



# Trace mineral source influences the performance of Nelore cattle in the growing phase during the transition between dry to rainy season in Brazil

## Introduction



Intellibond C and Z (hydroxy trace mineral) improve NDF digestibility in relation to inorganic sources (Faulkner and Weiss, 2017) and could improve performance in animals supplemented in pasture during the dry season.

## Objective

The study was carried out to evaluate the effect of trace mineral source on the liver concentration of Cu and Zn and performance of Nelore cattle supplemented in the growing phase during the transition between dry to rainy season.

## Material and Methods

- 120 intact male, Nelore (24 mo)
- 2 treatments: ITM – inorganic trace mineral or HTM – hydroxy trace mineral (copper and zinc)
- 12 paddocks: 6 paddocks per treatment and 10 animals/paddock
- Animals grazing *Urochloa brizantha* cv. Marandu
- Supplement: 5 g/kg BW (250 g/kg of CP and 650 g/kg de NDT, natural matter basis)
- Supplements consisted of 40 mg Cu and 148 mg Zn/kg DM from either inorganic TM (ITM) **or** hydroxy TM (HTM) Intellibond® sources
- Liver samples: at the beginning and end of the study - 3 animals/paddock.
- Weight: at each period (30 days) - three periods
- 90 days of supplementation
- Initial BW was used as a covariant and variables (BW, ADG) analyzed as repeated measurements in time
- Paddock was considered experimental unit
- Data were analyzed by ANOVA using PROC MIXED, SAS 9.4 ( $P \leq 0.05$ )



## Results

Table 1. Body weight (kg) and average daily gain (kg day<sup>-1</sup>) of Nelore cattle fed with different trace mineral sources in the supplement

Days (Period)	ITM (Inorganic)	HTM (Hydroxy)	SE	P - value
<b>Body Weight, kg</b>				
0	348.72	350.72	-	-
30	362.91	364.28	1.201	0.284
60	364.09	368.91	1.246	0.004
90	391.97	397.11	2.058	0.030
<b>Average Daily Gain, kg day<sup>-1</sup></b>				
0-30	0.440	0.485	0.037	0.272
30-60	0.038	0.149	0.031	0.016
60-90	0.962	0.971	0.045	0.843
0-90	0.469	0.506	0.010	0.012

\*( $P \leq 0.05$ )

Table 2. Concentration of copper and zinc in the liver of Nelore cattle fed with different trace mineral sources in the supplement

Days	ITM	HTM	SE	P - value
<b>Copper, mg kg<sup>-1</sup></b>				
0	166.97	162.95	13.746	0.782
90	130.49	147.34	21.616	0.454
<b>Zinc, mg kg<sup>-1</sup></b>				
0	46.18	42.04	4.333	0.363
90	37.91	45.37	6.645	0.288

\*( $P \leq 0.05$ )

## Implications

- The animals supplemented with **HTM had higher (+0.037 kg/day) general ADG** (day 0 to 90;  $P = 0.012$ );
- Final BW (day 90) from animals fed **HTM was 5.14 kg higher than ITM** (391,97 vs. 397,11 kg BW;  $P = 0,030$ );
- No differences were found in the liver concentrations of Cu and Zn between ITM or HTM;
- **Cu and Zn from HTM improves the performance of animals compared to ITM sources.**

## Reference

Faulkner, M. J., and W. P. Weiss. 2017. Effect of source of trace minerals in either forage- or by-product-based diets fed to dairy cows: 1. Production and macronutrient digestibility. *J. Dairy Sci.* 100:5358–5367.

