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Ruminant nutrition and production

Physical characteristics of meat from sheep in crop-livestock system in the Caatinga biome

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The population's growing demand for healthy meats has created a new market that seeks to consume products with better sensory and nutritional quality, with the physical part being one of the main factors responsible for consumer acceptance, especially color and tenderness. Crop-livestock system can be defined as the simultaneous cultivation of agricultural crops and grazing for livestock within the same system in order to optimize productivity per area. Plants from the Caatinga biome contain secondary metabolites, such as tannins and terpenes, which may have the potential to alter the quality of the meat. The aim of the present study was to evaluate the physical characteristics of meat from sheep in crop-livestock system in the Caatinga biome. 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). 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. A completely randomized design with four treatments and five replications was adopted. The treatments were three crop-livestock systems implanted in the Caatinga, integrated with (i) bean crop, (ii) maize crop, and (iii) herb-cotton crop. The control treatment was composed of sole Caatinga rangeland. All variables were subjected to the analysis of variance followed by the Tukey test, using the GLM procedure of Statistical Analysis Systems. The differences were significant at 5% of error probability. The integrated systems did not significantly affect the pH values, cooking loss, water holding capacity, lightness (L*) and redness (a*) ($P>0.05$). However, there was significant difference for yellowness (b*) and Waner-Bratzler shear force ($P<0.05$). The yellowness showed the greatest intensity in the treatments integrating maize (4.64a), only Caatinga (4.32a) and beans (4.10ab), while the treatment with cotton showed the lowest yellowness intensity (3.61b). This result may be linked to the presence of carotene in the cotton plant. The amount of carotene deposited in the intramuscular fat of the meat may have promoted a greater intensity of the yellow color. Cotton does not contain the same considerable amounts of this pigment as maize, which may explain the difference between the treatments. As for the Waner-Bratzler shear force the maize treatment had the lowest force applied to cut the sample (5.52a kgf/cm²), followed by beans (6.06ab kgf/cm²), cotton (6.44ab kgf/cm²) and the treatment with only Caatinga (6.67b kgf/cm²), which did not differ from each other. Shear force is linked to the tenderness of the meat, which can be more acceptable to consumers in terms of texture and juiciness. Integrated crop-livestock system in the Caatinga biome is recommended for improving the physical characteristics of sheep meat.

Keywords: lamb meat; *longissimus dorsi;* meat quality; semi-arid ecosystem

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