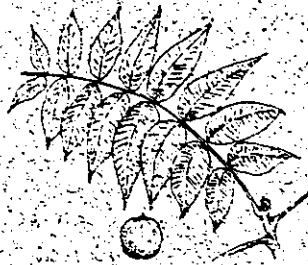




Black walnut

Yvonne Carree Barkley and Annette Brusven



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 140-280 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" in Nebraska to 70" 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" 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 2 out of 5 years. Open-grown trees may begin to produce nuts at age 6, but usually nut production begins at age 10-12, with crop sizes reaching their peak production when the tree is 20-30 years old. Nut production will continue at this rate until age 80-100, 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 2-4' in height per year, reaching 100-120' at maturity. On the best sites, research has shown that it is possible to grow 16" diameter black walnut sawlogs in 30-35 years and larger, veneer-quality logs in 40-50 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 (3' or more), well-drained loamy soils with pH values between 5 and 8. 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, south- or west-facing aspects,

hardpan layers, and shallow soils should also be avoided.

Planting densities. Recommendations for planting densities for black walnut vary widely. An initial spacing of 14' x 14' tends to encourage more upright form and single, central leaders. The closer the initial spacing, the sooner you will have to thin.

Planting stock. Selecting planting stock that is compatible to your site is another important step in the establishment of a successful alternative tree plantation. For Idaho, we recommend the Purdue #1 hybrid black walnut, developed at Purdue University and available from the UI Forest Research Nursery. This particular hybrid has been field tested and found to be successful in a variety of Idaho climates. Purdue #1 black walnut is a patented hybrid with unique qualities which include more than double the average 1/4" per year diameter growth rates for ordinary black walnut. Purdue #1 hybrids also have strong central leader tendencies and are late leafers, which increases their chances for escaping damage from late spring frosts.

Plantation Culture and Management

Pruning. Black walnut has a tendency to produce multiple leaders due to frost or insect damage to the terminal bud, so corrective pruning to maintain a single leader and limit the number of developing branches is very important if lumber production is your goal.

Thinning. Black walnut responds well to thinning. Your plantation should be thinned when the canopies of adjacent trees begin to touch. For maximum growth, crowns should be 5 feet apart from adjacent trees. Subsequent thinnings may be required to maintain growing space. At maturity, trees should be thinned to approximately 100 trees/acre for timber production or approximately 25 to 30 trees/acre for nut production. Remove inferior trees at the first thinning and plan to return for an intermediate harvest of marketable trees at a later time.

Strong and beautiful are words often used to describe furniture and gunstocks made from black walnut. These qualities combined with the added benefits of a tasty nut crop and aesthetically pleasing characteristics make black walnut an attractive choice for Idaho landowners with the perfect site for an alternative tree crop.

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, 50-100' 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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