

PROCEEDINGS



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## ANIMAL SCIENCE:

# Challenges in Production and Sustainability

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**ANIMAL SCIENCE:  
CHALLENGES IN PRODUCTION AND  
SUSTAINABILITY**

Proceedings of the 56th Annual Meeting of the Brazilian Society of Animal Science  
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**56ª Reunião da Sociedade Brasileira de Zootecnia**

**16 a 20 de Agosto de 2021**

**VIRTUAL**

Letter from the Chair

Dear Participants

The Brazilian Society of Animal Science (SBZ) started in 1951 a mission to develop livestock in Brazil through new information and exchange of experiences among professionals in the area. In these 70 years, SBZ has done a great job in publishing the results of technical-scientific observations carried out in universities and research centers in Brazil.

Many advances in animal production were registered with the SBZ meetings and publications, and it is known that many were and will be the challenges faced by the Agricultural Sciences area in the coming years. Thus, the theme of the 56th Meeting is “Animal Science: the challenges of production and the sustainability of the planet”, and intends to provide an environment for scientific and technical discussions and boost animal productivity in Brazil and, thus, meet increasingly demanding markets.

We also partnered with two other important events: Formuleite and the Symposium on Biometeorology, Ambience, and Animal Behavior and Welfare. Our target audience includes, besides researchers and academics, technical professionals and companies in the area.

In this material, you'll see all the abstracts submitted and approved by our team of collaborators, with the highlights of each research area.

I would like to send a big THANK YOU to the entire team of collaborators and also to all the participants. We are aware of everyone's difficulties in this difficult period that the world is facing. We had to make changes; our event could not take place in the beautiful Ilha da Magia (Florianópolis – SC), but we brought the best in a virtual platform.

Last but not least, I want to express my gratitude to all the sponsors and supporters who contributed to making this meeting a reality.

We now have a lot of work in the hope of better days.

*Yours sincerely,*

Sandra Carvalho

Chairman of the 56th Annual Meeting of the Brazilian Society of Animal Science

### Enteric methane emission by steers grazing on Ipyporã and Mulato II brachiariagrasses pastures

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The reduction of enteric methane (CH<sub>4</sub>) emitted by livestock is driven by pasture management, which can enhance forage accumulation and animal performance, supporting lower CH<sub>4</sub> emission per kg of meat produced. In this sense, new forage grasses can increase the pasture production (e.g.; quantity and quality) and average daily gain, reducing CH<sub>4</sub> emission and improving the efficiency of the forage-based livestock systems. Our objective was to compare the CH<sub>4</sub> emission by Nellore steers grazing on 'Ipyporã' [*B. ruziziensis* Germ. & Evrard × *B. brizantha* (Hochst. ex A. Rich.) Stapf] and 'Mulato II' (*B. ruziziensis* × *B. brizantha* × *B. decumbens* Stapf) brachiariagrasses pastures in Sinop, MT, Brazil. All experimental units were continuously stocked using a variable stocking rate from May 2016 to May 2018. The GreenFeed® was used to measure CH<sub>4</sub> emissions at 4-h intervals with up to eight drops of 50 g (feed supply) distributed in 40-s intervals for up to 5 min in each feeding period (Feb. 1 to Apr. 31, 2017, in the first year; and from Nov. 27, 2017, to Jan. 11, 2018, and from Mar. 29, 2018, to April 30, 2018, in the second year). The average CH<sub>4</sub> emissions were 59.1 and 71.9 ± 9.5 kg animal<sup>-1</sup> year<sup>-1</sup> for Ipyporã, and 55.8 and 71.9 ± 3.2 kg animal<sup>-1</sup> year<sup>-1</sup> for Mulato II, in the first and second years, respectively. The greater was the stocking rate and the gain ha<sup>-1</sup>, the greater was the CH<sub>4</sub> emission per area in both forage-based systems, with the greatest values on Mulato II (P<0.05). Although a more intensive livestock system, with greater animal production per area, promotes a greater absolute CH<sub>4</sub> emission due to the increased stocking rate, it is important to consider the system efficiency. The CH<sub>4</sub> emission per area decreased as the average daily gain increased for the two grasses. In addition, when considering the gain ha<sup>-1</sup>, which consists of the relationship of individual performance and the stocking rate, the greater the gain ha<sup>-1</sup>, the lower the relative CH<sub>4</sub> emission per kilogram of meat produced. The CH<sub>4</sub> emission by the gain per area (kg CH<sub>4</sub>.kg gain ha<sup>-1</sup>) presented a similar response pattern for both cultivars. For Ipyporã, relative emission decreases while the gain ha<sup>-1</sup> increases up to 33.6 kg liveweight ha<sup>-1</sup> per month, stabilizing the emission at 0.25 kg CH<sub>4</sub>.kg gain ha<sup>-1</sup>. On the other hand, the reduction in CH<sub>4</sub> emission per gain per area stabilizes at 0.27 kg CH<sub>4</sub>.kg gain ha<sup>-1</sup> for Mulato II, when the gain per area reaches 20.6 kg liveweight ha<sup>-1</sup> per month. We concluded that forage-based systems producing more than 33.6 and 20.6 kg of liveweight ha<sup>-1</sup> per month on Ipyporã and Mulato II pastures, respectively, are more efficient, emitting less CH<sub>4</sub> per unit of product.

**Keywords:** *Brachiaria*, forage-based systems, greenhouse gasses, sustainability, *Urochloa*

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