GRAZING MANAGEMENT OF IMPROVED PASTURES

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SUMMARY

Grazing management can be a very powerful tool to influence plant and animal performance in forage-based livestock systems. For this tool to be used effectively, however, the producer must understand both plant and animal requirements for production, and then choose a management that balances the two. The most important choices to be made in designing a grazing management system are how close and how often the pastures are going to be grazed. These choices affect pasture performance which subsequently determines how well the animals will perform.

INTRODUCTION

Choice of grazing management will affect pasture productivity, forage nutritive value and stand longevity. Profitability of enterprises that are based on grazed forages will be greatly influenced by the way in which pastures are managed. This paper will provide an overview of the objectives of grazing management systems, discuss what management tools are at our disposal that affect plant and animal performance and look at the advantages and disadvantages of several approaches to grazing management; including high intensity, short duration grazing.

DEFINITION AND OBJECTIVES OF GRAZING MANAGEMENT

Grazing management has been defined as the manipulation of livestock grazing to accomplish a desired result (Pieper and Heitschmidt, 1988). What the desired result is will depend upon your enterprise, but certainly economic goals will be important. Specific objectives of a grazing management system may include 1) high production of forage per acre, 2) efficient use of the forage produced (i.e., a high percentage of forage produced is consumed), 3) long-term persistence of the pasture and 4) high level of production per animal and per acre. A fifth objective is that the grazing system match the needs of the producer in terms of profit margin, level of risk and managerial skill. The bottom line is that many tools are available to the pasture manager, but economic conditions and the skills/interest of the individual will determine which ones are useful in a given situation.

PLANT VERSUS ANIMAL REQUIREMENTS

Too often we have a bias toward either the pasture or the animal with the result that one receives more careful attention than the other. In a forage-based livestock system a narrow focus is not wise because the overall productivity of the system depends upon both plant and animal. Intelligent grazing management decisions must be based on an understanding of the requirements of both. Long-term profitability can be maintained only when the needs of plants and animals are kept in balance.

Plant Requirements for Persistence

The major effects of grazing livestock on pasture plants are due to defoliation, trampling and deposition of waste. Unlike row crops which grow without interference from animals, forages must survive these stresses and regrow to face them again.

Plants and grazing animals have evolved together over many years. In the process, grazed plants have developed ways of protecting themselves from defoliation. These include 1) maintaining a reserve supply of nutrients for regrowth in a part of the plant that is generally not grazed, 2) having branching or low growing stems that keep some leaf away from the animals and 3) maintaining living buds below the grazing height so that new shoots can replace those that the animal consumes. If we are aware of these protective devices and know when the plant will rely on them, we can intelligently manage the pasture. It is important to remember that although the plant is protected from the animal to some extent, overgrazing can occur to such an extreme or so often that the plants' defenses are overcome and it dies.

Animal Requirements for Productivity

The two basic requirements for livestock on a pasture-based system are adequate quantity (amount available) and quality (nutritional value) of forage. Overstocking not only affects the pasture, but it will also reduce animal performance because of a shortage of forage for grazing. Maturity is the major factor affecting the nutritional value of forages. Grazing a pasture frequently may ensure that animals have access to immature, high quality forage, but if the plant is not adapted to this type of management it may severely limit pasture growth or result in stand loss. On the other extreme, infrequent grazing may result in large quantities of forage being available for livestock, but it may be so low in protein and digestible energy that performance is still poor.

Another important point to remember is the difference in requirements of various classes of livestock. Mature bahiagrass may be a very adequate ration for a dry beef cow, but its use may result in large weight losses for a growing heifer.

It is clear that we need to understand the requirements of both the plant and the animal to develop successful grazing management strategies.

AREAS OF CONTROL IN GRAZING MANAGEMENT

What tools do we have available in designing a management system? Initially, the producer must determine which forage plants are adapted to his/her location, what level of inputs (weed control, fencing, fertilization) is likely to be profitable, and what class of livestock will be most useful for their situation. Having established these aspects of the enterprise, the most important tools available for grazing management are selecting the grazing intensity (a stocking rate for a pasture, or a plant stubble height when you will pull cattle off the pasture) and the grazing frequency (length of the rest period between grazings).

Grazing Intensity

In our opinion the most important decision relative to managing your pasture is how close you are going to graze it. This will determine whether the plants will have energy reserves, leaf or living buds available for regrowth after grazing. You determine this by the stocking rate that you choose or by the decision to graze a grass to a specific height. If grazed too closely the stand may be lost and/or the animals may be undernourished. If not grazed closely enough, beef production per acre will be limited, and likely the nutritional value of the forage reduced.

What must be considered when deciding on a stubble height to graze to, or a stocking rate to use? Sensitivity of the pasture to overgrazing and sensitivity of the animals to a period of insufficient forage are critical. For example, bahiagrass can be grazed considerably closer than can limpograss. If there is a shortage of pasture and both grasses are grazed into the ground to feed your animals, bahiagrass will likely come back but limpograss stands may be damaged. If the type of animal in use is able to compensate in the future for poor performance during a shortage of forage, then you may decide to graze the pastures as close as the plants will tolerate even if that type of management leads to animal weight loss. Each situation requires thought and the knowledge of how both the plant and animal will respond. No one guideline can be used for all grasses or all types of animals at every time of the year.

Other important factors affecting the choice of grazing intensity relate to the flexibility that a producer has to adjust animal numbers or to supply feed in addition to pasture. Obviously, if the pasture is the only source of feed and the number of animals cannot be profitably adjusted by buying or selling, then stocking should be done conservatively. In other words, the stocking rate used should be what can be supported on the land in a very poor year. If there is potential and profit in conserving forage as silage or hay, buying forage, irrigating during drought or adjusting animal numbers, then there is less risk in stocking at a rate that would be appropriate for the average year. In Florida's cow-calf enterprises, flexibility is limited by economics and most stocking decisions must be made conservatively.

Grazing Frequency

Our first choice relative to grazing frequency is between continuous and rotational grazing. Rotational grazing means that a pasture is divided into two or more subunits called paddocks, and the paddocks are regularly grazed and rested in an orderly sequence. Continuous grazing, also called continuous stocking, occurs when the pasture is not subdivided and cattle are given continuous access to the entire area.

Relationship Between Grazing Intensity and Frequency

There is give and take between grazing frequency and grazing intensity. If a grass is grazed very closely, then it will generally require a longer rest period than if a taller stubble was left. Likewise, leaving a taller stubble may allow more frequent grazing than if plants were grazed closely. It is critical that we can predict how a plant will respond to the management we impose, so that we do not destroy stands of improved pasture.

ROTATIONAL VERSUS CONTINUOUS GRAZING

The primary reasons to graze rotationally include 1) survival of some pasture plants depends on it, 2) to increase beef production/acre or 3) to closely fit the nutritional needs of a given class of animals with the pasture that they are grazing.

Plant Survival

When grazed, plants must maintain either leaf to produce energy for regrowth, or stored reserves to provide that energy. If frequently defoliated, plants may not have enough time to grow new leaves and replenish their supply of reserves before being grazed again. The result is that after each grazing the plant has less reserve energy than before, and eventually its reserves will be gone. A rest period allows the plant to fill its reserve reservoir before another grazing.

Increase Beef Production/Acre

This point is still somewhat controversial, but there are experiments, particularly with temperate forages, that suggest an increase in production/acre with rotational grazing. Blaser (1986) reported from 24 to 40% higher milk yields per acre for rotationally grazed legume-orchardgrass pasture than when the same pastures were continuously grazed. The higher yields occurred because the forage was better utilized and stocking rate could be increased. Individual animal performance was the same on both systems.

Fit Nutritional Needs of Cattle

Rotational grazing allows the producer to allocate forage to the cattle based on their nutritional needs. Animals needing higher levels of nutrition, like replacement heifers or

stocker steers, can be given first access to a paddock and be allowed to graze the top part of the canopy. Then they can be moved on to the second paddock, while animals with lower requirements, like cows, can finish grazing the first paddock to the desired stubble height. This first and second grazer or leader/follower system is not likely to increase gain/acre over a regular rotational management, but it does allow the producer to efficiently allocate the most nutritious forage to the animals that need it. The same type of system could be used for creep grazing nursing calves as long as the paddocks were separated by a creep gate. The calves could move to the next paddock to graze the plant tops, and the cows would finish grazing the less nutritious forage.

Advantages of Rotational Grazing

Rotational grazing may be preferred over continuous grazing because with rotational grazing 1) it is easier to minimize weeds and prolong the life of the pasture, 2) the producer sees the cattle and pasture more often and manages both more effectively, 3) there are more management options in terms of matching animal needs with pastures, 4) the stocking rate can generally be increased and the pasture is better and more uniformly utilized and 5) beef production/acre can be increased.

Advantages of Continuous Grazing

Continuous grazing may be preferred over rotational grazing because 1) it requires less initial expense in terms of fence, water lines, etc., 2) less labor is required, 3) there are fewer decisions and management is less complicated and 4) there is less variation in the nutritional value of the animals' diet from day to day than under a rotational system.

HIGH INTENSITY, SHORT DURATION GRAZING SYSTEMS

Grazing management consultants, electric fence companies, and others have recently become more vocal in their support of the concept of high intensity, short duration grazing systems in Florida. This concept is not new, and is merely a type of rotational grazing. The major difference between it and more traditional rotational grazing methods is the number of paddocks that the pasture is subdivided into. Typically, it is recommended that more than 16 paddocks be used and of course this number may be much higher.

The benefits attributed to this approach are many, some of which are no less than miraculous. In many cases, no data are available to support these claims.

We see potential advantages to this type of system. These advantages should be very similar to those listed above for rotational grazing. It is quite conceivable that increasing the number of paddocks will minimize spot grazing and increase the percentage of forage produced that the animals actually consume. This may result in moderately higher stocking rates and gain/acre as number of paddocks increases.

In this type of grazing management as with any other, the most important choices you will make involve the selection of a grazing intensity and frequency. Be sure to remember that overgrazing will kill pastures no matter how fancy your fences are or the number of paddocks you have. You still must know your plant and the height to which it can be grazed safely. Number of paddocks should be determined based on how frequently you feel you can move the animals and how long the average rest period should be. In Florida most of our warm-season grasses should be grazed every 28 to 35 days during summer. If you want to move cattle every day, then you will likely need about 28 to 35 paddocks; if every other day, then 14 to 17 paddocks.

Unfortunately, we do not have any data from Florida that support or negate the claims being made. This kind of research requires a large number of pastures and animals, daily attention from trained support personnel, and constant supervision. Funds to support this type of research are not currently available and it may be up to producer groups to channel checkoff dollars or some other source of funds to these projects if they are to be done.

In terms of recommendations, we can only say that if the claims made sound too good to be true, they probably are. We do not question that marked increases in beef production/acre can occur when pastures are well managed compared to when they are not managed. What has not yet been established to our satisfaction is whether a high intensity, short duration grazing system will outperform a well managed rotational grazing system. In other words, are the extra dollars spent on fencing and labor to move the cattle every day or two, worth it?

LITERATURE CITED

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