

## Unit III – Grassland Management Practices

### Lesson 5: Grassland Management Plan

This lesson will show how a grassland management plan is developed to build a profitable livestock operation. The information covered in previous units will be incorporated in the plan through the management decisions made for the livestock operation.

#### Components of a Grassland Management Plan

Certain management tools are needed to run a profitable livestock operation. They include soil test results, soil identification information, maps, a knowledge of plant composition, information on livestock needs, and a herd inventory. Each of them provides information needed for a grassland management plan.

Soil test results provide information on the current condition of soil fertility. Soil tests are used to determine what amendments should be made to the soil in order to increase the quality and yield of the forage.

Information on soil identification can be found in soil survey manuals. The type of soil will affect the drainage and use classification of a particular grassland.

Maps in the soil survey manual will make it possible to determine where a type of soil is located in the pasture. Maps provide a visual representation of the land that shows its physical layout, including water, slope, and drainage.

Plant composition is the current quality, quantity, and variety of forage plants found on a given plot of land. A knowledge of plant composition will help to determine the best grazing system and carrying capacity for a grassland.

Livestock needs are determined by their species, age, sex, production level, and environment. This information represents the nutritional needs of the animals at any given time.

A herd inventory reveals the quantity of animals in the different production classes discussed in Lesson I of this unit. Production is optimized if the total nutritional needs

of the herd are met by the grassland without any waste or shortage of feed.

#### Developing a Grassland Management Plan

Developing a grassland management plan (GMP) involves several steps. One of the first steps in developing a grassland management plan is to acquire an aerial photograph of the grassland. On the map, outline the field included in the GMP. Soil tests should then be completed for each field. A complete grassland inventory looking at plant composition must also be conducted to help the grassland manager determine the quality and quantity of pasture available and assist in calculating stocking rates.

Wildlife needs are another factor to be considered in a grassland management plan. A successful GMP can provide for both wildlife and livestock. Assistance for creating a wildlife management plan is available from the Missouri Department of Conservation.

After these steps have been completed, a grassland management plan must be selected. Possibilities for grazing are endless, and the grazing system chosen depends on the individual's situation. For example a dairy farm that requires high quality forage may have 20 paddocks and may rotate the herd twice a day. On the other hand, a small cow-calf producer could do quite well with only a three-to five-paddock system with longer rotation periods. The grassland manager needs to decide what areas should be grazed and which fields should be mechanically harvested for hay or silage.

#### Selection of Grazing Systems

The selection of a grazing method is based on the interaction between soil, environment, resources (such as time and labor), herd needs, wildlife, and plants. The goal when choosing a grazing system is to match the forages with livestock needs, but other factors may influence the choice of a grazing system. For example, the amount of labor available could determine how many rotations may be made or if a rotational system would be feasible. If there has been a drought, forages will decrease in yield, and supplemental feeding may be needed. Plant composition could lengthen the grazing season if the forages chosen

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have different growing seasons. Flexibility, intensive management, and a knowledge of plant and animal growth are the keys to profitable livestock management.

## Basis of Forage Selection

The two factors that determine forage selection are forage management and livestock management. The goal of forage management is to find a forage that will create a persistent stand and produce acceptable yields. It involves determining what will grow in the given climate and site conditions. Livestock management influences forage selection by looking at the nutrient needs of the livestock and the intensity of harvest or grazing needed to sustain the herd and reach the goal of profitable gains.

Of the two factors, forage management should be considered first. The fact that a particular forage can meet the needs of the herd is not important if the forage cannot grow in the grassland. A producer should determine what plant species will grow and then decide which of these plants will best meet the needs of the herd.

## Maintaining and Renovating a Grassland

Several practices are commonly used to maintain or renovate a grassland. Renovating involves making improvements to promote renewed growth. Some methods for maintaining and renovating a grassland are outlined below.

Testing the soil and then amending it is a good practice. Learning the current conditions of the soil from the test results will indicate what changes need to be made to improve the soil. Spreading fertilizer or liming are two ways to amend the soil. Disking may also be used to amend the soil when maintaining the grassland.

In renovation, suppressing or destroying existing unwanted plants may be necessary to decrease competition. The grassland manager can use chemicals or machinery to get rid of unwanted plants. If chemicals are used, he or she should be aware of the safety precautions for humans and animals and always follow the instructions on the label. Machinery can also be used to disk or plow the surface to eliminate existing plants.

Most often, renovation of a grassland includes the introduction of legumes, which may be done by overseeding or no-till planting. In Missouri, the legumes most often used are white clover, annual lespedeza, red clover, and birdsfoot trefoil. They may also be used in combination with each other. Overseeding is accomplished by broadcasting legumes into an existing pasture in which the stand is thinned or grazed close to the ground. This practice is usually carried out during late winter, which is sometimes called frost-seeding, or early in the fall. Overseeding can be one of the most effective methods of renovation if conducted properly and at the right time.

No-till renovation is accomplished with a no-till drill. The no-till drill is a piece of specialized machinery that can place the seed into the ground at an optimal depth without the ground being worked up (i.e., by disking or plowing). This practice is also sometimes used to establish additional grass. Some advantages of no-till planting are lower seeding rates, precise placement of seed, and reduction in the loss of valuable organic matter due to tillage. One of the greatest benefits of the no-till method is that soil erosion can be greatly reduced.

Prescribed burning is another way to renovate and improve the quality of grasslands. This practice is most commonly used for native warm-season grasses such as switchgrass, big bluestem, and indiangrass. Fire is used deliberately to remove the unwanted previous year's growth, keep invading woody plants in check, and reduce competition from invading cool-season grasses, such as tall fescue, bluegrass, and smooth brome grass. Burning is usually conducted in the spring. This practice encourages fast and vigorous growth right after the burn, since it releases nutrients that are locked up in the previous year's growth. Benefits from fire usually peak 2 or 3 years after the burn, and most native warm-season Missouri grasslands need prescribed burning every 3 to 5 years. Landowners interested in using prescribed burning to maintain grasslands must learn to use it safely. Training is available from the NRCS and MDC. When planning a burn, the grassland manager should contact the local NRCS office and local rural fire departments.

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### Summary

For a grassland management plan to be profitable, many aspects of production must be considered. An inventory of current conditions helps the producer to make educated choices about grazing systems, forage selection, and renovation plans.

Smith, Dale, Raymond Bula, and Richard Walgenbach. *Forage Management*. 5th ed. Dubuque, IA: Kendall/Hunt, 1986.

Walton, Peter D. *Production and Management of Cultivated Forages*. Reston, VA: Reston Publishing Company, Inc., 1983.

### Credits

Barnes, Robert F., Darrell A. Miller, and C. Jerry Nelson. *Forages, Volume I: An Introduction to Grassland Agriculture*. 5th ed. Ames: Iowa State University Press, 1995.

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