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Field of study: Forage and Pasture

Growth and development of maize cultivated in saline-sodic soil and treated with organic and mineral conditioners.

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In the pursuit of increased productivity, various soil management practices, both correct and incorrect, are employed by different producers. Many of these practices, such as deforestation, irrigation, excessive fertilization, among others, contribute to or cause soil salinity excess, leading to salt accumulation in arable layers and reducing agricultural productivity. Accordingly, this study aimed to evaluate different salinization conditioners in salt-affected soil on the growth and development of maize (*Zea mays* L.), hybrid Feroz Vip 3. The experiment was conducted in a greenhouse at the Federal University of Agreste de Pernambuco, Garanhuns, Pernambuco, Brazil. It was set up in a randomized complete block design with four treatments: gypsum, dairy sludge, dairy sludge + gypsum, and a control treatment without any conditioner. Each treatment had three replications, with each replication represented by 15 L pots containing 12 kg of soil, each with one maize plant. The doses of the conditioners followed 100% of the recommendations from the National Environmental Council and the Agronomic Institute of Pernambuco. The evaluated soil has saline-sodic characteristics and was collected in São Bento do Una, Pernambuco, Brazil. After collection, it was broken up and distributed in the pots. The seeds were sown at a depth of 2 cm after the conditioners were mixed into the soil, which occurred 10 days before sowing. After 60 days from the experiment's establishment, variables such as plant height (PH), root length (RL), root fresh weight (RFW), and root dry weight (RDW) were evaluated. Subsequently, the obtained data were subjected to analysis of variance using the Scott-Knott test at a 5% probability level. The dairy sludge treatment showed the best performance in reducing the effects caused by salt excess, resulting in an increase of 107.61; 78.04; 600.00 and 2400.00% for the variables PH, RL, RFW, and RDW, respectively, compared to the control. The addition of organic matter in the form of dairy sludge has the ability to promote plant growth and development due to increased water and nutrient absorption. The dairy sludge conditioner stood out among the others, mitigating the effects of soil salinity and providing greater morphological growth and development of maize plants, hybrid Feroz Vip 3.

Keywords: crop production, salinity, *Zea mays* (L.).

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