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Pastures and Forage

Productive response and characterization of the content of secondary metabolites of gliricidia in a biosaline cultivation system

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Livestock systems in semi-arid regions have a short period of precipitation to produce and store food for periods of scarcity. Thus, biosaline agriculture emerges as a way to increase forage supply, based on the principle of using soils and waters with high salinity content in a strategic and sustainable way, cultivated with resilient species, such as *Gliricidia sepium* (Jacq.) *Steud* (gliricidia), a forage species with high protein and energy content and resistant to drought and saline soils/water. However, there is a lack of references on the use of irrigation with saline water in these environments for the cultivation of gliricidia and its response in terms of the content of secondary metabolites, which are substances that can favor or harm the use of a nutritional element. The objective was to evaluate the productive responses and the content of secondary metabolites of gliricidia in biosaline systems. The experiment was conducted in the biosaline agriculture experimental field, located in the Empresa Brasileira de Pesquisa Agropecuária - Embrapa Semiárido, in Petrolina, PE. The design adopted was randomized blocks, with four replications. Two treatments were applied, the first consisted of the absence of irrigation with 0% of the reference evapotranspiration (ET_0), acting as a control, while the second treatment used irrigation with saline water according to 50% of the ET_0, the saline water was coming from an artesian well 70 meters deep and with a flow rate of 1800 liters per hour. The precipitation measured during the experimental period was 485.3 mm and application via irrigation was 252 mm (totaling 737.3 mm). The 50 cm uniformization cut was made at the beginning of the experiment. The harvest was carried out when the plants reached a height of 1.40 m. Four central plants were used per treatment in each block. Weighing and estimating production per hectare of dry matter (DM) were carried out, as well as analyzes of secondary metabolite levels: total tannins, condensed tannins, and saponins. All data were subjected to the analysis of variance test and turkey at 0.05. The 50% blade increased (P=0.0275) the production of DM in relation to the 0% blade of ET_0, with average values of 10.05 $Mg.ha^{-1}$ and 5.11 $Mg.ha^{-1}$ respectively. It was observed that the presence of irrigation reduced (P<0.001) the total tannin levels (13.34 $g.kg^{-1}$ for the 50% level and 14.61 $g.kg^{-1}$ in the 0% ET0 level) and saponins (0.59 $g.kg^{-1}$ for the 50% slide and 3.99 $g.kg^{-1}$ for the 0% ET_0 slide), while the concentration of condensed tannins increased (P=0.0001) (6.5 $g.kg^{-1}$ for the 50% blade and 5.87 $g.kg^{-1}$ at 0% ET_0). The irrigation depth with saline water increases the production of dry matter and condensed tannins and reduces total tannins and saponins in biosaline systems in the production of gliricidia, with values recommended for composing the diet of ruminant animals.

Keywords: Saline water, management strategy, *Gliricidia sepium* (Jacq.) *Steud*, **tannins.**

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