
FORAGE: TALL FESCUE

In Mississippi



With an estimated 600,000 acres of tall fescue in Mississippi, it is clearly the most important perennial cool-season grass although it has some problems. It grows especially well in the Prairie and Flatwood areas, where moisture is adequate during periods of maximum growth. With high temperatures and less water-holding capacity in the sandy soils of south Mississippi, performance as a forage is low compared to the upper part of the state.

Fescue Toxicity

In the 1970s, Auburn University linked a disorder referred to as fescue toxicity with a fungus (endophyte) that is commonly present inside "Kentucky 31" tall fescue, the variety that occupies most of the Mississippi acreage. However, long-term stand persistence, competitiveness, yield, and summer survival are directly related to this fungal endophyte living in the fescue plant.

New varieties developed as fungus free, resulting in improved animal performance. These varieties were unable to adapt to the management needed for the fungus-infected fescue. In the mid-1980s, this resulted in many acres of lost stands and a general disregard for use of the fungus-free fescues.

Another breakthrough has occurred in the fescue fungus situation. The fescue endophyte produces different, naturally occurring chemical compounds (alkaloids). The fescue-fungus alkaloid has both helpful and harmful complexes. One alkaloid (ergovaline) results in fescue toxicity while another alkaloid (peramine) gives the plant stress resistance and pest resistance. Different strains of the fungus produce larger amounts of particular alkaloids; this explains why different fields of tall fescue are more harmful than others. Many of these problems can be reduced by lowering nitrogen fertilizer rates, keeping grass fairly short during the cool season, and diluting infected fescue with other forages such as bermudagrass, dallisgrass, and clovers. Cattle that graze infected grass and are fed infected hay may get a double dose because fungus problems can be increased from hay and seed.

Ongoing Research

Researchers at Ag Research Grasslands, Palmerstown North, New Zealand, identified a group of nontoxic (novel) endophyte strains and inserted them into elite cultivars of fescue. Under an agreement with Pennington Seed Company, Dr. Joe Bouton at the University of

Georgia and Dr. Gary Latch at Ag Research inserted this nontoxic endophyte technology (trade named Max Q) into endophyte-free Jesup and Georgia 5 tall fescue varieties. Pennington Seed, Inc., currently owns the commercial rights to both cultivars. Research is under way at other sources to develop additional nontoxic endophyte cultivars.

Two years of testing at the Central Georgia and Northwest Georgia Branch Experiment Stations under close continuous grazing gave excellent animal performance and stand survival. More work will determine the areas best suited to these new varieties. As data are obtained from different locations (Mississippi has research under way), recommendations will be established to give better management conditions. If you are a serious cattle producer who will spend the time to manage Max Q Jesup or Georgia 5 properly, you will eliminate toxicity problems and have the potential for greater productivity and profit. Contact your Extension county agent if you would like further information on the establishment and management of fescue.

General Suggestions

Have good seedbeds, free of competing grasses and broadleaf weeds. September to November plantings are usually best. Plant in pure stands at 20 to 25 pounds per acre seed rate. During establishment, take care not to overgraze by maintaining at least 3 to 4 inches of growing leaf in the area.

Do not overgraze. Rest (no grazing) is needed to maintain shade for the hot, dry soil that can occur during July and August. Therefore, if you plan to grow endophyte-free or endophyte-friendly fescue, treat it as a cool-season grass and plan to have some summer forages (such as bermudagrass, dallisgrass, or bahiagrass) in separate pastures for your cattle to use during the summer.

Establishment

Plant into a well-tilled, firm seedbed or no-till (NT) drill. Cultipack before and after seeding in a tilled seedbed. NT plantings require fields to be grazed or clipped closely and rarely require an application of a nonselective herbicide. See Extension Publication 1532 *Weed Control Guidelines* for herbicide information. For best results, plant between September 1 and November 1. Plant the seed $\frac{1}{4}$ to $\frac{1}{2}$ inch deep.

Fertilization

Keep the pH of soils between 6.0 and 7.0 for best results. Stand decline may occur if pH is less than 5.5. Plan to soil test, and apply needed fertilizer and lime during seedbed preparation. Your Extension county agent can provide information on how to take a soil sample.

Soils with a medium to high level of fertility require small amounts of phosphate and potash for establishment. They require only 60 to 70 pounds each of phosphate and potash per year for maintenance unless forage is removed as hay. If you harvest hay, double the potash application. If you have a low level of fertilizer in the soil, use up to 120 pounds each of phosphate and potash along with lime before or during seedbed preparation.

Limit nitrogen fertilizer to applications of 50 to 60 pounds of nitrogen in October and March. High-nitrogen fertilizer applications (greater than 50 pounds each) on endophyte-infected tall fescue may increase the problem of fescue toxicity. Summer applications of nitrogen to fescue that is growing with bermudagrass can accelerate fescue stand loss.

Grazing Management

The ideal stage to graze fescue is at a 6- to 8-inch height. Remove livestock when fescue is grazed down to 3 inches high. Plan to manage grazing height strictly during the first year. The first growth of fescue provides good-quality forage. Cross fence your fescue pasture in order to practice rotational grazing. Three pastures are needed for adequate rotational grazing. Although not always possible, having three or more pastures greatly benefits the grazing procedure because there is usually an excess of growth in the spring.

With a rotation plan, you can remove the excess as hay. If you cut it when grass is in the early-bloom stage, it makes excellent hay. Fescue makes the best hay in north Mississippi in early to mid-May. If fescue is growing alone,

clip it closely in August and allow it to grow or stockpile until early winter, if possible. Otherwise, rotate cattle among the pastures, grazing fescue no closer than to 3 inches. However, be careful while grazing stockpiled growth because rank growths of tall fescue contain very little magnesium. Cases of grass tetany are reported each year while grazing stockpiled fescue. Contact your Extension county agent about when to feed magnesium supplements under these conditions.

Renovation of Toxic Tall Fescue

Stands of toxic tall fescue can be renovated or killed to allow for establishment of endophyte-free or endophyte-friendly fescue with good success, if done properly. Begin in the spring by not allowing the toxic fescue to bloom and produce seed. Apply a herbicide to kill the existing toxic fescue. Then fallow the field in summer or plant a warm-season annual such as pearl millet if needed for hay or grazing during the summer. If the pasture already contains a warm-season, perennial grass, killing the tall fescue in early spring usually will not harm the warm-season grass.

In late August to early September, graze off existing forage and apply herbicide again if needed to kill the remaining tall fescue. Then in late September, no-till drill new tall fescue either alone or with white clover. Do not mix with either wheat or ryegrass because of competition. Once the stand develops to the recommended height, follow the suggested grazing management plan.

For more information on tall fescue, ask for Extension Publication 1982 *Management of Endophyte-Infected and Endophyte-Free Tall Fescue in Mississippi*. Contact your Extension county agent for further information on the establishment and management of fescue.



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Revised by **Malcolm L. Broome, Ph.D.**, Extension Forage Specialist, and David J. Lang, Ph.D., Associate Professor of Agronomy, based on an earlier version by E. Lamar Kimbraugh, Ph.D., Extension Forage Specialist (retired).

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