

***Cajanus cajan* Consumption on Performance and Mitigation of Enteric Methane Emissions from Nellore Steers**

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Solutions to more productive grazing systems capable of mitigating enteric methane (CH₄) emissions are needed. This study aimed to evaluate the performance and the enteric CH₄ emission of *Nellore* steers in three different continuous grazing systems, including *Cajanus cajan* consortium. The experiment occurred from July 2020 to July 2021 at Embrapa Pecuária Sudeste, in Sao Carlos, SP, Brazil. Twenty-seven animals (15-16 months) were weighed monthly and their enteric CH₄ production measured by the Sulfur hexafluoride (SF₆) tracer gas technique for five days. The treatments were: 1) recovered pasture with a mixture of *Urochloa decumbens* cv. Basilisk and *Urochloa brizantha* cv. Marandu with 200 kg N-urea/ha per year in the rainy season, with moderate stocking rate (REC); 2) degraded pasture of *U. decumbens* cv. Basilisk with low stocking rate (DEG); 3) pasture with a mixture of *U. decumbens* cv. Basilisk, *U. brizantha* cv. Marandu intercropped with *Cajanus cajan* cv. BRS Mandarin with moderate stocking rate (CON). Each treatment were in three replicated areas with 1.5 ha, submitted to stocking rate adjustments using "Put and take" technique. The performance and CH₄ data were subjected to analysis of variance and comparison of means by the Fisher test (5%), using the SAS PROC MIXED. Individual average daily gain (ADG) was statistically different ($P \leq 0.05$) between treatments: CON (478 g/day), followed by REC and DEG (387 and 302 g/day, respectively). The daily emission per animal and daily emission per kg of gain were, respectively: 207 g/head per day and 1054 g/kg in REC; 211 g/head per day and 2023 g/kg in DEG; and 214 g/head per day and 614 g/kg in CON, having statistical difference only in emission per kg of gain. The efficient use of intercropping increased the weight gain of the animals and emitted less methane per kg gain.

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