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## Meat and Muscle Biology™



## Effects of Cattle Backgrounding Diets on Carcass Characteristics and Beef Quality

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## Objectives

To determine how backgrounding cattle will affect carcass characteristics and fresh beef quality. It was hypothesized that backgrounding cattle will result in an increased hot carcass weight, without impacting fresh beef quality.

## Materials and Methods

The impact of utilizing a moderate energy backgrounding diet was evaluated using 95 crossbred steers (initial body weight:  $352 \pm 30$  kg) that were randomly assigned to 1 of 15 pens. Each pen was randomly assigned 1 of 2 dietary treatments. Dietary treatments included a traditional high energy (HigE) finishing diet ( $n = 7$ ) or a moderate energy (ModE) backgrounding diet ( $n = 8$ ). Cattle on HigE were fed a high energy finishing diet for all 193 d; those fed ModE were fed the moderate energy diet for 63 d followed by feeding the HigE diet for the last 130 d. All steers received Revalor-XS on d 1. Two steers were randomly chosen from each pen for further evaluation. Hot carcass weight (HCW), 12th rib backfat (BF), ribeye area (REA), marbling score, USDA yield grade, and percent kidney, pelvic, and heart fat (KPH) were collected 48 h postmortem. Strip loins (IMPS #180) were retrieved and evaluated for vacuum purge loss and objective backfat color. The strip loins were fabricated into 2.54 cm steaks for drip loss, Warner-Bratzler shear force (WBSF), sensory evaluation, and subjective and objective color score evaluation. Data were analyzed using the mixed procedure of SAS (SAS Inst. Inc., Cary, NC) with treatment as a fixed effect and pen as a random effect. Pen was the experimental unit. Significance was determined at  $p \leq 0.05$ , while trends were determined at  $p \leq 0.10$ .

## Results

There was a tendency for HCW to be heavier for ModE cattle ( $P = 0.06$ ). There was no treatment effect for BF ( $P = 0.43$ ), REA ( $P = 0.96$ ), Marbling ( $P = 0.16$ ), YG ( $P = 0.76$ ), or KPH ( $P = 0.22$ ). No moisture loss attributes differed between treatments: Purge loss ( $P = 0.40$ ) and drip loss ( $P = 0.41$ ). Backfat  $a^*$  ( $P = 0.43$ ) and  $b^*$  ( $P = 0.18$ ) values were not statistically significant between treatments, however,  $L^*$  ( $P = 0.06$ ) tended to be higher for HigE cattle. Warner-Bratzler shear force values did not differ between treatments ( $P = 0.72$ ). There were no treatment effects for any of the steak subjective sensory attributes evaluated: Overall liking ( $P = 0.80$ ), flavor liking ( $P = 0.75$ ), texture liking ( $P = 0.44$ ), toughness ( $P = 0.31$ ), juiciness ( $P = 0.65$ ), and off-flavor ( $P = 0.21$ ). Objective color score did not differ between the 2 treatments:  $L^*$  ( $P = 0.39$ ),  $a^*$  ( $P = 0.55$ ), and  $b^*$  ( $P = 0.68$ ). Subjective color ( $P = 0.11$ ) and discoloration ( $P = 0.21$ ) scores also showed no differences between treatments. Subjective sensory analysis showed that steaks from the HigE treatment tended to be more desirable ( $P = 0.10$ ).

## Conclusion

Feeding a backgrounding diet before finishing led to similar carcass characteristics with a lower reliance on concentrate feed ingredients. Backgrounded cattle also had similar fresh beef qualities but could be compromised at the retail display case with subjective desirability scores tending to be lower.