

# Ruminal methane emissions in grazing beef heifers

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## Introduction

Brazil is one of the largest beef exporter in the world, and this is due to the introduction of Nellore cattle which has been adapted to the edaphoclimatic conditions of the country. With more than 200 million head, distributed in different production managements, producing through mainly extensive grazing system, Brazil has the responsibility to increase its productivity. That means, to produce more in smaller areas using fewer animals. One option to achieve that goal is to make the rotational management, thus, it may provide a better control of food supply for animals. However, it is also necessary to be concerned about the environment, especially for the methane produced from enteric fermentation in rumen. The objective of this study was to measure the emission of enteric methane in beef heifers in rotational and continuous grazing systems.

## Material and Methods

The experiment was conducted at FZEA / USP in Pirassununga / SP in the year of 2014. It was used 18 Nellore heifers with an average initial body weight of 275 kg grazing *Brachiaria brizantha* cv Marandu pasture under two grazing systems. The continuous grazing system was composed of three areas of 3.10, 3.86 and 5.63 ha and the rotational system consisted of 3 paddocks of 0.315 ha each (7

days occupation x 28 days of rest). Every 35 days, the heifers body weight (BW) was obtained and average daily gain (ADG) was calculated. The measurement of ruminal methane was performed by tracer gas SF6 technique, in which animals were adapted for 15 days to the use of halters and sarongs for data collection. Collections were held four times a year for 5 consecutive days which were 01/20, 04/28, 07/07 and 09/21 representing, respectively, Summer, Fall, Winter and Spring seasons. The CH<sub>4</sub> and SF<sub>6</sub> concentrations were determined by a gas chromatography by Embrapa Meio Ambiente, Jaguariuna / SP. The data was submitted to analysis of variance by MIXED procedure using the SAS statistical software and applied multiple test averages for comparison of treatments.

## Results and Conclusions

The results are shown in Table 1.

Table 1. Methane variables of heifers in continuous and rotational grazing system.

Heifers	Treatment		Average	P
	Continuous	Rotational		
BW (kg)	341,1	333,0	340,1	0,5430
ADG (kg/d)	0,587	0,543	0,540	0,6138
CH <sub>4</sub> (g/d)	171,1	174,4	176,7	0,7589
CH <sub>4</sub> ADG (g CH <sub>4</sub> /kg ADG)	656,4	789,1	723,7	0,6839
CH <sub>4</sub> BW (g CH <sub>4</sub> /kg BW)	0,501	0,521	0,516	0,4317

BW: body weight, ADG: average daily gain, CH<sub>4</sub>: methane emission.

## Acknowledgements

Pecus, Embrapa Meio Ambiente, Embrapa Pecuária Sudeste.