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Determination of forage mass and leaf area index of *Cenchrus ciliaris* and *Urochloa mosambicensis* in the crop-livestock systems in the Caatinga biome

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Indiscriminate exploitation of natural resources and removal of native vegetation for pasture are major causes of environmental degradation, especially in the Caatinga. Crop-livestock systems offer a sustainable alternative, promoting biodiversity and ecological interactions. The aim of the present study was to assess the forage mass and leaf area index of *Cenchrus ciliaris* and *Urochloa mosambicensis* in the crop-livestock systems in the Caatinga biome. 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 experimental period was carried out over two subsequent years (2022 and 2023). 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. The quadrat method was used to determine forage mass, using a PVC tube frame to collect four samples from each plot in a 0.25 m² area. Samples were collected randomly and dried at 60°C for 72 hours to estimate the forage mass. The leaf area index was obtained with an LAI 3100C analyzer. Results showed that buffel grass performed better in 2023, with higher forage mass production and a better leaf area index in all systems (P<0.05). Urochloa grass also improved in 2023, especially in the maize crop (P<0.05). Integrated crop-livestock system in the Caatinga biome is recommended for improving the forage mass and leaf area index of *Cenchrus ciliaris* and *Urochloa mosambicensis*.

Keywords: biomass; lamb; semi-arid ecosystem; sustainability

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