

## Grazing Management Strategies for Forage Systems

### Introduction

Proper grazing management practices are essential to meeting forage production, quality, and animal performance goals (Fig. 1). Following research-based management recommendations for species helps optimize stand longevity and improve forage and nutrient use efficiency and sustainability of forage systems. There is no 'one size fits all' when planning the forage management for an operation. It is essential to understand the plant and animal needs, the management skills required, and the goals and budget of the operation to implement a grazing management plan for an operation effectively.



Figure 1. Steers grazing cool-season forages mixtures. Credits: Liliane Silva, CUCES Specialist.

### Background information

When planning a forage system, the first step is to choose the forage species adapted to the soil and climate conditions in the area. The species chosen must be compatible with the enterprise goals and budget, management requirements, and desired level of animal performance. Several forage options can be used to help provide grazing for extended periods of the year statewide. Contact your local Extension agent for more information on choosing the appropriate forage species for your operation.

Once the forage system is defined, establishing a proper management plan is essential since it will directly influence forage growth and stand longevity. Under grazing, it will be crucial to balance the frequency and intensity of forage removal properly to avoid issues with forage regrowth and depletion of plant energy reserves. When managing a grazing system, some terms need to be well understood, including stocking rate (SR), stocking density (SD), and carrying capacity (CC).

*Stocking rate* refers to the number of animals grazing within a unit of land over a specified period. Incorrect SR often leads to overgrazing which contributes to pasture degradation, among other issues. *Stocking density* is the number of animals accessing a specific pasture area at a particular time. *Carrying capacity* is the maximum number of animals or animal units (AU) that a pasture can support over a period of time without compromising the forage stand health.

The SR will determine animal performance and affect stand persistence over time. The optimal SR must be based on the forage mass available and goals for animal



performance for operation. Measuring forage mass is an efficient way to monitor forage production and estimate SR and CC. Different methods can be used to measure forage mass. For more information, consult the “*Methods to estimate forage mass in forage systems*” Land Grant Press publication.

Continuous and rotational stocking management are the most commonly used management techniques for forage systems. Under continuous stocking management, livestock has unrestricted access to pastures, which can lead to overgrazing, stand decline, and soil degradation, which reduces biodiversity and water quality. Under rotational stocking management, pastures are subdivided into paddocks that alternate grazing and rest periods during the grazing season. This management contributes to improved forage removal, excreta distribution, animal gain, and overall carbon footprint reduction (kilogram of carbon dioxide per kilogram of meat).

## **Expectations**

- Practice implemented will occur on bahiagrass, bermudagrass, or tall fescue dominant pastures. Therefore, these perennial grasses will be the predominant forages in the pastures where this practice will be implemented.
- Farms selected will have a previous history of use of continuous stocking management. Forage responses collected after the implementation of rotational stocking management will be compared to an area left under continuous stocking management (as a control area).
- The livestock type will be beef cattle, including stocker calves and cow-calf operations.
- Soil pH and fertility should be addressed as needed and not be a limiting factor for forage production.
- Recommendations provided by Extension personnel will be implemented accordingly to ensure the best chances of success. Guidelines must be followed as provided to avoid compromising forage and animal production and responses being collected and reported to the United States Department of Agriculture (USDA). Data collection will be conducted as described in the timeline.
- Extension agents and associates will be the first point of contact with producers to support implementing practices and scheduling sampling events, among others.

## **Implementation**

- During the first farm visit, a resource inventory and survey will be conducted to compile information on existing resources, including forage species, soil type, ecological aspects of the site, location and condition of fences and water resources, and opportunities to improve resource conditions and management aspects.



- The forage inventory will consider the forage species diversity and estimated production and quality for the pasture. This will also consider the needs of the livestock categories in each operation throughout their production cycle.
- Based on the predominant perennial grass species, recommendations for grazing management will be provided. Rotation frequency will not be dictated by a strict number of days, although based on the three perennial grasses used, they should range from 21 to 35 days, depending on the time of the year and plant growth speed. Target stubble height is 4” for animal removal, and grazing should start when plants reach 8 to 10 inches.
- The stocking rate should be adjusted based on the forage mass available.
- A grazing plan that identifies periods of grazing, recovery, and other necessary management practices, such as weed and pest control, will be outlined for pastures. A monitoring plan will be the last section of the overall prescribed grazing plan, which will outline short- and long-term indicators for producers to keep track of to identify whether the grazing strategy is helping meet the goals and objectives. This monitoring plan will include critical plants, areas, and other site-specific indicators that the producer will use to make management decisions.
- The Climate-Smart Team will collect data from the control (continuous stocking) and rotational stocking paddocks. Information collected will include the following:
  - o An inventory of plant species will be taken at the beginning of each grazing season in both systems.
  - o Forage height averages will be measured in inches. Measurements will be collected before turning animals into paddocks for new rotation.
  - o The number of grazing days in each paddock and the rotation from paddock to paddock will be recorded.
  - o At the beginning and end of each season, soil samples will be collected to a 12” depth in each grazing system.
  - o Pictures will be taken throughout the project to support data and illustrate the reports.

## **Supplemental resources**

1. Silva, L.S. Methods to estimate forage mass and adjust stocking rate in forage systems. Land Grant Press (under review)
2. Silva, L.S., Duckett, S., Burns, M., Aguerre, M., Bolt, B., Fischer, M., Marshall, M., Greene, J., Hersom, M., Kirk, K., Scharko, P., Smith, N. 2023. Concepts and research-based recommendations for forage systems in South Carolina. Partially funded by the SC Forage and Grazing Lands Coalition and a South Carolina Sustainable Agriculture Research and Education (SARE) program.