

# DOES GRAZING METHOD MATTER?

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Interest in and opportunities for grazing continues to increase not only in Kentucky, but throughout the U.S. In Wisconsin, 12% or approximately 5000 dairymen are now using grazing. In Michigan, over 40% of the dairymen are using grazing for a significant part of their feed requirements. Over 15% of these dairymen are using intensive grazing. Similar numbers exist for Pennsylvania.

Research and demonstrations have also increased dramatically in the past few years. Pennsylvania State University has made a major change in their forage-livestock research program with major emphasis currently directed toward grazing. Research in Pennsylvania has shown that grazing results in milk being produced at \$1.00 per hundred cheaper than traditional confinement and a return of \$153.00 more per cow per year.

Researchers at the University of Georgia compared continuous with rotational grazing over a two year period. Rotational grazing resulted in a 38% increase in stocking rate and a 37% increase in pounds of calf gain per acre. In addition, pounds of hay fed per cow was 32% less for rotational over continued grazing. Workers at Purdue University compared animal performance with different levels of pasture management. Low maintenance was continuing grazing with no fertilizer or legumes. Moderate maintenance required temporary fence to separate pasture in half and adding some clover. Intense management required dividing the pasture into five subdivisions, adding adequate levels of fertilizer and renovating with legumes. Results showed a dramatic response to level of management. Weaning weights, grain per acre and net return per acre showed a dramatic increase with each level of pasture improvement.

Missouri workers compared stockpiled tall fescue to round bale fescue hay for late fall early winter feed. Cost to feed a mature, pregnant beef cow was 71.32 cents per day from the hay and 31 cents a day for grazing stockpiled tall fescue.

Michigan workers compared grazing to traditional grain-silage-hay feeding and found a \$78 per cow per year savings for the grazing program. Pennsylvania workers showed that rotational grazing resulted in \$100 more net income per cow compared to continuous grazing.

In Tennessee, researchers studied total crop and livestock programs in a whole farm setting and found grazing alfalfa to be more profitable per acre than cash hay on other row crops grown.

In Kentucky, rotational grazing showed increased gains per acre from 300 to over 800 lbs compared to continuous grazing. Record beef production per acre of 1354 was achieved by grazing alfalfa-grass using rotational grazing.

In addition to some of the numbers above, several other studies have shown that controlled grazing usually provides greater returns than continuous grazing. First nutrients in pasture and usually ¼ to ½ the cost of those same nutrients in stored feed (Table 1).

Table 1. Relative economic efficiency of supplying a unit of digestible energy to ruminant livestock.	
	Cost Ratio
Grazed pasture	100
All hay	160
Alfalfa hay	152
Timothy hay	161
Silage	195
Dehydrated forages	320
Grain and concentrate	457
SOURCE: USDA and Agricultural Canada	

## Grazing Methods

Several grazing methods have been developed to accomplish various objectives. Low cost, high voltage electric fences have made it much more feasible to implement a variety of grazing methods that reduce pasture waste, conserve surplus forage as hay or silage, and possibly increase forage quality for the grazing animals. The objective of a grazing method should be to manage the pasture and other feed inputs to efficiently produce animal products. Effectively managing forage quantity and quality over the grazing season is the ultimate challenge.

Grazing methods are of two general types: continuous and several variations of intermittent grazing. They vary from simple to complex (Figure 1).

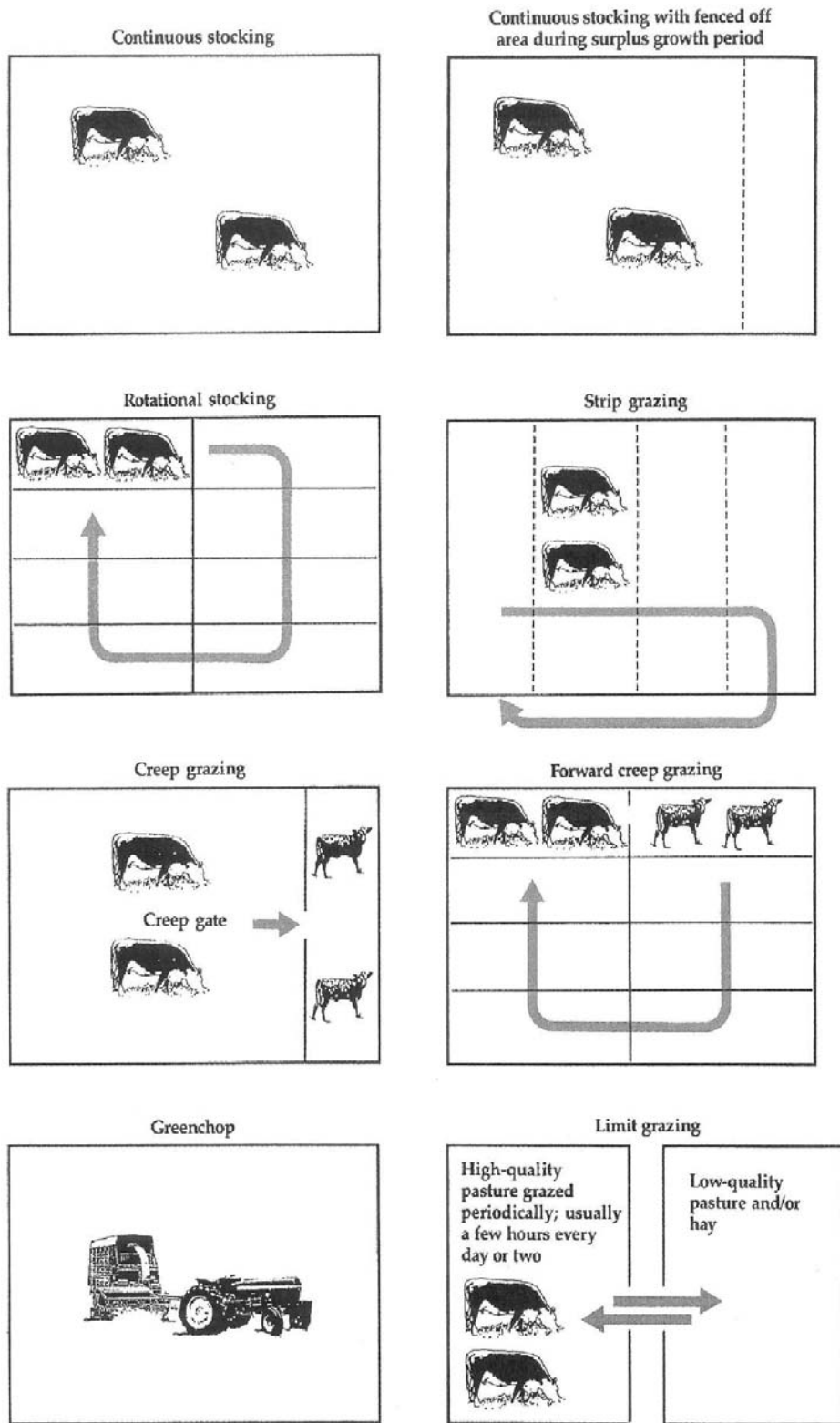


Figure 1. A variety of grazing/harvest methods may be used successfully. (SOURCE: Southern Forages, 4<sup>th</sup> Edition. 2007.)

**Continuous Stocking (often referred to as continuous grazing).** Animals are maintained on a single pasture unit during the grazing season. This method allows animals to selectively graze unless the stocking rate is too high. If animal numbers or pasture size are not adjusted as pasture conditions change, this method may result in some plants being undergrazed and others being overgrazed. Also, without adjustment, the stocking rate may be near ideal part of the time and too high or low at other times during the grazing season. Pastures may be set-stocked with a fixed number of animals, or numbers may be adjusted to fit the feed supply over the grazing season. Adjustment of the stocking rate as needed greatly improves forage utilization. A temporary fence is sometimes used to close off part of a continuously stocked pasture during periods of surplus growth. This allows accumulated forage to be harvested for stored feed.

Continuous stocking has often been incorrectly equated with overgrazing and poor management. A continuously stocked pasture can be just as productive and efficient as any other method provided that available forage is controlled by adjusting stock numbers as needed. Continuous stocking can encourage a high number of grass tillers to maintain pasture stability and production over a long period of time.

Certain plant species such as johnsongrass, big bluestem, indiagrass, and switchgrass are not suited to continuous stocking unless the stocking rate is low enough to maintain 6 to 8 inches of leaf tissue. Stands of conventional hay-type alfalfa varieties will weaken and die under continuous close stocking. However, grazing-tolerant alfalfa and sericea lespedeza varieties will persist under moderate continuous stocking, though rotational stocking will provide increased forage utilization and lower the likelihood of weed encroachment.

*Creep Grazing.* This method allows young animals to pass through a fence opening or creep (Figure 2) to a special small pasture of higher quality forage (such as pearl millet, small grains, chicory, clover, or alfalfa) than the lower quality pasture where their mothers are maintained. This is particularly effective in summer when low forage availability restricts gains and when nutritive quality of a perennial grass pasture is low (Table 2).

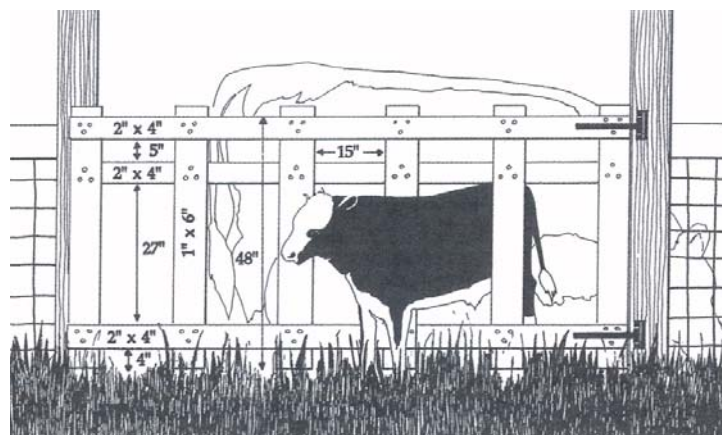


Figure 2. A creep gate allows calves, but not their mothers, to have access to high quality pasture. (SOURCE: Southern Forages, 4<sup>th</sup> Edition. 2007.)

Table 2. Creep grazing of beef calves on pearl millet from June-September (104 days) when cow-calf pairs were maintained on tall fescue pasture in northern Alabama.		
	Control	Creep grazing
Calf weight gain, lb	1.44	219
Calf average daily gain, lb	1.38	2.10
Cow weight change, lb	-60	+27
Source: E.E. Thomas, J.T. Eason, D.M. Ball, and B.G. Ruffin. Alabama Agric. Exp. Stn. Highlights Agric. Res. Vol 30, No. 2.		

With beef cattle, calf gain increases and cow condition is often improved with creep grazing. This is a relatively inexpensive system as it requires only a small area of high quality pasture for the young growing animals. Creep pastures should be close to water or loafing areas so calves will utilize the high quality forage.

**Forward Creep Grazing.** This method allows calves or lambs with a high nutrient requirement to pass through an opening in the fence to graze fresh ungrazed pasture ahead of their mothers in a conventional rotational method. A creep gate or a single stand of electric fence positioned at the correct height to allow calves, but not cows, access to a higher quality paddock can be highly effective in creating a creep pasture.

**Strip Grazing.** Movable electric fence is used ahead of and sometimes behind the animals to ration daily forage. This method results in high forage utilization and is most effective with excellent pasture during cool weather when nutritive quality declines slowly. With low-quality forage, animal daily gains may suffer with strip grazing because of reduced selectivity. This method is especially valuable for minimizing waste when grazing stockpiled tall fescue during late autumn and winter.

**Limit Grazing.** Maintaining livestock on lower quality pasture, but allowing them access to a high quality winter annual pasture for a few hours each day or every few days, can reduce waste from trampling. This method is often used in the lower South where beef cows are kept on frosted bermudagrass or bahiagrass pasture during winter and fed low-quality hay, but allowed periodic access for a few hours each day or every few days to high-quality rye, wheat, and/or annual ryegrass pasture as a protein supplement. This provides good nutrition at relatively low cost as the area needed for winter annual pasture is relatively small.

**Greenchop.** Green forage is chopped mechanically and fed to livestock. This method reduces waste by grazing animals so that more animals can be fed per acre, but forage selectivity is reduced, and individual animal output is often lower. Equipment costs are high with the method. Forage often is not harvested at optimum growth stage, lowering nutritive quality. Also, daily harvesting can be difficult, especially in winter when rain results in wet soils and poor field conditions.

**Deferred Grazing or Stockpiling.** This is an excellent way to reduce hay feeding costs by grazing during early and mid winter the grass that was left ungrazed during autumn. For example, tall fescue fertilized in late summer or early autumn can

be allowed to grow and accumulate forage until needed. Stockpiled tall fescue will usually contain 14 percent crude protein and over 60 percent digestible dry matter and maintains this high nutritive quality well into the winter. Unfortunately, stockpiled endophyte-infected tall fescue will still have some toxic properties, but the effect on animals is less severe during cool weather. Orchardgrass is less well suited for stockpiling as it makes less autumn growth and deteriorates more in winter. Warm season grasses such as bermudagrass or bahiagrass can also be stockpiled and grazed after frost, but nutritive quality is lower than tall fescue, and leaf quality deteriorates more quickly. Continuous stocking of stockpiled grass will result in a high percentage of the forage being trampled and wasted. Strip grazing with a movable electric fence is a useful way to ration daily forage for cattle and reduce waste.

**Rotational Stocking (often referred to as rotational grazing).** The pasture is subdivided into several paddocks and for a particular subdivided area, a rest period follows each grazing period (Figure 1). The number of paddocks may vary from only a few to 12 or more. A high stocking rate is imposed on a paddock for a short time, generally no more than seven to 10 days. Animals are then shifted to another paddock.

During periods of surplus growth, one or more paddocks may be harvested for hay, haylage, or round bale silage while animals are rotated through other paddocks more quickly. When grazing animals are given access to a fresh pasture, the best quality forage is consumed first. Therefore, moving animals more quickly when pasture growth rates are high provides top quality forage to the livestock while helping to prevent excess forage accumulation in any of the paddocks.

A major advantage of rotational stocking often is increased carrying capacity, which may be 20 to over 30 percent higher than obtained with continuous stocking. This is mainly a result of less wasted forage from trampling as well as increased leaf growth. Some studies have shown little or no increased production as a result of rotationally stocking winter annuals. However, when high quality wheat-annual ryegrass no-till planted in bermudagrass was grazed during the cool season in Arkansas, steer gain/A was increased about 40 percent as a result of improved carrying capacity, while steer average daily gain was not affected. In this case, three- and 11-paddock systems gave similar results. However, during the warm season on bermudagrass there was no improvement in gain per acre with rotational stocking. Average daily gain trended downward. Rotational stocking often reduces the opportunity for animals to select only the leafiest forage, thus decreasing the overall quality of forage ingested and sometimes lowering individual gains. This is especially true on low-quality warm season perennial grasses such as bermudagrass and bahiagrass. Small grains and annual ryegrass are highly palatable. Their nutritive quality remains high over the grazing season, allowing animals to maintain high performance, regardless of grazing method, if stocking rate is appropriate.

A variation on rotational stocking is to give first access in a paddock to animals having high nutritional requirements such as growing steers or lactating dairy cows, followed by animals with lower nutritional requirements. This is referred to as forward grazing. For example, steers or heifers with high potential for gain can be allowed to graze a paddock first, followed by beef cows that utilize the remaining lower-quality

forage. This method maintains high gains on the young animals and removes the old residue to stimulate new growth of high-quality leafy forage while the pasture is rested. This approach can also be used with lactating dairy cows followed by dry cows or replacement heifers.

## **Summary**

Much skill is required to obtain optimum or near optimum animal production from pastures. It is one thing to produce forage, but efficient utilization is usually a greater challenge. In order to provide adequate quantities of good quality forage and economically convert it to animal products, good grazing management is essential. It involves frequent observation of pasture height, forage available, and periodic adjustment of stocking rate or movement of animals as needed.

The choice of grazing method to be used depends on the individual farm and the livestock producer. Continuous and some form of intermittent stocking such as rotational or creep grazing may be used on the same farm for different livestock enterprises or at different seasons of the year. Different methods are not mutually exclusive, and one is not necessarily superior to another.

A grazing method is a tool that allows a producer to efficiently and profitably harvest the forage with livestock and maintain the pasture in a productive state. Each method requires management control to be successful. This involves variable stocking rates that may be achieved by altering animal numbers per acre, altering the size of the land area to a fixed number of animals, harvesting surplus forage as hay, haylage, or round bale silage, and/or mowing excess growth in a pasture.

Each grazing method has advantages and disadvantages. A producer must select the one(s) that best suits a particular situation. This varies, depending on the type and class of livestock, pasture species, resources available, and objectives of the operation.

As you plan and prepare your beef feeding program, let me encourage you to consider using more of your pasture over a larger time of the year in as high a quality form as possible. Also, make plans to have adequate amounts of quality hay and/or silage to meet animal needs when we have no opportunity for grazing.

## **Reference**

D.M. Ball, C.S. Hoveland, and G.D. Lacefield. 2002. Southern Forages - Third Edition. Potash & Phosphate Institute and the Foundation for Agronomic Research, Norcross, GA.