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Morphological analysis of *Urochloa mosambicensis* and *Cenchrus ciliaries* in the crop-livestock systems in the Caatinga biome

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Deforestation in the Northeastern Brazilian Caatinga is a significant concern highlighted by several researchers, impacting vast areas. A promising alternative is adopting integrated crop-livestock systems (ICL), incorporating crops, forest species, and animals to promote diversity and environmental resilience. Thus, the aim of the present study was to assess the morphological analysis of *Urochloa mosambicensis* and *Cenchrus ciliaries* in the crop-livestock systems in the Caatinga biome. The experimental period was carried out over two subsequent years (2022 and 2023). The experiment was conducted in the Academic Unit of Serra Talhada of the Federal Rural University of Pernambuco, in an experimental area of 7,200 m², divided into three randomized blocks with four plots of 584 m² each, under rainfed conditions. A factorial arrangement using 2022 and 2023 was conducted to compare the systems' responses in each year. Tukey's test at a 5% probability level was employed for comparing the means. All variables were subjected to the analysis of variance followed by the Tukey test, using the Statistical Analysis System. Caatinga site composed of Mororó tree (*Bauhinia cheilantha* Steud Bong) and enriched with Buffel grass (*Cenchrus ciliaris* L.) and Urochloa grass (*Urochloa mosambicensis* Salm-Dyck). The treatments were three crop-livestock systems implanted in the Caatinga, comprised of the sheep livestock integrated with (i) bean crop, (ii) maize crop, and (iii) herb-cotton crop. The control treatment was composed of sole Caatinga rangeland. Twenty non-castrated male lambs (Santa Inês × Dorper crossbreed) aged six months old were used in the study, and they had an initial average weight of 24.64 ± 2.95 kg. The "marked tillers" technique was utilized to determine morphometric characteristics, involving the counting and measurement of different types of leaf blades, such as expanded, expanding, and senescent, over 13 weeks. Three representative tillers were marked in six areas of 0.25 m² each, and the length of the tiller was measured using a metric tape measure. Buffel grass stood out with a higher number of expanded and expanding leaves, especially in systems with herb-cotton crop and only Caatinga rangeland. Urochloa grass exhibited larger tillers in all systems, while buffel grass showed consistent responses, albeit lower in 2022 ($P < 0.05$). Despite competition for resources, crop-livestock systems in the Caatinga favor the development of Buffet and Urochloa grass.

Keywords: biometry; seasonally dry tropical forests; semi-arid ecosystem; sustainability

Animal Experimentation Ethics Committee of the Federal Rural University of Pernambuco (approval no. 2436310322).

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