



FORAGE FACTS

Publication Series

HOW TO ASSEMBLE AND EVALUATE A FORAGE GRAZING SYSTEM

INTRODUCTION

Within a particular county, or even community, the basic forage resource may be quite different. Soil, kind of grass, dryland or irrigated forages, cool-season or warm-season and even annual or perennial plants make up part of that diversity. There is no one plan or program that fits all. Consequently, there is no “right or wrong” forage program. There are numerous options, and each producer must make careful selections. Any forage program must result in the most economical method that results in good livestock performance and is environmentally sound.

Which came first, the chicken or the egg? Each producer should match the forage program to the cattle needs or base the cattle to the forages that are available. Without question, a producer’s overall forage production philosophy has an important influence on the type of forage program developed. For example: if the producer doesn’t want to graze grain sorghum after harvest residue, that forage won’t be part of this program.

There is a basic difference in producer philosophy in different parts of the United States. Some see themselves basically as *livestock managers* who run their animals on pasture. In other parts of the country, producers see themselves as *grass farmers* who are using livestock to harvest their grass.

ASSEMBLE THE SYSTEM

Producers should start with the inventory of the forages that they already have and develop the livestock program around the resource. Generally, the animal portion is either already on hand or we want to have a particular animal program, and then try to make an existing forage situation fit the needs of the livestock.

It would be ideal for producers to have the nutrient requirements of the grazing animals met by an existing forage mix.

Producers should inventory their forage source. Write down acreage and kind of forage. Note when it is high quality and when quality is low. Make an estimate of yields. Consult K-State Research and Extension agents or NRCS staff who have knowledge of production in your area. Work on averages. It is better to have more forage than expected instead of the reverse.

Next, inventory your animal requirements—cow/calf or yearlings, fall-calving or spring-calving. Does the forage that you currently have “line up” with the high nutrient requirements of the yearlings or cows during the first three months after calving?

Grass farmers will establish forages as needed to fit the animals’ nutritional needs.

FORAGE PLANT SELECTION

There are no all season forage plants available, although native rangeland can be close. Producers should recognize the limitations of plant seasonality as well as take advantage of its benefits. Complementary forage systems that incorporate both cool- and warm-season plants (in separate pastures) provide nearly yearlong grazing.

COOL-SEASON FORAGE

Cool-season forage plants operate on the C₃ photosynthetic process. Optimum growth occurs around 65

to 75°. Cool-season forages start growth early in the spring, go dormant in the summer as it gets hot and dry, then resume growth in the fall and early winter. As a general rule, they both respond to applied fertilizer and require more moisture than warm-season plants. We have both perennial and annual cool-season forages. They all reproduce in May or June. The perennials regrow after seed maturity, whereas annual plants do not. Being cool-season, we call cool-season annuals “winter annuals.”

Bromegrass. A native of Europe and introduced in the United States in the early 1880s. Can be used for grazing or hay. It is best adapted to well-drained soils in the 28- to 35-inch rainfall belt in Kansas. Will respond to nitrogen as well as P_2O_5 and K_2O if a soil test so indicates. Makes most of its yearly growth in the spring; limited growth in the fall. When cut for hay, leave a 4-inch stubble. Never graze below 3 inches. When grazed close, allow 30 days before grazing again.

Tall Fescue. A native of Europe and introduced in the United States in 1886. It is best adapted to claypan soils where excessive moisture is a problem some parts of the year. It is tolerant of more abuse than bromegrass, but really responds to good grazing management including fertilization. Producers should always plant a variety that is fungus free (no endophyte) to avoid animal performance problems. Legumes perform better in fescue than bromegrass because it is a “bunch” grass. The quality of tall fescue is best in the spring and fall. Stockpiled growth can be grazed in the winter. When fall nitrogen is applied, protein stays at about 10 to 12 percent. Without it, protein drops to 6 percent.

Winter Cereals. Winter annuals, such as wheat, rye or triticale, can be planted in early September and grazed when plants are established well enough that they are not pulled up by the grazing animal. In the case of wheat, it can be grazed and harvested for grain. Of course, the option to “graze-out” is always there. For graze-out situations, consider a mixture of wheat and rye; about one-third rye and two-thirds wheat. If you do not let the rye seed mature, there is no volunteer. Winter cereals respond well to nitrogen. Apply one-half of the total needed at planting and topdress the remainder during the winter. Total nitrogen should be 120 pounds. P_2O_5 and K_2O should be applied to the soil test. If wheat is grazed and cut for grain, too, do not graze later than about April 1 or jointing, whichever comes first. Other cool-season grasses include: orchardgrass, reedcanary grass, Kentucky bluegrass and Matua. These are limited in use—know the limitations of each before using them.

WARM-SEASON FORAGE

Native Rangeland. This is a true native mix of forage species which has been in existence since time began. Developed under the climate that exists, it has experienced drought, floods, fire, periods of destructive grazing and long rest periods. Today’s native rangeland, from the Flint Hills east, is a diversity of plants—warm- and cool-season, grass and broadleaf, some annual and perennial. We usually say that big bluestem, little bluestem, indiangrass, switchgrass and sideoats grama are the grasses, when in reality the system may contain over 200 plant species. Fire is an important management tool today. Brush control and reduction of spot grazing are important reasons for its employment. In the case of yearling cattle, annual burns are important for animal performance. For cows, three consecutive years of fire are necessary for good brush control. The best way to improve rangeland is intensive early stocking or to double-stock until July 15, and then remove all cattle. Winter grazing does not hurt native rangeland, but may reduce fuel supply for spring burn.

Summer Annual Forages. Sudangrass, Sudan-sorghum hybrids, hybrid Sudangrass and hybrid pearl millet are summer annual forages. They all produce a lot of forage in a short period of time in late spring and summer. Of the summer annuals, hybrid pearl millet is the best to graze. When drilled at 10 pounds of seed per acre, it is ready to graze when it is 16 to 18 inches tall. It is very leafy and animals perform well. It does not contain prussic acid, but can accumulate nitrates under drought conditions. The Sudangrass annuals produce more forage than pearl millet, but two-thirds of the weight is in the stalk of the plant. Those forages are best used for hay (when cut early) or greenchop. All summer annuals respond to nitrogen. Apply 50 pounds of nitrogen at planting, and another 50 pounds six weeks later.

Crabgrass. This can be a valuable summer forage, too. Crabgrass is not native to the United States, but probably came in with European immigrants as a contaminant in seed for feedstuffs. Today, there is even a registered variety named Red River. Common or unnamed crabgrass is not as productive as Red River. Crabgrass is used for the forage production during the summer months. If planned, crabgrass will produce year after year by volunteering. It works very well in a winter cereal crabgrass rotation. Please discuss production details with your county agricultural agent.

Bermudagrass. A highly productive warm-season perennial, limited to about 12 counties in south central and southeast Kansas. A native of Africa, the plant lacks winter hardiness in most of Kansas. However, variety development continues to add to the production area. Stands are generally established by sprigging roots. Only one variety, Guyman, can be seeded

and survival expected. Once established, nitrogen should be split into three applications: first in late April (75 pounds N); second, early June (50 pounds N); and third, mid-July (50 pounds N). Can be cut for hay two or three times or grazed with high stocking rates. Probably best for cows because individual animal performance on stockers can be less than 1.5 pounds per day; but that is not to say that it cannot be improved with management.

Other Warm-Season Forages. Eastern gamma grass, alfalfa and other legumes offer a wide selection of forage crops to choose from. Please visit with your county agents and let them help you plan your forage program.

EVALUATION OF FORAGE PROGRAM

One would like to say if you made money, you must have a good program. But with depressed cattle prices, the one that loses the least may be a better evaluation tool.

In reality, forage programs must be evaluated on such things as:

- Weaning weight and cow conception rates
- Stocker gains: spring, summer, fall and winter
- Condition of perennial forage pastures
- Amount of hay purchased
- Animal health problems
- Was the producer happy with the results?

Now it is your turn to develop a forage program and evaluate it.

Situation 1. Cow/calf, calve in February to March, sell calves in the fall.

When are nutrient requirements the highest? What will you feed these cows year round?

Situation 2. Yearlings purchased in the fall, wintered and summer grazed. To keep average daily gain at least 1.5 pounds, what will you do?

Evaluation: How will you measure success?

Table 1. Forages and Their Grazing Times

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Brome				* ————— *								
Fescue	—————	—————		* ————— *					* ————— *			
Native	—————	—————	—————	————— *	————— *	————— *	————— *	————— *	————— *	————— *	————— *	————— *
Alfalfa				————— *	————— *	————— *	————— *	————— *	————— *			
Bermuda					—————	—————	—————	—————	—————			
Wheat	—————	—————	—————	* —————						————— *	————— *	————— *
Crabgrass							—————	—————	—————			
Sorg. Residue										—————	—————	
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

* Indicates "best" grazing time.

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