

GRAZING SYSTEMS FOR BEEF CATTLE

John Johns

Beef Cattle Extension
University of Kentucky

Beef cattle represent the most important grazing livestock enterprise to Kentucky producers. As of January 1, 2003 there were 1,120,000 producing beef brood cows on 39,000 farms in the state. In addition, more than 600,000 yearling cattle are also produced. The number of total beef animals is increasing as producers put more economic reliance on beef and forage programs. In many cases, beef cattle represent the only practical method of converting high quality forage to income for producers.

Most farm business records programs show that calves sold from beef cow herds will generate sufficient income to cover cash expenses but a net return over all expenses is generally met only in times of very high calf prices. Data from the latest summary of the Kentucky Farm Business Management Program and SPA summaries from Michigan and Illinois for beef cow enterprises are shown in Table 1. Feed costs which include purchased feed and the fair market value of home raised feed compose the majority of the costs of maintaining a cow yearly. Forage, either grazed or harvested and stored for later feeding represents the basis of beef cow feeding programs. Farm produced forages are generally less expensive to feed than purchased feeds. Farm harvested forages which are stored for later feeding represent a much greater expense than systems that allow the cow to meet her nutrient needs through grazing. Grazing requires much less labor than feeding stored forages and can be done at a much lower cost to the producer. The goal of this presentation is to discuss how to achieve the goal of grazing more and feeding less stored feed. What to graze and how to graze will be the focus.

State	Kentucky	Illinois	Michigan
Feed cost, purchased and home raised, \$	191	227	238
Non-feed, cash costs \$	141	142	156
Total cash and value of home raised feed \$	332	369	394
Feed as a % of total	57.5	61.5	60.4

Beginning grazing earlier in the Spring can make major savings in hay costs for producers. The use of nitrogen fertilizers early in the Spring can increase the green-up and accelerate growth of cool season grass or small grain pasture. This management

practice has been shown to allow grazing to begin as much as 1 to 2 weeks earlier than normal. A two week saving of hay feeding would be a significant savings in costs and labor. Small grains and other forages deserve a closer examination by producers interested in early grazing. Rye is the best small grain for grazing. The variety Winter King is winter hardy and will begin growing very early in the spring. In tests at Lexington, this variety had made 20 inches of growth and produced 1.5 tons of dry matter per acre by April 10. By April 21st, boot stage had been reached with 2.5 tons of dry matter per acre produced. A few acres seeded to this variety and intensively grazed would provide much earlier grazing than normally experienced. A word of caution is necessary, however. Small grains are very prone to causing Grass Tetany in spring calving beef cows. If a small grain is used to begin the grazing season early, a high magnesium mineral must be provided to the spring calving cow herd. Ryegrass, either annual or perennial, is a cool season grass that also begins growth very early in the spring. Tests at Lexington have shown a dry matter yield of 1.6 tons by April 7. Working these into a grazing system can allow grazing to start at least two weeks earlier than normal.

The most difficult time to maintain performance of grazing cattle is in mid to late summer time. Cool season plant growth has slowed greatly due to increasing temperature and less rain. There are two very viable alternatives for maintaining high levels of productivity on grazing during this period. Warm season perennial grasses make up to 75% of their growth during mid-summer. Just as the cool seasons are slowing down and becoming less palatable, the warm seasons are hitting their peak. Warm season grasses of interest in Kentucky are the bluestems, bermudagrass, switchgrass and eastern gamagrass. Each requires good management but each also provides a good alternative to summer grazing of cool season forages, especially fescue. A second alternative for summer grazing is alfalfa. Alfalfa is high yielding and provides an excellent quality forage for cattle. Stocker cattle are easily capable of 2 pounds ADG in summer on alfalfa. Milk production will be increased for lactating cows resulting in more pounds of weaning weight. Field demonstrations with stocker cattle grazing alfalfa generally have resulted in over 500 pounds of animal gain per acre.

Extending the grazing period through late Fall and as far into winter as possible will greatly reduce feed and labor costs for the cattleman. Several alternatives such as stockpiled fescue, brassicas and standing corn are possible to extend the grazing season. Stockpiled fescue is the most readily available for Kentucky producers. Fescue quality actually improves in the fall and excellent performance can be experienced on both weaned calves and mature cows, tables 2 and 3. When weaned calves are grazed from early November until the middle of December, daily gain has been 2 pounds or better. Gain will decrease as grazing continues beyond this point due to increased deterioration of the accumulated grass with freezing and thawing. However, quality of forage can still be excellent for dry beef cows. In table 3, cows were grazed from early November to mid-February. Stocking rate was 1.3 cows per acre. The cows actually gained 119 pounds during this period which is the equivalent of one and one-half body condition scores. During this time only 564 pounds of hay per cow were fed due to snow and ice covering the grass. The equivalent of 10 square bales

per cow for the majority of the winter! Stockpiled fescue can greatly increase the grazing period and reduce the overall feed costs to the farm.

Table 2. Feeder Cattle Performance Grazing Stockpiled Tall Fescue		
Trial	Grazing Days	ADG, lbs
KY 1982	59	1.27
KY 1985	57	1.15
KY 1986	56	2.00
OK 1986	42	2.13
KY 1990	63	.97
IL 1992	56	1.76

Table 3. Performance of Beef Cows Grazing Stockpiled Tall Fescue - 4 Year Summary	
Grazing Dates	11/6 until 2/10
ADG, lbs	1.24
Stocking Rate/Acre	1.33
Total Gain, lbs	119
Hay/Cow, lbs	564
Kentucky Progress Report 282, p. 11 and 12	

Brassicas are fast growing, easy to establish crops that will produce high quantities of excellent forage/feed for beef cattle. They are generally rather cold tolerant and can extend the grazing season. Results of a field trial from Ohio are shown in table 4. In this demonstration, turnips were drilled into 4.3 acres of pasture in early August. The area was ready for grazing in 84 days. By strip grazing, this small acreage provides sufficient forage for 28 cows with their calves for 45 days. Considering all costs of establishment, fertilization and labor, costs were 17 cents per cow per day for the grazing period. Several forage brassicas are now available and are well adapted to Kentucky. Bloat can be a problem when grazing brassicas thus a bloat preventative such as Rumensin should be provided to cattle when this forage crop is utilized.

Table 4. Grazing Brassicas in Ohio
4.3 acres of Turnips with a yield of 10,306 pound dry matter per acre
28 cows with calves at side used to graze
Grazing days = 45
Cost per cow per day = \$.17

Standing corn can also be used to extend the grazing season. While several trials have been conducted with stocker cattle, the best use may be for winter grazing of beef cows. A demonstration in Greenup County, Kentucky (table 5) has shown promise. In this demonstration, 25 cows with large calves at side were used to graze down 3 acres of standing corn. The field was strip grazed and lasted for 35 days. Cows were able to maintain their body weight and body condition score even with large calves. Calf rate of gain was 1.29 pounds daily. Expressing the total weight as animal units shows that the 3 acres of corn provided 1,534 animal unit grazing days. With establishment cost of \$150 per acre, the grazing cost per animal unit day was \$.293. A considerable savings over a hay based feeding program.

Table 5. Grazing Corn with Cows and Calves - Greenup County Demonstration
Three acres of standing corn, yield 229 bushels per acre
Twenty five cows with calves at side
Grazing days = 35
Cow initial wt = 1243 lbs; final wt = 1245 lbs
Cow initial BCS = 5.5; final BCS = 5.3
Calf initial wt = 511 lbs; final wt = 556; ADG = 1.29 lbs
1,534 Animal Unit grazing days
Cost per AU day = \$.293

The final consideration in extending grazing is actually how we allow animals to graze the pasture. If we can cause the cattle to utilize more of the pasture and waste less, we can graze longer and feed less stored feed. A 3 year summary of research at Georgia comparing continuous with rotational grazing allowed more cattle to be carried per acre and 29% less hay to be fed on the rotationally grazed treatment. There was no effect on calf weaning weight or cow pregnancy percentage due to the grazing system.

Keeping as much high quality forage in front of cattle at all times and using a system that will increase the amount of that forage utilized by cattle can maintain production and reduce winter feeding costs. Producers can increase farm income through better management of their cattle and their forages.