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Workfield: Forage farming

Comparison of productivity in different grasses cultivated in a semi-arid region and irrigated with brackish water

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Forage grasses play a fundamental role in livestock farming, ensuring the availability of food for animals and contributing to the sustainability and profitability of agricultural activities, in addition to providing essential nutrients for their growth and full development. The objective of this work is to compare the morpho-productive performance between *Panicum maximum* cv. Mombasa, *Panicum maximum* cv. Aruana and *Brachiaria decumbens* irrigated with brackish water. The study was conducted at the International Reference Center for Agrometeorological Studies of Palma and Other Forage Plants, located at the Federal Rural University of Pernambuco - Academic Unit of Serra Talhada (UFRPE/UAST), in the municipality of Serra Talhada, PE, Brazil. The cultures used in the experiment were Mombaça and Aruana, both from the genus *Panicum maximum*, and Braquiária from the genus *Brachiaria decumbens*, in a randomized block experimental design, with four replications. The total area was 36 m^2 (9.0 m × 4.0 m). The grazing grasses were irrigated with an irrigation sheet with replacement of 100% of the reference evapotranspiration – ET_0. The ET0 estimate for irrigation management was carried out using the Penman-Monteith FAO-56 equation, with meteorological variables collected using an automatic meteorological station, belonging to the National Institute of Meteorology. Irrigation was carried out using a drip irrigation system with the drippers spaced 0.2 m apart and a flow rate of 1.35 L h^{-1}. The water used for irrigation comes from an artesian well with an average electrical conductivity of 1.62 dS m^{-1} and pH = 6.84, being classified as high salinity water (C3S1). At the end of the cycle, plant biometry was performed to obtain the average plant height (AP, m), stem thickness (EC, mm) and number of living leaves (NFV, units) and dead leaves (NFM, units) and number of tillers (NP, units). At the end of the cycle, the material was collected and weighed on a semi-analytical balance to obtain the fresh mass (MF, Mg ha^{-1}) and taken to a forced ventilation oven at 65ºC until the dry mass (DM, Mg ha^{-1}) was obtained. 1). There was a significant difference ($p \leq 0.05$) between the cultivars. It was found that at the end of the cycle, Mombaça grass presented higher AP and EC with average values of 1.05 m and 4.25 mm, respectively, being higher than Braquiária (AP = 0.63 m and EC = 2.88 mm) and Aruana (AP = 0.47 m and EC = 3.20 mm); Braquiária presented a higher NP with an average of 32.25 units, followed by Aruana and Mombaça with 28.25 and 13.50 units, respectively. Aruana presented the highest MF production with an average of 17.45 Mg ha^{-1}, while Braquiária and Mombaça presented average values of 12.30 and 9.82 Mg ha^{-1}, respectively. Based on the results, it is concluded that the Aruana cultivar irrigated with lower quality water presented a greater performance in green biomass production in a semi-arid environment.
Keywords: *Panicum maximum*, *Brachiaria decumbens*, **productive performance, sustainability, agricultural resilience.**

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