

## **Latest Research Reports: Evaluation of Alternative Beef Finishing Systems**

### **Forage vs. Grain Finished**

Agri-Food Canada and University of Guelph conducted a study to evaluate forage vs. grain finishing diets with or without growth promotants on growth performance, carcass characteristics, and economics of production. Angus cross steers were allotted to one of five treatment groups: 1) grass silage only; 2) grass silage + growth promotant; 3) grass silage + 40% rolled barley; 4) grass silage + 70% rolled barley; 5) grass silage +70% rolled barley + growth promotant. Researchers found that growth promotants increased average daily gain by 25% compared to cattle fed grass silage without growth promotant. Likewise, grain supplementation also increased ADG by 21% compared to cattle fed grass silage without growth promotant. Growth promotants increased carcass weight but did not alter any other carcass characteristic. Increasing the percentage of barley in the diet also resulted in heavier carcasses but also improved quality grades.

Evaluation of economics for production showed that cattle raised on grass silage would need to receive a 16% premium over conventionally fed steers to overcome reduced income due to reduced carcass weights and quality grades (SOURCE: Berthiaume et al. 2006. J. Anim. Sci. 84:2168).

### **Natural vs. Conventional**

Purdue University compared the effects of natural vs conventional feedlot protocol on performance and carcass characteristics of Angus heifers. Conventional system fed heifers with an 85% corn-based diet and Rumensin, Tylan, and MGA. Growth promotant (Revalor I-H) was given at day 30 and day 120 of the feeding period. The natural program fed heifers with 85% corn-based diet with no feed additives or growth promotant. All heifers were fed to a constant back fat thickness (0.5 in) prior to harvest.

Researchers found that the conventional heifers had greater ADG, finish weight, dressing percentage, hot carcass weight, and ribeye area. There were no differences in fat thickness, marbling score, yield grade or feed efficiency. Natural heifers had a higher percentage of carcasses that Choice or Prime (100 vs. 90.5%) than conventional heifers. Conventional heifers had a slightly higher carcass value, although not statistically significant, (\$944.96 vs. \$910.24) due to heavier carcass weights in conjunction with acceptable quality grade. This advantage was also seen when evaluating net profit. Although the cost of feed additives and growth promotants increased the cost to finish a conventional heifer, greater carcass weights still resulted in \$21.52 more profit for conventional feed heifers over natural heifers. (SOURCE: Gunn et al. 2007. Midwest Section ASAS. Abstract 312).

### **Calf-Fed vs. Yearlings**

University of Nebraska evaluated the carcass characteristics of calf-fed steers in relation to yearlings. Calves were placed directly in the feedlot at weaning and finished on high-concentrate diet for 191 days. Yearlings grazed crop residues after weaning followed by pasture grazing in the spring and summer. These steers were placed in a feedlot for 91 days and finished with a high concentrate diet. All animals were harvested at a constant back fat thickness (0.4 in).

Yearling steers produced carcasses that were heavier, had a larger ribeye area, but, lower marbling scores and quality grades. Steaks from yearling steers also had greater shear force values and poorer sensory ratings for flavor compared to calf-fed steers. The data found that yearling carcasses had a greater risk of producing a tough steak; 21.22% vs. 1.24% for yearling vs. calf-fed respectively. However, increasing the time of aging of a carcass from 7 to 14-21 days reduced shear force values of both groups. Authors concluded that calf-finished steer produce superior carcasses in regards to quality and palatability than carcasses from yearling-finished, but, yearling-finished steers can produce tender beef with extended aging (SOURCE: Brewer et al. 2007. J. Animal Sci. 85:1239)

### **45 day Backgrounding: Dry lot vs. Pasture**

New Mexico State University analyzed the effect of backgrounding weaned calves in pasture vs. drylot for 42-45 days and evaluated performance, carcass characteristics and profit. The drylot calves were fed a corn/wheat midds-based, pelleted ration plus alfalfa hay. The pasture calves grazed native-range pasture and supplemented with a 32% CP range cube 3 times a week. All calves were similarly and conventionally managed in a feedlot during the finishing phase. Steers were harvested with a backfat thickness around 0.5 in. Two phases are analyzed for performance and economic impact; backgrounding phase (included both steers and heifers) and feedlot phase (steers only).

Pasture calves had greater ADG for the first 21 days of backgrounding, however, in the second 21 days, drylot calves had a higher ADG and overall ADG. Final backgrounding price was higher for the pasture calves because they were lighter but the final value was \$6.90/head less than drylot calves. However, net income of pasture calves was \$44.59/head greater than drylot calves. Feed costs for drylot calves were 5-fold higher for drylot calves over pasture calves, likewise, labor costs were 2-fold higher. Authors found that the drylot calves would have needed a premium of \$5.00/cwt to be profitable, however, the pasture calves were profitable without a premium.

The finishing phase yielded animals that performed similarly and graded similarly regardless of backgrounding system. There were no difference in total ADG, final weight, days on feed, yield grade or any measured carcass characteristics in this study. Drylot steers experienced 7.6% greater mortality than pasture steers. Although the drylot calves had a lower feed cost, carcass value was not different between the groups. Gross income for

pasture steers was \$111/head greater due to no mortalities and numerically higher carcass weight and carcass price. Consequently, pasture steers earned \$103/head more net income than drylot steers. It was calculated that to achieve the same finishing phase net income for drylot steers as pasture steers, the value of the drylot steers coming into the feedlot immediately follow backgrounding phase would be a price reduction of \$17.45/cwt. Authors concluded that additional gain achieved with higher-input systems may not offset higher costs; and stress associated with dietary change and confinement immediately following weaning may impact subsequent death loss. Low-input pasture backgrounding systems can be more profitable than drylot systems of the same duration during the backgrounding and finishing phases.(SOURCE: Mathis et al. 2007. Western Section ASAS. Proceedings. 58:122)