.3, O.M. 1.8 %, V 15.1%, CE 6.5 cmol_c dm⁻³, P (Melhlich) 0.4 mg dm⁻³, P-rem 31.6 mg dm⁻³, K⁺ 31.3 mg dm⁻³, Ca⁺² 0.3 cmol_c dm⁻³, Mg⁺² 0.31 cmol_c dm⁻³, Al⁺³ 0.2 cmol_c dm⁻³, S-SO₄⁻² 12.3 mg dm⁻³. The climate is tropical with dry winter, annual means of 1,618 and 2,372 mm of rain and evapotranspiration, 33 and 22°C as maximum and minimum temperatures. The soil received 3.5 Mg ha⁻¹ of lime, 60 kg of N ha⁻¹, 45 kg of K₂O ha⁻¹ and 170 kg of P₂O₅ ha⁻¹ of Single Superphosphate (SSP), except in the plots without P. The cuttings were planted at 22/06/2020, and at 44 DAP was applied 3.1 Mg ha⁻¹ of gypsum, 45 kg of N ha⁻¹ and 38 kg of K₂O ha⁻¹. The first harvest occurred at 88 DAP and so on each 14 days, until the 14th harvest at 18/03/2021 (269 DAP). The height of the residue was 40 cm and the pasture received 45 kg of N ha⁻¹ and 38 kg of K₂O ha⁻¹ after each cutting. The experimental design was totally randomized, the treatments were arranged in a factorial with repeated measures, having the inoculant (absence, I1 and presence, I2) as the main factor, the conventional P fertilization (absence, P1 and presence P2) as the submain and, the harvests at 13 levels (H2-13) as the sub-submain factor, in four repetitions. The plots had 4 x 3 m, with four rows of plants spaced by 60 cm, 2 m of the central rows of each plot was cut, weighted (kg of OM ha⁻¹), dried at 62°C for 72 h on kiln and, weighted (kg of DM ha⁻¹). It was got two measures of 25 repetitions per plot, with a chlorophyll meter at late Spring and late Summer, the SPAD index (SI) was adjusted by the function $C = (99 * SI) / (144 - SI)$, resulting in the chlorophyll content (µg cm⁻²). The data set was submitted to Shapiro-Wilk and Bartlett's tests and, the ANOVA indicated the significant effect of conventional P (p<0.05) upon the forage accumulation (CV 61.5%). The harvest presented significant effect, although the variation was too high (CV 104,5%). The means were submitted to Tukey test (p<0.05) and revealed difference, the P2 achieved 1,480 kg of DM ha⁻¹ and had better performance than the P1, with 1,180 kg of DM ha⁻¹. The means of the chlorophyll content were different (p<0.01), with 40.2 and 34.7 µg cm⁻², for Spring and Summer (CV 13.2%). For now, we can conclude that the use of conventional P, treatments SSP and SSP + inoculant, can contribute to obtain better results in the production of the dwarf elephant grass cv. BRS Kurumi. In addition, the results of chlorophyll content suggest the influence of some climatic factor.

Keywords: dwarf elephant grass, P adsorption, intensive forage production, tropical.