

THEME 9 | RUMINANT NUTRITION AND PRODUCTION

Methane emission by lambs and ewes in different pasture production systems

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The knowing about greenhouse gases (GHG) emissions of livestock systems are very important in the current context of climate changes. Under Brazilian conditions, it is estimated that livestock production is responsible for approximately 56% of the methane (CH₄) emissions, from ruminal fermentation. The present study aimed to quantify the emissions of ruminal methane in two systems of sheep production. The experiment was carried out at the Sheep and Goat Production and Research Center (LAPOC), Federal University of Paraná (UFPR), Brazil, from September to November 2016. 32 White Dorper x Suffolk crossing breed was used. 16 lambs and 16 ewes were distributed in: I) 8 suckling lambs (SL) (38.35 ± 7.41 kg) and 8 lactating ewes (LE) on pasture (71,75 ± 7,29 kg); II) 8 weaned and supplemented lambs (WSL) on pasture (40,31 ± 3,51 kg), receiving 2% of body weight (BW) of concentrate.day⁻¹; and 8 weaned ewes (WE) (76,84 ± 12,28 kg). The experimental design was completely randomized, with four replications and two animals per replication. The pasture was composed of black oat (*Avena strigosa*) and ryegrass (*Lolium multiflorum* Lam.) overseeded on Tifton-85 (*Cynodon* spp.). The grazing method was continuous grazing with variable stocking rate, and herbage allowance at 16% BW, adjusted every 14 days. The CH₄ emissions were quantified by the sulfur hexafluoride (SF₆) tracer gas technique, providing a capsule containing SF₆ with known release rate; the collection was performed every 48 hours, totaling three collections in six days of evaluation, using gas collector apparatus. In the experimental area, six atmospheric air collecting tubes were allocated (“blank”) and their CH₄ and SF₆ values were discounted in the calculations. Two evaluations were performed. The CH₄ emission rate is the result of the multiplication between the SF₆ emission rate and the relation between the CH₄ and SF₆ concentrations of the tubes, subtracting the values of the “blank”, being determined by chromatography. The results showed no significant difference (p=0.53) in daily CH₄ emissions for lactating or weaned ewes (30.74 and 22.88 CH₄ g day⁻¹, resp.). CH₄ emission from weaned and supplemented lambs was higher (25.42 CH₄ g day⁻¹) than from suckling lambs that presented 17.15 CH₄ g day⁻¹ (p = 0.0095). It is concluded that different sheep production and/or feeding systems can influence the ruminal methane emission.

Keywords: finishing systems, global warming, greenhouse gases, tropical pasture

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