

Limit-Fed High-Grain Diets

by **ALAINA BURT**

If circumstances such as drought or a poor hay year have you considering feed alternatives, it may be time to revisit Steve Paisley's presentation at the 2003

Range Beef Cow Symposium in Mitchell, Neb.

"There has been a lot of success with limit-fed diets and some opportunities to reduce winter feed costs," the University of Wyoming (UW) Extension beef

specialist told producers at the production-focused biennial conference. (His presentation is available online at www.rangebeefcow.com.)

Limit-fed, high-grain diets consist of limiting the amount of free-choice hay a

cow consumes and replacing that hay with an alternative feed. By reducing the amount of hay, cheaper alternative grains and forages may be used to reduce feeding costs.

Paisley urged producers to balance rations on a protein basis, as well as on an energy basis. For example, soybean meal and corn could be used in combination as a substitute for free-choice hay because the combination would meet both energy and protein needs. Several different feed resources can be substituted to make up a high-grain diet, including corn, distillers' grain, corn gluten and beet pulp.

Points of comparison

Citing several studies conducted by Ohio, Wyoming and Illinois universities, Paisley explained how limit-fed diets compare to feeding free-choice hay.

Studies have shown that cattle on free-choice hay diets lose more weight, on average, compared to limit-fed rations. However, in the second year of the Ohio State University (OSU) study — which was conducted through a colder, harsher winter — body condition scores (BCS) and body weights were lower in the group consuming the high-grain diet.

High-grain feed sources could provide low-cost alternatives to hay.

Paisley explained that this was due to the amount of calories available in roughages, which generate more heat in the rumen during the fermentation process. Better control of body temperature aided the free-choice hay group in maintaining BCS and mature weight by lowering maintenance needs.

On another point of comparison, Paisley noted that cows fed a high-grain ration tended to give birth to calves with heavier birth weights. Studies have shown anywhere from a 4-pound (lb.) to a 7-lb. difference in calf birth weight. Paisley noted that this could be a factor to consider in seedstock operations that strive to keep birth weights low.

Although birth weights differed, calving ease for both groups remained the same, he pointed out. There was no difference in rate of dystocia for the free-choice hay vs. the high-grain diet group. Calf vigor was equal between both groups.

The studies continued throughout the breeding season to provide a clearer picture of how limit-fed high-grain diets affect conception rates. In the studies, conception rates for both groups were about equal, but the cows consuming a high-grain diet actually had a slightly higher rebreeding rate.

Management considerations

University of Illinois (U of I) studies show that in a comparison of whole-shell corn to cracked or rolled corn in the high-grain, limit-fed diet, whole-



A limit-fed, high-grain diet may prove to be a successful alternative to high hay prices or poor-quality hay, says Steve Paisley, UW Extension beef specialist.

early lactation because the cow's nutritional needs are doubled when she calves.

"Occasionally limiting intake may be a good thing," said Paisley in support of limit-fed diets in certain situations. Limit-fed grain rations can be a solution to the problem of high winter feed costs.

Choosing to implement high-grain rations must be determined on how the program

fits an operation. High-grain diets can fit nicely into an operation that uses a feed wagon, has cows in a drylot, and has adequate bunk space. However, it's difficult to accurately and effectively use high-grain rations in range-type situations because the resources are limited.

Through careful management, attention to herd safety, and an eye on the operation's bottom line, limit-fed grain

rations can be a viable option to keeping winter feeding costs low.



Editor's Note: Alaina Burt was the summer editorial intern for Angus Productions Inc. An audio archive, proceedings paper and synopses of Paisley's presentation, as well as the PowerPoint® he used, are available at www.rangebeefcow.com. Access the information by clicking the News:Papers:Audio link on the site's home page.

shell corn was more efficiently utilized. The practicality of cracking corn in a high-grain, limit-fed diet should be a management consideration.

From a management perspective, there are certain behavioral changes that accompany limit-feeding, Paisley explained. With traditional free-choice hay rations, a cow has ample time to consume her feed throughout the day. In a limit-fed situation, the amount of time for consumption shrinks to about 20-30 minutes (min.). This leaves plenty of time for a cow to move about, make noise, find holes in fences and establish a pecking order.

Cows can become quite aggressive on a limit-fed diet; therefore, bunk space must be a consideration, Paisley warned. In the fight to consume as much of the ration available as possible, individual cow consumption may vary, with boss cows consuming more and gaining weight and timid cows eating less and losing body condition. In an effort to curb this behavior, Paisley recommended separating cows into two or three groups — first-calf heifers; thin cows; and mature, healthy cows.

Paisley also recommended keeping a close eye on the group that is being fed a high-grain diet. The group should be started gradually by providing grain in increasing amounts until the cattle are consuming the maximum amount of grain desired in the ration. When cows are consuming both high amounts of grain and free-choice hay, begin to reduce the amount of hay until the ration requirement is met. During this transition period, care must be taken to avoid overfeeding of grain and roughages.

"Consistent and accurate feeding ... is going to improve the success rate of some of these high-grain programs," Paisley said. If for some reason a feeding is untimely, more hay should be offered to compensate a cow's tendency to "crash the bunk." With this diet, it will also be important to consider mineral supplements such as calcium, magnesium and vitamin A. High-grain diets usually lack the calcium often found in free-choice hay or forage diets.

The last key to managing a group of cows on a high-grain diet is to balance the ration according to the stage of pregnancy and early lactation. The ration should be nearly double the amount of grain from late pregnancy to