

A Conservation Plant Released by the Natural Resources Conservation Service  
Cape May Plant Materials Center, Cape May, NJ

# ‘Carthage’ Switchgrass

*Panicum virgatum* L.



‘Carthage’ switchgrass (*Panicum virgatum* L.) is a cultivar released in 2006. Photo by, USDA NRCS.

‘Carthage’ switchgrass (*Panicum virgatum* L.) is a cultivar released by the Cape May Plant Materials Center, Cape May, NJ in 2006.

**Description**

Switchgrass (*Panicum virgatum* L.) is native to most of the continental United States east of the Rocky Mountains and is an important component of tallgrass prairies. It is not native in California and the Pacific Northwest. The cultivar ‘Carthage’ is a native, perennial, warm-season bunchgrass that has been tested by the Cape May Plant Materials Center for over 25 years. It grows 4–5 ft tall, has round stems, and a many-branched, open, 6–18 in indeterminate inflorescence. It spreads by seed or by short rhizomes 0.5 in (1.4 cm) long. This cultivar release shows better than average spread, a higher forage nutrient value, and earlier spring recovery than current Midwest selections of switchgrass being used in the Northeast. Agricultural Research Service (ARS) studies from Penn State show ‘Carthage’ has very good yields of high quality forage with excellent stand persistence. The most desirable traits of this cultivar are its good seedling vigor and outstanding leafiness. Because it matures late

compared to other varieties of switchgrass, it complements cool-season forages for mid to late summer use.

**Source**

Seed was collected from a single plant in 1957 near Carthage, North Carolina. This area is located on the boundary of the Piedmont and Coastal Plain physiographic region, where switchgrass is an important component in longleaf pine communities. The dominant soils in this region are deep, sandy Quartzipsamments and Paleudults. Selected material was vegetatively increased, and openly pollinated. The selection ‘Carthage’ was made from accessions in a multi-center switchgrass strain trial.

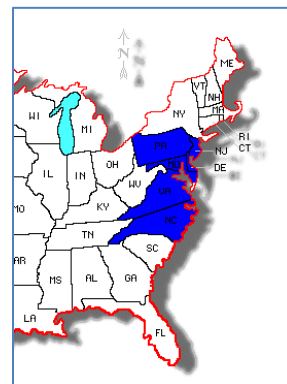
**Conservation Uses**

‘Carthage’ switchgrass was released by the Cape May Plant Material Center in 2006 primarily for use in forage or hay production. It has produced greater yields in the Northeast and Mid-Atlantic than popular Midwestern varieties such as ‘Cave-in-Rock’ and ‘Blackwell’. On-site studies in Cape May, NJ found ‘Carthage’ had a protein content of 8–10%.

Its secondary purpose is for wildlife habitat, land restoration, conservation cover, buffers, and critical area planting. Switchgrass varieties have often been used in Conservation Reserve Program (CRP) and Wildlife Habitat Incentive Program (WHIP) as a component of native plant mixes. It can also be used in the production of grain ethanol or biofuel.

**Area of Adaptation and Use**

‘Carthage’ is well adapted to the growing conditions of the Mid-Atlantic States from North Carolina northward to north-central Pennsylvania and northern New Jersey (USDA Hardiness Zones 6a–8b). These soils tend to be shallow and droughty. It grows best in sandy to loamy soils, and does not perform as well in heavier soils. Its northern limit is undetermined.



Map of ‘Carthage’ area of adaption and recommended area of use.

Switchgrass generally occurs in remnant tallgrass prairies throughout the Midwest or along the Mid-Atlantic coast in backdune areas and the upper margins of tidal shorelines. Inland, it may be found growing in roadside ditches, along railroad right of ways, and on dry, sandy, nutrient-poor sites. The optimum soil type is a loamy or sandy well drained soil, however, it will also grow on poorly-drained soils.

For a current distribution map, please consult the Plant Profile page for this species on the PLANTS Web site.

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

Switchgrass seeding is best done by drilling into a well-prepared conventional seedbed or no-tilled into a killed sod at a ½ inch depth. If seed is broadcast, lightly rake and cultipack the site to provide good seed to soil contact. Solid stands of switchgrass are established using 8–10 pounds of pure live seed (PLS) per acre. In a mixed seeding with other warm-season grasses, the rate would be lowered to 4–6 pounds per acre. The optimum seeding time is mid-April to mid-June. If early cool-season weeds are a problem, suppress weed competition and plant towards the later end of the seeding window (late spring to early summer). On sites where weeds are not a problem, an early spring seeding (April) is best. When weeds are mowed, timing should not interfere with ground-bird nesting season in the area—especially if land is under a USDA–NRCS conservation program. If needed, fertilization can be used moderately as determined by a soil test, however, fertilization will also increase weed competition. Amendments may be applied prior to, during, or after seeding. Nitrogen should only be applied after green growth has begun in the second growing season. The soil pH should be adjusted to a range of 5.5–6.5.

Switchgrass seedlings are slow to establish relative to cool-season grasses such as fescue and ryegrass. Stands that appear poor the first year will most likely improve the second growing season. Two or more years may be required to establish productive stands for seed production. To control weeds mow to the height of 4–6 inches three to four times the first year after planting. Pre and post-emergent herbicides for broadleaf and grassy weeds may be applied, however do not apply post-emergent herbicide until switchgrass has developed at least four leaves.

*Hay/Grazing:* Do not graze the first year. Begin grazing in a rotational system when switchgrass plants are 18–24 inches tall. Graze no lower than 8–10 inches and allow the plant to recover to 24 inches before utilizing again. Switchgrass will require more rotational grazing and more

care in determining cattle stocking rates. It can be no-tilled into a cool-season crop and mixed with partridge pea for wildlife planting.

### **Ecological Considerations**

Switchgrass can be negatively affected by insect and disease such as grasshoppers, flea beetles, leaf and stem rust, as well as spot blotch and anthracnose (Bonos et al., n.d.).

### **Seed and Plant Production**

In studies conducted by the Cape May Plant Materials Center in Cape May, NJ, ‘Carthage’ produced an average of 10,050 lb/ac of biomass from 2009 to 2013. ‘Carthage’ seed had 57 percent germination from four harvests at the Cape May PMC from 2003 to 2007. There are approximately 250,000 seeds per pound.

### **Availability**

*For conservation use:* For sources of supply for ‘Carthage’ switchgrass or for more information on the availability, planting and use, contact your local NRCS office or Soil and Water Conservation District.

*For seed or plant increase:* ‘Carthage’ is an eastern US cultivar. NRCS maintains foundation stock at the Cape May Plant Materials Center in Cape May Court House, NJ. It is now available from most commercial nurseries in the Northeastern United States and other parts of the US.

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

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### **References**

Bonos, S., Z. Helsel, and W. Hlubik. n.d. Switchgrass production and use in New Jersey. NJ Cooperative Extension. Fact Sheet 1075.

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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