W 1030

Grazing Management Principles for Beef Cattle

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Why is Grazing Management Important to a Successful Cattle Operation?

Employing improved grazing management practices can be beneficial to cattle operations for a number of reasons including improved forage utilization, decreased feed costs, better forage persistence, more uniform manure distribution, improved water quality, and decreased soil erosion. Proper management of pastures, and in turn, cattle, may provide improved animal performance by matching cattle nutrient requirements with pastures of appropriate quality and forage availability.

The Balance Between Plant and Animal

Grazing management practices can affect both the quality and the persistence of the plant, as well as the performance of the animal. It is important to find an optimal balance to favor plant persistence while ensuring desirable animal performance.

Goals of Grazing Management

1. Improved grazing efficiency
2. Reduce pasture waste
3. Conserve surplus forage
4. Increased animal performance
5. Improved forage quality at the time of use

Forage Quality and Plant Growth

The forage growth curve is an S-shaped curve, with a slow rate of growth at the beginning, a transition into rapid growth and slow growth at the end (Figure 1). While forage quality is affected by species, climate, soil fertility and grazing method, stage of maturity at the time of grazing has the largest influence. Each forage species will have a unique growth distribution; however, plants generally will go through each of these stages.

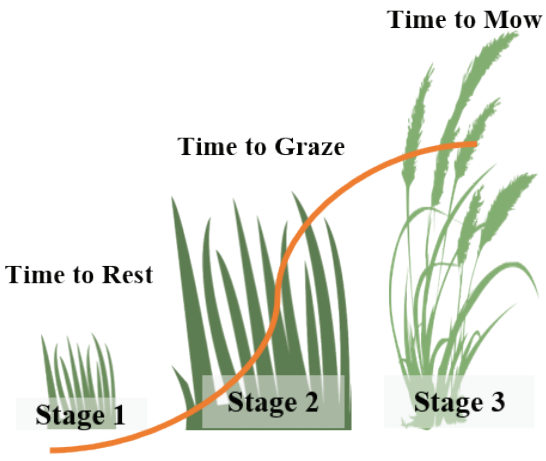

Figure 1. An illustration of the forage growth curve.

Stage 1
The early growth stage is when pasture grasses are newly emerging, coming out of dormancy or have been grazed or clipped. At this stage, the plant is relying on carbohydrates stored in the root and base of the plant to fuel regrowth, while limited leaves are available to capture sunlight. Cattle should be removed from stage 1 pasture grasses, and the pasture should be left to rest until it reaches late stage

Stage 2
The vegetative stage is where pasture grasses are growing rapidly. Pasture grasses should be managed to remain in this stage as much as possible. There is plenty of leaf surface area to allow the plant to make energy without sacrificing the root reserves, and the leaf parts of the plant are at their highest quality. This stage is the best time to graze the pasture as the forage quality and quantity are optimized.

Stage 3
As the plant enters the reproductive stage and develops seed heads or blooms, the plant is entering the final stage. Growth slows and yield will be at its highest, but the quality of the forage will be lower due to greater fiber concentration, reduced crude protein and increased stem to leaf ratio. For optimal forage productivity and palatability, minimizing the time that plants are in stage 3 will allow for greater forage intake of high-quality forage. Under grazed, mature forage may be wasted as it is less palatable to cattle.

Plant Persistence

The goal of promoting plant persistence is to maintain energy reserves stored in the form of carbohydrates. Maintaining an adequate supply of stored energy will improve stand longevity. After grazing, plants use the stored energy for initial regrowth. If energy reserves are not replenished due to plants being repeatedly grazed low to the ground, the plant becomes weakened.

- Plants that have less root reserves or stressed plants can die quickly, opening up the canopy and allowing weeds to invade the stand.
- Significant weather events like drought or frost can exacerbate persistence problems in over grazed stands.
- Due to differing growth habits, some forage species may tolerate greater grazing pressure than others. Species with greater leaf area below the grazing line have greater potential for regrowth.
- Overall, managing pastures appropriately will allow for increased pasture productivity and longevity.

It is important to have a plan and designated sacrifice area for times when pasture is not ready to graze. When adverse weather conditions occur, such as drought, and no pasture is ready to graze, meaning it is less than mid-stage 2, cattle should be placed onto a sacrifice paddock and begin eating hay. There is a great benefit to plant persistence when cattle are held off of drought-stressed pastures until it rains again. If pastures are continuously grazed during this time and cattle are not pulled off quickly enough, it can become too late to salvage grazing for the year.

How Does the Animal Benefit from Grazing Management?

The ideal goal for many cattle operations is for the pasture to provide all daily nutrients for the animal. A mature cow can consume approximately 2-2.5 percent of her body weight in dry matter per day. When adequate amounts of forage are not available, animal performance may be hindered and the producer may need to provide supplemental feed. Rotational grazing allows the producer to manage forage availability and excess forage more closely. During times of the year when forage is abundant, some pastures may be cut for hay or baleage to be fed when pastures are not as productive. Managed grazing allows the producer to separate pasture to be cut for hay from pasture to be grazed, making more efficient use of the land and forage supply. Another matter than can be addressed with proper grazing management is the relationship between forage quality and intake. As the plant matures, the quality of the plant drastically decreases, and as a result, the animal's intake will decrease. This

is because the rumen becomes filled more quickly and the contents are not broken down as rapidly as higher-quality forages. Therefore, keeping pastures in a vegetative growth stage is best for both pasture quality and animal performance. Other considerations relating to the animal would be forage utilization, manure distribution and water quality. When cattle are given free range of pasture, they will selectively utilize some parts of the pasture and allow other parts to become over-mature and trampled. The decreased pasture utilization could ultimately increase feed costs if cattle need to be supplemented. Furthermore, in large pastures with no rotation, manure is distributed unevenly across the pasture, specifically around feed troughs or water sources, or in shaded areas. This leads to spots where cattle may refuse to consume forage and areas that become damaged due to hoof pressure. If cattle have free access to ponds and streams, water quality may be adversely affected; management of grazing and water sources by use of fencing allows for improved water quality.

How do Cattle Graze?

Cattle are unique in the way that they graze. Because they do not have upper incisors, cattle use their tongues to wrap around the grass and tear it off, rather than biting it with teeth. Therefore, grass that is extremely short may be difficult for cattle to consume.

Grazing Methods

Grazing methods range from simple to complex, and there is no one-size-fits-all grazing program. Table 1 breaks down the pros and cons of continuous, rotational and strip grazing systems. As more rotation is incorporated in the system, the percentage of available forage utilized goes up. Figure 2 shows a visual representation of what these grazing systems may look like.

Grazing Method	Pros	Cons	Efficiency (percent of available forage utilized)
Continuous	• Simple • Cattle can selectively graze • Minimal management/input cost	• May lead to overstocking and overgrazing • Pastures not evenly utilized • Potentially lower herd performance	**30-40 percent**
Rotational Grazing	• Increased rest periods for forages • Improved nutrient distribution from manure • Flexibility in managing excess forage • Better matching of animal nutrient requirements • May decrease need for supplementation	• Increased initial input costs for fencing and water systems • Requires more labor for moving cattle and monitoring forage supply	**Simple Rotation (3-4 paddocks) 50-60 percent** **Moderate Rotation (6-8 paddocks) 60-70 percent**
Strip Grazing	• Ideal for stockpiled forage systems • Decreased animal selectivity	• Medium/high labor • Land needs to be broken into manageable units • May reduce animal performance • More management decisions	**70-80 percent**

Table 1. Pros, cons and efficiency of continuous, rotational and strip grazing systems.

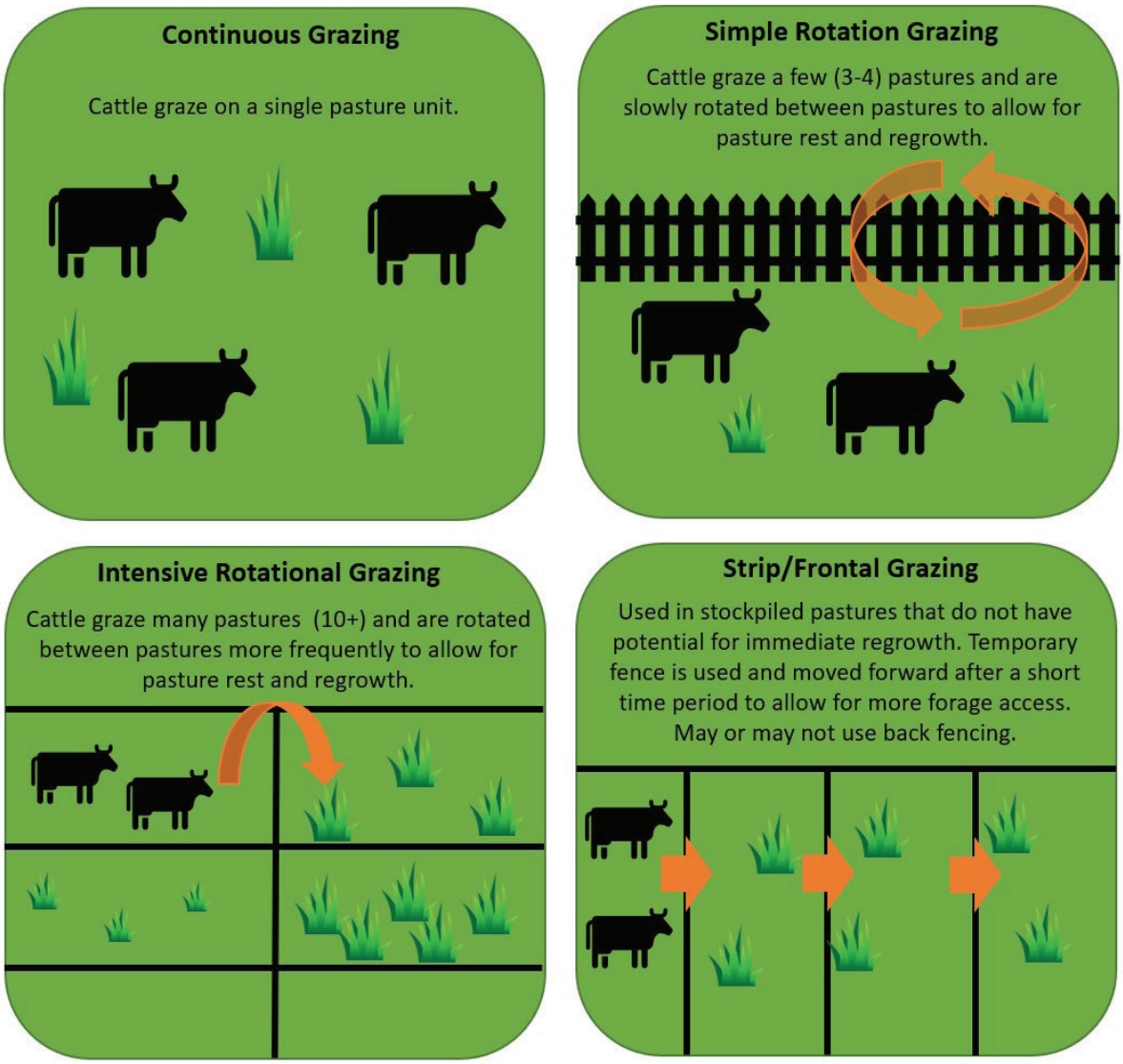

Figure 2. An illustration of various grazing methods: continuous, rotational and strip grazing.

Key Considerations for Grazing Management

There are many factors to consider when starting a grazing management program. The key is to start with a simple plan that works best for your operation. Try to strike a balance between your cattle and your forages in order to have a productive and persistent forage system. All grazing systems come down to this key concept: short grazing bouts and long rest periods. Utilizing any amount of rotational grazing will increase efficiency within a grazing system, and a moderate level of rotation is sufficient for most beef producers. If you have any questions about implementing a grazing management plan, contact your county Extension agent or state Extension specialist.

References

Ball, D. M., Hoveland, C. S., & Lacefield, G. D. 2015. Southern forages. Peachtree Corners, GA: International Plant Nutrition Institute.

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