Alternatives for Reducing Forage Acres

Several alternatives may allow producers to manage the same amount of livestock on fewer acres of forage or carry more cows on the acres of forage they have available.

by ***Iowa Beef Center staff***

A 2005 survey of beef-cow operations identified available land as the biggest obstacle to expanding one's herd, but this survey was completed before an increase in corn prices created further competition for pasture or hay land. If there is a shift in acres from forage to corn, will cow numbers decrease — or can the same number of cows be carried on fewer forage acres?

Cow-calf producers who have tillable acres in forage production may be looking at alternatives to decrease forage acres and increase row crop acres. With higher corn prices, pasture and hay land may have higher profit potential if converted to corn production. Plus, pasture rent likely will increase significantly if available pasture acres decrease.

In the short run, producers realize that maximizing the amount of return per acre may not meet their operation's management criteria, including soil conservation requirements and long-term goals. However, there are several alternatives that may allow producers to manage the same amount of livestock on fewer acres of forage or carry more cows on the acres of forage they have available. As with most management decisions, there are tradeoffs between the cost of implementing these alternatives and the potential returns of converting forage acres to corn production.

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►Management alternatives to increase pasture productivity include using legumes like alfalfa.

Management alternatives

Management alternatives designed to increase productivity of pastures include:

1) using fertilizer or legumes to boost production;
2) incorporating managed intensive grazing (MiG); and
3) utilizing more productive species of forage.

Typically, a 30%-40% increase in productivity would be projected by utilizing nitrogen (N) fertilizer or legumes compared to using none. Producers could also expect an estimated 10%-15% increase in productivity by utilizing managed grazing with three to five paddocks or a 15%-25% increase by utilizing five or more paddocks in their grazing system as compared to continuous grazing.

Another alternative might include supplementing cows on pasture or removing the cows from the pasture and feeding them in a lot or sacrifice area during part of the traditional summer grazing period. This system would rest the pasture acres during the late summer/early fall time frame, allowing for increasing stocking rate levels during the early, fast-growing period of the growing season. Producers may want to consider weaning calves at an earlier age when feeding in a drylot situation. The drylot scenarios may work well with other management practices, such as artificial insemination (AI).

Even though this "feeding vs. grazing" scenario can significantly reduce grazing acres during the summer growing season, it is a different mind-set for producers. Utilizing low-cost feedstuffs that meet the nutrient requirements of the cow is key. Potentially higher labor and equipment costs, herd health, and feeding systems must also be considered. To feed a cow nursing a calf for 45 days in July and August, it would require about 1,250 pounds (lb.) of cornstalks or low-quality hay, and 1,150 lb. of wet distillers' grains (WDG). If the calves are weaned, these requirements would be significantly reduced.

Cereal grain silage might also be considered to provide feed for a drylot period. An acre of cereal grain silage would provide about 2.5-3 tons of dry matter (DM) vs. an estimated 0.75 tons of dry matter from a tall, cool-season grass pasture in the July-August time period.

Some producers currently supplement feed on pastures using silage, corn or hay when pasture productivity decreases in

Table 1: Estimate of acres per cow-calf unit[a]

	Bluegrass with N or legume			Tallgrass with N or legume		
Management alternative	<40 CSR	40-60 CSR	>60 CSR	<40 CSR	40-60 CSR	>60 CSR
Continuous grazing	3.5	2.4	2.2	2.3	1.6	1.5
>5 paddocks rotation	2.8	1.9	1.8	1.8	1.3	1.2
Continuous grazing with 5 lb. DM supplementation June-Aug.	3.4	2.3	2.2	2.2	1.5	1.4
>5 paddocks rotation with DM supplementation June-Aug.	2.7	1.9	1.7	1.8	1.2	1.1
>5 paddocks rotation with drylot or sacrifice area July and half of Aug.	2.1	1.5	1.3	1.3	0.9	0.8

[a]One cow-calf unit includes a mature cow and an appropriate number of second-calf heifers, first-calf heifers and yearling heifers and bulls.

Source: Iowa Beef Center.

the summer or dry weather limits forage growth. While supplementation does help to maintain the cow and calf, little is known about the amount of grazed forage saved or reduced.

A forage supplementation option may be to use corn coproducts if these products are cost-competitive. Several demonstrations have been conducted and numerous ongoing studies are currently exploring various levels of coproduct supplementation and the respective effect on the amount of forage consumed by grazing. In the following tables, we have assumed that 1 lb. of dry matter supplemented would replace 0.6 lb. of forage dry matter grazed.

Note that this supplementation strategy has the advantage of not needing to feed every day.

Other management factors, such as calving dates and weaning ages, will affect the demand for forage. Typically, earlier calving dates require less grazed forage but would require more stored feed. For example, a March 1 calving date would require about 8% fewer grazed acres than an April 15 date. Earlier weaning also requires fewer grazed acres, assuming the calves will be fed in a lot after weaning. A mature cow nursing a calf would consume about 1% more of her body weight in dry matter than a dry cow. In general, reducing weaning age from 180 to 150 days would require 5%-10% fewer grazed acres.

Grazing acres required

The number of variables and potential management combinations that are available to individual beef producers is mind-boggling, making the number of alternatives almost endless. We have attempted to simulate a few of these alternatives and estimate the number of acres required to carry a cow-calf pair under various management scenarios. The simulation does not accurately represent any individual operation, since there would typically be a mix of grazing systems, forages and pasture productivity in one operation. It does, however, demonstrate the reduction in acres under different grazing systems and three pasture productivity scenarios.

An individual producer would need to inventory his acres, level of productivity and the management options available to adequately determine acres needed for his or her operation.

In Table 1, bluegrass and tall-grass pastures with applied nitrogen or legumes are represented with grazing starting in late April and ending in mid-October. Continuous grazing and rotational managed grazing systems are included with a supplementation period. The rotational system also includes a drylot or sacrifice area for a 45-day feeding period. Productivity is represented in terms of corn suitability rating (CSR) in an effort to include the effect of soil type. Within each level of productivity there would be a range as well. The simulation in the table would reflect the middle of the range.

The supplementation scenario assumes each pound of dry matter fed replaces 0.6 lb. of forage dry matter that would be consumed through grazing. There is not a great deal of research that has been carried out to document this assumption. The replacement rate may vary with the amount actually supplemented.

The drylot or sacrifice area scenarios assume that the cows are fed stored feed to meet their expected dry-matter consumption and nutrient needs. The time period of July through the first half of August is used to coincide with decreased forage growth. The time period could be altered or extended to match up with weather conditions, especially drier weather. The acres estimated in the table do not take into account producing forage for winter-feeding. In some cases, hay might be harvested early in the season and then those acres grazed later in the season. Hay acres might be replaced with cornstalks and corn coproducts if these products are available at a lower cost than the cost of raising hay.

Conclusion

This article addresses the number of grazeable forage acres required to maintain a beef cow-calf animal unit under various management systems. The grazing system scenarios selected concentrate on management systems that would reduce the number of grazeable acres required while maintaining animal numbers and performance expectations. Individual producers may consider utilizing grazed forages throughout the year, along with crop residues, to minimize feeding stored feed if pasture acres are not limiting.

Other articles in this series address the economics of decreasing forage acres to raise corn, managing cows in drylot systems, managing sacrifice areas, and ration options for cows — including using corn coproducts, cornstalks and traditional feeds.

Editor's Note: *Iowa State University's Iowa Beef Center (IBC) first published this series of fact sheets titled "Cows & Plows" in October 2007. The articles evaluated the management and economics of alternative feed and grazing systems in a time of skyrocketing land values and rental rates, soaring grain prices, and high feed and forage costs. While exact costs represented in the series may differ from today's even higher prices, the derived principles remain pertinent, if not more so.*