

Early High-Starch Diet Critical to Carcass Quality

Research confirms a high-starch diet early in a calf's life is more important than genetic merit for marbling.

by Barb Baylor Anderson

High-quality carcasses start with high-starch diets, and high-starch diets need to begin with calves as early as possible. Research shows calves that are fed high-starch diets early in life will have more marbling at the same backfat end point as calves grown on forages. In addition, the amount of starch in the finishing diet is not as critical as starch at a young age. Research also confirms it is more important than genetic merit for marbling.

"The effects of high marbling EPDs (expected progeny differences) have been additive with our management program, so they are important," says Dan Faulkner, University of Illinois Extension beef cattle specialist. "Producers desiring to produce high-quality cattle for the marketplace should consider the marbling EPDs on the bulls they use and manage their calves to get them on a high-starch diet early to reduce fat and improve carcass quality."

In research at the University of Illinois, Faulkner has evaluated the effects of creep-feeding and weaning time on calf performance and on the carcass merit of calves at harvest. What he and others have found is that changing management practices can have a dramatic influence on calf performance in the feedlot and enhance carcass merit.

Influence on carcass quality

"Our creep-feeding research shows the source of creep feed, amount consumed and length of time calves receive creep feed all influence carcass quality grade," he says. "Calves creep-fed with a corn-based diet had much higher final quality grades than those fed a soyhull-based diet, even though daily gains were similar. Data show calves need to be on creep feed for about 80 days to increase quality grade."

When comparing in research the carcass traits of various feeding scenarios, Faulkner says that on average, normal-weaned steers without creep had lighter carcasses than other steers.

"The trend is for early-weaned steers to have more backfat than the average of the creep-fed steers. Marbling score was greater for early-weaned steers than those receiving creep feed," he says. "By industry standards, all treatments graded fairly well, with between 73% and 90% Choice. However, early-weaned steers had a greater percentage of average Choice or higher carcasses compared to the creep-fed steers."

Research also indicated that weaning calves at 150 days improved quality grade dramatically and improved feed efficiency in the feedlot.

"We found a 30% increase in calves that graded average Choice or above with weaning at 150 days. We observed a slight increase

in carcass weights of early-weaned calves compared to non-creep-fed calves," he says. "All calves were slaughtered at 0.4 inches (in.) of backfat, so greater carcass weight and quality were not due to fatter calves."

Early effects

With more than 50% of the cattle in premium beef grades harvested at less backfat when comparing weaning age, Faulkner suggests marbling deposition may be affected early. Diet composition during the growing period also seems to influence marbling deposition.

"Recent unpublished work has shown no differences in rate of marbling due to level of starch for calves that had been early weaned on a high-starch diet," he adds. "Because of the calves' small size and low intake at a young age, feeding grain during this phase can be very cost-effective and provide more flexibility in the finishing diet for these calves."

Protein levels may also influence marbling deposition. Faulkner notes increasing protein levels in diets of young calves to as high as 16% will increase marbling score at the same backfat end point. He says increasing protein levels may improve starch digestion and absorption from the small intestine, especially on whole-shell-corn-based diets.



Quality carcass production strategies

If you want to increase carcass quality through feeding, University of Illinois Extension Beef Cattle Specialist Dan Faulkner offers these ideas:

- ▶ Decide if you want to creep-feed or early-wean calves. Creep-feed at least 80 days. If you wean at 80 days, you can see reproductive benefits for the cow, as well as performance and carcass benefits for the calf.
- ▶ Calves need to be on a high-concentrate diet as early as possible to initiate marbling deposition. If calves are fed a low-energy diet after they were on a high-energy diet, they may lose marbling and ultimately not grade as well.
- ▶ Calves can be implanted twice about 100 days apart with estrogenic implants. During the last 120 days, calves should be implanted with a combination estrogen-androgen to increase final weight and not reduce marbling.
- ▶ Calves can be marketed at 210 days or ownership can be retained until harvest. At 210 days, calves are 100-200 pounds (lb.) heavier than normal-weaned calves, are efficient in their gain, but may be discounted for being fleshy under the current marketing system. Selling calves for what they are worth may be difficult.
- ▶ Let the cow be your low-input, low-cost factory. Part of the feed cost of early weaning can be recovered through reduced supplemental feed cost. Early weaning calves also effectively increases stocking rates by more than 35%, which is important during midsummer when stocking rates are at a low.
- ▶ If you produce high-quality beef, find a market that will pay for it. Compare marketing alternatives for feeding calves on your farm to those available through a custom feedlot. The system can pay dividends in markets that reward quality.

Corn Coproduct Survival Guide

Consider a number of factors before buying.

by Barb Baylor Anderson

If you're eyeing the possibility of incorporating corn coproducts into your operation's feed rations, the information below may help you succeed. Extension nutrition and management specialists say beef producers can survive in a corn coproduct world, as long as a number of factors are considered before buying.

"To utilize corn coproducts, it is imperative that producers become knowledgeable about what products are available, obtain the name and phone number of their local ethanol plant marketing manager, learn how to access product prices and understand product analysis," says Dave Seibert, University of Illinois Extension animal systems educator.

Seibert stresses that producers must also become knowledgeable about the effect of moisture levels and the cost it takes to get products from different plants, consider storage and spoilage possibilities, be able to compare the costs of the various energy and protein sources, and have the ability to formulate and supplement their beef cattle diets.

"You can't just jump into the corn coproduct world without asking whether or not these coproducts fit into your program at home," advises Daryl Strohbahn, Iowa State University Extension beef cattle specialist. "Corn prices are going to continue to be the main factor in determining how you are going to do things."

With that said, Strohbahn adds that beef cattle are uniquely suited to manage corn coproducts in their diets, including distillers' grains from ethanol production. The principal products from the ethanol process are wet or dried distillers' grains, condensed distillers' solubles and combination products of the two, depending on the plant.

Distillers' alternatives

"Corn coproducts from the ethanol industry offer cattle producers a feed resource that is high in protein and superior to its parent grain in energy," he says. "Because the starch is removed in ethanol

production, distillers' grains do not interfere with fiber digestion in rations high in roughage content. Distillers' grains also have good bypass protein characteristics, which enhance their role in growing calf and lactating cow rations."

Strohbahn explains that the rumen is what gives cattle unique digestion capabilities suited for corn coproducts. The rumen physically mixes and breaks down the feed, which allows fermentation to take place. Calling the rumen a "forage digestion system," he notes that while the system may not be the best scenario for feedlot finishing rations that contain large amounts of grain in combination with distillers' grains, the system offers a very positive alternative for cow and stocker diets supplemented with distillers' grains.

"Distillers' grains have a nutrient analysis about three times greater than corn grain, except for the energy value," he says. "Energy estimates vary greatly among feeding rations. Feedlot research shows energy estimates can vary by as much as 40%."

Energy values, fat content and protein

Strohbahn says feed rations higher in distillers' grains generally end with energy estimates in the 110%-120% range of corn grains. Low-level feeding rates end with energy estimates of 140%-150%. In cow rations, he uses a conservative estimate of 125% the energy value of corn, adding that a great deal of the energy is due to the corn oil left in the distillers' grains. He recommends that for beef cow rations, producers not exceed total ration fat content of 5%-6% with distillers' grains.

Strohbahn estimates on the protein side that distillers' grains, even when solubles are added in, tend to range from 28%-36% crude protein (CP) on a dry-matter (DM) basis, or 10-15 percentage units less than 44% soybean meal if compared on a DM basis.

"A distinct difference exists in crude proteins when comparing distillers' grains

to either alfalfa hay or soybean meal, and that is in the degree of rumen degradation to ammonia or the amount which bypasses rumen fermentation," he says. "Distillers' grains have lower degradation rates. Distillers' is absorbed as amino acids for productive functions."

Bypass is important because growing calves and lactating cows have higher protein requirements and need some bypass protein to achieve maximum gains and milk production. Strohbahn says growing calves weighing 350 to 600 pounds (lb.) probably offer the greatest opportunity for using bypass protein from distillers' grains.

"When feeding a ration containing hay, a large portion of the crude protein is degraded in the rumen," he explains. "In lower-energy growing rations for calves, there may not be sufficient energy intake for the rumen microbes to synthesize microbial protein from this degraded alfalfa protein, resulting in protein shortages for the calf.

"Growth rate and efficiency are reduced because protein requirements are not met," he continues. "When distillers' grains are included in the ration, a larger portion of the protein bypasses rumen degradation, supplying the necessary protein for gain allowed by the amount of energy being fed."

Weigh the options

Strohbahn reiterates that producers must weigh these and possibly other factors before entering the corn coproduct world. "As always, when determining if a byproduct feed fits into your production system, consider the delivered purchase cost, efficient storage principles and the ability to incorporate the product into feeding regimens," he says. "Be sure to consider all potential factors prior to making any wholesale ration changes." A7