

**PSVII-14 Evaluation of Precision Feeding on Production Efficiency Responses in Finishing Beef Cattle.** Warren C. Rusche<sup>1</sup>, Zachary K. Smith<sup>1</sup>, Santana Hanson<sup>1</sup>, <sup>1</sup>*South Dakota State University*

**Abstract:** Angus heifers (n = 60; initial shrunk BW = 460 ± 26.2kg in n = 10 pens; 5 replicate pens/treatment) were used in a 112-d feedlot finishing experiment to evaluate animal growth performance outcomes, efficiency measures, and carcass characteristics when varying degrees of ingredient inclusion tolerances were imposed. Treatments included: 1) Normal feeding with 1lb tolerance for all ingredients (FIXED). 2) Variable inclusion strategy where each ingredient was randomly increased or decreased but the targeted as-fed quantity for the daily delivery was met (VAR). All heifers were fed once daily with all bunks managed using a slick bunk approach. Monensin sodium was fed at 33mg/kg and ractopamine HCl was fed (300mg per head daily) the final 28d. Individual BW measures were captured at processing and every 21d. Diets consisted of earlage, dried distiller's grains, and a liquid supplement. Ingredient inclusions were randomized by assigning independently a random integer to DDGS and LS with each integer corresponding to the deviation from targeted inclusions. Earlage inclusion was adjusted so that the targeted as-fed amount of the diet was delivered. As-fed inclusion rates varied from formulated targets by -20, -15, -10, -5, 0, +5, +10, +15, or +20%. Actual DM inclusion was within 5% of expectations 72% of the time in FIXED (13periods/18periods) and only 27% of the time in VAR (5periods/18periods). Ingredient inclusion accuracy did not affect ADG, DMI, or feed conversion efficiency in this experiment ( $P \geq 0.15$ ). DMI and liquid inclusion rates showed an inverse relationship. There were no differences ( $P \geq 0.35$ ) detected between treatments for carcass characteristics. No differences were noted between dietary treatments for liver abscess prevalence or severity. Under the conditions of this experiment, randomly altering ingredient proportions did not affect live animal performance, efficiency measures, or carcass characteristics.

**Table 1. Growth performance (shrunk 4%) responses through d112**

Item	Treatment		Pooled SEM	P-value
	Fixed	VAR		
Initial BW, Kg	459	460	0.997	0.15
Final BW, Kg	669	676	0.079	0.85
ADG, Kg	1.88	1.93	0.083	0.56
G:F	0.139	0.139	0.0071	0.96
DMI, Kg	13.59	13.82	0.546	0.70

**Keywords:** feedlot, finishing, inclusion

**PSVII-3 Effects of Feeding Direct-fed Microbials on Digestibility and Rumen Fermentation Characteristics of Finishing Bos Indicus Cattle.** Bruno Garcia de Carvalho Dias<sup>1</sup>, Murilo A. Meschiatti<sup>2</sup>, Bárbara Brixner<sup>1</sup>, Alecsander Almeida<sup>1</sup>, Bruno Cappellozza<sup>3</sup>, Giuseppe Copani<sup>3</sup>, Paulo Ferreira<sup>4</sup>, Oscar Queiroz<sup>3</sup>, Flavio Santos<sup>1</sup>, <sup>1</sup>*Department of Animal Science, "Luiz de Queiroz" College of Agriculture, University of São Paulo (USP), Piracicaba, SP, <sup>2</sup>Inpasa Brazil, <sup>3</sup>Chr Hansen A/S, <sup>4</sup>Chr Hansen BR*

**Abstract:** Direct feed microbials (DFM) are probiotics often fed to feedlot to cattle offered to improve rumen fermentation and/or intestinal health, thus benefiting animal health and performance. We hypothesized that DFM supplementation would improve nutrient digestibility and rumen fermentation in finishing *Bos indicus* cattle. On day -1, 30 rumen-cannulated Nellore bulls were blocked based on initial body weight (BW; 350 ± 35.0 kg) in 1 of 30 pens and, within each block, animals were randomly assigned to: (1) Control: corn-based diet without DFM (n = 10), (2) EFSC: CONT + 1 gram/head per day of a DFM based on *Enterococcus faecium* and *Saccharomyces cerevisiae* (Probios Precise, Chr. Hansen A/S, Horsholm, Denmark; n = 10), and (3) BLBS: CONT + 2 grams/head per day of a DFM based on *Bacillus licheniformis* and *Bacillus subtilis* (Bovacillus, Chr. Hansen A/S; n = 10). The experimental period lasted 35 days, while between days 30 to 33, total fecal collection was performed and on days 34 and 35, feces and rumen fluid were collected at 0, 3, 6, 9, 12, 15, 18, and 21 h post-feeding for ammonia, VFA, and pH determination. All data were analyzed as orthogonal contrasts using SAS: (1) DFM vs. CONT and (2) EFSC vs. BLBS. Inclusion or type of DFM did not affect either nutrient digestibility or ruminal fermentation parameters ( $P \geq 0.40$ ). In contrast, DFM supplementation, regardless of type, yielded a reduced mean ammonia concentration (14.7 vs. 15.7 mg/L;  $P = 0.05$ ). Moreover, ammonia concentrations were decreased in EFSC at 3 and 6 h post-feeding vs. CONT ( $P \leq 0.04$ ), but also less for BSBL vs. CONT at 6 h ( $P < 0.01$ ). In summary, DFM supplementation, regardless of type, reduced proteolysis, with no effect on other parameters of rumen fermentation in *Bos indicus* bulls fed a finishing diet.

**Keywords:** *Bacillus licheniformis*, *Bacillus subtilis*, *Bos indicus*, direct-fed microbials, feedlot cattle, rumen fermentation