



United States Department of Agriculture  
Natural Resources Conservation Service  
Plant Materials Program

# 'Blackwell' switchgrass

*Panicum virgatum* L.

A Conservation Plant Release by USDA NRCS Manhattan Plant Materials Center, Manhattan, KS



Figure 1. Blackwell switchgrass inflorescences and foliage in full flower. Photo by Alan Shadow, ETPMC, Nacogdoches, TX

'Blackwell' switchgrass (*Panicum virgatum* L.) is a cultivar released in 1944 in cooperation with the Kansas Agricultural Experiment Station (AES).

### Description

Blackwell switchgrass is a warm-season, native, perennial species that was originally one of the major species of the Tallgrass Prairie ecosystem of the central United States. Switchgrass is a sod forming grass with a C<sub>4</sub> metabolic pathway that is 3 to 5 feet tall. It produces seed in large, open, finely textured, reddish-purple panicles. Long, stiff, flat bright green leaves occur up and down the stem. In the fall the plant turns shades of pale yellow. It can be distinguished from other warm-season grasses by the hairy ligule located at the point where the leaf sheath attaches to the stem. The stem is round, stiff and usually has a reddish tint. Switchgrass has deep (10 feet or more) roots and is strongly rhizomatous.

### Source

Seed from a single plant was harvested in 1934 on a native prairie site near Blackwell, Oklahoma. The plants originating from this seed collection were compared with many other collections at the Soil Conservation Service (SCS) Nursery at Manhattan, Kansas. Blackwell ranked highest in leafiness, total forage, and resistance to rust and other diseases. It also possessed excellent seedling vigor when compared to other accessions. Blackwell was cooperatively released as a cultivar by SCS and the Kansas AES in 1944.

### Conservation Uses

**Livestock:** Blackwell switchgrass is noted for its vigorous growth during late spring and early summer. It produces good quality warm-season pasture and hay for livestock.

**Erosion Control:** Switchgrass is a valuable native grass on a wide range of sites. It stabilizes soil on strip-mine spoils, sand dunes, dikes, construction sites and other critical areas. It is also provides erosion protection in plantings as vegetative barriers and buffer strips.

**Wildlife:** Blackwell switchgrass provides excellent nesting habitat and fall and winter cover for pheasants, quails, and rabbits. It can remain standing in heavy snow and is used on game preserves. Its seed provides food for pheasants, quails, turkeys, doves, and songbirds.

**Biofuel Source:** The U.S. Department of Energy has designated switchgrass as one of the principal biofuel species recommended for combustion, gasification, and liquid fuel production. The characteristics that make Blackwell switchgrass an ideal renewable energy crop includes the fact that its broadly adapted to different geographical regions of the U.S., it's easy to plant and establish, is compatible with conventional farming equipment for establishment and harvesting, and produces biomass under a wide range of environmental conditions.

### Area of Adaptation and Use

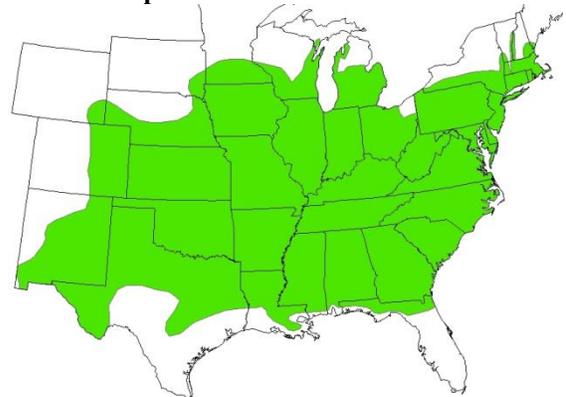


Figure 2. Blackwell switchgrass area of adaptation.

## **Establishment and Management for Conservation Plantings**

The smooth, free-flowing seed unit can be planted with most seed drills or with a broadcast spreader in the spring (May-June). Seeding rates vary from 20 to 35 Pure Live Seeds (PLS) per square foot depending on the purpose of the planting. Seedbeds should be weed free and firmed with a packer roller prior to drilling or broadcasting of seed. If seeds are broadcast, the area should be rolled after seeding to provide better seed to soil contact. Drilled seed should be planted .25 to .50 inch deep depending on soil texture. No-till seeding into closely grazed or burned sod has been successful, if sod is subsequently managed. Vegetative material can be directly planted from containerized or bare rooted material for erosion control. One to two feet spacing provides adequate soil protection in most cases.

Because switchgrass is slow to establish, applying nitrogen fertilizer is discouraged in the first year or before the stand is fully established. Applying nitrogen fertilizer to a newly planted field will encourage weed competition, hindering the growth and development of switchgrass seedlings. Prior to planting, adjust P and K levels to a medium level using soil test analysis and crop recommendations for a warm-season grass, such as sudangrass as a guide. If soil pH is highly acidic, apply sufficient lime to raise pH to 6.0 to 6.5 to allow for more efficient utilization of soil nutrients.

## **Ecological Considerations**

There are several known insects and fungal microorganism that are known to negatively impact the production of switchgrass forage and seed. Rust (*Puccinia* sp.) disease has been reported on switchgrass from South Dakota to Mississippi to Texas. A smut fungus (*Tilletia maclaganii*) that causes significant forage and seed losses from switchgrass has been reported in Iowa, New York and Kansas. Grasshoppers and leafhoppers have been reported to damage new seedlings of switchgrass. A switchgrass moth (*Blastobasis repressella*) has been reported to impact the stands and production of switchgrass in the northern Great Plains.

## **Seed and Plant Production**

Stand establishment can normally be accomplished in a single year. A reasonable expectation is that seed can be produced in the second growing season. Seed production fields should be established in 30 to 42 inch rows. Cultivation, mowing, and the herbicide 2, 4-D can be successfully used to control broad leaf weeds the initial growing season. Herbicides can be used to provide additional weed control once plant establishment is complete the second year. Nitrogen fertilizer can be applied at a rate of 60 to 80 pounds of actual N per acre and potassium and phosphorus as recommended by the

soil test. Irrigation water should be applied as needed to produce the seed crop. A five year average of Blackwell seed production at Manhattan, Kansas yielded 288 PLS pounds per acre with an average of 69 percent germination and 99.50 percent purity. Switchgrass seed units can be planted in the greenhouse to produce seedlings. In a greenhouse setting seed will normally germinate in 10 to 14 days after planting in a container and can be moved to a field planting in 60 growing days.

## **Availability**

*For conservation use:* Blackwell switchgrass is widely available from numerous commercial sources.

*For seed or plant increase:* Breeder and foundation seed are maintained by the Manhattan Plant Materials Center. There is no registered class of seed recognized for this switchgrass cultivar.

*For more information, contact:*  
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<http://www.plant-materials.usda.nrcs.gov/>

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For additional information about this and other plants, please contact your local USDA Service Center, NRCS field office, or Conservation District <<http://www.nrcs.usda.gov/>>, and visit the PLANTS Web site <<http://plants.usda.gov/>> or the Plant Materials Program Web site <<http://www.plant-materials.nrcs.usda.gov/>>

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