



Does pasture-finished beef make the grade?

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Finishing beef animals on pasture can potentially reduce the overhead costs of facilities and equipment compared to confinement finishing. Researchers at UW-Madison set out to learn if beef animals finished on pasture can make the Select and Choice quality grades for conventional meat markets.

The researchers—Jeff Lehmkuhler from Animal Sciences and Dan Undersander from Agronomy—investigated the performance of steers on pasture with and without supplements. The researchers compared crossbred beef steers typical of Wisconsin beef farms to crossbred Normande steers. The Normande breed is a dual purpose milk/meat breed which is growing in popularity. The purpose of this comparison was to determine if Normande-cross steers are a viable option for farmers finishing beef animals. From 2005 to 2007, the researchers collected data at the UW-Madison Lancaster Agricultural Research Station. Support was provided by a USDA-CSREES HATCH grant.

The researchers compared a diet based exclusively on pasture with three supplementation strategies. A diet of pasture plus alfalfa pellets was one strategy, chosen because alfalfa pellets can provide forage-based protein and dry matter for grazing cattle when pasture availability is low. The other two pasture supplements included soyhulls and dried distillers grains. One of these two treatments included an ionophore (an antibiotic added to cattle feed to prevent disease and promote efficiency), which allowed for the comparison of natural and conventional production systems. Dried distillers grains were of interest because of their growing availability, high levels of undegradable protein and unsaturated fatty acid content. Soyhulls were included due to high fiber digestibility. Steers were offered up to 9 pounds of supplement per head daily, which provided an estimated 50 percent of each animal's daily dry matter intake over the grazing season.

Forty-eight steers were grazed each season. These animals were divided equally across the four supplementation treatments (12 steers per treatment). The use of electronic gates fastened to feed bunks allowed for all treatments to be offered in the same pasture area, reducing the impact of pasture type and quality on the responses from the supplementation strategies. The pastures were predominately

a cool-season grass legume mixture. Steers were moved to new areas of pasture three times weekly.

Of the 12 steers assigned to each treatment, half were of Normande influence and the remaining were crossbred beef steers of British genetics, predominately Angus and Hereford sired. Regardless of genetics, the target beef quality grade was Select or higher. From an economic standpoint, it is important to produce carcasses with sufficient marbling to attain at least a Select grade.

Alfalfa supplement intake varied considerably between animals. A few steers consumed nearly all 9 pounds offered while others ate only a couple of pounds. There was less variability in the intake of both grain co-product supplements. During the grazing season, steers receiving alfalfa pellets consumed approximately two-thirds the amount of supplement by weight as those receiving the grain co-product.

Supplementation and rate of gain

“Supplementation, regardless of type, increased daily gains for steers in all three years” says Lehmkuhler. (See Fig. 1 on page 2.) Alfalfa pellets increased daily gains by approximately 0.25 lb/day in comparison to the pasture only treatment. Co-product supplementation increased daily gains even more. The inclusion of an ionophore significantly increased gain in only one of the three years. This lack of consistent gain response was observed in previous supplementation research at the station with a different ionophore.

Carcass characteristics

The increased performance of supplemented animals did impact carcass characteristics. Use of grain co-products produced heavier carcass weights and



Electronic gates allowed steers in all treatments to graze together and have access to the supplement assigned to them.

higher dressing percentages. Ribeye area, an indicator of overall carcass muscle mass, was larger for cattle receiving alfalfa and co-product supplements, primarily due to the heavier carcass weights.

Animals were harvested directly off pasture in 2005 and 2007. In 2006, the researchers checked the steers with ultrasound as they approached targeted weight and backfat endpoints. Most of the grain co-product steers met the targets and were harvested directly off pasture. The steers on the pasture-only and alfalfa pellet treatments needed additional time to attain the Select grade weight and marbling. Animals not meeting the targets were placed in a confinement barn and offered alfalfa haylage along with the supplements assigned to their group until they were harvested approximately 60 days later. At that point, carcass differences between treatments were minimal.

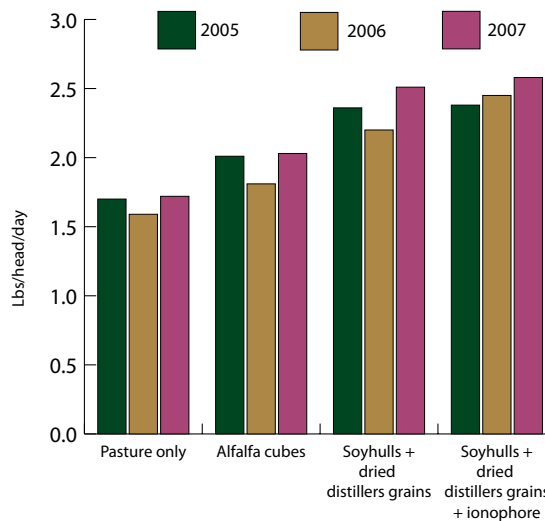
Warner-Bratzler shear force values, which indicate meat tenderness, were not found to be different among treatments. In addition, meat tenderness of these pasture-based steers was similar to that of ten other steers fed under conventional feedlot management practices and receiving the same amount of co-product supplement in 2005. This would further support the potential for producing acceptable beef with a grass or forage-based finishing system. Steers grazing pasture without any supplement produced beef that was of similar marbling as supplemented cattle. Only in 2007 was the average marbling score greater for the supplementation treatments compared with those from steers consuming just grass.

A dry growing season in 2005 resulted in the necessity to remove animals from pasture in early October. Subsequently, cattle did not have the degree of finish desired and this was reflected by the low percentage of cattle achieving the target quality grade. However, in 2006 and 2007 more than 70 percent of the carcasses from the supplementation treatments graded USDA Select, Choice or Prime.

Normande cross steers gain well

The Normande-influenced steers performed similarly to the crossbred beef steers. The Normande steers were on average a month younger, and therefore lighter, than the beef breed steers due to different calving seasons on the source farms in 2006 and 2007. Over all three years, the Normande carcasses had higher dressing percentages and less backfat than the beef breeds, as expected. While ribeye area was

Average daily gain of steers consuming different supplements in a pasture finishing system



not different among the breed types, the conventional crossbred beef carcasses had higher marbling scores than the Normande. This was unexpected and may partially result from the lighter weight and younger age of the Normande cattle at slaughter. Normande cattle responded similarly to the beef crossbred steers to the different supplementation strategies.

The bottom line

Through the use of supplementation, it is possible to produce beef on pasture that will meet commodity market specifications. More time is required to meet these specifications when diets are strictly forage based. The cost of the additional dwell time for the forage-based steers is a trade-off with respect to the added cost of supplementation. But supplementation is a way to stretch pasture, especially during a summer slump in pasture growth. With growing consumer interest in grass-fed and -finished beef, some farmers may prefer not to supplement their cattle and sell their beef directly to customers or specialty markets rather than commodity markets. Dual-purpose Normande-influenced steers had daily gains similar to more conventional crossbred beef steers when managed in a pasture finishing system. These findings can help beef producers make better informed decisions related to alternative production systems.

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