

NATURAL ROCK OF IPIRÁ USED AS SOIL CONDITIONING CROPPED WITH COMMON BEAN

Itamar Pereira de Oliveira; Daniel Pettersen Custódio, Belmiro Pereira das Neves, Renato Sérgio Santos Mota

EMBRAPA Arroz e Feijão.

C.P. 179 75 375-000 Santo Antônio de Goiás. BRAZIL

Phone: 62 3533 2158; Fax: 62 3533 2100; E-mail: itamar@cnpaf.embrapa.br

Natural Rock of Ipirá presents a mineral composition containing aluminum and silicate and any mineral elements able to influence the soil chemical characteristics and to behave as soil conditioning. As low mineral concentration fertilizer, this bentonite clay can deliver available plant nutrients in proportion, facilitated by soluble flux the balance of soil solution nutrients that feeds the plant needs through root system (Rossi,2004; Gopinath et al., 2003)). Then, high amounts of natural fertilizer source must be used to supply the crop needs (Anônimo, 2004). Also, natural conditioning can act as soil amendment similar to organic matter stabilizing the soil mineral composition avoiding toxic effects of aluminum, iron and manganese on bean plants. Therefore, conditioning material acts in soil improving its soil physical characteristics facilitating the vegetal development and the plant food. Nowadays any Brazilian states have stimulated technical researches using soil conditioning in mineral nutrition of plant, soil amendment and pottery. This goal research was to test the Natural Rock of Ipirá on the soil exchangeable complex cropped with common bean.

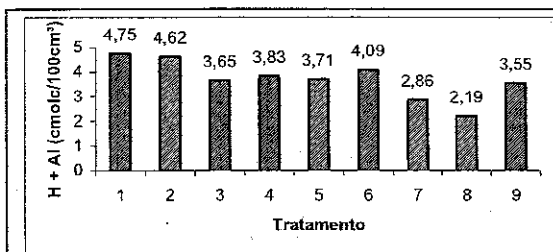


FIGURE 1. Concentration of soil acidifying (H+Al).

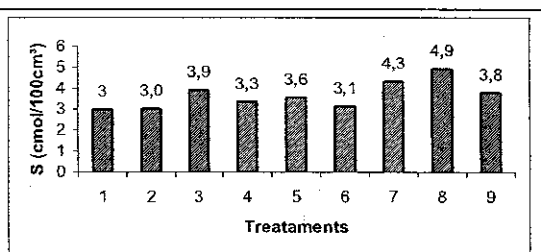


FIGURE 2. Sum (S = Ca+M+K) of soil cations in plots treated with any fertilizer doses.

The experiment was carried out in Saint Antonio de Goiás- Goiás State in one acid Oxisol, poor in organic matter, in phosphorus, calcium, magnesium, manganese and zinc. The following treatments were studied: 1 = check treatment, 2 = low fertilizer dose - 250 kg/ha of 4:30:16 (N, P₂O₅, K₂O), 3 = 300 kg/ha of Natural Rock of Ipirá used as fertilizer, 4 = 300 kg/ha of Natural Rock and 250 kg/ha of 4:30:16 (N, P₂O₅, K₂O), 5 = limed soil and 300 kg/ha of Natural Rock of Ipirá plus 250 kg/ha of 4:30:16 (N, P₂O₅, K₂O). 6 = application of 1,000 kg/ha of Natural Rock of Ipirá. 7 = application of 3,000 kg/ha of Natural Rock of Ipirá .8 = 9,000 kg/ha of Natural Rock of Ipirá and 9 = application of 27,000 kg/ha of Natural Rock Ipirá.

Higher H+Al concentrations (Figure 1) were observed in check plot. This result means that Natural Rock of Ipirá works as soil conditioning unconcerned with the amounts applied. In the contrary, higher S values (Sum of Ca + Mg + K) were observed where natural fertilizer was present (Figure 2).

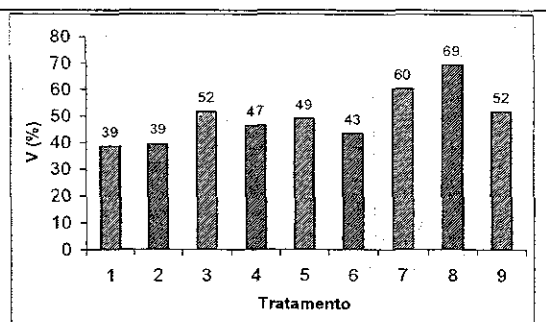
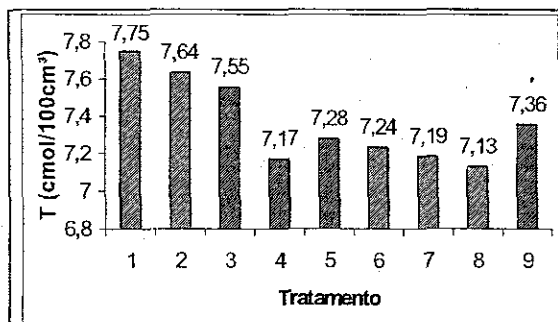


FIGURE 3. Variations in the cation exchange capacity (CEC) of soil.

FIGURE 4. Base saturation (V) of soil.

Higher cation exchange capacity values were observed in check plot and in parcels where low doses of natural fertilizer were applied (Figure 3). In the other manner, these results can be attributed to the higher Al+H concentrations observed in the Figure 1. The CEC (Ca+Mg+K+Al+H) increased deeper in relation to A+H than in function of Ca+Mg+K concentrations. These results can be observed in Oxisol, from savanna soil, similar to that used in this research (Thung and Oliveira, 1998). Also, base saturation ($V = S/T$) presented higher values in plots where higher doses of Natural Rock of Ipirá were applied. Base saturation can be used as indicative of soil amelioration (Figure 4). In general way, the Natural Rock of Ipirá, can be used as soil conditioning in combination with low doses of fertilization in soil presenting low fertility to produce grain for the man and animal. It is believable that best results can be obtained in medium and high-soil fertility by using natural source as soil fertilizer.

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