



Improving Black Walnut Stands

Black walnut trees, found growing throughout the eastern two-thirds of Kansas, have provided landowners good cash returns. Forest management practices — particularly correct thinning and pruning — must be applied to maximize benefits.

Improving walnut timber is hard work, requiring a great deal of time and hand labor. Benefits far outweigh the investment, however, and rewards will be realized for generations to come. In addition to economic returns, improving a walnut stand enhances wildlife habitat.

Site Evaluation

Black walnut trees can grow on a variety of sites, but they grow best on deep, well-drained, silt loam soils in bottomland areas. Before time and money are spent to improve a walnut stand, soil depth should be determined by using a soil probe or digging a soil pit. A minimum of 3 feet of well-drained soil before reaching rock, clay or gravel is needed to assure sufficient growth to make thinning and pruning economical.

Black walnut will grow to commercial size on upland sites if soils are deep enough for good root development. Technical assistance may be needed to determine the growth potential on marginal sites. Kansas Forest Service, Natural Resources Conservation Service, or local K-State Research and Extension agents can help with soils information.

Stand Management

Woodlands often consist of several stands or groups of trees that vary in

age and species. Often, black walnut trees are found in nearly even-aged stands that are classified according to size. Tree size is expressed as dbh: diameter in inches at breast height measured 4½ feet above ground level. Management recommendations depend on the age and size of trees.

Seedling stands (trees less than 2 inches dbh). Black walnut seedlings are in an establishment period. Improvement work recommended is removal of competing vegetation (trees, shrubs, weeds, or grasses) that will overtop or otherwise restrict seedling growth and removal of double leaders.

Sapling stands (trees 2 to 5 inches dbh). Competition for moisture, nutrients, and light becomes increasingly important at this stage. Future crop trees should be identified. Thinning black walnut trees and removing other competing trees may be necessary. Pruning may be needed to remove lower branches 1 inch in diameter and larger to improve stem quality. Trees should be pruned up to one-third to one-half of their total height. Do not remove or prune more than one-third of the live branches in one year.

Pole stands (trees 5 to 12 inches dbh). This is the stage when greatest investment returns can be realized, so improvement work is critical. Future crop trees should be identified, and competing trees removed to ensure optimum growth of crop trees. Trees that are removed can be used for fuelwood, posts, or other wood products. Branches up to a height of 9 feet that are 2 inches or less in diameter should

be pruned to improve stem quality. Additional pruning is recommended on tall, straight trees. Do not remove or prune more than one-third of the live branches in one year. Vines growing in crop trees should be killed by cutting vines. Do not cut into the tree cambium (thin layer of cells growing between the bark and the wood) of crop trees when severing the vines. This could create a wound and degrade log quality.

Immature sawtimber stands (trees 12 to 16 inches dbh). Crop trees should be identified and competing trees removed. Some competing trees may be sold for sawlogs or other wood products. Pruning live limbs to improve quality is not economical at this stage. Only the lower dead branches should be pruned to reduce risk of decay. Walnut trees should be kept free of vines.

Mature sawtimber stands (trees greater than 16 inches dbh). Periodic selective harvests are used to thin these stands and maintain optimum growth by removing lowest-quality trees first. Eventually the mature stand will be completely harvested and a new stand must be established for continuing walnut production. Pruning and non-commercial thinning are not economically feasible at this stage. It may be necessary to remove vines from smaller sawtimber trees.

Crop Tree Selection

Crop trees are the best trees in the stand. Select future crop trees, which are tall, straight, free of stem defects, and have large crowns. Mark crop trees

with paint or flagging so they can be easily identified during improvement operations.

Black walnut trees need space and sunlight to grow and develop. Competing trees are those that are the same general height as crop trees or overtop the crop trees. Small trees, unless they are rubbing a crop tree, generally do not need to be removed. Competing trees may include low-quality walnut.

To properly space crop trees, remove or kill standing competing trees to allow 5 to 7 feet of space between crowns. If two or more crop trees are growing close to one another, at least two sides of their crowns should be free from competition. Trees too widely spaced often develop excessive limb growth on their trunks. This lowers stem quality and creates future pruning work. It may be necessary to leave a number of noncrop trees in the stand to provide protection from wind and excessive sunlight.

Removing Competing Trees

Unwanted trees can be killed standing or cut and dropped to the ground if crop trees will not be damaged. An approved herbicide can be applied to the cut stump to prevent sprouting. Some woodland owners let stump sprouts grow to provide additional wildlife food and cover.

Standing trees may be killed by using one of the following methods:

Hack and squirt treatment. Make cuts through the bark and into the cambium with a hatchet, axe, or similar device at 1- to 3-inch intervals completely around the tree. Place a small amount of herbicide in the cuts.

Basal treatment. Use a garden sprayer to soak thin-barked trees such as osage-orange or honeylocust from the ground up to 15 inches on the stem of the tree. This method can be used on trees less than 6 inches in diameter.

Single girdle treatment. Make a single cut with a chainsaw or overlapping cuts with a hatchet or axe completely around the tree. Apply herbicide

Table 1. Pruning Requirements for Walnut Stands

Stage of development	Pruning needed	Limb size		Pruning height
		Dead	Live	
Seedling	Yes (double leaders)	—	—	—
Sapling	Yes	All	1 inch & above	⅓ to ½ tree height
Pole	Yes	All	2 inches & less	9 feet or ½ tree height
Immature sawtimber	Yes	All	No	9+ feet
Mature sawtimber	Yes	All	No	9+ feet

to the entire cut around the tree.

Double girdle treatment. Cut two continuous, connecting circles, 1 to 2 inches deep and about 3 inches apart, around the tree trunk with a chainsaw. No herbicide is necessary unless stump sprouts are to be controlled.

Pruning

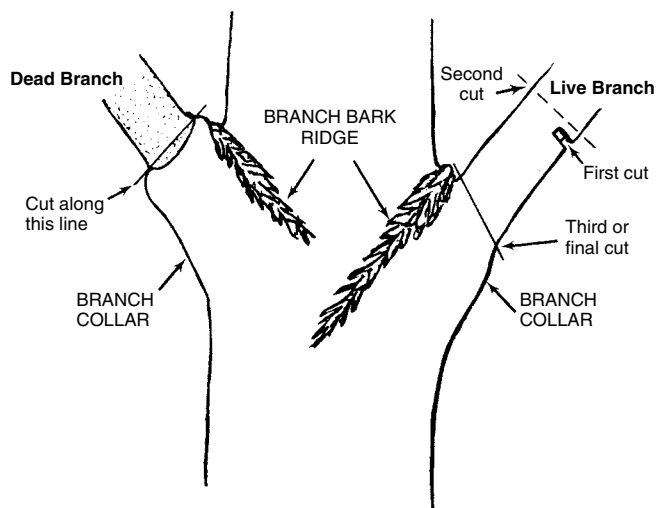
Pruning can improve stem quality and reduce risk of decay. Proper pruning in sapling and pole stands will improve the future value of trees. Table 1 summarizes pruning needs for various walnut stands.

When pruning live limbs, begin at outer edge of branch collar (see illustration). Make three cuts on larger limbs to prevent stripping the bark down the trunk. Avoid making cuts flush with the trunk. Flush cuts create large wounds that take a long time to close, promote decay and cause other defects.

Dead limbs should be removed at branch collar (see illustration). It is important not to cut into live wood and create a new wound. Wound dressing should not be used when pruning dead or live limbs.

District foresters can provide on-site technical assistance in managing walnut stands. They can help identify crop trees

Limb Pruning Methods



and mark competing trees for removal. Contact your local K-State Research and Extension, Natural Resources Conservation Service, or County Conservation District offices for an appointment.

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