Stewardship Notes

Indiana Division of Forestry

Culture And Production Of Black Walnut

Site Selection

Cultural practices recommended for growing black walnut have a basic premise: the seedlings must be planted on the proper site. Just because a walnut tree grows in a certain area doesn't mean that area is an optimum walnut site, or because a field has a high corn yield does not necessarily mean that it will grow good walnut. The entire site, its soil types and topography must be closely examined.

The soil on an ideal walnut site should be at least two feet deep (preferably more) before it hits a restrictive layer such as bedrock, gravel, hardpan or water table. The best walnut soils should also have adequate moisture supply available for growth, but the site should be well drained. Wet, poorly drained soils should not be planted with walnut.

On level or gently rolling landscapes, site aspect (the direction the site is facing) is not a critical factor; however, in steep terrain, it can be very important. Ridge tops or hillsides that face west or south are not good walnut areas. These sites are hot and dry and will not support good tree growth. The best walnut sites in hilly terrain are located on the north and east slopes, and in the small bottoms and cove areas if the soils are deep enough. Since these areas are not exposed to the hot afternoon sun, they are cooler and have more moisture available for growth.

To determine the soil types in your area and their ability to grow walnut, contact the local Natural Resource Conservation Service in your county, the district forester, or a consultant forester. They can check the soils and determine the feasibility of planting walnut.

Site Preparation

Once a planting site has been selected, some preparations are necessary to ready the area for planting. Level or nearly level fields that have a sod cover may be plowed and disked prior to planting to control the competing vegetation. Recently cropped fields may require only disking. On rolling ground subject to erosion, an approved herbicide may be applied in strips to deaden the competing vegetation. Soil disturbance on these areas should be minimized to prevent soil loss. In brushy areas, the brush and scrub species should be either cut by hand or mowed, and the stumps treated with herbicide to prevent sprouting. No matter what method of site preparation is used, the end result should be reduced competition for the newly planted seedlings and little or no soil loss from the planting site.

Seedling and Plantation Layout

Seedlings for planting may be purchased from state operated nurseries. Order blanks may be obtained from the Division of Forestry, local FSA and NRCS offices or the Extension Service. Plant the seedlings as soon as you receive them or shortly thereafter. If this is not possible, special steps should be taken to protect the seedlings. Store the seedlings in a dark, cool area so that they remain dormant or take them out of the shipping bag and "heel them in," by selecting a protected site and dig a small trench. Place the seedlings roots in the trench and cover with dirt to prevent drying out. Neither method should be used for long periods of time.

If planted in an open field, the seedlings should be planted in rows to facilitate future weed control. Several different spacings are used, the most common being:

8’ x 8’	681 trees per acre
8’ x 10’	545 trees per acre
10’ x 10’	436 trees per acre

Walnut seedlings may be planted in a pure stand. However, recent studies have shown that interplanting with other species tends to give better results. Contact your local forester for recommendations on what species to interplant.

The walnut is forced to grow straight and self prune, eliminating much cultural work such as pruning. If walnut is planted in openings in an existing woodlot, the seedlings must be placed so they are in full sunlight. Black walnut must have full sunlight to survive and grow well. The actual planting may be done by machine or hand. Whichever method is used, be sure the seedlings are planted straight. The hole must be deep enough so that the taproot points downward and the seedling are at the same level or slightly lower as when it was growing in the nursery. If planted properly, many future problems can be prevented.

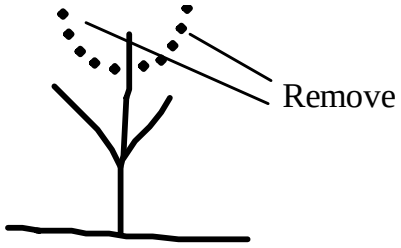
Weed Control

For at least the first three growing seasons, some form of weed control is needed to ensure seedling survival. Weed control is accomplished by mulching, herbicide application around each seedling, or a combination of both. Herbicides may either be applied as a band spray in each row or spot treated in a three-foot radius around each seedling. If an herbicide is used in conjunction with mowing at least once during the growing season, weed competition should not be a problem. When using chemicals for site preparation and follow-up weed control, use only approved chemicals and follow the recommended application rate and label directions. To find out which chemicals are registered for use with walnut, contact the district forester, a consultant forester or the local county extension agent.

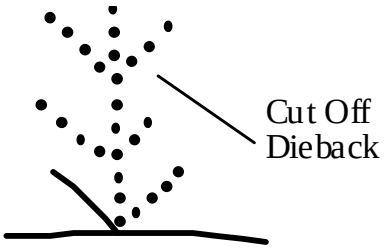
Pruning (0 - 4 years of age)

Try to develop a tree with a good, straight terminal shoot, but do not try to free the stem of all branches for its entire length. Such mistreatment stimulates the development of extremely heavy branching and/or foliage. A tree in this condition is more susceptible to bending or breakage by the wind. If a seedling has a good central stem with no forks and terminates above all the rest of the lateral branches, it should be left alone until it has been in the ground for at least four years.

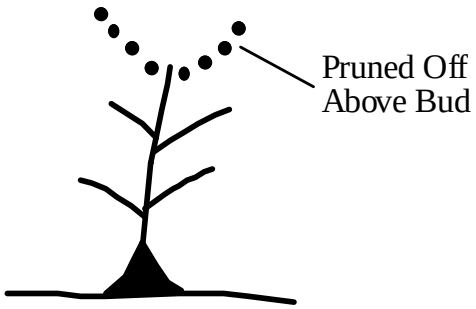
Trees that have problems starting a straight trunk have conditions similar to one of the drawings below. These diagrams can help you determine what the proper corrective measures are. Pruning should be done in winter and early spring while the tree is still dormant with hand clippers or a sharp knife.



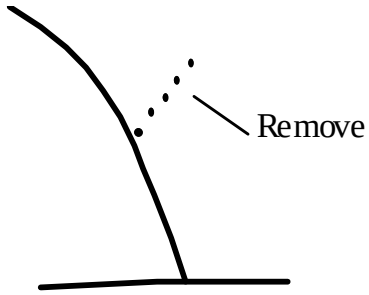
"Train" each tree to grow in a single, straight stem by removing all lateral branches that compete with the terminal for dominance. Use sharp hand clippers to cut branches off just above the branch collar. If the terminal bud was damaged in planting or by late frost, several buds at the base of the terminal will sprout and cause forking. Pinch off all but the most upright one. This bud will then become the new leader.



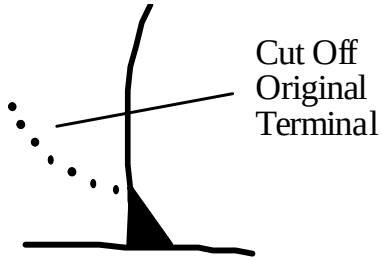
If a seedling has died back for half or more of its length, vigorous sprouts may arise near the base of the stem. Cut the stem off above the most vigorous, upright sprout and eliminate all others.



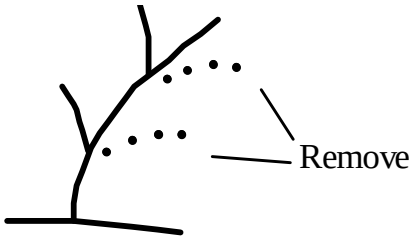
Correct any forks that may have been missed the first year. If none of the shoots are straight, vigorous or upright, cut the stem off below the fork, but above the first good bud (in the dormant season) or above the first vigorous shoot (after new growth has begun). Follow-up pruning will be needed to prevent a new fork from developing.



Save the one fork that leans into the prevailing wind if both shoots of a fork are potential leaders. The wind can help straighten the crooked stem.

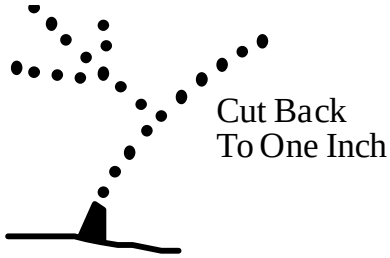


The terminals of seedlings planted on a slant will grow at an angle and forking will result. When this happens, select a lateral branch that is growing vertically on the upper side of the slanted stem and cut the old terminal off at a point where the lateral originates. The crook that forms at that point will eventually disappear. Better yet, avoid this problem by planting trees



straight in the first place.

Continue to prune off laterals competing with leaders. If heavy leaf growth causes the stem to bend after severe rain and wind, cut off some leaves and ends of lateral branches on the lower side of the leaning stem.



If a tree does not respond to corrective pruning after three years, cut the entire stem off at a 45-degree angle, one inch above the ground in the early spring. When sprouting occurs, choose the straight shoot and remove the rest. By the end of the summer the shoot will develop a straight stem as tall as the original tree.

Pruning (4 - 25 years of age)

If the limbs are allowed to remain, the future quality of the harvestable timber will be greatly reduced. Now is the time to start side pruning. Trees that do not have a straight trunk will most likely be of minor concern since they will probably be removed early in their lives.

At age four, most trees should be at least six feet tall and contain three or more sets of branches so at least one-half of the total height of the tree is in the crown. When the tree reaches this stage, the development of a veneer log can begin and not slow the growth of the tree. In all cases, care should be taken to avoid cutting into the live, callous tissue surrounding the base of the removed limb. The cut should always be made above the callous tissue, rather than a flush cut. As a rule of thumb, no branches larger than two inches in diameter should be pruned off. A branch of this size leaves such a large scar where decay may set in before the scar has a chance to heal.

This program should be continued once every five years until a clear trunk at least ten feet (ideally seventeen feet or more) has formed. During the first pruning, a hand pruner or a pruning saw is used for the job. As time goes on, a long-handled pruning saw becomes more practical.

Thinning

The purpose of thinning is to remove competition around the most promising crop trees so they can take full advantage of available sunlight. Most good trees can be released by eliminating crooked, knotty or slow-growing individuals from the stand. Thinning should begin when the trunks are four to six inches in diameter. For a natural stand, the timing of a thinning operation depends upon the number of trees per acre and their relative sizes.

An aid to determining when and how to thin is by measuring the tree's diameter at breast height (i.e. 4.5 feet above ground) in inches, multiply it by two and add five. This figure, expressed in feet, is the approximate width of the

crown. It is a good idea to estimate how much the tree will grow between thinning and then expand the calculated crown diameter by two feet for every inch of growth. For example, if a tree is presently six inches in diameter, multiply six by two and then add five. The ideal crown diameter for this tree is seventeen feet. For trees of different diameters, the distance between the two trees would be the average of their calculated crown diameters. Contact your forester for assistance before you thin the stand.

Walnut Marketing

Since the earliest times in the American hardwood industry, black walnut has demanded the highest prices as lumber, veneer, gunstocks or furniture. Walnut has become a status symbol and it is always in demand because of its many uses. In the recent past, the export of veneer quality walnut has pushed the price of walnut up. Buying competition has been keen. Walnut is like no other kind of wood, and it should be marketed carefully. The seller should know exactly the quality and quantity of walnut being sold, and should know who to contact to get competitive bids and find out how to conduct the sale.

To know the quality and quantity of trees for sale, the seller must first select trees to sell. Unless the seller is well versed on the growing characteristics, quality and economic aspects of walnut, a professional forester should select the trees for sale. Once selected, the trees should be marked for easy identification and their volume estimated by log grade. In Indiana, the Doyle Log Scale should estimate volume.

Next comes the sale advertisement. The forester can give the seller names of prospective licensed buyers who may be interested in the sale. All these buyers should be contacted. The seller can also use the Licensed Timber Buyer's Bulletin, which is sent to every buyer who is licensed to buy timber in Indiana. The buyers should be given at least one month to inspect the trees. A definite time and date should be set by the seller for bids to be submitted. If sealed bids are being taken, the buyers should be invited to be present at the bid opening. Normally, a buyer will not submit a sealed bid until the time and day of the sale. An open auction may be used where the values are likely to be high or if the sale contains exceptionally high quality trees.

Follow the same procedure for selling walnut as you would for other woods. Be careful to attend to all of the details because of walnut's potentially high value.

For more information on black walnut contact:

The Purdue University Agricultural Communication Service Media Distribution Center (ACMDC)
301 South 2nd Street
Lafayette, IN 47901-1232

Publications include:
FNR-76 Correct Pruning of Black Walnut for Timber Form
FNR-105 Grafting Black Walnut
FNR-115 Characteristics of Purdue University's Patented Black Walnut Trees
FNR-119 Black Walnut Plantation Management
FNR-148 Predicting Black Walnut Prices
FNR-149 Important Information About Planting Black Walnut in Indiana

For more information on the Division Of Forestry contact:

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http://www.IN.gov/dnr/forestry

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