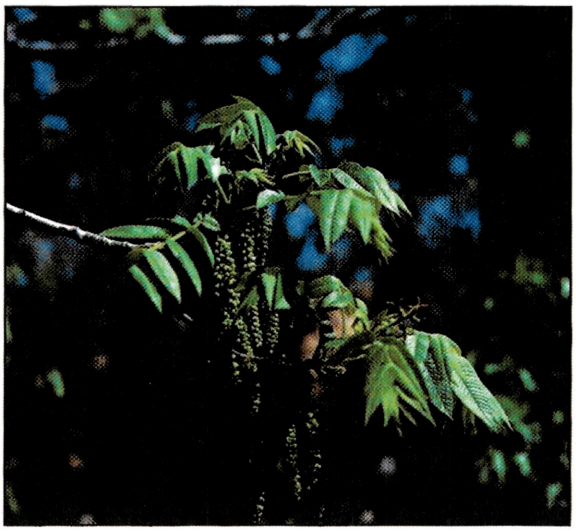
Butternut



Butternut (Juglans cinerea)

General Description

Native to eastern North America, west to eastern Minnesota. Considered a borderline species with evidence of being hardy in the Red River Valley to near the Canadian border and trees growing west to Bismarck. An attractive medium-sized tree with rounded canopy. Another tree to consider for diversity of community forests.

Leaves and Buds

Bud Arrangement - Alternate.

Bud Color - Pale, silky-downy, oblong to conical in shape.

Bud Size - Terminal ½ to 1 inch long, bluntly pointed, lateral buds ¼ to ½ inch, 1 to 3 superposed buds above axillary bud.

Leaf Type and Shape - Pinnately compound, 11 to 19 oblong-lanceolate, pointed leaflets.

Leaf Margins - Serrate.

Leaf Surface - Finely pubescent above, pubescent and glandular beneath; petiole, rachis and midrib covered with sticky hairs.

Leaf Length - 10 to 20 inches, leaflets 2 to 5 inches.

Leaf Width - 4 to 10 inches, leaflets ¾ to 2 inches.

Leaf Color - Dark green above, pale green beneath. Golden-yellow fall color.

Flowers and Fruits

Flower Type - Male catkins, 2 to 3 inches long; female flowers, 5 to 8 in spikes.

Flower Color - Greenish turning brown.

Fruit Type - An oval-shaped drupe bearing a nut, 1 to 1½ inches, covered with sticky hairs.

Fruit Color - Green, ripening to dark brown.

Form

Growth Habit - Rounded canopy in full sun, forked and limby under forest stand conditions.

Texture - Medium, summer; medium to coarse, winter.

Crown Height - 40 to 50 feet.

Crown Width - 30 to 45 feet.

Bark Color - Ridges whitish-gray, furrows gray to brown.

Root System - Tap root, some fibrous roots, deep penetrating.

Environmental Requirements

Soils

Soil Texture - Prefers deep, fertile, sandy loam to clay loam soils. Adaptive to droughty sandy soils.

Soil pH - 6.5 to 8.5.

Cold Hardiness

USDA Zone 3.

Water

Prefers moist, well-drained soils. Moderate flood tolerance and moderately resistant to soil compaction. Adaptive from river bottoms to rocky, droughty sites.

Light

Full sun.

Uses

Conservation/Windbreaks

Older mature trees are reported to be thriving in windbreaks in northeastern North Dakota. Use in multirow farmstead windbreaks and riparian plantings.

Wildlife

Cover and food (nuts) for birds and small mammals.

Agroforestry Products

Wood - Very desirable for furniture.

Food - The nuts are sweet, edible and very oily. Sweet drink from sap in spring, sometimes added to maple syrup.

Medicinal - The inner bark has been used as a mild cathartic and astringent. Dried outer bark used for toothache and dysentery. Oil from nuts used for tapeworms.

Other Products - Yellow to orange dye from seed husks and bark, light brown dye from young twigs, leaves and fruit.

Urban/Recreational

Excellent medium-sized shade tree for home landscapes and parks, attractive bark and interest in the nuts. The sticky leaves may be a minor drawback.

Cultivated Varieties

None.

Related Species

Black Walnut *(Juglans nigra)* - See Black Walnut.

Manchurian Walnut *(J. mandshurica)* - Hardy in limited plant trials in North Dakota. A large tree in Bismarck, N.D.

Pests

Diseases: Anthracnose may occur. Canker has been a major problem in eastern third of the United States, but not found in North Dakota to date.

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Plant Guide

BUTTERNUT

Juglans cinerea L.

Plant Symbol = JUCI

Contributed by: USDA NRCS National Plant Data Center & the Biota of North America Project

R. Mohlenbrock
USDA, NRCS, Wetland Science Institute
@ PLANTS

Alternate common names
White walnut, demon walnut, oilnut

Uses
Butternut is called "white walnut" because of its light-colored wood, which has a natural golden luster that becomes satin-like when polished. The wood is only moderately hard and saws and carves easily. It has been used for furniture, cabinetry, instrument cases, interior woodwork, including hand-carved wall panels and trim, and church decoration and altars. It is stocked in specialty lumberyards because little is cut annually.

Butternuts were often planted close to the house on farmsteads for their use as food. Kernels were used in baking and cultivars have been selected for nut size and for ease of cracking and extracting kernels.

They have been popular in New England for making maple-butternut candy. Early settlers used the fruit husks and inner bark to make orange or yellow dye and the root bark provided a laxative.

Status
Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status, such as, state noxious status and wetland indicator values.

Description
General: Walnut family (Juglandaceae). Small to medium-sized native trees with stiff upright branches and a wide-spreading crown, the young twigs, stems, and leaflets have hairs sticky-oily to the touch; terminal buds 12-18 mm long; bark brownish-gray, thick, shallowly divided into smooth or scaly plates. Leaves are pinnately compound, the leaflets (7-) 11-17, ovate to lanceolate or oblong-lanceolate, ± symmetric, mostly 5-11cm long, with finely toothed margins, terminal leaflet present, the lower surfaces densely covered with stellate hairs. Flowers are unisexual, female (pistillate) and male (staminate), but on the same tree (the species monoecious), usually not opening simultaneously on any individual tree; male flowers in slender catkins 6-14 cm long, the female flowers in terminal clusters of 6-8 flowers each. Fruit is an oblong-ovoid nut 4-6(-8) cm long, single or in clusters of 2-5, with a hard, thick, deeply furrowed shell enclosed by a thick husk with a sticky-glandular surface. The nuts usually remain on the tree until after leaf fall. The common name refers to the mature nut kernels, which are sweet and oily, like butter.

Distribution
Butternut is primarily a species of the northeastern and north-central US and southern Canada from southeastern New Brunswick to Ontario and Quebec; in the US in Minnesota to Missouri and eastward through Tennessee into North Carolina and Virginia, with disjunct outlyers in Arkansas, Mississippi, Alabama, South Carolina, and Georgia. It is uncommon throughout most of its range and formally listed as rare in many of the states in which it occurs. For current distribution, please consult the Plant

Profile page for this species on the PLANTS Web site.

Establishment
Adaptation: Butternut is found most frequently in rich woods of coves and stream benches and terraces, on slopes, in the talus of rock ledges, and on other sites with good drainage; at elevations of 0-1000 (-1500) meters. Young trees may grow in considerable competition, but they are shade-intolerant and mature trees must reach the overstory. Flowering occurs from April-June and fruiting from September-October.

General: Seed production begins at about 20 years and is optimum from 30-60 years. Good crops can be expected every 2-3 years, with light crops during intervening years. Premature seed losses may result from consumption by insects, birds, and rodents, and a lack of butternut trees in the immediate vicinity may limit pollination and fruit formation. Seeds germinate in the spring after seedfall and a cold period at 20°-30° C. for 90-120 days to break dormancy.

Stumps of young butternut trees and saplings are capable of sprouting. The trees are reported to be slow growing and seldom live longer than 75 years.

Management
Butternut canker is killing the species over its whole range. The fungal pathogen (*Sirococcus clavigignenti-juglandacearum*) apparently was introduced from outside of North America. It was first reported from southwestern Wisconsin in 1967 but is believed to have spread from the southeastern US coastal region, where it first appeared about 40-50 years ago. The Forest Service estimated in 1995 that 77% of the butternuts in the Southeast were dead. The fungus infects trees through buds, leaf scars, and possibly insect wounds and other openings in the bark, rapidly killing small branches. Spores produced on branches are spread by rain, resulting in multiple, perennial stem cankers that eventually girdle and kill infected trees – these do not resprout. The cankered portions should be removed and destroyed and the wounds should be covered with fungicidal paint; leaves that might harbor fungus (brown leaf spot) should be destroyed.

A few healthy butternut trees have been found growing among canker-diseased and dying trees and may be resistant. Black walnut apparently is unaffected. A research coalition has been formed to locate surviving trees or populations, characterize sites, identify trees with putative resistance, develop screening methodology for disease resistance, study fungal physiology, and preserve germplasm.

Fire easily top-kills butternut and older trees rarely sprout from the root crown or stump. A single hot fire or repeated cool fires can effectively eliminate the species in mixed hardwood stands

There is commonly a zone of no-growth or inhibited growth around walnut trees, because they produce a naphthoquinone (juglone) that selectively inhibits growth of associated plants. Juglone is concentrated in root tissue and fruit husks, with lesser amounts in the leaves, catkins, buds, and inner bark.

Cultivars, Improved and Selected Materials (and area of origin)
Contact your local Natural Resources Conservation Service (formerly Soil Conservation Service) office for more information. Look in the phone book under "United States Government." The Natural Resources Conservation Service will be listed under the subheading "Department of Agriculture." These plant materials are readily available from commercial sources.

Two hybrids show strong growth and extreme hardiness and produce nuts similar to the butternut in clusters of 10-15.
Juglans cinerea X *J. regia* = *Juglans* X *quadrangulata*
Juglans cinerea X *J. ailantifolia* = *Juglans* X *bixbii*

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