

Black Walnut



Black Walnut (*Juglans nigra*)

General Description

A large oval to rounded, somewhat open-crowned tree. Considered the most valuable timber tree. The tree is borderline hardy in North Dakota and some seedling sources will be subject to winter dieback. Select hardy North Dakota seed sources. The largest tree in North Dakota is 65 feet tall with a canopy spread of 50 feet.

Leaves and Buds

Bud Arrangement - Alternate.

Bud Color - Buds are pale, silky-downy, ovate, and grayish, superposed.

Bud Size - About 1/3 inch long and slightly longer than wide.

Leaf Type and Shape - Pinnately compound, with 15 to 23 leaflets.

Leaf Margins - Leaflets are ovate-oblong, to ovate-lanceolate, acuminate, rounded at the base, and irregularly serrate.

Leaf Surface - Upper surface at first minutely hairy, finally nearly smooth and somewhat shiny; underside is hairy and glandular.

Leaf Length - 10 to 20 inches; leaflets 2 to 4 inches.

Leaf Width - 2 to 6 inches; leaflets 1/2 to 1½ inches.

Leaf Color - Green leaflets; yellow fall color.

Flowers and Fruits

Flower Type - Catkins, 2 to 7 inches long.

Flower Color - Greenish.

Fruit Type - A globular drupe bearing a nut 1 to 2 inches across, indehiscent, edible.

Fruit Color - Green husk, until ripening in fall, when it turns black.

Form

Growth Habit - Under forest conditions devoid of branches to ½ its height. Open-grown trees are frequently forked and limby.

Texture - Medium, summer; coarse, winter.

Crown Height - 35 to 60 feet.

Crown Width - 30 to 50 feet.

Bark Color - Bark is thick, ridged, very dark brown, with deep diamond-shaped furrows.

Root System - Produces a deep, extensive taproot, which makes transplanting difficult. Roots and decaying plant parts release a toxic compound (juglone) which inhibits the growth of other plants growing near Black Walnut trees.

Environmental Requirements

Soils

Soil Texture - Sensitive to soil conditions. Does best on deep, well-drained, fertile, loamy soils.

Soil pH - 6.0 to 7.5.

Windbreak Suitability Group - 1, 3.

Cold Hardiness

USDA Zone 4.

Water

Prefers moist well-drained soils. Does not withstand extended ponding or drought.

Light

Full sun, tolerates partial shade.

Uses

Conservation/Windbreaks

Medium tree for protected areas of farmstead windbreaks in eastern part of North Dakota.

Wildlife

Used extensively by over 20 species of wildlife for food and cover.

Agroforestry Products

Wood - Heartwood is a rich dark brown and used for veneer and furniture. The wood is heavy, hard, strong, close-grained, durable, and is easily worked. Nut shells are ground for industrial polishing and cleaning. Pulp and roots are used to make a black dye.

Food - Confectionery uses for nuts.

Medicinal - Used as a laxative, an astringent for treatment of skin problems and in cancer research.

Urban/Recreational

Used for parks and other large landscape areas. Less suitable for small yards and boulevards because of its large size and messy fruit.

Cultivated Varieties

Juglans nigra 'Laciniata' - Finely dissected leaflets, but not winter hardy in North Dakota.

Related Species

Butternut (*Juglans cinerea*) - Use North Dakota seed sources.

Manchurian Walnut (*J. mandshurica*) - Hardy in limited plant evaluations in North Dakota.

Pests

No major pest problems. Plant extracts are found to be effective against certain insect pests.

BLACK WALNUT

Juglans nigra L.

Plant Symbol = JUNI

Contributed by: USDA NRCS New York State Office



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Uses

Traditionally the dark colored wood was used for gun stocks, fencing, airplane propellers, and cabinetry. Today the high valued wood is utilized for some of the finest quality furniture. The large nuts produced by this tree are consumed by wildlife and humans.

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

Black walnut usually matures in about 150 years. An average site will produce mature black walnut trees which are 70 to 80 feet in height and attain diameters of 2 to 4 feet when grown in a forest stand. On the best sites this tree may reach up to 150 feet tall and over 8 feet in diameter. When grown at low stocking or in open fields, black walnut produces a short, wide spreading crown.

A deep, wide spreading root system supports this large tree. Mature trees have a deeply furrowed gray-brown to nearly black bark. The brown to orange-

brown twigs are stout, with large, shield shaped, conspicuous leaf scars. The deciduous leaves are 1 to 2 feet long, alternate, and compound. The 15 to 23 leaflets are stemless, unequally rounded, and wider at the base than at the pointed tips.

Unisexual flowers emerge on black walnut from mid-April to mid-June, appearing with the leaves on a separate inflorescence of the same tree. A globular fruit is produced which contains a corrugated nut in its yellowish-green husk. The nut is usually 1 1/2 to 2 1/2 inches in diameter, containing an oil-rich, sweet, and edible seed. The large fruit ripens between September and October. Upon ripening the husk softens and turns dark brown to black.

Adaptation and Distribution

Found throughout the eastern U.S., black walnut thrives in deeper, well drained, neutral soils. Black walnut is a shade intolerant species, and must have direct sunlight to grow optimally. It requires about 35 inches of annual precipitation, an annual average temperature of about 55 degrees F., with no less than 170 growing days for optimum growth and development. This species survives beyond its ideal site requirements as it approaches the limits of its native range. Black walnut is found naturally growing from Vermont to Minnesota, south to Florida and Texas.

When acquiring planting stock it is important to utilize local or regional sources, since climatic variation has been noted.

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

Establishment

Seed dormancy is broken by natural over-winter freezing and thawing conditions or artificially with cool moist stratification.

Natural: Shortly after leaves fall from the tree, the nuts fall. This species is naturally distributed by various wildlife, as they store nuts in the soil for winter. After the freezing and thawing of winter, those nuts not consumed by wildlife will normally germinate the first or second spring. On good sites, seedlings will grow 3 feet the first year and double that the second year.

Nursery: Propagating seedlings under nursery conditions is a viable choice, but precautions must be taken to protect against rodent predation. Direct seeding onto raised beds or at a site will lead to productive results. Seedlings should be distributed as 1/0 bare-root or containerized stock. On fertile nursery soils, black walnut should not require additional nutrients for adequate growth.

Pests and Potential Problems

European canker and walnut caterpillar are the only two pests documented to attack black walnut.

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

Over 100 varieties of black walnut have been selected for their nut quality, but most commercially available seedlings are produced from local collections. Specific varieties are typically propagated from grafts.

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Edited: 05Feb2002 JLK; 060801 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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