

NATURAL RESOURCES CONSERVATION SERVICE
ARKANSAS TECHNICAL NOTE

CREATING A PRESCRIBED GRAZING PLAN

Steps in Creating a Grazing Plan

Initial Inventory

- Become acquainted with the farm through the aerial photo and soils map. Note water sources and existing fences. Review soil samples.
- View the farm, preferably by walking or at least walking a representative portion of it with the owner/manager.
- Get a feel for the short term and long term goals of the owner.

Observations While Viewing the Property

Pay particular attention to the following:

- Pasture vegetation
- Plant population, diversity and vigor of the plants
- Presence or absence of legumes
- Length of rest pastures are getting
- Carry a grazing stick with you and know the information on it.
- Measure areas and calculate forage availability.
- Note some estimate of efficiency of utilization by the grazing animals, such as severe spot grazing or severe overgrazing.
- Note uniformity of grazing and plant residue. Conducting a pasture score estimate may be useful, particularly in discussions with the landowner/manager.
- Pay particular attention to the livestock as to overall general appearance and health, condition score and thriftiness
- Note any sources of soil erosion as well as water pathways, both entering and leaving the farm. Observe the riparian management associated with water flow.
- Note forage quality and availability, particularly in stress times of the year.

- Observe manure deposits for quality of forage consumed and presence of dung beetle/earthworm activity.
- Observe the weed population and the probability of weeds being consumed by livestock, especially with a high stock density at appropriate times (early spring, for example). Recognize the value of forbs in the diet of livestock, especially small ruminants.
- Note obvious fertility differences within pastures as well as landscape differences within the pasture.
- Observe the soil tilth and/or hardness of ground and the potential for water holding capacity of the soil.
- Get a feel for the potential frequency of rotation, both within and across seasons.
- Note how pastures might be subdivided easily.

Conversation Points After Viewing the Farm

- As a beginning, if the farm has multiple pastures and livestock have access to all pastures, try to get the producer to shut the gates to allow pastures to rest.
- Encourage the owner to subdivide existing pastures and monitor changes.
- Suggest ways to get started on a grazing program through temporary fencing with a plan to establish permanent electric fencing within a logical time period.
- Determine a logical transition time for complete implementation of a prescribed grazing program, beginning with the potential of easily subdividing pastures to planning a water delivery and permanent paddock subdivision for at least a 3-4 day rotation with cow-calf operations and every other day move for stocker operations.
- Evaluate practice recommendations as to

return on investment with priority given to ones that yield the greatest return.

- Explore ways to increase water availability for proper distribution of livestock
- Determine other practices that should be implemented to enhance a prescribed grazing plan (PGP). For example, a PGP is harder to manage without Forage Harvest Management. A more advanced plan may need to consider a Heavy Use Protection Area. Prescribed burning may be beneficial for management of warm season grasses, including bermudagrass.
- Develop a timeline for exploring alternatives to present grazing management.

Plan Development

If the producer wants to increase the harvest efficiency, proceed with calculations on stock density and paddock rotations.

The tools to use in the well-managed grazing program are the pasture availability (pounds of dry matter per acre of pasture) and the stock density (pounds of animal grazing each unit of land for defined period). Stock density is pounds of animal per acre per day of grazing and normally would range from 30,000-50,000 lb/acre/day.

Estimates needed for grazing calculations are pounds of forage available for grazing on a per acre basis, daily dry matter intake of the grazing animal, the grazing efficiency of the animal, and forage growth per day of rest. Most of these numbers are available on the grazing sticks.

Pounds of forage available can be estimated by measuring the height of the forage and multiplying by the estimates on a per acre inch basis. Forage density and fertility greatly impacts this number, which can range from 100-500 pounds per inch of forage available. These numbers can be developed through clipping a sample. A good stand of bermudagrass pasture could have 400 lbs per inch, be six inches tall and, therefore, have 2400 lbs of dry matter

available per acre.

Dry matter intakes of grazing animals are usually underestimated as intakes are normally estimated on consumption of dry harvested forages. The grazing behavior of the animal can have a large impact on consumption as does the moisture content and quality of the forage. Routine numbers to use are 3% of body weight per day (dry matter basis). This should be raised to 4% for dairy animals and thin lactating beef cows. Non-lactating animals in good condition may be as low as 2%. Remember horses eat more than cattle because of the decreased digestion of the forage. Sheep and goats eat more than cattle and probably should use 4% of the body weight.

Grazing efficiency can range from 35% for a continuous grazing program to 70% for a daily rotation. The higher the stock density and frequency of rotation, the less spot grazing occurs which results in a greater harvest efficiency.

The largest potential error in grazing calculations is due to regrowth rate of the pasture after grazing. The number of days of rest needed may vary from 14-40 days or more during extremely dry weather. This estimate is the number that most greatly influences the number of paddocks needed in a grazing operation and illustrates why the use of temporary fencing to subdivide areas can be beneficial.

Guiding Principles

Begin grazing a paddock at the level of 2400-3000 pounds of forage per acre (except the first graze of the year). Graze down to 1000-1500 pounds depending on the nutrient requirements of the animal grazed. Remember that the lower the pasture is grazed, the more intake is decreased because of the grazing behavior of the animal. Therefore, dairy cattle probably should be moved when pasture availability is 1200-1500 pounds whereas other animals can graze down to 1000-1200 pounds or lower. NOTE:

The first graze of the season needs to start at a lower dry matter availability to keep the pastures under control, especially without a Forage Harvest Management option. This also allows the grazing season to be extended.

Calculations for Grazing

Assume a herd of 25 beef cows weighing 1000 lbs each with an estimated intake of 3% of body weight on a dry matter basis. Each animal will eat 30 lbs. of dry matter; the herd will eat 750 lbs. per day.

Assume a pasture of bermudagrass is 7 inches tall, a dense stand that has been highly fertilized will have an estimated 400 lbs per acre inch of grass for a pasture availability of 2800 lbs.

Method 1: A twice a week rotation should yield a 50% harvest efficiency. Therefore, 50% x 2800 lbs of forage gives 1400 lbs for consumption or a rough estimate of half an acre per day for the 25 cows or a 2-acre paddock for 4 days. Assuming a regrowth rate of 70 lbs per day would require a rest of 20 days to replenish the 1400 lbs removed.

These 25 cows on two acres for 4 days give a stock density of 12,500 lbs. If the cows were moved every day on half an acre, the stock density would be 50,000 pounds per acre. This would increase the utilization to around 60%.

Method 2: A preferable approach for bermudagrass might be to graze it down to a certain level, e.g. 1000 lbs of dry matter. This gives 1800 lbs of forage available for consumption or about 2.5 days of grazing per acre. A 4-day rotation would require 1.6 acres. This might a longer rest period to replenish the forage but the grass would be higher quality as it was grazed shorter.

Quick cowboy arithmetic: In reality for average grazing conditions, 30 cows or 60 steers for one day on an acre would fit most grazing situations. This can be adjusted based on forage availability. If the forage is well-fertilized with

a thick stand, raise the number to 40-80. If it is in excess of 8" in height and well-fertilized, raise it to 50-100. If a slower rotation is desired, divide by the number of days on a paddock for the estimated stock density. If the animals are on a pasture longer than three days, reduce it by 20%. Normally two steers can be carried on the same land area as one cow.

Evaluation of a Prescribed Grazing Plan

There are many components to consider in evaluation of the grazing effort. While grazing height of forages is generally referenced, this approach is hard to achieve on a year-round basis and hard to evaluate at any particular point in time. Hence, a more comprehensive approach may be necessary for practicality. Consider the use of the Pasture Condition Score Sheet to determine the effectiveness of the grazing plan. It takes 3-5 years for the transition period in a grazing program, depending on the severity of the overgrazing initially. The components of the Pasture Condition Score Sheet are percent desirable plants, plant cover, plant diversity, plant residue, plant vigor and uniformity of use.

A minimum height judgment could be made as to length of rest period and used accordingly. For example, if a pasture is grazed too short by suggested grazing heights, suggest to the farmer that the pasture needs another 3-7 days of rest or ensure the farmer knows to not graze the pasture again until adequate forage is available (2500-2800 lbs/acre).

Fencing and water systems for prescribed grazing: High tensile wire and temporary fencing such as polywire can be used quite effectively to subdivide pastures existing pastures easily to explore grazing options. A good beginning point is to get land managers to subdivide existing pastures using high tensile fencing. Become comfortable with the use of electric fencing in working with farmers. Having grazing demonstrations in the county can be used to acquaint farmers with the latest technology. There is a prescribed grazing

incentive in EQIP to encourage subdivision of pastures with the use of temporary electric fencing. Use these farms to demonstrate a well-managed grazing plan.

Development of water systems is critical to an effective prescribed grazing program. Availability of water for livestock in each pasture (paddock) is highly desirable. The primary objective is placement of water is distribution of grazing animals for a high harvest efficiency. Generally, suggestions are to have access to water within 1000 feet of where

the animals are grazing. Having water farther away decreases the utilization of the forage.

Development of wells with piped water may be advantageous over ponds and should be considered. When piping water, be sure to include watering points even though cost share may be limited for number of tanks. Installing quick couplers in the water line to plug in portable tanks can help distribute livestock, especially during hot weather when freeze proof tanks are not needed.