With its straight-grained, lustrous dark-colored wood, black walnut (Juglans nigra) has long been a favorite for use in the crafting of fine furniture and gunstocks. It is one of the most-highly prized North American hardwoods. Native to the United States, naturally occurring black walnut has declined significantly due to high demand and changing land usages.

Black walnut is also being increasingly grown for its tasty nuts. Most black walnuts are sold for home baking, with the remainder being used in ice cream, commercial baking, and candy making. Walnut shells are also used in a wide variety of products from cosmetics to commercial grades of abrasive grit.

**Biology and Silvics**

Black walnut occurs naturally throughout the central and eastern parts of the United States. In its native range, black walnut has a growing season of 140 to 280 days, with mean annual temperatures ranging from 45°F in the north to 67°F in the south. Temperatures as low as -45°F occur in the northern part of this species range, but only trees originating from northern seed sources will survive these low temperatures.

Annual precipitation ranges from 25 inches in Nebraska to 70 inches or more in parts of the south. Optimum conditions for black walnut would include a mean annual temperature of 55°F, 170 frost-free days and at least 35 inches of precipitation. Black walnut is moderately tolerant of flooding.

Black walnut flowers from mid-May to early June and occur at the same time foliage is leafing out. Black walnut is extremely susceptible to late frosts and will often lose new foliage and flowers to this type of damage. Walnut are monoecious (separate male and female flowers are produced on the same tree) and species are cross-compatible, meaning they are able to pollinate other trees from the same genera but different species. As walnuts rely on wind for pollination they need to be in close proximity to ensure fruit set. Although not common, some trees will self-pollinate. To ensure pollination, the practice is to plant walnuts in small groves.

Black walnuts ripen in September or October and drop from the tree shortly after the leaves fall. Good seed crops are produced irregularly, on the average two out of five years. Open-grown trees may begin to produce nuts at age six, but usually nut production begins at age 10 to 12, with crop sizes reaching their peak production when the tree is 20 to 30 years old. Nut production will continue at this rate until age 80 to 100, when production begins to decline.

Black walnut seedlings are intolerant of shade and grow slowly the first few years while establishing large root systems. Once established, black walnut can grow two to four feet in height per year, reaching 100 to 120 feet at maturity. On the best sites, research has shown that it is possible to grow 16 inch diameter black walnut sawlogs in 30 to 35 years and larger, veneer-quality logs in 40 to 50 years. Black walnut responds well to basic cultural practices, such as pruning and thinning, with increased growth and quality in only a few years.

**Plantation Establishment**

*Site selection.* Black walnut does best on top quality sites. To be successful with black walnut, you need to choose a site with deep (three feet or more), well-drained loamy soils with pH values between 5.0 and 8.0. Smooth or gently rolling landscapes provide the best topography, although lower north- and east-facing slopes in mountainous terrain, as well as stream terraces and floodplains, also provide good sites for black walnut. Avoid frost pockets as black walnut is very susceptible to frost damage. Poor site characteristics such as insufficient or excess moisture, steep slopes,
At a glance…

Species: *Juglans nigra*

Common names: black walnut, eastern black walnut, American walnut.

Native range: eastern United States.

Hardiness: USDA Zone 4-9.

Soil type: deep, rich, moist soils for maximum growth; will grow in drier, less fertile sites at a slower rate.

Shade tolerance: intolerant.

Form: large, semi-formal tree; 50 to 100 feet tall.

Regional insect & disease problems: aphids.

Objectionable characteristics: produces a substance called juglone, which is selectively toxic to certain other species of plants - highest concentration of chemical in roots and fruit husks; deep taproot, making it difficult to transplant; will not tolerate extreme heat and dryness.

Other: as quantities diminish, wood is used primarily for veneer; nuts have a distinct flavor that are in demand for baked goods and ice cream; ground shells are used in many products.

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