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CHEMICAL ATTRIBUTES OF SOIL AND CORN PRODUCTION UNDER DIRECT SEQUENCE AS A FUNCTION OF CALCARY AND PLASTER APPLICATION IN THE EASTERN AMAZON

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The correction of the soil acidity in the area under no-till from the application of limestone becomes limited, due to the low movement of bases without profile. The use of lime with agricultural plaster is a viable alternative, as it favors the vertical movement of bases in the profile. The objective of this study was to evaluate the effect of the combined application of lime and gypsum on soil chemical attributes and corn grain yield under no - till during three crop cycles. The experiment was conducted in Terra Alta, Pará, in the Brazilian Amazon, in the cycles from 2010 to 2012, in a dystrophic Yellow Latosol. A randomized complete block design with three replicates. The treatments were lime (0, 1, 2, 3, 4 t ha⁻¹) and gypsum (0, 500, 1000 kg ha⁻¹). The corn was sown with spacing of 70 cm between the rows, with five plants per linear meter. In the first and third agricultural years, in the 0-20 cm layer, an application of increasing doses of lime promoted a linear increase in soil pH ($y_{2010} = 4.522 + 0.293x$ $R^2 = 0.98$; and $y_{2012} = 5.0148 + 0.236x$ $R^2 = 0.94$ while in the second year there was interaction between the doses of limestone and gypsum, however the pH remained, even on the influence of the gypsum. In all years, an application of reduced lime or Al³⁺ content, with more effective action in the superficial layers. Not the first year, the Al³⁺ had the behavior $y_{2010} = 0.5369e - 0.449x$ $R^2 = 0.980$. In the second year, there was a greater reduction in Al³⁺ contents in the 0-10 cm layers ($y_{2011} = 0.392 + 0.141x - 0.0171x^2$ $R^2 = 0.89$) and 10-20 cm ($y_{2011} = 0.584e - 0.364x$ $R^2 = 0.91$). In the third year, there was a greater influence of the lime on the Al³⁺ levels in the layers of 0-10 ($y_{2012} = 0.669 + 0.3004x - 0.0492x^2$ $R^2 = 0.97$) and 10-20 cm ($y_{2012} = 0.684 + 0.3359x - 0.0538x^2$ $R^2 = 0.98$). In the first year, an interaction between limestone and gypsum increased Ca+Mg content in the 0-10 cm layer ($y = 1.493 + 0.4x$ $R^2 = 0.98$) and 10-20 ($y = 0.901 + 0.467x - 0.0978x^2 + 0.4667x$ $R^2 = 0.66$). What is the measure of increases, especially in the layer up to 20 cm ($y_{2011} = 1.556 + 0.29x$ $R^2 = 0.97$, and $y_{2012} = 0.828 + 1.0062x - 0.1024x^2$ $R^2 = 0.98$). There was an increase in the grain yield with an application of limestone and gypsum in the years ($y_{2010} = 2574 + 208.71x$ $R^2 = 0.76$, $y_{2011} = 3939 + 500.97x - 59.869x^2$ $R^2 = 0.70$, and $y_{2012} = 4653 + 256.54x - 20.886x^2$ $R^2 = 0.54$). The application of limestone, associated or not with gypsum, promoted improvements in chemical attributes, with positive effects on the production of corn grain

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