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## **Impact of Grazing Methods on Forage and Cattle Production**

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Grassland covers about 10 million acres in Florida and most of this area is grazed by beef cattle. Rapid urbanization is reducing grassland area and may force beef producers to use pastures more efficiently. Stocking rate is one of the most important grazing management decisions, and it is defined as the amount of land allotted to each animal during the grazing season. Once stocking rate is decided, grazing method can be used as a management tool to increase the efficiency of forage and animal production.

Grazing methods include rotational or continuous stocking. They are also popularly called "rotational or continuous grazing".

Rotational grazing can be defined as a grazing method that utilizes recurring periods of grazing and rest among two or more paddocks in a grazing management unit throughout the period when grazing is allowed. Continuous grazing is a method of grazing livestock on a specific unit of land where animals have unrestricted and uninterrupted access throughout the time period when grazing is allowed. Rotational grazing has shown advantages over continuous grazing in several measures of forage and beef cattle production. Some of the benefits of rotational grazing are described below.

Regrowth after defoliation is driven by residual leaf and carbohydrate reserves that will supply energy for the plant. Rotational grazing with the correct stocking rate allows maintaining adequate stubble height and carbohydrate reserves that will maximize forage regrowth. Rotational grazing with 1, 3, 7, and 21 days of pasture occupation (21-day rest period between grazings) resulted in greater forage production than pastures that were grazed continuously on bahiagrass pastures.

**Table 1. Herbage accumulation rates on rotationally grazed pastures with different grazing periods (rest period of 21 days for all) and under continuous grazing during 2001-2003. Adapted from Stewart et. al. (2005)**

Treatment	Herbage accumulation (lb of DM per acre per day)
Rotational	
1 day	58
3 day	61
7 day	64
21 day	67
Continuous	37

In addition to increased regrowth rates, rotational grazing at the proper stocking rate also aids in pasture persistence by allowing better stubble height control. Controlling target stubble height on rotationally grazed pastures is important, not only to maximize forage regrowth, but also to extend the life span of the pastures. Overgrazing can result in loss of desirable species and an increase in weeds. Target stubble heights for persistence of different warm-season grasses are shown in Table 2.

**Table 2. Target stubble height for persistence of rotationally grazed warm-season grasses in Florida. Adapted from Mislevy, 2002.**

Species	Target stubble height (inches)
Bahiagrass	2
Bermudagrass	3-4
Stargrass	6-8
Limpograss	8-10

Results from Florida studies confirm the beneficial effect of rotational grazing on

persistence of some grasses. For example, Callie bermudagrass pastures were rotationally or continuously grazed for two years at the same stocking rate. Pastures contained 90% Callie and 10% common bermudagrass at the beginning of the study. After two years of grazing, Callie percentage was 86% in rotationally grazed pastures and 62% in continuously grazed pastures. Callie persisted better under rotational grazing because during the rest period between grazings it grew taller and shaded common, while under continuous grazing the lower-growing common bermudagrass was not shaded nearly as much.

Rotational grazing has the potential to increase grazing efficiency, the percentage of forage produced that animals actually consume. In continuously grazed pastures, a greater proportion of forage is trampled, soiled, and rejected by the animals than in rotationally grazed pastures.

Forage nutritive value is usually not affected by grazing method. In Florida, bahiagrass crude protein, phosphorus, and digestibility were not affected by grazing method or length of the grazing period of rotationally grazed pastures from 2001 to 2004.

In general, grazing method does not affect average daily gain of beef cattle grazing warm-season grasses; however, the greater forage production and utilization allow greater stocking rates that typically result in greater liveweight gain per unit of land.

Grazing cattle retain approximately 20% of the nutrients ingested from forages and the remaining 80% is excreted through feces and urine. Feces and urine are important sources of nutrients for forages, mainly for grazing systems with low inputs. However, in warm climates, the animals tend to concentrate their excreta close to water and shade. Under continuous grazing in warm climates, animals deposited 80% of the excreta in 30-40% of the pasture area. Rotational grazing increases the uniformity of distribution of the excreta.

At times of increasing fertilizer costs, better distribution of the excreta likely results in improved use of the nutrients by forages and may reduce the amount of commercial fertilizers used in the long run.

Rotational grazing allows producers to make management decisions based on the variability in forage production and animal requirements. During the months of the year with excessive forage production, rotational grazing allows some pastures to be deferred and used for hay production or stockpiled forage for the winter. In addition, the producer utilizing rotational grazing has the opportunity to better match animal requirements with the pasture's ability to supply nutrients. Animals with greater nutrient requirements (i.e., replacement heifers, first calf heifers) can have access to pastures first and graze the greater nutritive value forage. They can be followed by cattle with lower nutrient requirements (i.e., mature cows). Lastly, the periodic handling of the cattle permits managers to inspect the herd frequently so that timely herd management decisions can be made.

The main disadvantages of rotational grazing compared with continuous grazing include:

- initial investment on fences, water, and feed bunks
- labor availability to move the animals
- more management decisions

No single grazing management program will be appropriate for all forages in all environments. Because of the likelihood of greater pasture production and persistence, rotational grazing has potential to increase animal production on beef cattle operations in Florida. The choice of grazing method will depend on individual characteristics of each beef cattle enterprise including the forage being grazed, the stocking rate used, and the economics of production. In general, rotational grazing will be most needed when stocking rates are high or the forage being grazed requires more careful management for long-term survival (e.g., stargrass and limpograss).