

FORAGE MIXTURES FOR DAIRY GRAZING

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One of the biggest challenges facing a dairy operation is the difficulty of providing high-quality feed to a lactating cow. Often dairy producers will feed a total mixed ration, or TMR, consisting of corn silage, hay or haylage, and various grains. Dairy producers may not consider incorporating grazing into their feeding programs, assuming it takes too much land and time, or fearing that milk production will decrease due to a lower quality diet. With the right management and the proper forage species, as little as 5-10 acres can be grazed, replacing 20-30 percent of the TMR with no drop in milk production.

THINK OF YOUR FIELD AS A FEED TROUGH

When many producers think of grazing pasture, they may picture cattle staying all day on the pasture, part of the time grazing and part of the time laying. However, supplemental grazing can be accomplished without remaining all day in a pasture. Planting a small acreage of high-quality forage that the animals can access one or two times a day to graze can provide a high-quality supplement or replacement for a portion of the TMR. After they have finished grazing and begin to lie down, usually 30-45 minutes, they should be moved out of the pasture to prevent damage to the forages.

This concept is one that many dairy producers are familiar with, but they may be hesitant to implement due to lack of time, land or diet quality concerns. However, grazing a herd or group of 50 to 150 dairy cows on high quality forages

can reduce feed cost while maintaining milk production. By relying more on pasture, the costs associated with producing stored feeds are reduced, which makes grazing a cost effective option for some producers.

GETTING STARTED

Before planting, a few questions should be answered. How much land are you setting aside for grazing? Pastures should be separated into small paddocks for best usage, but as little as 5-10 acres can be sufficient, depending on herd size and forage yield. The acreage selected should be located relatively close to the milking parlor or loafing area in which the cattle normally are kept. It is preferable to minimize the distance cattle need to walk to pasture, especially since they may only be in these pastures for 30-45 minutes at a time, one or two times a day.

POTENTIAL FORAGE MIXTURE

There are several forage species that can provide high-quality forage for this strategy. Trying various species with which you are familiar in your operation can enhance your mixture and your success. The goal with any species mixture is to include both grasses and legumes, which provide high yield, high quality, and a reduced need for nitrogen fertilization due to nitrogen fixation by the legume. The following species mixtures have been successfully utilized on dairy farms in Tennessee.

Orchardgrass, tall fescue, red clover, white clover, and alfalfa

This is a perennial mix with reliable production over a long grazing season. This mixture can be planted either conventionally or no-till. If planting no-till, be sure to use a herbicide such as glyphosate to kill all existing vegetation. The planting date and seeding depth recommendations are similar for all species, simplifying planting. This mixture can be planted in the fall, with grazing beginning the following spring. Under good conditions, this cool-season mix should be productive into midsummer and again in the fall.

The high legume component in this mixture results in no need for nitrogen fertilization. Phosphate, potash and lime should be applied based on soil test results. Apply 2 pounds of boron per acre each year to meet the alfalfa needs.

Species mixture	Seeding rate (lb/acre)	Comments
Orchardgrass	3-5	Seeding depth: 1/4 inch
Tall fescue	7-10*	Seeding date: Aug 15–Oct 1
Red clover	4	*Be sure to use either endophyte-free or a novel endophyte infected tall fescue variety. Do not use KY 31 endophyte infected tall fescue.
White clover	2	For legumes, be sure to use pre-inoculated seed or alfalfa-true legume inoculant
Alfalfa	10	

Sorghum x sudangrass hybrid/cowpea; wheat/crimson clover

This is a high-yielding combination that uses both warm- and cool-season annuals to provide a long grazing season. Since it uses two annual mixtures, two separate seedings are required. These can be seeded either in a conventional or no-till practice. Using no-till will allow for more timely establishment and a firmer seedbed. To prepare for no-till planting, apply glyphosate as recommended by the label to kill all existing plants. The sorghum x sudangrass hybrid and cowpeas should be planted in late spring, and will be ready to graze in 30-45 days. This mixture can be grazed until early September, then killed in preparation for planting wheat and crimson clover. Wheat and crimson clover can be grazed until early May, then killed and rotated back to sorghum x sudangrass hybrid and cowpea.

Since there are two plantings each year, there is more risk of weather issues such as drought or cool temperatures limiting the early season forage availability with this program. Establishment costs also tend to be higher with this mixture.

Both the cool- and warm-season mixtures contain a legume, so nitrogen fertilization may not be needed. Evaluate the legume stand after establishment to determine if nitrogen fertilization is needed. Phosphate, potash and lime should be applied based on soil test results.

Species mixture	Seeding rate (lb/acre)	Depth (in.)	Seeding date	
			Spring	Fall
Sorghum x sudangrass	30	½-1	Apr 20- June 15	-
Cowpea	50			
Wheat	100-150	¼-½	-	Aug 15- Nov 1
Crimson clover	20-25			

Annual ryegrass, crabgrass and red clover

This mixture utilizes two cool-season species (annual ryegrass and red clover) and one warm-season species (crabgrass). These species should provide forage production for a large portion of the year without having to spray and re-establish between seasons. All of these species are relatively aggressive as seedlings, allowing for seeding with limited soil disturbance. In fact, if stubble height is minimized, all of these species can be successfully established by broadcasting on the soil surface. The annual ryegrass and red clover should be planted in the fall, providing grazing during winter and spring. The field should be grazed down or mowed in late spring and the crabgrass can be over-seeded either by drilling or broadcasting. Pulling a harrow or lightly disking can improve seed to soil contact. Once this rotation is established, each species can be planted by broadcasting and harrowing a field during the appropriate seeding window.

Annual ryegrass and crabgrass are both annual species, while red clover is typically biennial (lives for two years). It is possible to manage this mixture so that seed is only added every two or three years. All of these species are good seed producers, so light grazing during the spring and late summer will allow these species to reseed.

Red clover has been shown to provide significant amounts of nitrogen to a grass mixture, so nitrogen fertilization may not be needed. If the red clover portion of the mixture is reduced in some years, it may be beneficial to apply nitrogen to the annual ryegrass in spring or the crabgrass during summer. Phosphate, potash and lime should be applied based on soil test results.

Species mixture	Seeding rate (lb/acre)	Depth (in.)	Seeding date	
			Spring	Fall
Annual ryegrass	20-30	¼-½	-	Aug 15- Oct 15
Red clover	8		Feb 15- Feb 28	Aug 15- Oct 15
Crabgrass	3-5 PLS		May 1- July 1	-

GRAZING MANAGEMENT

The goal of this type of system is to allow the cattle to select a high-quality diet, thereby maintaining milk production. Since the most nutritive portion of the plants will be the leaves and upper stem, do not force the milking herd to utilize all of the standing forage. Let these animals graze the top portion of the canopy, then move them to a new paddock for the next grazing. Allow dry cows or heifers to graze the remaining forage in the paddock.

The sorghum x sudangrass/cowpea mixture should be grazed when it reaches approximately 25-30 inches tall, while the other mixtures should be grazed when they reach 10-12 inches tall. A good rule of thumb is to let the milking

herd graze the top 30-50 percent of the forage, leaving the next 25-30 percent for dry cows, and leaving 25-30 percent as stubble for adequate regrowth.

FINAL THOUGHTS

As in any production system, there are pros and cons with each of these forage mixtures. While each can support milk production while reducing feed costs, diversifying forage production will help provide for a more reliable grazing system year-round. Consider planting separate acreage to two of these to ensure grazing in between plantings and throughout the seasons.

Professor Joe Burns



Funding for this publication was provided by the Joe Burns Memorial Endowment. Professor Joe Burns spent his career educating forage producers in Tennessee and across the Southeast. He was a nationally renowned forage specialist with University of Tennessee Extension and served in that role for 37 years before retiring in 1992. During his career, he was honored as the Tennessee Man of the Year in agriculture by Progressive Farmer magazine and was awarded both the Merit Award and the Distinguished Grasslander Award from the American Forage and Grassland Council. Burns was well-known not only for his knowledge but also for his kind and encouraging attitude. He was a role model and mentor for many faculty at UT and producers across the state.

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