

Documentos

ISSN 1983-974X
Outubro, 2016

216

II SIGEE – Second International Symposium on Greenhouse Gases in Agriculture – Proceedings



*II International Symposium on Greenhouse
Gases in Agriculture*

Embrapa

ISSN 1983-974X
outubro, 2016

*Empresa Brasileira de Pesquisa Agropecuária
Embrapa Gado de Corte
Ministério da Agricultura, Pecuária e Abastecimento*

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Embrapa
Brasília, DF
2016

Exemplares desta publicação podem ser adquiridos na:

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1ª edição

Versão online (2016)

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**Dados Internacionais de Catalogação na Publicação (CIP)
Embrapa Gado de Corte.**

Anais - 2º Simpósio Internacional Sobre Gases de Efeito Estufa na Agropecuária [recurso eletrônico] / Roberto Giolo de Almeida et al. - Campo Grande, MS : Embrapa Gado de Corte, 2016.

502 p. ; 21cm. - (Documentos / Embrapa Gado de Corte, ISSN 1983-974X ; 216).

Sistema requerido: Adobe Acrobat Reader, 4 ou superior.

Modo de acesso: <<http://www.cnpqc.embrapa.br/publicacoes/doc/DOC216.pdf>>

Título da página da Web (acesso em 16 de outubro de 2016).

1. Gases de efeito estufa. 2. Agropecuária. 3. Emissões de GEE. 4. Embrapa Gado de Corte. I. Almeida, Roberto Giolo de. II. Oliveira, Patrícia Perondi Anchão. III. Saito, Maurício. IV. Soares, Cleber Oliveira. V. Galvan, Lucas. VI. Chiari, Lucimara. VII. Alves, Fabiana Villa. Bungenstab, Davi José.

CDD 636.213

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Intensities of Methane Emissions from Canchim Steers Finished in Feedlots

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Introduction

Livestock is responsible for 14.5% of total anthropogenic emissions of greenhouse gases - GHG (FAO, 2013). Studies evaluating GHG from different lineages within of the same cattle breed are scarce. The objective of this study was to evaluate the intensities of methane emissions (kg CH₄/kg Live Weight) from two lineages of Canchim steers (3/8 Nelore + 5/8 Charolais).

Material and Methods

The study was conducted at Embrapa Southeast Livestock, Sao Carlos, SP, Brazil, from June to September 2015. Twenty-four Canchim steers were evaluated in feedlot, separated according to their lineages, with 12 belonging to the new lineage (NL) and 12 to the ancient lineage (AL), with an initial body weight of 368 ± 38 kg and age of 21 ± 3 months. The animals were allocated in collective pens with an electronic trough for individual dry matter intake (DMI) measurement (Grow Safe System). Methane (CH₄) and carbon dioxide (CO₂) emissions (grams/day) were evaluated using the GreenFeed System (C-Lock Inc., Rapid City, SD). Data were analyzed using the MIXED procedure of SAS and averages were compared using Tukey's test, with significant differences at P < 0.05.

Results and Conclusions

The CH₄ emissions of the NL were higher than the AL, as were the emissions of CO₂, but CH₄ emissions relative to the DMI, DWG and LW were similar for the two lineages (Table 1). Although CH₄ emissions were higher for the NL, the NL also displayed a better performance, resulting in lower emissions intensities (Table 1).

Table 1: Emissions and emission intensities from Canchim steers lineages

	Ancient lineage	New lineage	p-value
CH ₄ (grams/day)	155.28 ^a	177.75 ^b	0.0130
CO ₂ (grams/day)	7008.05 ^a	7577.83 ^b	0.0219
CH ₄ /DMI (kg/kg)	0.01842	0.01833	0.9446
CH ₄ /DWG (kg/kg)	0.1383	0.1387	0.9669
CH ₄ /LW (kg/kg)	0.00038	0.00039	0.6832

a,b: letters in the same row differ at (P<0.005) using the Tukey's test

References

FAO. Food and Agriculture Organization of the United Nations. Tackling climate change through livestock, A global assessment of emissions and mitigation opportunities. Roma/Italia: FAO, 115p. 2013.

Acknowledgements

Embrapa Pecuária Sudeste staff, CAPES (project 02.12.02.008.00.00) and Allflex[®].