United States Department of Agriculture

Soil Conservation Service

Program Aid Number 1452

‘Dacotah’ switchgrass

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'Dacotah' switchgrass, *Panicum virgatum* L, has been released cooperatively by the Soil Conservation Service (SCS) and the Agricultural Research Service (ARS) of the U.S. Department of Agriculture (USDA) and the North Dakota and Minnesota Agricultural Experiment Stations.

Original Dacotah switchgrass plants were collected on an upland site near Breien in south-central North Dakota. The plants were grown in comparison with other collections at the USDA, ARS Northern Great Plains Research Laboratory, Mandan, North Dakota. After three generations in open pollinated nurseries, 10 plants with the following characteristics were selected: uniform plant type, leafiness, high plant vigor and seed yields, adaptation to northern climates, and uniform green color.

Switchgrass, a native perennial, warm-season, sod-forming grass, is a major component of the tall grass vegetation which once dominated the prairies of the Central and Eastern United States. It can be used alone or in mixtures for livestock forage in rangeland, pastureland, and hayland. In addition, switchgrass is excellent for wildlife habitat, critical-area seeding, roadside beautification, and erosion control. It can be used in mixtures with other warm-season grasses such as big bluestem, indiangrass, little bluestem, and sideoats grama.

Since cool-season grasses such as smooth bromegrass and crested, tall, intermediate, and pubescent wheatgrasses predominate in the area, forage is often in short supply during summer months. Sudangrass or sorghum-Sudan hybrids are warm-season, annual grasses that provide productive alternatives for midsummer forage; however, they must be established each year. From the first day of June until late summer, switchgrass grows rapidly and provides large quantities of high quality forage for livestock grazing when high temperatures retard the growth of cool-season species. Proper grazing management and fertilization can maintain high performance indefinitely.

Description

Switchgrass grows 3 to 5 feet in height. Even as a seedling, it can be distinguished from other native grasses by the dense patch of hairs at the point where the leaf blade attaches to the sheath. The stem is round and usually has a reddish tint. The seed head (panicle) is spreading and open. The plant spreads vegetatively by short rhizomes. Dacotah is typical of northern ecotypes of switchgrass having shorter stature and finer leaves and stems.

Performance

The phenology, forage quantity, and wildlife habitat potential of Dacotah have been documented in advanced evaluation studies and field plantings under actual use conditions in locations throughout North Dakota, South Dakota, and Minnesota. Dacotah has demonstrated superior winter hardiness, drought tolerance, and seed production yields. Studies conducted on surface-mined lands indicate superior forage production and persistence on droughty sites and coarse-textured soils. In areas where it is adapted, Dacotah will produce mature seed and persist for long periods in low-maintenance stands. Dacotah yielded 3,600 pounds of dry matter per acre over 18 evaluation years in trials with eight other switchgrass cultivars at five locations in North Dakota, South Dakota, and Minnesota. Dacotah's forage production was not significantly different from 'Forestburg,' 'Nebraska-28,' and 'Cave-In-Rock' at the Fergus Falls, Minnesota, test site. Dacotah is shorter in mature height and has less rank growth than other cultivars tested.

At Fergus Falls in west-central Minnesota, Dacotah matured 27 days earlier than Forestburg, 'Sunburst,' 'Nebraska-28,' and 'Summer' and 45 to 50 days earlier than the southern cultivars 'Blackwell,' 'Cave-In-Rock,' and 'Pathfinder.' Dacotah has the ability to consistently produce mature seed, which helps maintain productive stands and provides feed for birds in wildlife planting. Its characteristics of early maturity, shorter height, and high density of residual vegetation provide an excellent wildlife cover and nesting habitat. Dacotah's sod-forming habit is ideal for erosion control on drastically disturbed areas such as waterways, surface mines, and transportation corridors.

Establishment

Switchgrass and other warm-season grasses require a soil temperature above 50 °F for satisfactory germination. Within the area of adaptation, the optimum time to plant is early May to mid-June. The seed is clean, free-flowing, and can be planted easily with most grass drills. Recommended seeding rate is 3.5 to 4.5 pounds of pure live seed per acre (30 to 40 pure live seeds per square foot).

The planting site should be free of perennial weeds. A moist, firm seedbed is essential. Firming the soil with a roller packer prior to seeding ensures good seed-soil contact and proper seeding depth. The seed should be placed one-fourth to one-half inch deep. Broadcast-packer seeders or drills equipped with double disk openers and depth bands provide the best results. Companion crops are not recommended, and grazing should be deferred during the establishment year.

The application of fertilizer at seeding time stimulates weed growth and is not recommended. Atrazine and/or 2,4-D applied according to label instructions will help control weeds during the establishment year.

Seed Production

Stand establishment usually can be accomplished in one growing season. Seed production is expected the second year and will continue indefinitely. The fields should be established in rows that are 30 to 42 inches apart. Broadleaf weeds and cool-season grasses can be controlled by a timely application of atrazine and 2,4-D herbicides according to label instructions and by clipping and cultivating. Apply irrigation water at the boot and immediately after the flowering stages. Apply 60 to 80 pounds of nitrogen per acre and phosphorus and potassium according to soil tests.

The seed matures in August, and harvesting can be accomplished by windrowing in the hard dough stage. Direct harvesting can be done when the seed has matured. When direct harvesting, seed must be dried as soon as possible because damage occurs from heating. The small, heavy, smooth seed of switchgrass makes harvesting and cleaning easy. Average purity and germination are 95 and

70 percent, respectively. Seed yields averaged *200* pounds of pure live seed per acre under irrigation at the Plant Materials Center, Bismarck, North Dakota.

Management

Well-established stands of switchgrass, which are properly managed and maintained, should not require replanting. Weak stands can be rejuvenated by using proper management practices such as controlled grazing, the application of recommended rates of herbicides and fertilizer, and prescribed burning before the beginning of spring growth.

Phosphorus and potassium fertilizer should be applied according to soil tests. Nitrogen should be applied at the rate of 50 to 75 pounds per acre when growth in the spring reaches 4 to 6 inches.

Forage quality will remain high until the seed head emerges. From mid-June, grazing should begin when grasses reach 12 to 16 inches in height. Overgrazing can cause stands to decline; therefore, grazing should be stopped when plants are grazed below 8 to 12 inches in height. Leaving this stubble before frost allows the plant to store carbohydrates in the plant crown and ensures the production of vigorous plant growth in the spring.

Adaptation

The projected climatic adaptation of Dacotah is represented in the shaded area on the adaptation map. Performance outside this area has not been adequately tested.

Dacotah is best adapted to North Dakota and the northern half of Minnesota on sites where switchgrass is recommended. Precipitation for this area ranges from 15 to *30* inches. The early maturity of Dacotah will extend the area of adaptation of switchgrass farther north than with presently available cultivars.

Dacotah is best suited to light or medium-textured soils, Although Dacotah is not adapted to extreme conditions, it will tolerate moderate stress from saline or alkaline soils. Dacotah is best suited to moderately wet soil, and is more drought tolerant than other currently available switchgrass cultivars.

Availability

The USDA, Agricultural Research Service (Northern Great Plains Research Laboratory, Mandan, N D 58554) maintains the breeder seed, and the USDA, Soil Conservation Service Plant Materials Center (P.O. Box 1458, Bismarck, N D 58502) maintains the foundation seed of Dacotah switchgrass.

For more information on availability and use of Dacotah switchgrass, contact your local Soil Conservation Service office or conservation district office.

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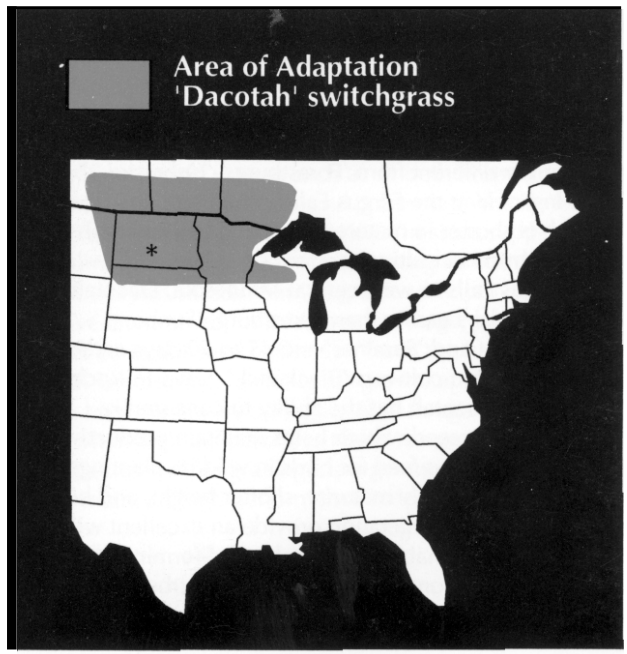

*Point of origin

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