Forage News

MISSISSIPPI STATE UNIVERSITY EXTENSION SERVICE

Integration of Summer Annual Forage Crops in Mississippi

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Often we find fields that were planted in annual ryegrass and they will remain fallow during the summer time. These conditions allow for introducing summer annuals that could produce a lot of forage in a short period of time under the moisture and heat conditions that we see in Mississippi during the summer months. Summer annual grasses grow best at relatively high temperatures (80 ºF) and can produce under conditions of limited moisture. They differ in growth and production potential, but have several similar characteristics. Some major disadvantages include the high cost of annual establishment and the increased risk of stand failure due to low rainfall in late spring and early summer. Some of the desirable characteristics of summer annuals are rapid growth (especially in mid-season), excellent drought resistance, and good response to fertilizer and water. Most of these summer annuals could be grazed or harvested for hay.

Sudangrass and Sorghum-sudangrass hybrids

Sudangrass is a rapid growing warm-season grass which can produce good quality forage if managed properly. It usually grows between 3 and 8 feet high. True sudangrass usually has fine stems and grows rapidly after grazing. Sudangrass develops only fibrous roots and does not have rhizomes. It usually contains lower levels of prussic acid than sorghum-sudangrass hybrids, but is also lower yielding.

There are several sorghum-sudan hybrids in the market nowadays and they resemble sudangrass in growth. These hybrids are taller, have larger stems (stalks), and are higher yielding. Some of the new varieties use the "Brown Midrib (BMR)" genetic trait that produces less lignin. This genetic trait has shown a decrease in lignin concentration (40 to 60%), an increase in forage palatability (15 to 30%), and therefore, an increase in digestibility and improvement in forage quality. The BMR hybrids have also shown a better yield potential compared to traditional sorghum-sudan hybrids.

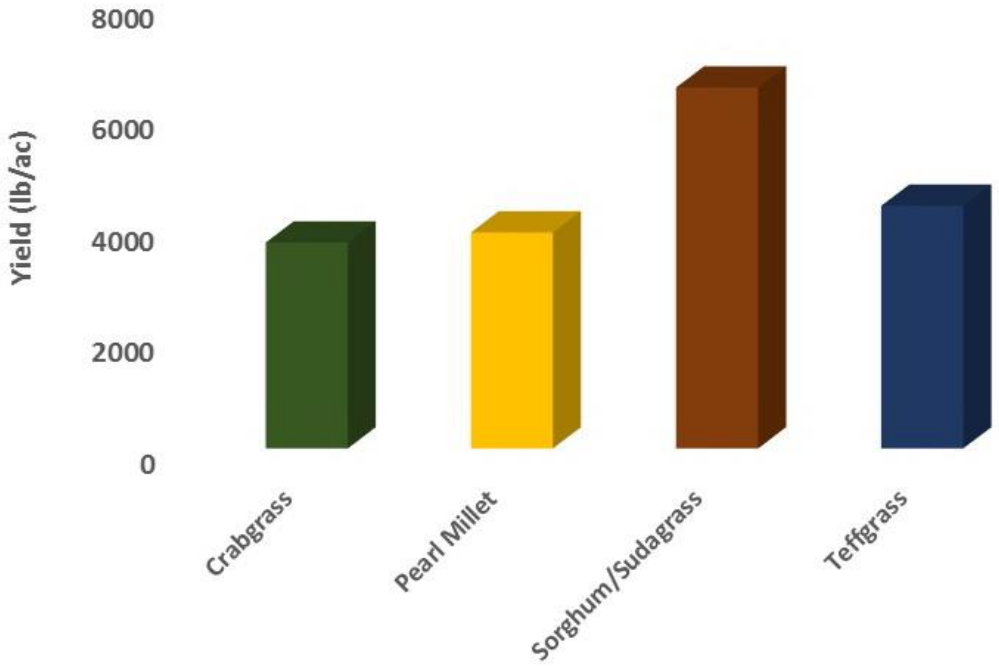

Figure 1. Average biomass production of summer annuals in Mississippi.

Browntop, Foxtail, and Pearl Millet

Millet has smaller stems and greater leaf biomass than forage sorghum, sudangrass, and sorghum-sudangrass hybrids. Browntop millet is

a very short and leafy species with high tolerance to soil acidity. Browntop has a growing season of about 60 days and only hay cut is obtained. Pearl Millet is usually preferred due to faster growth after cutting or grazing. Pearl millet does not produce prussic acid, and the summer forage produced is safe for pasturing horses. Millet is best used for hay or pasture. It is not as drought tolerant as some of the other summer annual grasses. Foxtail millet has smaller stems and is leafier than the sorghum, sudangrass, or sorghum-sudangrass hybrids. However, foxtail millet does not grow after harvest. Foxtail millet yields are usually lower than yields of sorghum -sudan hybrids. Start grazing millet at 18 inches tall and stop at a height of 8-12 inches. Manage additional growth in same manner.

Forage Sorghums

Forage sorghum is best adapted to fertile, well-drained soils that have a good water holding capacity. Forage sorghums have improved leafiness, better seedling vigor and excellent yield potential. Most of the growth (90%) occurs in June, July, and August. Sorghum can be grazed 45 to 60 days after emergence. Summer grazing may occur with caution due to higher levels of prussic acid even when plants are completely headed. Before grazing, sorghum should be at least 30 inches tall and graze to a height of 5 to 7 inches. Manage additional growth in the same manner. Forage sorghums are best used in a single hay cut. Haying is best done when plants are in bloom or early dough stage and a mower-conditioner should be used to crush the stems. Allow drying time for stems to dry before baling. In the fall after plants have been killed by frost, insure that plants have no re-growth before allowing livestock to graze.

Crabgrass

Crabgrass is commonly considered a weed, but possesses significant potential for supplying high quality summer forage. Some advantages of crabgrass are that it occurs naturally in most summer pastures, especially those that have been overgrazed, and it has a good reseeding potential. Crabgrass is best adapted to well-drained soils such as sands, sandy loams, loamy fine sand, loams, and silt loams. Crabgrass is best utilized in a rotational grazing system. It can produce grazable forage in as little as in 35 days, but normally 40 to 60 days are required. Grazing can be started at 6 to 8 inches and stopped at 3 to 4 inches. Hay should be cut at the early-to-late boot stage or at a height of 18 to 24 inches. Animals should be removed at least two to three weeks before the first expected frost in the fall to allow for reseeding.

Teffgrass

Teff is a warm-season C_4 annual grass that originated in Africa with great potential for hay production in the Southern US. It can be used as a summer rotation crop in fallow areas where only annual ryegrass is utilized as winter forage. Teff is characterized by a small seed (about 1.3 million seeds per pound), a large crown, and fine stems (which increase curing time when used for hay production). Its inflorescence is a loose or compact panicle. It is not recommended for grazing since it has a very shallow root system. Teff can fill a gap in summer forage production and make excellent hay for horses and livestock. Teff grass should be harvested at the boot stage to ensure best feed quality and to mini-

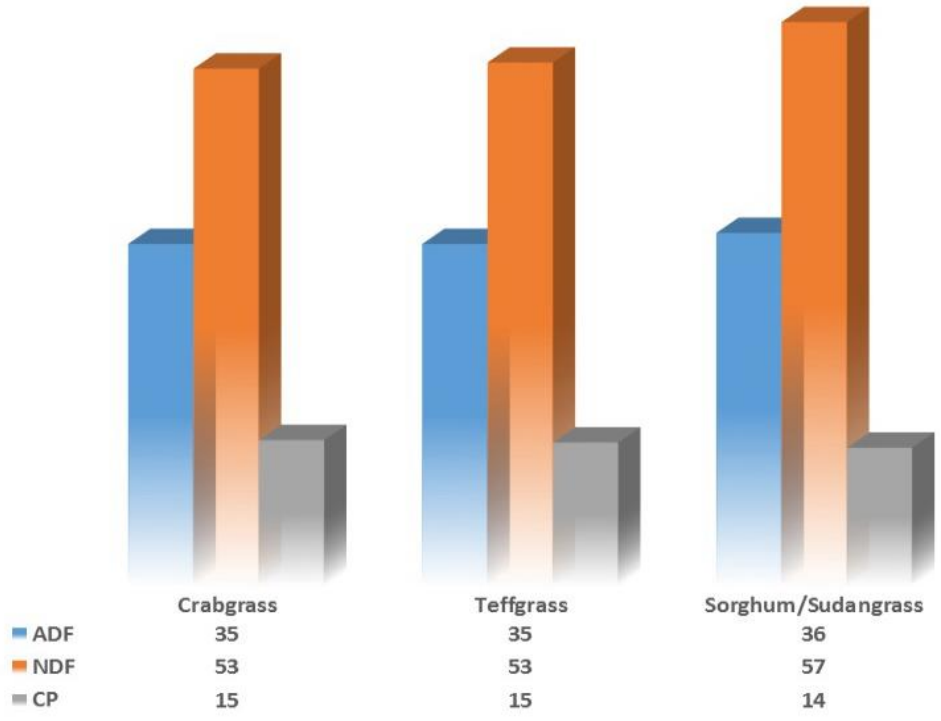

Figure 2. Avereage forage quality of summer annual forage crops in Mississippi.

mize lodging potential. The first cut is usually 45 to 60 days after planting (depending on location) under proper moisture and fertility, and subsequent cuts can be harvested following the same 45 to 60 days interval.

Potential Animal Health Hazards

The two most frequently reported animal health problems associated with summer-annual grasses are prussic acid poisoning and/or nitrate poisoning. Prussic-acid poisoning occurs in sorghum, sudangrass, and sorghum-sudangrass hybrids after a killing frost or drought. Usually cattle are more susceptible to prussic-acid poisoning than horses. Prussic acid usually dissipates within a week after frost. To avoid issues with prussic acid, it is recommended to follow the the guidelines: (1) graze or green chop only when grass is greater than 18 inches tall; (2) do not graze plants during or immediately after a drought; (3) do not graze on nights when a frost is likely; (4) do not graze after a killing frost until the plant is dry or until re-growth is greater than 18 inches; and (5) delay feeding silage for 6 to 8 weeks after ensiling.

Nitrate poisoning usually occurs when high rates of nitrogen fertilizer are used and drought conditions occur or exist. The high nitrate levels are especially found in the lower stems, and they do not dissipate as the hay cures. Nitrate poisoning can occur in pearl millet as well as in the sorghum-sudangrass hybrids and sudangrass. Nitrate poisoning can also occur when grazing stubble in the fall and winter, after the leaves and upper parts have been consumed by livestock, and they begin grazing the lower part of the stem (stalk). In horses, foxtail millet can cause kidney and joint problems while sorghum poisoning can occur as an infection of the urinary tract. The same precautions for prussic acid poisoning could help prevent nitrate poisoning.

For more forage variety testing information in Mississippi please visit http://www.MSUCares.com or contact your local County Extension Office.

For upcoming forage related events visit:
http://forages.pss.msstate.edu/events.html

May 13, 2014— North Mississippi Small Farmers Field Day, Chris & Carolyn Jones Farm, 32466 Hwy 45 Alt, Okolona, MS 38860

June 25 & 26, 2014— Summer Forage and Grassland Meeting, Raystown Lake Resort in Huntingdon County, PA, http://afgc.org/docs/events/Tour_6_25_2014_Registration_Brochure.pdf

July 10, 2014—Warm-season Forage Tour, Starkville, MS

October 3, 2014— Mississippi Hay Contest Entries Due, http://msucares.com/crops/forages/hay/index.html