Winter grazing of stockpiled grass-legume forages to reduce costs of developing beef heifers

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Abstract
Livestock producers looking for ways to cut costs may find that winter grazing offers a viable option.

Keywords
Animal Science, Economics

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Abstract: Livestock producers looking for ways to cut costs may find that winter grazing offers a viable option.

Question & Answer
Q: Is winter grazing of stockpiled grass-legume forages an effective strategy for reducing the costs of developing beef heifers and young cows in Iowa?

A: Even in a winter with above normal snowfall and cover, pregnant two-year cows grazing stockpiled forage required no hay and 16 to 286 lb corn gluten feed per cow compared to 5,195 lb hay and 69 lb corn gluten feed per cow. This decrease in hay feeding to grazing cows reduced winter production costs by $.07 to $.45 per cow per day depending on stocking rate.

Background

In order to be profitable, cow-calf producers in the United States, particularly those with small herds, require management systems with minimal capital investment. While beef herd costs such as operating costs, depreciation, and labor can be reduced, none of these items have as much impact on herd profitability as feed costs, which can account for more than half of beef production costs. Feed costs can be decreased by reducing the amount of stored feeds fed over the winter. (Use of hay as a feed source during the winter entails high machinery and storage facility costs, as well as time and labor for harvest and feeding.)

One effective strategy to cut down on the amounts of stored feeds fed during the winter is to graze grass and/or legume forages that are stockpiled during the late summer and fall. While this tactic has proved to work well with mature cows, it may be less effective for developing heifers and young cows because of their high nutrient requirements and lower feed intakes. Furthermore, because of the nutrient requirements for pregnancy, the total nutrient needs for both spring-calving cows and heifers are greatest during the portion of the year when pasture forage nutrient availability is lowest.

In order to evaluate the virtues of grazing stockpiled forages for winter feeding, a trial was conducted comparing the effects of stocking rate and corn gluten feed supplementation of grazing two-year-old cows to those fed hay and corn gluten in a dry lot.

The objective of this project was to compare the performance of pregnant, two-year-old cows grazing stockpiled grass-legume forage to those feeding on grass-legume hay in years with near or greater than normal snowfall. This was done by:

- Evaluating body weight and condition score changes, forage intakes, and subsequent reproductive performance of young cows grazing stockpiled tall fescue-red clover forage at different stocking rates during winter or fed hay in a dry lot;

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Co-investigators:
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Budget:
$28,612 for year one
• Quantifying the amounts of supplemental corn gluten feed required to maintain an equivalent body condition in young cows grazing stockpiled forage or fed hay in a dry lot; and
• Analyzing the economic costs of systems of maintaining two-year-old cows by grazing stockpiled grass-legume forages or feeding hay with corn gluten feed supplementation.

Approach and methods

Two 30-acre pastures divided into two 6.25-acre and two 8.75-acre pastures at the ISU Beef Nutrition Farm near Ames containing tall fescue and red clover were used in the experiment. The forage was harvested in hay in early June and August. In October of 2003 and 2004, 32 cows in their second gestation were allotted to the pastures according to high and low stocking rates or to dry lots. Cows in the dry lot were fed hay. Corn gluten feed was provided to cows to maintain mean body condition scores of 5 on a 9-point scale (High level) or as a risk management tool in case of excess snow and ice (Low level).

Each pasture was divided into eight paddocks and strip-grazed for 147 days in each year. Forages were sampled and tested. Forage intake was estimated in two cows per pasture using fecal output sampling techniques. Cows were weighed at initiation and termination of grazing, as well as every 14 days within the experiment period. Body condition was scored visually on a nine-point scale at weekly intervals.

An economic analysis of the systems was conducted to estimate winter production costs using a partial budgeting model developed in an earlier winter grazing project.

Results and discussion

At the end of the winter feeding period, body condition scores of cows maintained in the dry lot were greater than those grazing stockpiled forage in year 1, but did not differ in year 2. But at no time were the body condition scores of the grazing cows below their targeted condition scores. Cows maintained in dry lots required an average of 5,195 lb hay DM (dry matter)/cow and 69 lb corn gluten feed DM/cow to maintain body condition. Cows supplemented at the high and low levels of corn gluten feed were receiving 241 and 19 lb corn gluten feed DM/cow.

Conclusions

1. In spite of delaying initiation of stockpiling until early August, the crude protein and in vitro digestible dry matter concentrations of stockpiled forage were lower than those of hay for at least part of the winter feeding period. In year 1, these lower crude protein and in vitro digestible matter concentrations in stockpiled forage seemingly were caused by late summer drought that increased the amount of dead forage. In year 2, the lower crude protein and in vitro digestible dry matter concentrations in the stockpiled forage after December stemmed from weathering losses.

2. Because of the ability to select forage, cows grazing stockpiled forage consumed forage with equal or greater concentrations of crude protein and in vitro digestible dry matter than cows being fed hay.

3. In winters with near or greater than normal snowfall, pregnant two-year-old cows grazing stockpiled forage at .34 to .48 cows/acre for five months needed 16 to 286 lb corn gluten feed per cow with no supplemental hay to maintain body condition compared to 5,195 lb hay and 69 lb corn gluten feed per cow maintained in dry lots.

4. Even in winters with near or greater than normal snowfall, the costs of maintaining pregnant two-year-old cows over winter were $.07 to $.45 per cow per day lower than maintaining cows on a hay and corn gluten feed diet in dry lots, depending on pasture stocking rate and assuming costs of $50/ton for hay and $60/acre pasture rent. The
reduced costs were associated with the decreased amounts of hay fed and lower costs associated with dry lot maintenance.

5. The lack of differences in performance of two-year-old cows grazing stockpiled forage at two stocking rates and supplemented with corn gluten feed at two levels implies that production costs of two-year-old cows may be further decreased by increasing corn gluten feed supplementation of pregnant two-year-old cows.

Impact of results

Previous projects showed that grazing of stockpiled forage was an effective way to reduce winter maintenance costs of pregnant mature cows compared to feeding hay in dry lots. However, because of the higher nutrient requirements, lower feed intakes, and less winter grazing experience of young cows, the efficacy of grazing stockpiled forage for winter feeding of pregnant heifers and young cows needed to be established.

In the winters of 2001-02 and 2002-03, winter grazing showed promise for pregnant heifers. However, snowfall during those winters was far below normal. This project demonstrated that even in winters with near or greater than normal snowfall, grazing of stockpiled forage by pregnant two-year-old cows reduced the costs of maintaining them compared to hay feeding without adversely affecting their body condition. Because there were few differences in body weights of condition scores of cows grazing stockpiled forage at several different testing levels, it seems that winter costs may be reduced even further by increasing the stocking rates and corn gluten feed supplementation of cows grazing stockpiled forage.

Education and outreach

The project was described in Animal Science leaflet R1998 and was covered in a master’s thesis written by Rhonda Driskill. Presentations on this work were given at two field day meetings (one in Ames and one in Taylorville, IL) on grazing and at the Cow-Calf Conference in Pella.

Leveraged funds

No additional funding was secured.