

Bridge seasonal changes in pasture quality

by Brad Heins

PASTURE is the primary source of forage for grazing dairies. For organic dairies, the National Organic Program livestock production regulations require a minimum of 120 days grazing per animal. In the northern United States, this requirement is typically met by a May to September grazing season, and profitability depends on pastures that provide a uniform, season-long supply of high-quality forage.

However, in this region, seasonal variation in temperature and precipitation creates a challenge. The predominant forage plants undergo a "summer slump" in production.

To create a more uniform and extended forage supply, research studies have recommended diversifying pasture systems to include warm season species in the summer. An approach to improving diversity in a farm's forage base is to combine annual and perennial crops in separate fields. Grazing systems using these different approaches to achieve diversity require biological, environmental and economic analysis.

Overcome the summer slump

Why should summer annuals be considered by livestock producers? They are very drought tolerant and can fill a gap in feed when other species experience the "summer slump." They are also great emergency forages during dry weather.

During the summer of 2013, we planted two summer annuals for grazing at the University of Minnesota WCROC dairy in Morris, Minn. BMR sorghum-sudangrass and teff grass were planted to extend our forage supply. These grasses were seeded with a drill on May 28, 2013, which was about two weeks later than what we planned.

BMR sorghum-sudangrass has become more popular due to the BMR gene and improved NDF digestibility (5 to 10 percent higher than regular sorghum-sudangrass). The plants have thick stems and are very leafy. Sorghum-sudangrass has moderate regrowth potential, but you should

not graze or cut it for forage until the plants are at least 18 inches tall to reduce prussic acid concentration.

When grazing sorghum-sudangrass, animals should be moved so they leave 6 to 8 inches of stubble, but they might waste 20 to 30 percent of the forage through grazing. Lastly, sorghums and sudangrasses are luxury consumers of potassium, so they should not be used for dry cow forages. For seeding rate, we seeded our fields and pastures at 20 pounds per acre.

Teff grass is native to Northern Africa. Teff is drought tolerant and can be seeded into many soil types. With this grass, you will have a high yield with competitive forage quality and will have rapid growth for nine to 12 weeks. The seed is very, very small, and we seeded our pastures at 8 pounds per acre. Both annuals should be planted at a soil temperature of 60° to 65°F and planted 1 to 1.5 inches deep.

The table has averages for forage quality of BMR sorghum-sudangrass, teff grass and cool-season grasses during 2013. The cool-season species consist of mixtures of smooth brome grass, orchardgrass, red and white clover, and alfalfa.

The dry matter of the sorghum-sudangrass was low because the cattle grazed the fresh forage in the early vegetative state. The summer annuals were not as high in crude protein as the cool-season grasses. However, with lower crude proteins, we likely improved nitrogen utilization by the milking herd.

The acid detergent fiber values of the grasses were very similar and are within the range of low 30s to mid-50s. All of these grass species were highly digestible. The neutral detergent fiber levels were higher for the summer annual grasses compared to cool-season species.

The summer annuals were similar to the cool-season grasses for sugar and nonfiber carbohydrates, and they provided similar net energy for lactation and milk per ton as the cool season grasses.

Remember, sorghum-sudangrass and teff grass are not replacements for cool-season forages, but they should be added to a forage program to complement the cool-season grasses. 

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Forage quality for three grasses during 2013

Description (% of DM)	Grass species		
	BMR sorghum-sudangrass	Teff grass	Cool-season grasses
Dry matter	17.0	29.0	27.0
Crude protein	12.9	13.7	19.9
Acid-detergent fiber (ADF)	37.6	40.2	35.5
Neutral detergent fiber (NDF)	58.1	61.8	52.7
TTNDFD	53.9	46.4	52.5
Lignin	5.4	3.6	5.7
Sugar	6.3	5.8	7.3
Nonfiber carbohydrates (NFC)	18.8	14.1	18.1
Net energy for lactation (Mcal)	0.56	0.53	0.59
Milk per ton	2476	2028	2450