



# FORAGE FACTS

**Publication Series**

## SUMMER ANNUAL FORAGES: UTILIZATION

### INTRODUCTION

Summer annual forages are warm-season grasses that tolerate hot, dry weather and are adapted to most areas of Kansas. Harvesting and utilizing summer annuals depends on the livestock operation, weather, available equipment, storage facilities, and the needs, abilities and preferences of the producer.

#### GRAZING

Sudangrasses and hybrid pearl millets can provide high-quality forage in a grazing system. Sorghum-sudangrass hybrids can be grazed, but are less palatable than sudans or hybrid pearl millet, and livestock performance is lower. Because forage sorghums have thick stems, limited regrowth ability, and are notorious prussic acid producers, they are desirable for silage production only.

The objective of a summer annual grazing system is to keep the plants in a vegetative stage and prevent them from seeding. Sudangrasses should not be grazed until 18 inches tall and sorghum-sudangrass hybrids should not be grazed until 24 to 30 inches tall. Ideally, the pasture should be rapidly grazed to a 6- to 8-inch stubble, rested until regrowth reaches the appropriate height, and then regrazed. Overstocking removes too much stubble and severely reduces regrowth production, whereas understocking allows the plants to mature and become stemmy. Livestock will selectively graze the leaves and avoid the stems. The forage would be better utilized as hay or silage if the summer annual is more than 36 inches high.

Summer annual grazing programs may either supplement or complement native grass. A supplementary forage system allows livestock to graze summer annual pasture simultaneously with native range at an approximate ratio of one acre cropland to three acres rangeland. Once the summer annual is ready to graze,

the cattle are allowed free access between native and planted forages. Native and summer annual pastures are grazed as separate entities in a complementary program. Livestock are moved from native grass to summer annual pasture around mid-July and remain until the end of the growing season. The livestock receive a higher quality forage, and the late-season rest increases the vigor of the perennial grasses.

Continuously grazed complementary pastures are generally underused or overused because stocking rates do not correspond with the fluctuations of moisture, temperature, and regrowth throughout the growing season.

The highest stocking rates and most efficient use of summer annual pastures are obtained with a rotational grazing system. This involves subdividing a pasture and stocking one section with enough livestock to graze the plants to a 6- to 8-inch stubble in 10 to 14 days and then moving the livestock to the next field. The planting dates can be staggered so the cattle are sequentially rotated to a field that is ready to graze.

With a rotational grazing system, summer annuals can provide nearly 90 days of high-quality forage which can handle two to six yearling steers per acre. Actual stocking rates are difficult to predict because they depend on plant species, livestock size, soil type, fertilization, moisture, and other managerial and environmental factors.

## HAY UTILIZATION

Sudangrass and hybrid pearl millets are best adapted for hay operations. Sorghum-sudangrass hybrids can be cut for hay, but their thick stems are difficult to cure, and crushing, crimping, or a hay conditioner is required to speed drying.

For high quality hay, plants should be cut before the heads emerge. Harvesting after heading substantially reduces forage quality. Summer annuals can produce two or three hay crops if 6 to 8 inches of stubble is left for regrowth. Applying 30 pounds of nitrogen after the first harvest can hasten regrowth and increase protein content.

## SILAGE UTILIZATION

Forage sorghums and sorghum-sudangrass hybrids are best suited for silage because they have a high yield, quality and grain potential. The highest quality silage is from forages that have at least 20 percent of the dry matter from grain. The tall, late-maturing hybrids may produce high forage yields, but they produce minimal grain yield. The late-season cultivars are prone to lodging and a high moisture content, which can produce excessive effluent at ensiling.

Harvesting the forage at the proper stage of maturity is a critical factor affecting silage quality. Sorghums should be harvested for silage at the mid- to late-dough stage of kernel maturity to optimize forage quality and yield. The moisture content at the mid- to late-dough stage of kernel maturity is approximately 60 to 70 percent. Summer annuals that are cut at a higher moisture content must be wilted until the moisture content reaches an acceptable level.

## GREEN CHOP

Sorghum-sudangrass hybrids are best suited for a green chop program. Once the crop reaches 30 inches it can be cut and fed daily as needed. With a cutting height of 6 to 8 inches and adequate moisture and fertility, the regrowth can be harvested within 30 days.

Green chop is generally a high-protein forage and commonly fed to dairy cattle or other high-producing livestock. The harvested forage should be fed immediately after cutting and not allowed to wilt and heat in the wagon or feed bunk.

## LIVESTOCK POISONING POTENTIAL

Summer annual forages may be potentially dangerous to livestock. Under certain environmental and managerial conditions, summer annuals can be prone to nitrate toxicity and prussic acid poisoning, however, those problems can be minimized with careful management. For more detailed information, see K-State Research and Extension publication MF-1018, *Nitrate and Prussic Acid Toxicity in Forage*.

Horses should not consume high amounts of sorghums, sudangrasses, or foxtail millet because they occasionally may develop kidney and bladder problems from the forages if they are a major component of the diet.

## OTHER PUBLICATIONS

Nitrate and Prussic Acid Toxicity in Forage  
(MF-1018)

Prussic Acid Poisoning (Forage Fact Sheet Series)

Nitrate Toxicity (Forage Fact Sheet Series)

Summer Annual Forages (MF-1036)

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