

Assessing Feed Intake, Enteric Methane Emissions and Performance of Beef Steers on Different Pasture-Based Systems

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The objective of this trial was to evaluate the dry matter intake, animal performance, and enteric methane emissions of beef steers in different pasture-based production systems. Sixty Canchim beef steers (5/8 Charolais x 3/8 Zebu) with initial liveweight 255 ± 7 kg were evaluated, distributed in five treatments (pasture-based system); Intensive, Integrated Crop-Livestock, Integrated Crop-Livestock-Forest, Integrated Livestock-Forest and Extensive. The experiment was carried out at Embrapa Southeast Livestock, Sao Carlos, SP, Brazil, evaluating four seasons (Summer, Autumn, Winter, Spring) during two consecutive years (2013-2015). The data were analyzed using mixed models. Means were separated by the Tukey test and the effects were considered significant when $p < 0.05$. Final liveweight (484a, 466a, 416b, 414b, 429b kg), dry matter intake (8.2ab, 7.5ab, 8.9a, 8.3ab, 7.4b kg), CH₄ emissions intensity in g/kg of dry matter intake (30.4a, 33.0a, 22.8b, 26.7ab, 29.2a) and in g per kg of carcass/ha/year (0.68b, 0.81b, 0.94b, 0.78b, 1.36a) differed ($p < 0.05$) between Intensive, Integrated Crop-Livestock, Integrated Crop-Livestock-Forest, Integrated Livestock-Forest and Extensive, respectively. System x season interaction was observed for the average daily gain (Summer: 0.71a, 0.97a, 0.52b, 0.69a, 0.64ab and Winter: 0.39a, 0.40a, 0.09b, -0.09b, 0.31a kg/day), and the CH₄ emission per kg of average daily gain (Summer: 0.36a, 0.17b, 0.34ab, 0.22ab, 0.37a Autumn: 0.36b, 0.46b, 0.62ab, 0.57ab, 0.69a g/kg), respectively for Intensive, Integrated Crop-Livestock, Integrated Crop-Livestock-Forest, Integrated Livestock-Forest and Extensive. Pasture systems that receive technologies such as soil correction and fertilization, are managed with rotational stocking or are integrated with corn, can produce animals with higher average daily gain and consequently higher final liveweight, which dilutes the CH₄ emissions per kg of liveweight gain. Animals produced in intensive and integrated systems emit less methane per kg of carcass produced per area per year than those raised in systems managed extensively.

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