

266 Administering an appeasing substance to beef calves at weaning to optimize welfare and productivity. Kelsey Schubach¹, Reinaldo F. Cooke¹, Alice Brandão¹, Bruna Rett¹, Vitor Ferreira², Giovanna Scatolin¹, Eduardo Colombo¹, Courtney L. Daigle¹, Ky G. Pohler³, Bruno I. Cappellozza⁴, ¹Texas A&M University, ²Department of Animal Science, Texas A&M University, College Station, TX, ⁴Nutricorp

This experiment evaluated the impacts of bovine appeasing substance (BAS) administration on performance, behavioral, and physiological responses of beef calves upon weaning. Eighty Angus-influenced calves (40 heifers, 40 steers) were weaned at 233 ± 2 d of age (d 0), ranked by age and body weight (BW), and assigned to receive BAS (Nutricorp, Araras, SP, Brazil; n = 40) or placebo (diethylene glycol monoethyl ether; CON; n = 40). Treatments (5 mL) were topically applied to the nuchal skin area of each animal. Within treatment, calves were allocated to 1 of 8 drylot pens (4 pens/treatment) and received a free-choice total mixed ration (TMR) from d 0 to 42, intake of which was assessed daily. On d 0, calves were fitted with a pedometer behind their right shoulder, and pedometer results were recorded weekly during the experiment (d 0 to 42) concurrently with full BW collection and temperament evaluation. Blood samples were collected on d 0, 3, 7, 14, 28, and 42, and hair samples were collected from the tail switch on d 0, 14, 28, and 42. Average daily gain from d 0 to 42 did not differ between treatments ($P = 0.52$), but was greater ($P = 0.05$) in BAS vs. CON calves from d 0 to 28. Intake of TMR was greater during the first week for BAS vs. CON calves ($P = 0.05$), and similar ($P \geq 0.44$) from wk 2 to 6 (treatment \times week; $P = 0.08$). Exit velocity was greater ($P = 0.03$) for CON vs. BAS calves on d 14 and tended ($P = 0.08$) to be greater for CON vs. BAS calves on d 7 (treatment \times day; $P = 0.04$). Physical activity was greater for CON vs. BAS calves on d 1 ($P < 0.01$), but greater ($P = 0.01$) in BAS vs. CON on d 2 (treatment \times day; $P = 0.01$). Mean plasma concentrations of haptoglobin were greater ($P = 0.03$) in CON vs. BAS calves during the experiment. Hair cortisol concentrations were greater ($P = 0.05$) in CON vs. BAS calves on d 14 (treatment \times day interaction; $P = 0.03$). Results from this experiment indicate BAS calves habituated to their environment more rapidly through increased physical activity, which facilitated a lessened stress response associated with weaning, and accelerated adaptation to a novel environment. This was manifested through improved TMR intake and BW gain during the initial period of the experiment. Collectively, results suggest use of BAS as a strategy to improve calf welfare and productivity upon weaning.

261 Sorting strategy and effect of variation on profitability of a pen of feedlot steers. Meredith A. Harrison¹, James W. Oltjen², ¹Colorado State University, ²University of California Davis

Variation in feedlot cattle has a negative effect on feedlot profitability and beef products. Alternative sorting strategies may help reduce variation within a pen of feedlot cattle and improve beef product uniformity. A dynamic, deterministic model was built to predict growth, body composition, and carcass value for individual steers. Individual steer measurements for initial body weight (BW), frame size, and body fat percent were obtained from a set of Angus-based steers (n = 62; BW = 293kg) and used as initial values in the model. The model predicted individual steer BW, Yield and Quality Grades, and carcass values for each day in the feeding period. Total steer profit was calculated as carcass value minus feed costs and steer purchase price. Profitability was evaluated using four sorting strategies: 1) steers purchased, fed, and marketed as a lot without sorting; 2) steers purchased, sorted by BW at initial processing, and fed and marketed as two independent pens; 3) steers purchased and fed as a lot until midway through the feeding period, and then were sorted by BW into two pens that were marketed independently; and 4) steers purchased and fed as a lot and each individual steer was sold at the optimal time. Optimal marketing time was defined as the day profit reached a maximum value. Sensitivity analyses were conducted, changing all prices $\pm 10\%$ while all other variables were held constant. Scenario 4 was most profitable, with a mean profit of $\$161.78 \pm 144.79$ per steer, representing the greatest possible profit. Scenario 1, the practice commonly used by commercial feedlots, was the least profitable ($\$122.45 \pm 139.65$). Scenario 2 ranked third ($\$125.10 \pm 137.42$), and Scenario 3 ranked second ($\$127.85 \pm 137.73$), but mean profit per head only differed by $\$2.75$, indicating steers grew at a relatively constant rate, and there was no additional benefit in sorting mid-way through the finishing period versus at initial processing. Body weight at harvest and carcass weight varied across scenarios, but mean quality grade was similar for all four scenarios. Mean profit per was most sensitive to grid base price. In scenario 1, a $\pm 10\%$ change in grid base price resulted in a 145 and -136% profit change, respectively. Sorting feedlot steers into similar feeding and marketing groups reduces pen variation, increasing carcass value, decreasing feed costs, and improving overall profitability.

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