BEEF CATTLE RESEARCH UPDATE

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Forage-Fed, "Natural Beef" versus Conventional Feeding Programs for Beef Cattle

There is growing interest in forage-fed, "natural" beef and/or "organic" beef. As a result, several recently published research papers have evaluated the performance and production cost of cattle fed conventionally versus "naturally". Summaries of some of these studies follow.

Recent Iowa State University research[1] compared the performance of conventional feedlot-based cattle finishing with "organically" acceptable cattle finishing. In this research, yearling beef steers (initial weight of 730 lbs) were allotted to cool-season pastures. The conventionally raised steers were initially implanted with Synovex-S, grazed for 89 days and then moved to a feedlot where they were reimplanted and fed corn and ground hay until marketing 96 days later. The "organic" steers were not implanted and grazed the cool season grass and standing corn for an additional 137 days. An electric wire was moved every 2 or 3 days to allow the steers to graze more standing corn. They were then moved to the feedlot and fed corn and ground hay until marketing 114 days later.

During the 89-day grazing period on cool season grasses, the implanted cattle gained 1.9 lb/day and the "organic" cattle gained 1.7 lb/day. During finishing, the implanted cattle gained 4.6 lb/day (final weight of 1295 lbs) and 48% of the cattle graded choice or better. The overall gain for 185 days for these cattle was 3.3 lb/day. The "organic" cattle gained 0.7 lb/day when grazing corn and 3.7 lb/day in the feedlot. These cattle were marketed at 1422 lbs with an overall daily gain of 2.0 lb/day (340 days on trial) and 100% of the cattle graded choice or better.

These researchers noted that the implanted cattle probably would have graded better if they had been fed longer. They also noted that grazing cattle either on grass or corn increased their frame and thus the cattle needed to be fed to a heavier weight to reach the choice grade. Production cost were not calculated in this trial, however, it is apparent that the "organic" cattle would have had a higher total cost of gain because of their low gains over the trial (2.0 lb/day) and the fact that they were on trial for 155 days more than the conventional steers.

Recent Canadian research[2] evaluated forage versus grain finishing with or without the use of growth promotants on growth performance, cost of production, and carcass characteristics. During a 98-day growing phase, Angus-cross steers were fed grass silage with or without growth promotants (trenbolone acetate + estradiol implants, and monensin in the feed) or supplemental soybean meal. Steers on the growth promotant treatments were initially implanted with Revalor-G and reimplanted with Revalor-S on day 70. Monensin was fed at a level of 30 g/ton of dry matter. During the finishing phase of this experiment, steers were fed either grass silage diets or rolled barley based diets (steers originally on soybean meal supplements were fed barley based diets) with or without the same growth promotants used in the growing phase. Two barley based diets were evaluated: 60% grass silage and 40% barley and 30% grass silage and 70% barley (both on dry matter basis). In this trial, no

steers were slaughtered before they had deposited at least 0.315 inches of backfat measured by ultrasound. Ultrasound determinations of backfat were conducted every 14 days when half of the steers had deposited 0.24 inches.

During the growing phase, the use of growth promotants improved daily gains and feed efficiency (gain/feed) by 13 and 16.7%, respectively. Feeding supplemental soybean meal had no effect on performance of the steers. This result might be expected since the grass silage contained 16.1% crude protein. During the finishing phase, the use of growth promotants increased daily gains and the gain to feed ratio by 40.1 and 40.9%, respectively. Finishing on the 70% barley diet vs. grass silage improved gains and efficiency by 33.9 and 20.8%, respectively. The intermediate level of barley (40%) was tested to determine if feeding grain could compensate for the withdrawal of growth promotants. Cattle fed grass silage with growth promotants tended to gain 10.3% faster and 36.4% more efficiently than cattle fed 40% barley diets with no growth promotants.

Over the entire feeding period, the use of growth promotants increased daily gains and feed efficiency (gain/feed) by 28.5 and 28.0%, respectively. Steers fed supplemented diets (soybean and barley) gained 17.8% faster than steers fed forage only (grass silage). The use of growth promotants increased final body weights and hot carcass weights by 94 and 53 lbs, respectively. No carcass characteristics were affected by growth promotants in this trial. Possibly, this occurred because all animals were slaughtered at a constant endpoint (0.315 in. backfat). Barley fed steers (70% barley) had heavier final weights (43 lbs) and hot carcass weights (38 lbs) than silage fed cattle. In addition, barley fed steers had higher marbling scores and quality grades.

An evaluation of production costs for this trial showed that feeding a forage based diet without implants or ionophores reduced total production cost by 31%. However, due to their lower hot carcass weight and quality grades, these forage-fed, “natural” steers would need to receive a 16% premium to be economically competitive with cattle finished conventionally.

Recent New Mexico research[3] supports the results of this Canadian trial. In this trial, 706 lb (initial weight) crossbred steers were fed a high concentrate finishing diet (76% flaked corn, dry matter basis) with or without growth implants and with or without antimicrobial feed additives over a 140 day trial. Implanted steers received Synovex-S at initial processing and Revalor-S on day 63. Steers receiving feed additives were fed diets containing 30 g/ton of monensin and 10 g/ton of tylosin (dry matter basis).

Implanting cattle increased daily gain, feed efficiency (gain/feed), and dry matter intake by 21.2, 7.7, and 12.4%, respectively. Implants increased hot carcass weight by 77 lbs. However, the percentage of carcasses grading choice or greater was reduced from 90.2 to 62.5% with implants. As a result, implanted cattle received lower prices for their carcasses ($1.14 vs 1.15 per lb). However, due to heavier carcass weights for implanted cattle, non-implanted cattle would need to receive a $44 per head premium to be economically comparable with conventional production. This economic benefit of implanting cattle is similar to data presented at the 1997 OSU Implant Symposium[4]. In this paper, it was reported that implanting feedlot steers once returns from $21 to $43 above the cost of the implant. It was also noted that reimplanting steers increased returns above a single implant by $4 to $20.

In the New Mexico trial, feeding monensin/tylosin tended to increase gains and feed efficiency (gain/feed) by 4.3 and 5.6%, respectively. These feed additives also tended to improve marbling scores. However, these feed additives had no effect on profitability in this trial.

In summary, these recent trials suggest that producing "natural" beef (no growth implants or feed additives) will necessitate producers receiving a significant price premium to make them economically competitive with conventional production and finishing systems. Producing "natural" beef significantly reduces performance and thus carcass weight when compared to conventionally raised beef. Colorado research[5] that evaluated the relative importance of weight, quality grade, and yield grade as drivers of beef carcass value in grid-pricing systems concluded that carcass weight is the single most important driver of differences in beef carcass value.

Many people purchase "natural" or "organic" beef because of perceived health and nutrition and/or safety benefits. However, there are no conclusive studies to prove that "natural" beef is healthier or safer than other types of beef. According to a report published by the American Council on Science and Health in 2003[6], "natural" and "organic" produced beef products do not differ from conventionally raised beef in terms of nutrition or safety.

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