Mineral Nanoparticles and a Biostimulant to Improve Forage Production of *Chloris gayana* Kunth cv. Katambora and Water Stress Tolerance in Restrictive Soils in Pampa Deprimida

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Edaphic limitations restrict the productivity of forage species in the marginal environments in Pampa Deprimida, where saline and alkaline sodic soils predominate, combined with alternating periods of drought and waterlogging. In this context and considering the availability of innovative products on the market that could potentially enhance plant tolerance to abiotic stress, we aimed to evaluate the response of *Chloris gayana* Kunth cv. Katambora to the application of a dispersion of mineral nanoparticles based on sulfur and calcium (NanoSCa) and a liquid leonardite biostimulant (BioSt). The experiment was conducted in a greenhouse (mean maximum and minimum temperatures of 36.8±3.7°C and 19.1±2.8°C) under controlled irrigation (field capacity, FC and drought, D), using pots filled with soil collected from an alkaline-sodic depression in Chascomús (ρ=1.55±0.03 g/cm^3; pH=9.26±0.07; exchangeable sodium >15%). A factorial design was used to evaluate five application treatments under two water conditions (FC and D). Treatments were applied in soil bands at sowing and foliarly, 28 days after sowing (NanoSCa at 1.5 and 2 L·ha^{-1} for both soil and foliar applications; BioSt at 1.5 and 3 L·ha^{-1} at sowing and 1 and 1.5 L·ha^{-1} foliar; and water control). A reference treatment with fertile soil was included in parallel. At harvest (62 days after sowing), variables associated with plant growth and development were assessed. ANOVA was performed using Navure software, showing that water condition significantly affected fresh weight (p=0.0003) and tiller number (p=0.0252), with both decreasing under D regardless of treatment. Regarding treatments, independently of water condition, the highest fresh weights (in grams) were recorded for NanoSCa 1.5, BioSt 3, and NanoSCa 2 (31.76±4.98; 28.21±6.31; and 25.04±4.2, respectively); however, no significant differences were detected (p=0.0700) compared with the control (21.91±4.18). For leaf blade number, the interaction was significant (p=0.0042); under D conditions, the application of BioSt-3 showed higher values than the other treatments and did not differ from the FC control. Although the effects were not highly pronounced, comparison with the reference treatment (fertile soil) indicated that plants grown in alkaline sodic soil were already subjected to restrictive edaphic conditions. It is possible that treatment effects may become more evident if higher product doses are tested in future trials.