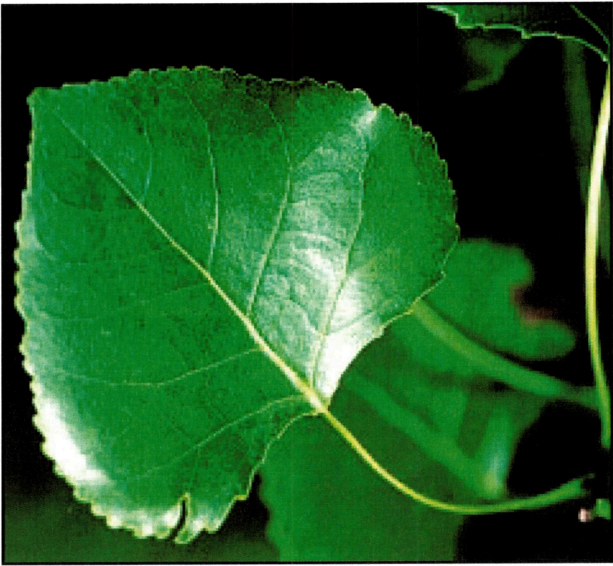
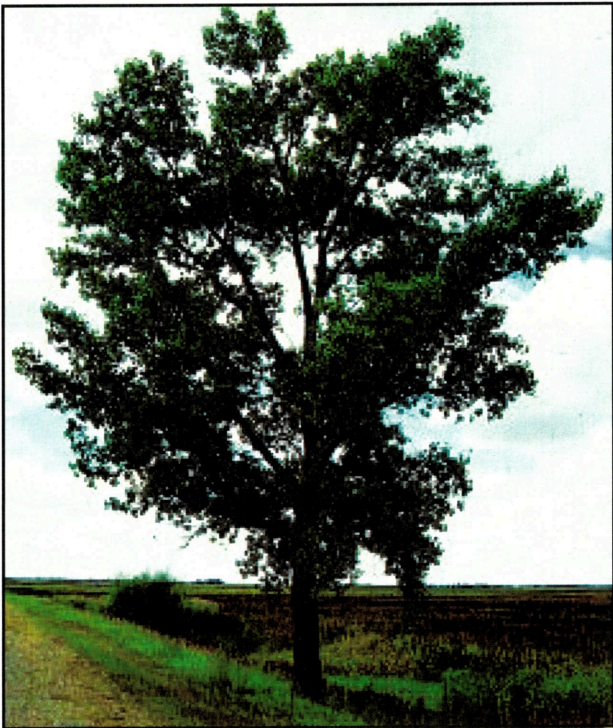


**Cottonwood**



# Cottonwood (*Populus deltoides*)

## General Description

The largest and fastest growing tree in the state. Native to moist soils along streams and wetlands throughout the state. Flood control dams have reduced spring flooding and the success of natural cottonwood regeneration along riparian areas. The largest living tree in North Dakota is 110 feet tall with a canopy spread of 94 feet.

### Leaves and Buds

Bud Arrangement - Alternate.

Bud Color - Chestnut-brown, sticky, conical.

Bud Size - Medium, 1/2 to 3/4 inch long.

Leaf Type and Shape - Simple leaves, triangular-cordate, acuminate tips, petioles are flattened.

Leaf Margins - Coarsely-dentate with curved teeth, entire near apex and base.

Leaf Surface - Glabrous.

Leaf Length - 3 to 5 inches.

Leaf Width - 3 to 5 inches.

Leaf Color - Lustrous, bright-green during summer, golden-yellow in late fall.

### Flowers and Fruits

Flower Type - Unisexual catkins on female trees bear many seeds surrounded by silky or cottony hairs.

Flower Color - Tiny brownish-red flowers early in spring.

Fruit Type - Capsule, 3 to 4 valved.

Fruit Color - Light brown, seeds in a mass of "cotton".

### Form

Growth Habit - Upright and narrow when young; branches spread to form a large open crown with age.

Texture - Coarse, summer; coarse, winter.

Crown Height - 50 to 100 feet.

Crown Width - 40 to 75 feet.

Bark Color - Light-gray when young, turning ash-gray and forming thick, flattened, curved ridges separated by deep furrows on older trees.

Root System - Shallow and wide-spreading, greater than height.

## Environmental Requirements

### Soils

Soil Texture - Loams to sands are most favorable.

Soil pH - 4.5 to 8.0. More alkaline tolerant than *Populus* cultivars.

Windbreak Suitability Group - 1, 1K, 2, 2K.

### Cold Hardiness

USDA Zone 2.

### Water

Requires a moist site. Tolerates drought on upland sites with high water table.

### Light

Requires full sun.

## Uses

### Conservation/Windbreaks

Tall tree for field and farmstead windbreaks and riparian plantings.

### Wildlife

Hollow trees make ideal den sites for wildlife. Young trees are used by deer, rabbits, mice and beaver for food.

Twigs and young branches make good browse. Buds used by grouse.

### Agroforestry Products

Wood - Used for making boxes, crates, and pallets.

Food - Native Americans ate the young sprouts and inner bark because of its nutritive value and sweetness.

Medicinal - *Populus* species contain salicin used as an anti-rheumatic drug, a disinfectant, an antiseptic and for eczemas.

### Urban/Recreational

Primarily used as a massive shade tree in river side parks or other low, moist areas.

## Cultivated Varieties

Siouxland Cottonwood (*Populus deltoides* 'Siouxland') - Male, rust resistant cultivar released by SDSU, Brookings, South Dakota.

Carolina Poplar (*Populus x euramericana*) - Hybrids of *P. deltoides* and *P. nigra* (Black Poplar), native to Europe (see Hybrid Poplar).

Many hybrid cultivars are similar but do not achieve similar heights or girth of native cottonwoods.

### Related Species

Balsam Poplar (*P. balsamifera*)

White Poplar (*P. alba*)

### Pests

Common diseases include Melampsora leaf rust, Septoria leaf spot and canker, Cytospora canker, wetwood, and stem decay. Common insect pests include poplar borer, aphids, poplar bud gall mite, poplar vagabond aphid and poplar leaf beetles.

## EASTERN COTTONWOOD

*Populus deltoides* Bartr. ex  
Marsh.  
Plant Symbol = PODE3

Contributed by: USDA NRCS Plant Materials  
Program



Robert Mohlenbrock  
USDA NRCS 1995 Northeast Wetland Flora  
@USDA NRCS PLANTS

### Uses

**Timber:** The wood of eastern cottonwood is light, soft, and weak. It is not durable, warps badly in drying, and is difficult to season. It is used principally for containers, interior parts of furniture, corestock in plywood, and high-grade pulp.

**Erosion control:** It is planted on strip mine spoils for erosion control and wood production. Male, non-hybrid adapted clones make good selections for windbreaks in multi-row installations.

**Recreation:** Due to its rapid growth rate, it is frequently used for providing quick shade around recreational developments, campsites and picnic areas.

**Landscape and beautification:** This species is occasionally planted as an ornamental shade tree, however caution should be used because the tree grows large and is susceptible to wind and ice damage.

**Wildlife:** Seedlings and young trees are browsed by rabbits, deer, and domestic stock. Beavers use saplings and poles for food and dam construction.

### Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

### Description

*Populus deltoides* Bartr. ex Marsh., eastern cottonwood, is a fast-growing tree which reaches 80 to 100 feet in height and 3 to 4 feet in diameter. It is a relatively short-lived tree, seldom surviving for more than 80 years.

The leaves are broadly triangular, ovate in outline, 3 to 5 inches long and nearly as wide. They are dark green, lustrous above, and paler and smooth beneath. The marginal teeth are somewhat hooked, being larger toward the leaf base and smaller toward the pointed tip.

Twigs are rather stout, round, and distinctly enlarged at the nodes. The conical, pointed buds are smooth, glossy, and olive-brown to reddish-brown in color. The bark of younger trees is rather smooth and greenish-gray. On older trunks it becomes ashy-gray and is roughened by long, deep, longitudinal and interconnecting furrows.

### Adaptation and Distribution

Cottonwood makes its best growth on moist, well-drained, fine sandy loams or silt loams. Coarse sands and heavy clay soils are not satisfactory. It has been found to be relatively tolerant of drier sites as shown by survival and growth of trees planted on strip mine spoil. Cottonwood is resistant to flood damage and usually tolerates a soil pH range of 4.5 to 8.0.

Eastern cottonwood is distributed throughout the East and Midwest. For a current distribution map, please consult the Plant Profile page for this species on the PLANTS Website.

### Establishment

Natural regeneration of cottonwood is usually by seed. Propagation by cuttings is the usual method of vegetative reproduction. The best planting stock is unrooted cuttings from 1 to 3 year old seedlings.

Cuttings are planted while dormant with sufficient cultivation to reduce competition.

#### **Management**

If this tree is planted for intensive culture management care must be taken to reduce completion from weed and other unwanted vegetation. On wide spacing, disking between the rows can be used to control vegetation. Care must also be taken to avoid over grazing by deer and other animals. Around buildings the plant may prove to be a nuisance. The silky-haired seeds of the female plants can clog gutters and the shallow root system may interfere with sewer lines.

#### **Pests and Potential Problems**

Eastern cottonwood can be seriously damaged by wood boring insects that attacks the main stem, branches and root system. Many leaf feeding insects can also reduce the growth and vigor of young trees. Leaf rust, leaf spot, and cankers reduce tree vigor and growth and in severe cases cause tree mortality.

#### **Cultivars, Improved, and Selected Materials (and area of origin)**

'Siouxland' cottonwood, is highly resistant to leaf rust and similar leaf attacking fungi. 'Siouxland' is a male plant, and therefore, does not produce the silky-haired "cotton" which many people consider a nuisance. Since there is no seed, the plant must be grown from cuttings.

*Populus robusta*, which is most likely a cross between *Populus nigra* and *Populus angulata*, is very similar to 'Siouxland' in appearance except that it is narrower and branches more widely. The foliage is also resistant to rust fungi. *Populus robusta* is a frost hardy, rapid grower. Other selections include 'Noreaster', 'Mighty Mo', 'Platte', 'Ohio Red', 'Lydick', 'Schictel', 'Spike' (cross between *Populus deltoides* and *Populus nigra*, from the New York Plant Materials Center, original material from the Netherlands) and 'Walker'. These selections show various levels of resistance from leaf rust and canker infestations.

Rooted cuttings and seedlings of 'Siouxland' and *Populus robusta* can be purchased from many hardwood nurseries. Other selections are more difficult to obtain, but worth the effort.

#### **Prepared By & Species Coordinator:** *USDA NRCS Plant Materials Program*

Edited: 05Feb2002 JLK; 060809 jsp

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

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# Eastern cottonwood

## Populus deltoides

### Physical characteristics

**Trunk | Bark:** The bark of a mature cottonwood is so thick that it can withstand fires with just minimum damage. Yet, they are also known for having “weak” wood and will drop branches occasionally, particularly during windy spells.

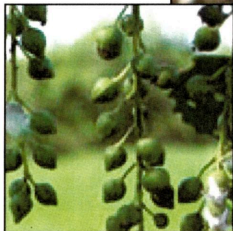
**Leaf:** The leaf is very coarsely toothed, the teeth are curved and gland tipped, and the petiole is flat. The leaves are dark green in the summer and turn yellow in the fall. In dry locations they drop their leaves early from the combination of drought and leaf rust, leaving their fall color dull or absent.



### “Trembling Leaves”

An identifying characteristic of the Eastern Cottonwood tree is that because its leaves are sail-like shaped with long flat stems they have a tendency to tremble and flutter from even the slightest breeze.

**Flower | Seeds:** Its flowers, called catkins, are produced on single-sex trees in early spring. In early summer seed capsules split open to release the numerous small seeds attached to cotton-like strands.



**Life span:** Eastern cottonwoods typically live 70 to 100 years, but they have the potential to live 200 to 400 years if they have a good growing environment.

### Ecological characteristics

In natural conditions, Eastern cottonwood trees typically grow near a water source. Cottonwood groves are typically indicative that a water source is nearby as they consume large amounts of water in their growth cycle; a mature cottonwood tree uses 200 gallons of water a day. Cottonwoods are so dependent on water that they will drop leaves during an extended period of drought in order to conserve moisture. If a cottonwood root is cut, it will “bleed” water for days until the cut heals.

### Distribution range

While mud banks left after floods provide ideal conditions for seedling germination, human soil cultivation has allowed them to increase their range away from such habitats. The Eastern cottonwood is native to North America, growing throughout the eastern, central, and southwestern United States, the southernmost part of eastern Canada, and northeastern Mexico.

### Relationship with other species

**Non-human:** When a cottonwood loses a branch, it is likely the heartwood will begin to rot at the break, forming holes that make the ideal accommodations for birds, squirrels or bees to build nests.

**Humans:** American pioneers used the cottonwood's leaves for animal fodder and herbal teas, its canopy for shelter and its wood for fire and crafts.

Though cottonwood pollen aggravates allergies, these large, adaptable and hearty trees provide shade and beauty across the country.



When used in home landscaping to provide cooling shade, space requirements can become an issue. As the tree matures, its roots will lift the soil surrounding the tree, referred to as root flair.

**Pests:** Once past the seedling-sapling size, cottonwood trees have few significant insect or disease pests. Leaf feeding insects and leaf diseases are not uncommon, but rarely injurious.