Dallisgrass

A GRAZING PLANT

FOR THE GULF COAST

AND EAST TEXAS

TEXAS AGRICULTURAL EXTENSION SERVICE

G. G. Gibson, Director, College Station, Texas
DALLISGRASS

E. M. TREW, Extension Agronomist
Texas A. & M. College System

Description

Dallisgrass, *Paspalum dilatatum*, is a perennial, warm-season grass that grows in clumps. Most of the leaves are produced near the base of the plant on shoots that arise from the knotty base of extremely short rhizomes. The oval, hairy seed are borne on the nearly leafless, 2 to 4 foot high seedstalks that are drooping to nearly prostrate except when supported by other plants. Dallisgrass is one of the first warm-season grasses to begin growth in the spring and one of the last to cease growth in the fall. It usually remains green through the winter in the Gulf Coast Prairie.

Adaptation

AREAS in Texas where Dallisgrass grows best are the Gulf Coast Prairie and the East Texas Timbers. It also does well in the eastern part of the Blackland Prairie, in creek bottoms and other sites with above average moisture. The primary and secondary areas of adaptation appear on the map in Figure 1.

SOILS to which Dallisgrass is adapted range from clay to sandy loam. It grows best on moist clay and loam soils high in organic matter. The grass will not grow in soils that remain waterlogged for several weeks during the growing season. Dallisgrass requires a medium to high fertility level for good growth, and it will not produce well on soils low in fertility. The grass is best adapted to soils that are slightly alkaline to slightly acid. It often becomes chlorotic on soils high in lime.

USE of Dallisgrass is primarily for grazing. It is unusually well adapted for use with low-growing legumes, such as white, hop and Persian clovers, due to its bunch-growth habit, Figure 2. For the same reason, it often
Figure 1. Dallisgrass is best adapted in Area 1. It grows well in Area 2 and in creek bottoms and other sites with above average moisture.

is grown with Common Bermudagrass. The grass often is used for hay, but it is not too well suited for this purpose because most of the leaves are produced near the soil surface.

Establishment

TIME-OF-PLANTING for Dallisgrass is midwinter to early spring in the East Texas Timbers and Blackland Prairie areas and October 1 to November 15 in the Gulf Coast Prairie. Moisture conditions generally are favorable for grass seedling establishment during these periods. Dallisgrass seed normally have a dormancy period, and the suggested early planting dates allow more time for moisture to penetrate the seedcoat. Late winter is a suitable planting time in the Gulf Coast Prairie only when seedlings are to be made in a well-prepared seedbed.

SEEDBEDS for Dallisgrass should be firm. Research by the Texas Agricultural Experiment Station at Nacogdoches, Kirbyville and College Station has shown that
the seed should be placed in firm contact with the soil. The kind of seedbed preparation that is best for Dallisgrass establishment depends on the type of soil and the degree of weed infestation. A clean, firm seedbed is the most desirable where weed and weedy grass competition is not a problem. Seed drilled into a clean seedbed should be covered $\frac{1}{4}$ to $\frac{1}{2}$ inch. Clean seedbeds should be firmed by rolling at the time of or following seeding. On a Lufkin soil near College Station that usually is infested heavily with a weedy annual grass, the best stands of Dallisgrass were obtained when the seed were drilled between 20-inch rows of oats or crimson clover in early spring. These crops suppressed the weedy grass growth in the spring, allowing the Dallisgrass to become established. The oats and crimson clover were still growing in the spring when the Dallisgrass was becoming established, but they gave less competition than the weedy grass.

Good stands of Dallisgrass may be obtained without seedbed preparation in the rice area by broadcasting seed by airplane in the standing rice following the last draining or in rice stubble. The Rice-Pasture Experiment Station at Beaumont has obtained volunteer stands of Dallisgrass and clovers following one crop of rice. The volunteer stands occurred in fields that had been in Dallisgrass-clover pastures 2 to 3 years prior to the one rice crop.

*RATES-OF-PLANTING* for Dallisgrass, which usually has low-quality seed, should be high enough to give 10 pure live seed per square foot. Seed with 20 percent purity and 50 percent germination planted at the rate of 20 pounds per acre would supply this amount when distributed evenly. This seeding rate would give 2 pounds of pure live seed per acre. A pound of pure seed contains about 288,000 filled seed units. Hammer-milled seed hay, broadcast on a prepared seedbed and rolled to place the seed in contact with the soil, usually gives satisfactory stands. The seed hay should be hammer-milled and broadcast immediately after cutting to reduce loss of seed quality.

The germination percentage of the seed drops rapidly when they are stored under conditions of high tem-
perature and high humidity. Dallisgrass seed that have not been stored properly and seed that have not been tested for germination recently, should be tested just before planting. Seeding rates then should be determined on the basis of seed quality.

**FERTILIZATION** will be necessary on many soils for establishment and good production of Dallisgrass. A soil test is the best way to find out the grade and amount of fertilizer needed.

**Management**

**GRAZING** should begin on recently planted Dallisgrass pastures only after the young plants have matured a crop of seed. If the stand is thin, grazing may be restricted to permit the plants to mature and shatter seed until volunteering plants make the stand as dense as desired.

Dallisgrass seedheads often become infested with ergot, a parasitic disease. Infected immature seed are covered with a sticky material, and infected mature seed are hard and black. Cattle may get ergot poisoning after eating infected seedheads. When ergot is found in numerous seedheads in a pasture, the seedstalks should be mowed off before the pasture is grazed.

Dividing Dallisgrass pastures into four or more blocks and rotating grazing from block to block will
increase forage production and allow more efficient utilization of the forage produced. Resting plants after grazing and allowing them to make regrowth before being grazed again will result in more vigorous plants. Also, blocks not needed for grazing may be harvested for hay.

**HAY** from Dallisgrass usually is of fair quality and the yields are satisfactory. The grass often is cut for hay after a seed crop is harvested. This is a desirable practice because Dallisgrass hay usually contains seed-heads that bear ergotized seed. To eliminate the possibility of ergot poisoning, hay containing seedheads may be threshed or run through a combine to remove the seed before baling. The seed obtained could be used for planting additional acreage. Cutting the grass after a seed crop is harvested results in hay of fair to poor quality.

To obtain better quality hay, Dallisgrass should be cut in the early bloom stage. The ergot bodies are not yet formed at this stage of growth. The grass should be cured in the swath, windrowed and then baled immediately.

**FERTILIZATION** is necessary for good production. A soil test is the best means of determining the grade and amount of fertilizer needed. Application of nitrogen often is necessary to maintain satisfactory protein content, and phosphorus must be supplied on phosphorus-deficient soils to obtain a satisfactory phosphoric acid content in the forage. Dallisgrass responds to fertilizer even on fertile soils. In experiment station tests on Miller clay near College Station in 1946, plots receiving 80 pounds of actual nitrogen and 80 pounds per acre of phosphoric acid produced 8,000 pounds of hay per acre, compared to 5,000 pounds from plots receiving no fertilizer. The addition of 80 pounds per acre of nitrogen more than doubled the forage yield in 1947 and 1948 on the same soil.

At the Nacogdoches station from 1949 to 1951, application of fertilizer to Dallisgrass at the rate of 90-60-0 per acre gave a net return of $23.05 per acre per year, producing a return of $2.31 for every $1 spent for fertilizer. The average yield for 6 years from an unfertilized Dallisgrass, carpetgrass and white clover
mixture was 1,620 pounds of hay per acre at the Beaumont station. Application of 32 pounds per acre of phosphoric acid per year increased the yield to 2,960 pounds, due to the increase in white clover growth. Adding 16 pounds per acre per year of nitrogen increased production to 3,220 pounds of hay per acre.

**SEED PRODUCTION** from Dallisgrass generally is low and quality of the seed is poor. Best quality seed are obtained under conditions of relatively low maximum temperature and high humidity. In experiment station tests at College Station, seed fill was 48.6 percent when the maximum daily temperature was 85 degrees and minimum relative humidity 54 percent. When the maximum temperature was 81 degrees and the minimum humidity 18 percent, the seed fill was only 18.4 percent. With a maximum temperature of 93 degrees and minimum humidity of 42 percent, the seed fill was 30.6 percent. Seed crops produced in late spring to early summer probably will give highest seed yields and quality. When seed are produced under irrigation, the soil should be kept moist until the seed mature.

Dallisgrass grown primarily for seed production should be planted in 36 to 42-inch rows. This permits some cultivation and results in higher yields than broadcast stands. Also, row plantings are easier to harvest. Seed yields vary from 60 to 250 pounds per acre with natural rainfall. Yields of 200 to 400 pounds are possible with irrigation. At the Winter Garden Experiment Station, 330 pounds of seed per acre were obtained with irrigation.

In experiment station tests at College Station on Miller clay, seed production plots produced 146 pounds of seed per acre in the June seed harvest following an application of 60 pounds per acre of nitrogen in early spring, compared to 81 pounds of seed from unfertilized plots.

Two methods generally are used in harvesting Dallisgrass seed. The seed may be combined from standing plants, or the grass may be mowed, windrowed and then picked up and combined. When the seed are to be harvested by direct combining, the grass should be grazed evenly but lightly for a short time; or the grass may be mowed. This will permit uniform growth of
seedstalks and less green leaves will run through the combine.

Check the seed units (spikelets) for fill and disease about 2 weeks after most of the plants have begun blooming to determine whether the seed crop will be worth combining. When 50 percent or more of the spikelets are coated with a sticky substance resulting from disease, the seed crop may be difficult to thresh. To check the seed fill, gather several samples of 100 brownish-green spikelets each from several places in the field and cut through them with a knife. When less than 10 to 15 percent of the spikelets contain a developing grain, the field probably will not be worth harvesting for seed.

Seed are ready for direct combining when a few of the earliest maturing spikelets have fallen and most of those remaining are brown. The seed should be combined only when the grass is dry, with the cutter bar set high, the cylinder set for 1,300 to 1,400 r.p.m. with about \( \frac{1}{4} \) -inch clearance, the shoe sieve and chaffer set about one-half open and the air shut off.

If the grass is to be mowed, windrowed and then combined, it should be cut about the time the first mature spikelets are ready to drop to prevent excessive seed loss from shattering. Then the seed hay is threshed when dry enough for baling.

Seed harvested directly with a combine contain many green seed and must be dried before storing. They may be spread in the sun and stirred occasionally, or they may be dried artificially with air temperatures of 110 to 120 degrees to a moisture content of 10 to 12 percent. Seed should be cleaned to permit easier planting. The foreign matter may be removed from seed with an ordinary fanning mill. Separating the unfilled and lighter spikelets from the good ones is difficult and not always practical.

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