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Area of work: Ruminant Nutrition

Ethogram of grazing sheep in crop-livestock system in the Caatinga biome

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Integrated crop-livestock systems play a crucial role in improving degraded pastures by restoring soil characteristics, which increases the CO₂-equivalent stock capacity, which, in turn, helps to reduce greenhouse gas emissions. Investigating and understanding sheep behavior is important in that it enables changes to be made in inappropriate management practices, with the goal of mitigating negative effects of stress and maximizing animal welfare, thereby influencing the animals into producing better and higher yields. The aim of present study was to assess the ethogram of grazing sheep in crop-livestock system in the Caatinga biome. 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 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. The experiment was conducted at the Federal Rural University of Pernambuco, Serra Talhada Academic Unit, in a thinned 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 experimental design utilized was a completely randomized with four crop-livestock systems and five animals per treatment were utilized. All variables were subjected to the analysis of variance followed by the Tukey test, using the GLM procedure of Statistical Analysis Systems. The ingestive behavior was assessed by simultaneous observation of animals by the punctual instant sweep method during 24 h every 10 min. Time spent on the following activities was recorded: grazing, rumination, and idleness throughout the day (ethogram). The integrated systems did not significantly affect the grazing, rumination, and idleness times throughout the day ($P > 0.05$). However, there was significant effect for these behavioral patterns throughout the day ($P < 0.05$). The differences recorded between observation periods for the behavioral patterns while standing and grazing behaviors may be related to temperatures at the study site. As such, the animals looking for food at higher frequencies in the early morning and late afternoon hours when temperatures are coolest. The crop-livestock integration system in the Caatinga is recommended because it does not alter the behavioral patterns throughout the day of grazing sheep.

Keywords: behavioral patterns; grazing time; integrated systems; rumination time; semi-arid ecosystem

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

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