



# I-INTERNATIONAL MEETING OF ANIMAL SCIENCE IN SEMI-ARID REGIONS

Universidade Federal do Agreste de Pernambuco – UFape  
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Field of study: Forage and Pasture

## **Morphogenesis of forage sorghum grown in magnesium-saturated soil and treated with organic and mineral conditioners.**

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Issues with salts-affected soils are recurring worldwide. In Brazil, due to reports of "magnesium waters," there's a need for heightened attention to magnesium excess in these soils. When in surplus, this mineral acts as a dispersant and reduces agricultural productivity. Therefore, the objective was to evaluate the growth and development response of forage sorghum (*Sorghum bicolor* (L.)) cultivated in soil saturated with magnesium, treated with different doses of gypsum and dairy sludge. The experiment was conducted in the greenhouse of the Federal University of Agreste de Pernambuco, Garanhuns, Pernambuco, Brazil, using forage sorghum, variety IPA 467-4-2. Eight treatments were evaluated, with six involving the incorporation of conditioners into the soil ten days before seed planting. These treatments included dairy sludge at 100% of the requirement; agricultural gypsum at 100% of the requirement; dairy sludge at 100% of the requirement combined with 100; 75; 50; and 25% of the gypsum requirement. One treatment involved gypsum incorporated into the soil 10 days before planting, with dairy sludge added to the soil surface 20 days after seed sowing, while the control treatment had no conditioner added. Each treatment had three repetitions, with each repetition represented by a 15 L pot containing 12 kg of soil and one forage sorghum plant. The evaluations were carried out at 0; 7; 14; 21; 28; 35 and 42 days after the start of the experimental period (10 days after seedling emergence). All plants per repetition were evaluated for plant height (PHT), total leaf number, tiller number, and length of fully expanded leaves. Based on these data, leaf appearance rate (LAR), tiller appearance rate (TAR), and leaf elongation rate (LER) were calculated. Subsequently, the obtained data were subjected to analysis of variance using the Scott-Knott test at a 5% probability level. The dairy sludge treatment and the other treatments combining dairy sludge with different levels of gypsum resulted in greater growth and development of sorghum plants, with a minimum increase of 216.66; 150.00 and 126.33% for the variables LAR, TAR, and PHT, respectively, compared to the control. On the other hand, the treatments with 100% gypsum recommendation and surface-applied sludge resulted in a minimum increase of 81.94% for the variable LER compared to the control. The addition of dairy sludge combined with gypsum favored the increase in leaf area due to a higher number of tillers, indicating that the use of these organic and mineral conditioners contributed to mitigating the salinity effect caused by excess magnesium in the soil.

**Keywords:** growth/development, salinity, *Sorghum bicolor* (L.).

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