

INTRODUCTION

The use of 3-nitrooxypropanol (3-NOP) consistently reduces CH₄ emission in European, North American and Australian feedlot cattle systems (Vyas et al. 2016, 2018). However, these effects has not been extensively demonstrated in tropical conditions.

Therefore, our objective was to evaluate the effects of feeding 3-NOP (commercial name **Bovaer**[®], developed by DSM Nutritional Products, part of Royal DSM) at two doses on methane emissions and performance by *Bos indicus* cattle fed tropical feedlot diets.

MATERIAL AND METHODS

- Location: Unesp Jaboticabal, São Paulo State, Brazil.
- 138 Nellore bulls (initial BW, 360 ± 37.3 kg).
- Completely randomized Block design (9 pens/ treatment)
- High-concentrate diet (11:89), 96 days on feed.
 - Treatments:** 1) Control: **0** mg 3-NOP/kg DM.day;
 - 2) **100** mg 3-NOP/kg DM.day;
 - 3) **150** mg 3-NOP/kg DM.day.
- Methane emission - Sulfur hexafluoride (SF₆) tracer technique (2 bulls/pen; 8 animals/treatment)
- Mixed procedure of SAS 9.4 ($P < 0.05$)

RESULTS

Variable	3-NOP level, mg/kg DM			SEM	P-value
	Control	100	150		
DMI, kg/d	10.8	10.3	10.3	0.39	0.350
ADG, kg/d	1.61	1.47	1.48	0.540	0.115
F:G, kg:kg	0.150	0.142	0.145	0.008	0.517
HCW, kg	288	281	282	12.0	0.263
CH ₄ , g/d	146 ^a	81.5 ^b	66.5 ^b	12.2	<0.001
<i>Methane emission intensity</i>					
CH ₄ , g/DMI ³	13.5 ^a	8.68 ^b	7.33 ^b	1.08	<0.001
CH ₄ , g/kg ADG	90.7 ^a	59.0 ^b	52.3 ^b	7.15	<0.001
GE loss,% GE intake	4.74 ^a	2.87 ^b	2.58 ^b	0.323	<0.001

- **3-NOP at 100 mg/kg DM**, decreased ($P < 0.001$) methane emissions by 44.2% as expressed as g/d; by 35.7% as g/kg DMI; by 34.9% as g/kg ADG and the GE loss as % of the GE intake by 39.5%.
- **3-NOP at 150 mg/kg DM**, decreased ($P < 0.001$) methane emissions by 54.5% as expressed as g/d; by 45.7% as g/kg DMI; by 42.3% as g/kg ADG and the GE loss as % of the GE intake by 45.6%.
- Feeding 3-NOP improved energy utilization and had no negative effect on animal performance parameters such as DM intake ($P = 0.35$), ADG ($P = 0.11$) and HCW ($P = 0.26$).

CONCLUSION

We conclude that 3-NOP can be used to effectively reduce methane emission by 44.2% up to 54.4% in feedlot cattle without adverse effects on animal performance.