Management Intensive Grazing

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Livestock producers can be viewed as "grass farmers." They produce the best quality and quantity of forage on a piece of land and harvest the forage with livestock. The level of productivity depends not only on how much forage is produced, but how efficiently it is harvested.

Grazing animals select the most desirable plants and avoid others. The composition of the diet they select will be more nutritious than the composition of the forage available. Selective grazing was essential to free-roaming animals prior to the fencing of the Great Plains. It allowed them to remain healthy and reproductive. Animals traveled in large herds over vast areas, which allowed forages to recover after grazing. This rest period was vital to forage survival.

Today, however, livestock are confined to a given area of land for a specific length of time. Grazing management focuses on the relationship between animal numbers, amount of land, and time. The way producers use these three variables determines the efficiency of the forage harvest.

What is overgrazing? Contrary to conventional wisdom, it is not the result of too many animals. It is damage to a plant that reduces the plant's ability to function normally. It occurs on a plant-by-plant basis. Damage is caused by the frequency rather than the severity of grazing. A plant can be overgrazed only when it is growing on stored energy.

Continuous Grazing

Continuous grazing is the most widely practiced form of grazing. Its popularity is based on ease of use and possibly tradition. One pasture is used during the year or a particular growing season. The stocking rate is set to ensure the availability of forage during the growing season. Under- or overstocking will occur because of the variability in rainfall and forage production.

During periods of fast forage growth, consumption can not keep up with production, resulting in poor forage utilization. Some of the forage is allowed to mature and becomes less palatable. Animal performance will be good, however, because livestock can select the more palatable forages. During periods of slow forage growth, consumption exceeds production. Animals overgraze the more palatable forages and are forced to consume the less palatable forages. The result is poor animal performance and poor forage utilization. The long-term effect of continuous grazing is replacement of preferred forages with less desirable forages or weeds.

Management Intensive Grazing

This approach emphasizes management rather than the system or its components. Controlled grazing (also known as rotational or management intensive grazing) is the process of moving a herd of livestock from one pasture to another and allowing each pasture a

period of rest before it is grazed again. This form of grazing management is gaining popularity because of the need to increase production efficiency to cover the high cost of land, labor, and operating expenses. Changing from continuous to controlled grazing allows livestock producers to (1) increase stocking rates, (2) extend the grazing season, (3) increase nutrient recycling, (4) decrease labor, and (5) improve animal health and potentially lower parasite loss.

In contrast to continuous grazing, controlled grazing requires a higher level of management. The efficiency of the grazing system depends on the amount of time, labor, and money invested in it.

The management of a controlled grazing system revolves around the period of rest plants receive during the growing season. During the rest period, plants are allowed to recover from grazing and produce new growth.

The length of rest varies with season and forage species and is based upon the amount of aboveground growth (residual dry matter) remaining in the pasture after the animals are removed. Pastures will recover faster and produce more usable forage when sufficient residual is left at the end of the grazing period.

Productivity

Forage utilization rates are between 50 and 85% in controlled grazing systems. Generally, higher rates are not recommended because a certain amount of green forage needs to remain in the pasture as residual. The old rule of thumb – take half, leave half – applies here. With continuous grazing, the utilization rate is about 30 to 35%. Rates are higher in controlled grazing because of higher stock densities.

A study from the University of Minnesota emphasizes this point. It looked at grazing treatments and their effect on total annual production. Pastures were grazed to 2-4 inches, 4-6 inches, and 6-8 inches of residue. Pastures that were grazed down to 6-8 inches of residue produced 5.5 tons of forage/acre/year over the three-year study. Pastures grazed down to 4-6 inches produced 5.4 tons/acre/year, but pastures grazed down to 2-4 inches of residue produced only 4.7 tons/acre/year. The pastures used in the study contained cool-season grasses (smooth bromegrass, bluegrass, and quackgrass) and legumes (alfalfa, red clover, and birdsfoot trefoil).

The *grazing period* is the amount of time livestock spend in each pasture. It can be calculated by subtracting one from the number of pastures and dividing this number into the rest period:

Grazing Period = Rest Period ÷ (Number of paddocks – 1)

The grazing period influences the utilization rate. A short grazing period yields a high utilization rate. This inverse relationship exists because livestock trample the forage and foul it by depositing manure and urine. Moving livestock each day allows better forage utilization but may not be practical from a management perspective. The design of the grazing system should be flexible.

When designing a grazing system, the first decision is the number of pastures. A minimum of 12 pastures per herd is recommended to effect changes in grass diversity. If resources are limited, a smaller number of pastures is acceptable. The greater the number of pastures, the higher the stock density and the better the utilization rate will be.

If the number of pastures is constant, the *rest period* is controlled by the number of days the animals stay in each pasture. If there are 12 paddocks in the grazing system and it is determined that they need 33 days rest, the grazing period is 3 days.

Grazing period = Rest Period ÷ (Number of paddocks – 1)
3 = 33 ÷ (12 – 1)

As the number of pastures is increased, the grazing period becomes shorter.

Stock density may need to be adjusted if 50 to 70% of the forage is not being used or there is not enough available forage. *Stock density* is calculated by dividing the number of animal units by the number of acres per pasture and multiplying by the grazing period.

Stock Density = Animal Units ÷ Acres per Pasture x Grazing Period

or

Stock Density = (Available Forage x Utilization Rate) ÷ (Daily Intake x Grazing Period)

= Animal Units OR Pounds of Live Weight per Acre per Day

Stock density can be adjusted by increasing or decreasing (1) the number of pastures, (2) the number of animals, or (3) the grazing period. Increasing the number of pastures and maintaining the same grazing period and stocking rate increases the stock density on each pasture but does not allow utilization of all of the available forage. Increasing the grazing period produces the same result. Stock density is increased, but the utilization rate may not be increased because of the fouling effect livestock have on forage. The shorter the grazing period, the better the utilization rate will be.

An alternative to increasing livestock numbers is to put up hay to harvest excess forage. Multiple paddocks allow producers the flexibility to set aside paddocks for hay production and the appropriate rest period can be maintained. During periods of slow forage growth, all pastures would still be grazed.

Kerr Center Experience

Heifer Management Area

The Kerr Center started a research program in 1996 to evaluate different heifer development strategies. This area is broken up into three different sections, each utilizing a rotational grazing program. The total acreage is 280 acres, currently broken into 40 paddocks. Some variability exists in size of pastures, but generally each paddock is approximately seven acres. Heifers enter the system weighing approximately 525 lbs., and reach 840 lbs. in a year's time. Therefore, the average weight is 682 lbs. or .682 AU. Using our first equation, we therefore have a stock

density of 17 AU per acres, with a range from 10 to 21 AU per acre.

The length of the grazing period usually never goes past two days. Generally, cattle move on a daily basis when grass is growing rapidly and slow down when growth is slow.

Because these areas have been managed for research, the grazing rules have not always been followed to optimize pasture conditions. Weighing cattle and working cattle dictate where cattle have to be during parts of the year.

Beaver Bottom Rotation

The Kerr Center started practicing controlled grazing in 1988. We selected 300 acres that were permanently fenced into 13 paddocks along the Poteau River. Each pasture consisted of 15 to 45 acres. In 1988, the forage composition was 60% tall fescue, 27% bermudagrass, 11% ladino clover, and 2% other forages. We had been running 100 head of cow-calf pairs on this acreage. In smaller pastures, we noticed excellent forage utilization, and in the larger pastures, poor utilization.

In 1990, some of the larger pastures were subdivided with semi-permanent electric fencing. This increased the number of paddocks to 17, with 11 to 26 acres in each. Livestock numbers varied from 100 to 150 head.

The grazing period was two to four days per paddock. Cattle moved when approximately 60% of the forage was utilized. We controlled the rest period by the number of pastures available for grazing. During slow forage growth in late summer and winter, all paddocks were available. The rest period ranged from 32 to 64 days, depending upon the production phase. During fast forage growth in spring and early fall, 12 paddocks were available, and the rest period ranged from 22 to 44 days. The remaining paddocks were set aside for hay in the spring and for stockpiling fescue in the fall.

Stock density ranged from 12 to 18 AU per acre, depending upon the grazing period and the number of cattle. We changed stock density by increasing or decreasing cattle numbers. During spring and winter, paddocks were wet and required lower stock densities. Stock density was increased during summer and fall.

See these additional Kerr Center resources related to management intensive grazing:

- *Resources: Forage and Pasture Management*
- *Programs: Cattle and Management Intensive Grazing*