



Strategic Points for Developing a Grazing Management Plan

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Year-round forage production is a critical resource to the cattle industry in the southern USA. To provide such level of forage production and reduce supplementation needs, producers need to have an effective management plan that will require their understanding of forage production, realistic livestock production goals, and effective grazing management strategies (grazing time, grazing pressure, and recovery). Understanding these principles will reduce weather impact, overgrazing, and optimize forage availability. Taking this approach can give producers the tools to be innovative and increase pasture biodiversity while increasing animal health and production (calving rates or beef production).

A grazing management plan is a tool that will allow producers to organize their land, improve forage production, determine livestock sustainability, allocate budget resources, and determine the effort and time to achieve long-term livestock production goals. At the beginning, a grazing management plan should be considered a moving target with a dynamic approach that overtime will allow the producer to understand, implement, and adopt the best management practices to meet the long-term goals and balance weather conditions to maximize profitability.



Figure 1. Example of a grazing management plan that include species, and fences water locations to achieve 300 to 330 days of grazing using a 7 to 10 grazing rotation. Tall fescue will allow for stockpiling and reducing hay supplementation while summer perennial pastures can be interseeded with cool-season annual grasses.

Before developing a grazing management plan, contact your local County Extension professional to gather all the necessary information and start putting together the parts of the puzzle. There are several key points to consider:

1. **Write down the current state of your forage and livestock operation and develop short- and long-term goals to optimize production and increase profitability** – It is important to document goals and priorities in quantifiable

manner (what do you want to accomplish?). For example, “I would like to increase livestock production by 25% by incorporating more forage species and using rotational grazing”. As part of this also evaluate your cost of labor.

2. **Gather all the information related to the farm** – That includes farm map with boundaries, soil map with soil types, slope, pasture size, and potential forage productivity. You can use your phone to obtain the coordinates of your farm and then use Google Earth (<https://www.google.com/earth/versions/#earth-pro>) to establish the boundaries of your property. You can also use those coordinates to obtain the existing soil types by using Web Soil Survey (<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>). Knowing the soil type information will determine what forage crops can be grown in the farm and their production potential. Keep in mind that not all soils are created equal and their production capability can vary considerably, and we need to consider fertility management practices.

This map can also be used to sketch a detailed diagram of your existing and future critical infrastructure such as pasture types, fences, gates, water, shade, lanes, working facilities, hay storage, etc. A good plan is to ensure that animals will always have access to forage and water. This will also help you identify the investment that is needed to improve pasture layout, forage diversity, and efficient grazing rotations.

3. **Determine how much forage is needed to maintain your livestock and the ability of the pastures to meet livestock nutritive demands** – Producers need to estimate what type of forage species are present in the farm, their growing season and how much those pastures are capable of producing. Forage productivity will allow determining if the farm is overstocked or understocked and what management strategies should be implemented. To determine the productivity of forages, producers can use a grazing stick to estimate yields (https://extension.msstate.edu/sites/default/files/publications/publications/p2458_web.pdf). Once the estimated forage productivity has been established, there is a need to determine forage demand for the livestock to establish a forage budget and balance. The forage demand might vary depending on the type of livestock class (dry cows, lactating, gestation, stocker, etc.) and genetics.

Forage Requirement – To determine the forage requirement of a specific livestock class, it will require doing a little simple math. First, you will need to know the number and weight of the animals. For example, let's assume there are 100 dry cows that weight 1,000 lbs, Let's assume that they are all eating 2.0% of their body weight each day. Let's assume the farmer would like to graze 300 days out of the year. This allow us determining the annual forage production that is required for the herd using the following formula

Dry Matter (DM) Forage Annual Requirement = Number of cows x Average Weight per cow (lbs) x Dry Matter Intake (%) x Grazing Days

Dry Matter Forage Annual Requirement = 100 cows x 1,000 lb/cow x 0.02 x 300 = 600,000 lb of dry matter forage (300 tons).

Available Forage – The type of forage species present in the farm can impact productivity, availability, and seasonal distribution. If you only depend on warm-season grasses for grazing, then adding cool-season grasses and legumes could improve your winter grazing capacity and reduce supplementation.

The next step is to estimate the pasture productivity per acre and seasonal utilization of the forage. Pasture productivity depends on soil type, rainfall, temperature, fertility, forage species and grazing management. Poorly managed pasture can only have a yearly production of 1.0 to 1.5 ton of dry matter per acre while those with good management can produce from 3 to 4 tons of dry matter per acre. Seasonal utilization refers to the actual forage that will be consumed by the livestock. In most cases, seasonal utilization can range from 40 to 70% depending of the forage species and the type of rotational grazing system. Commonly, a continuous grazing system will have the lowest seasonal utilization. Let's assume that the farmer has 150 acres of land and he average forage production is 5,000 pounds of dry matter forage per acre and he uses a slow rotation with 50% efficiency.

Available Forage = Pasture Production (lb DM/acre) x Utilization Rate (%) x Number of Acres

Available Forage = 5000 lb/acre x 0.5 x 150 acre = 375,000 lbs (187.5 tons).

If you are thinking about getting into the cattle business, then to maintain 100 cows you need to determine the number of acres need based on forage productivity and utilization rate. Another way to think of the number of animals to feed is determining how many acres added to keep these animals. Let's assume that your average pasture production is 5,000 lbs per acre.

Acres of Forage Production Needed = Amount of Forage Needed (lbs) / (average annual forage production (lb

DM/ac) x Utilization Rate)

Pasture Required in acres = 600,000 lb / (5,000 lb DM/ac x 0.5) = 240 acres of pasture

This means that your stocking rate will be 2.4 acres per cow (240 acres/100 cows). This is a common stocking rate for the area and ideal for someone starting to develop a long-term plan. Although setting the stocking rates lower early in the management plan can produce higher production per animal, it tends to have lower production per unit of land. This type of stocking rate will result in lower forage utilization and decrease economic return. On the other hand, setting the stocking rates too high too early can lead to lower production per animal and low return per acre due to possible overgrazing and diminishing economic return. When implementing a grazing plan, annual evaluation of forage productivity and utilization can help to finetune stocking rates.

Forage Balance – The forage balance for this farm is calculated then by subtracting the annual forage dry matter available in the farm from the required forage dry matter by the livestock. If the number is negative, it indicates that the livestock operation has more livestock than the pastures can support or it will have to spend extra money in extra hay, commodity supplementation, or both. If the number is positive, then the farm can have a slow increase in animals. The advantage of developing a grazing management plan is that it can help with forage utilization, recovery, and possibly productivity. Another critical component of this forage balance is forage distribution throughout the year. There is need to have different forage species both cool- and warm-season species that can diminish forage deficit throughout the year.

- Budget** – It is important to be develop a budget that can determine a cash flow between the cost of developing and implementing the recommended practices such as fences, forage establishment, fertilization, water, etc. versus income gained. Sometimes it might be difficult to provide the economic foundation to transition into these practices. Check with your local USDA-NRCS for any incentives programs that could provide some assistance with improvement of grazing and livestock management.
- Monitor, Evaluate, and Adjust** – This step allows a producer to evaluate if the objectives are being met. This is also an important component of the initial three years of adjusting your management strategies. Keep track or records of forage productivity, grazing management (duration, frequency, and timing), and yearly livestock inventory (calving rates, replacements, pregnancy rates). This information allows to make adjustment as needed, especially in areas that can be susceptible to heavy grazing. There are several record keeping systems (software) available in the market for tracking and monitoring forage and livestock production along with production cost and economic information.

Summary – Grazing experts or consultants have different and numerous ways and suggestions of how livestock producers can get the most from their forage enterprise. Remember that the goals of a grazing plan are dynamic, and they may change with implementation of management practices. Be flexible. It will be hard to make a grazing management successful with a blank map. Always review your short- and long-term goals to make sure that you are not heading to a fork in the road and there is a clear path. Understand your limitations and opportunities to respond to changes. Remember that longer hay feeding periods are often negatively related to profitability. If you need evaluating or developing a grazing plan, contact your local County Extension office or work with your grazing management specialist to develop a clear and feasible grazing management plan that will help ensure the objectives. Plan for the future!

Upcoming Events

August 25, 2020— Webinar: *Developing Efficient Winter Grazing Systems*; 6:00 PM—7:00 PM CST
Registration Link: https://msstateextension.zoom.us/webinar/register/WN_6OIl5IVNTjyAzPbHljkiyg

For upcoming forage related events visit: <http://forages.pss.msstate.edu/events.html>

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