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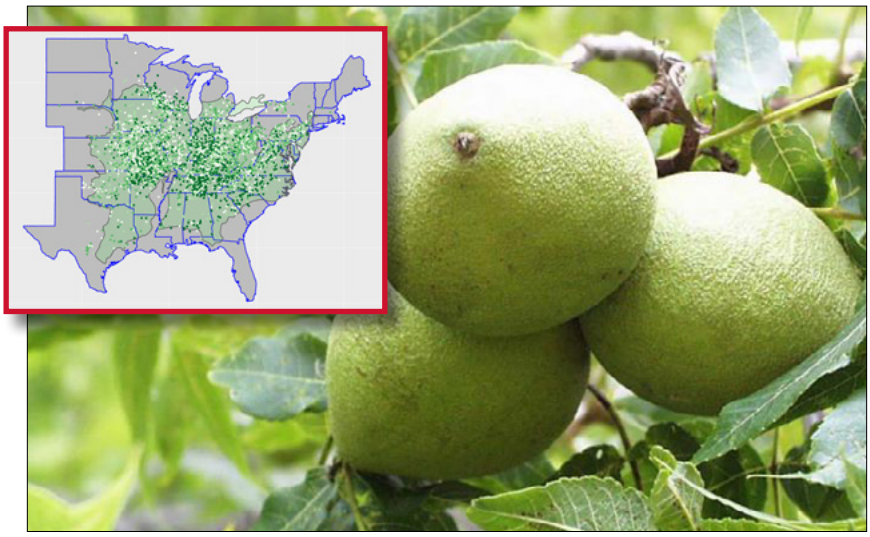
NTFPs from Trees: Nontimber Forest Products that Support our Society and Economy

EASTERN BLACK WALNUT

Products: Black walnuts, antifungal herbal medicine, and abrasives
Plant parts used: Fruit and hull

Eastern black walnut (*Juglans nigra*) grows best on sites with deep, moist, and well-drained soils. It reaches its greatest potential growing close to streams and on lower portions of north and northeast slopes. The tree is intolerant of shade and must be dominant or codominant in the canopy to thrive. In such conditions, eastern black walnut can reach heights of more than 100 feet, with diameters of 40 inches. Its natural range extends through most Eastern and Midwestern States (shown in green on the map below).



Key Points

- Though it is known more for its beautiful wood, eastern black walnut fruit is prized for food and medicine.
- The hard outer shell of eastern black walnut also has value as an abrasive.
- Anthracnose, a foliar disease, is threatening nut production.
- Thousand cankers disease, a disease complex caused by a beetle and a fungus, threatens the survival of the eastern black walnut. Estimated mortality has increased tremendously over the last 2 decades.
- The tree is favorable for agroforestry because of its many uses and foliar characteristics that allow light to penetrate to understory crops, although care should be taken in selecting plants to grow nearby.

Nontimber Uses

- Historically, Native Americans used the nut meat in soups and stews, for pickling, and as a condiment.
- In the early 20th century, ground shells were used as an abrasive to clean airplane pistons. They are still used for their abrasive qualities in a variety of applications.
- Today, the primary use of eastern black walnut fruit is for food; its distinct flavor makes it especially desirable in ice cream and baked goods.
- Unripe hulls are used in herbal medicine for gastrointestinal health and to treat skin ailments and fungal infections such as athlete's foot.

Markets

- One Missouri-based company commands most of the market for wild-harvested eastern black walnut fruit. Each year, more than 200 buying stations are set up in 14 States across the tree's natural range.
  - In the early 2000s, >25 million pounds of nuts were being processed each year with an annual value exceeding $2.5 million paid to harvesters.
  - In 2017, the company purchased >45 percent of the total nut production from Missouri; Indiana, Kentucky, and Ohio contributed about 37 percent of production.
- Like sugar maple, black walnut can be tapped, and the sap processed into syrup. It is being promoted as an alternative to maple syrup.

Any medical or pesticide use described in this publication is for reader information and does not imply endorsement by the U.S. Department of Agriculture.

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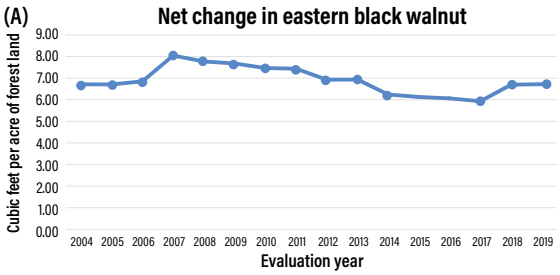
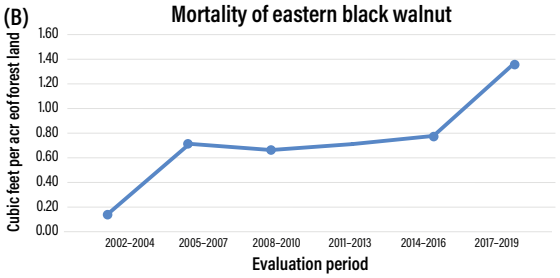
(A)



(B)



Status[a]

- Eastern black walnut has been found in Forest Inventory and Analysis (FIA) plots across 31 States, with the greatest number of trees per acre, relative to sample size found in Missouri, Kentucky, and Ohio.
- Over the years 2002–2019, the estimated volume of eastern black walnut has trended positive, increasing from about 148[b] cubic feet per acre (2002) to 256[c] cubic feet per acre (2019). The greatest positive change was in Wisconsin, Minnesota, and New York.
- Over all years, estimated net change in eastern black walnut has trended negative, exhibiting about a 25-percent decrease in volume per acre (see chart [A]).
- Estimated mortality of eastern black walnut increased tremendously, from <0.20 cubic feet per acre during the period 2002–2004 to >1.30 cubic feet per acre during the period 2017–2019 (see chart [B]).

[a] Estimates are based on observations of at least one specimen of the species in an inventory plot (representing about 6,000 acres of forest land). They are not based on all forest land for the State.

[b] At 68-percent confidence level, standard error is ± 5.41 percent of estimate.

[c] At 68-percent confidence level, standard error is ± 2.37 percent of estimate.

Management and Implications

- Large nut production begins to occur when eastern black walnut trees are 20–30 years old and may continue for more than 100 years.
- Thousand cankers disease, caused by the walnut twig beetle (*Pityophthorus juglandis*) and associated *Geosmithia morbida* fungus, is threatening eastern black walnut survival, especially on poor sites with low precipitation.
- Controlling anthracnose, a foliar disease caused by the fungus *Ophiognomonia leptostyla*, is important for nut production, as healthy leaves are needed during the growing season to manufacture carbohydrates and stimulate pistillate growth.
- Widely spaced black walnut trees grown for nuts and intercropped with agricultural crops show high financial returns on investment. Proper crop selection is needed as eastern black walnut exudes the chemical juglone, which is toxic to some plants.
- Estimating potential nut production requires estimates of average annual fruit production.

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The U.S. Department of Agriculture Forest Service **Forest Inventory and Analysis (FIA)** program tracks growth, mortality, and removals of forest trees and more. For additional information: https://www.fia.fs.fed.us/

Learn more about nontimber forest products: Jim Chamberlain ▪ james.l.chamberlain@usda.gov ▪ https://www.srs.fs.usda.gov/staff/524