



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

# 'Kanlow' switchgrass

*Panicum virgatum* L.

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



Figure 1. Kanlow switchgrass inflorescences and foliage in a mid-summer field setting.  
 Photo by Alan Shadow, ETPMC, Nacogdoches, TX.

'Kanlow' is a lowland type switchgrass, (*Panicum virgatum* L.) that was released as a cultivar in 1963 in cooperation with the Kansas Agricultural Experiment Station (KAES) and the Agriculture Research Service (ARS).

### Description

Kanlow switchgrass is a warm-season, native, perennial species that was one of the original dominant species of the Tallgrass Prairie ecosystem of the central United States. This switchgrass is a sod former with a C<sub>4</sub> metabolic pathway for the capture of carbon dioxide and is 6 to 8 feet tall at maturity. It produces seed in large, open, finely textured reddish-purple panicles. Switchgrass can be distinguished from other warm-season grass species by the hairy ligule located at the point where the leaf sheath and blade are attached to the plants stem or culm. Stems are round, stiff and usually have a reddish tint. Switchgrass has a deep root system (10 feet or more) and is strongly rhizomatous.

### Source

The original germplasm that produced Kanlow was collected by Soil Conservation Service (SCS) employees in a lowland area near Wetumka, Oklahoma in 1957. The collected seed was planted in a space planted nursery at the Manhattan PMC in 1958. Two hundred plants were selected from this nursery for leafiness, vigor, and retention of green matter late into the fall. Plant selections were combined into a poly-cross nursery that was isolated and allowed to cross pollinate at the Manhattan PMC.

### Conservation Uses

**Erosion control:** Kanlow switchgrass was developed for use in low wetland areas and land areas subject to excessive moisture. It is commonly used on pond or dam faces to reduce erosion by wave action. It can be inundated for several weeks without ill effects.

**Biofuel Source:** The U.S. Department of Energy (DOE) has designated switchgrass as one of the principle biofuel plant species recommended for combustion, gasification, and liquid fuel production. The characteristics that make Kanlow switchgrass an ideal candidate for renewable energy production are: 1) broadly adapted, 2) ease of planting and harvesting with common farm implements, and 3) incredible amounts of biomass production per unit of land area. In fact Kanlow, along with 'Alamo' switchgrass (another Plant Materials Program release from Texas) have been the two main lines of germplasm that have been the focus of intense research by the scientific community since the DOE indicated that switchgrass would be designated as a model plant for biofuels research.

**Livestock and Wildlife:** Kanlow provides forage with vigorous growth for livestock consumption during the spring and summer of the year.

It provides fall and winter cover for upland game birds and remains standing after heavy snowfalls. Its seeds provide food for pheasants, quail, and wild turkey.

### Area of Adaptation and Use

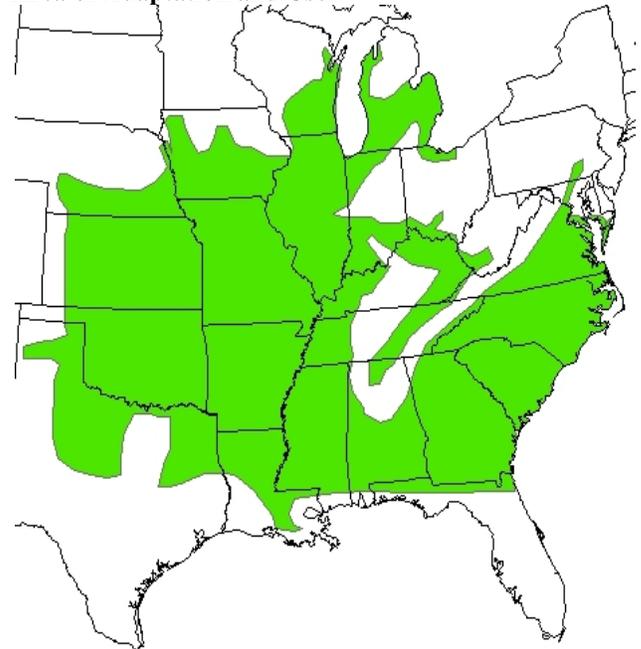


Figure 2. Kanlow switchgrass area of adaptation map.

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

The smooth, free flowing seed units can be planted with most seed drills or with broadcast spreaders in the spring (May to 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 worked, weed free, and firmly packed to provide for proper seed to soil contact for the seed units. Drilled seed should be planted .25 to .50 inches deep depending on the soil texture. If seed units are broadcast, a packer roller should be used to press the seed units into the soil to provide a better seed to soil contact. Because switchgrass is slow to establish, applying nitrogen fertilizer the initial planting year or before it's fully established is discouraged. A nitrogen application will only serve to stimulate weed growth and interfere with switchgrass growth and development. Prior to planting the switchgrass an adjustment of potassium (K) and phosphorus (P) levels to medium levels based on soil test analysis and crop recommendations for a warm-season grass, such as sudangrass is recommended.

## **Ecological Considerations**

There are several known insect and fungal microorganisms that will negatively affect switchgrass forage and seed production. Rust (*Puccinia* sp.) disease has been reported on switchgrass from South Dakota to Texas and points in between. Grasshoppers and leafhoppers have been known to damage new plantings of switchgrass. A moth known to attack switchgrass (*Blastobasis repartella*) has been reported to impact the stands and production of switchgrass in the Great Plains.

## **Seed and Plant Production**

Stand establishment can be normally accomplished in a single season. A reasonable expectation is that seed or biomass can be produced the second growing season. Seed production fields should be planted at a row spacing of 30 to 42 inches. Cultivation, mowing, and the herbicide 2,4-D can be used to control weeds the first season of growth. Other herbicides can be utilized in subsequent growing seasons after establishment. Nitrogen (N) fertilizer can be applied the second year at the rate of 80 to 100 pounds of actual N per acre and P and K at the recommended soil test rate. Irrigation water should be applied as needed for seed production. A five year average of Kanlow switchgrass seed production at Manhattan, Kansas yielded 160 PLS pounds per acre with an average germination and purity of 66 and 99.82 percents, respectively. Switchgrass seed units can be planted in containers in the greenhouse to produce grass seedlings. In a greenhouse setting germination and emergence of switchgrass will normally take from 10 to 14 days. Switchgrass seedlings can normally be moved to field plantings after 60 days growth in the greenhouse.

## **Availability**

*For conservation use:* Kanlow switchgrass is available commercially on a limited basis.

*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:*  
Manhattan Plant Materials Center,  
3800 South 20<sup>th</sup> Street  
(785) 539-8761, Fax (785) 539-2034  
<http://www.plant-materials.usda.nrcs.gov/>

## **Citation**

Release Brochure for Kanlow switchgrass (*Panicum virgatum*). USDA-Natural Resources Conservation Service, Manhattan PMC. Manhattan, KS.  
Published: May 2011.

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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