INFLUENCE OF CATTLE BACKGROUNDING SYSTEMS ON PERFORMANCE AND CARCASS CHARACTERISTICS

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I.   OBJECTIVES

The objective of this study was to determine the influence of backgrounding systems on cattle performance, carcass characteristics, and meat quality when finished on a common feedlot diet.

II.   MATERIALS AND METHODS

Postweaning Angus and Angus × Simmental calves ($N = 65$) were assigned in a completely randomized design to one of 3 treatments: (1) dry lot (DL, $n = 22$); (2) perennial pasture (PP, $n = 21$); and (3) cover crop (CC, $n = 21$) during backgrounding for 55 d. Concluding backgrounding, the CC and PP treatments were transported to pens and acclimated to a finishing ration over a period of 14 d and continued 3 step-up diets over the next 15 d. Two separate pens were utilized to house all heifers and steers during the finishing segment, and 28-d rotations eliminated pen effect. Body weight, hip height, and average daily gain were recorded every 28 d. Five periodic carcass ultrasound measures were recorded to evaluate ultrasound ribeye area (REA), ultrasound rib fat thickness, and ultrasound percent intramuscular fat. At harvest, carcass measurements included hot carcass weight, REA, 12th rib backfat fat thickness, marbling and maturity score, and objective color (L^*, a^*, b^*). Forty-eight-hour postmortem 2.54-cm steaks were cut from the loin and evaluated for ether analysis, water content, cook loss, 7- and 14-d aged Warner-Bratzler shear force, and sensory analysis. Statistical analyses were conducted using mixed model procedures, and animal weaning weight was used as a covariate. Least-squares means were computed and recorded as significant at $P \le 0.05$.

III.   RESULTS

No differences were observed for ultrasound intramuscular fat ($P = 0.23$), ultrasound rib fat thickness ($P = 0.07$), USDA marbling ($P = 0.06$), USDA maturity ($P = 0.22$), USDA Yield grade ($P = 0.28$), fat content ($P = 0.32$), or moisture content ($P = 0.75$). Ultrasound REA was recorded largest in CC ($P \le 0.001$), while PP resulted in the greatest REA ($P \le 0.001$). Hot carcass weight was similar between CC and PP, both heavier than DL ($P \le 0.001$). Lean tissue L^*, a^*, and b^* color values were highest in DL ($P \le 0.001$; $P = 0.01$; $P \le 0.001$). Cook loss was lowest in PP ($P = 0.02$), but there was no difference between age periods in all treatments ($P = 0.24$). Lower Warner-Bratzler shear force values were recorded for PP loin steaks ($P = 0.05$). Treatment had no effect on most steak subjective sensory attributes: overall liking ($P = 0.26$), flavor liking ($P = 0.36$), toughness ($P = 0.25$), juiciness ($P = 0.80$), or off-flavor ($P = 0.43$). The texture of CC steaks was least desirable ($P = 0.05$).

IV.   CONCLUSION

Overall, cattle backgrounded on PP and CC experienced greater compensatory growth and average daily gain during finishing compared to DL that resulted in similar USDA Yield and

Quality. Cattle backgrounded on alternative diets to DL provide steaks of similar desirability and qualitative characteristics.