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Managing Black Walnut Plantations for Timber

A basic knowledge of tree needs and the application of simple management principles are required to produce quality black walnut timber.

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Black walnut (*Juglans nigra*) is a high value timber species. The only way to maximize profit from black walnut plantations is by good timber management. Management practices that increase growth, improve quality and reduce damage, substantially increase profit. A basic knowledge of tree needs and the application of simple management principles are required to produce quality black walnut timber.

Protection, pruning and thinning are the major management activities.

Protection

Walnut trees are an investment. Protect your investment from:

1. *Competition.* Weeds and grass must be controlled for 3 to 5 years until young trees become established.
2. *Rodent damage.* Mice and rabbits can severely damage young trees. A clean area is the best protection. Chicken wire rings or repellants can be used.
3. *Livestock.* Grazing must be excluded to prevent damage from trampling, browsing, wounding and soil compaction.

4. *Fire.* Keep fire out of the plantation. Fire lines may be required in areas of high fire risk.
5. *Insects and disease.* Inspect trees regularly for insect or disease problems. Initiate control measures promptly.
6. *Herbicide damage.* 2,4-D spray drift is a major hazard. Use CAUTION when applying herbicides near trees and inform neighbors of the damage that herbicides can cause to your trees.

Pruning

The saying "as the twig is bent, so grows the tree" is especially applicable to the production of high quality walnut logs. Moneymakers of the future are tall, straight, clear-stemmed trees. Corrective pruning early in the tree's life will assure desired form.

General Recommendations

1. Check trees at least twice a year for proper form.
2. Correctively prune as needed. Pruning during the period of active growth (May, June and July) allows for rapid healing. Pruning in late winter or early spring causes excessive bleeding from the wounds.
3. Keep pruning tools sharp.

First Year

1. Prune each tree to a single, straight stem by removing branches that directly compete with the terminal for dominance. Use sharp hand clippers and cut branches flush with the main stem.



2. If the terminal bud is damaged, several buds at the base of the terminal will sprout and cause forking. Pinch or cut off all but the most upright one. It will become a new leader.

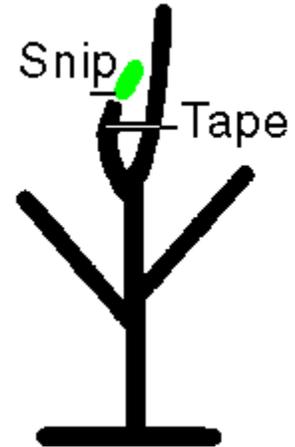


3. Vigorous sprouts will usually arise near the base of the stem. If the seedling has died back for half or more of its length, select the most vigorous, upright sprout and eliminate all others.



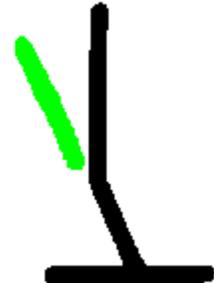
Second Year

1. Continue first-year pruning techniques to maintain a central leader. Correct any forks missed the first year.



2. If none of the shoots are straight and upright, cut the stem off above the first good bud or vigorous shoot. Additional pruning may be needed to prevent a new fork from developing. Simply tying two branches together with masking tape can often correct a fork.

3. Seedlings planted on a slant will grow at an angle. Forking will result. Select a side branch that is growing vertically on the upper side of the slanted stem. Cut the old terminal at a point where the lateral originates. The crook that forms, if not more than an inch or two out of plumb, will eventually straighten.



Third, Fourth and Fifth Years

1. Continue pruning to maintain a central leader.



2. Prune dead, dying or diseased branches flush with the stem. Use hand shears or a pruning saw.

3. Lop side branches 2 to 4 feet from the main stem when they are larger than one inch in diameter, or longer than half the height of the tree. The stub will produce sprouts the next growing season. The lopping technique

retards diameter growth of side branches and reduces the possibility of snow, wind or mechanical damage to the tree. Never remove more than 1/3 of the total leaf area of the tree.

4. Remove side branches which are 1 1/2 - 2 1/2 inches in diameter flush with the main stem. Branches larger than 3 inches in diameter should not be removed unless dead. A pruning saw works best. First cut from below, then from above to prevent bark stripping when the branches fall.

5. Some trees cannot be trained into a single straight stem. Deformed trees up to 3 inches in diameter should be cut back to 1/2 inch above the ground line during the dormant season (October to March). Several fast growing sprouts will appear in the spring. About three weeks after growth begins, select the best sprout and remove all others. The sprout will grow rapidly from the well developed root system. The same pruning techniques should be used to develop the sprout into a crop tree.



Six to Twenty Years

1. Continue corrective pruning.
2. Prune all side branches flush with the main stem to a height equal to about 30 percent of the tree's total height.
3. Prune side branches flush with the main stem when they approach 2 inches in diameter or when central stem at point of branch contact is 4 to 5 inches in diameter.
4. Continue pruning until the desired clear straight length is obtained at least 8 feet.

Thinning

Thinning is cutting trees from an immature stand to increase the growth rate of the remaining trees.

Increased supplies of nutrients, moisture and light are made available to the best trees.

Stands should be thinned when the trees become crowded, compete with each other and growth slows down. Unmanaged forests are thinned naturally as strong trees overtop, shade and kill the weak trees. Thinning as a management tool speeds up the natural process by removing the poorest formed, slowest growing, diseased and damaged trees. Trees remaining after the thinning are the crop trees.

Rotation is the period of time required to grow a crop of trees to either economic maturity or natural maturity. Proper regulation of stand density by thinning can shorten the length of rotation as much as 30 percent.

Site quality is the most important factor affecting growth rate of the trees and determining the carrying capacity of a site. Carrying capacity is the maximum amount of wood fiber a given area can produce. Black walnut plantations growing on good quality sites need thinning more frequently than those growing on poor quality sites. *Table I* gives general frequency of thinnings for good, average and poor quality black walnut sites.

Thinnings are applied as needed according to the average diameter at breast height (dbh) of the trees in the plantation rather than according to their age. *Table II* shows the number of trees per acre needed in a stand at specified average dbh sizes to fully utilize the site.

Table III shows the approximate spacing needed between trees to obtain the desired number of trees per acre. These spacings are guidelines and must be adjusted in the actual thinning. Two excellent trees growing too close together according to the recommended spacing can be left to grow if space can be provided by removing poorer trees on the other three sides of the good trees.

Table I. Frequency of Thinning (years)		
Site Quality	Diameter at Breast Height	
	less than 10 inches	more than 10 inches
Good	3-4	5-8
Fair	4-6	7-12
Poor	8-12	14-24

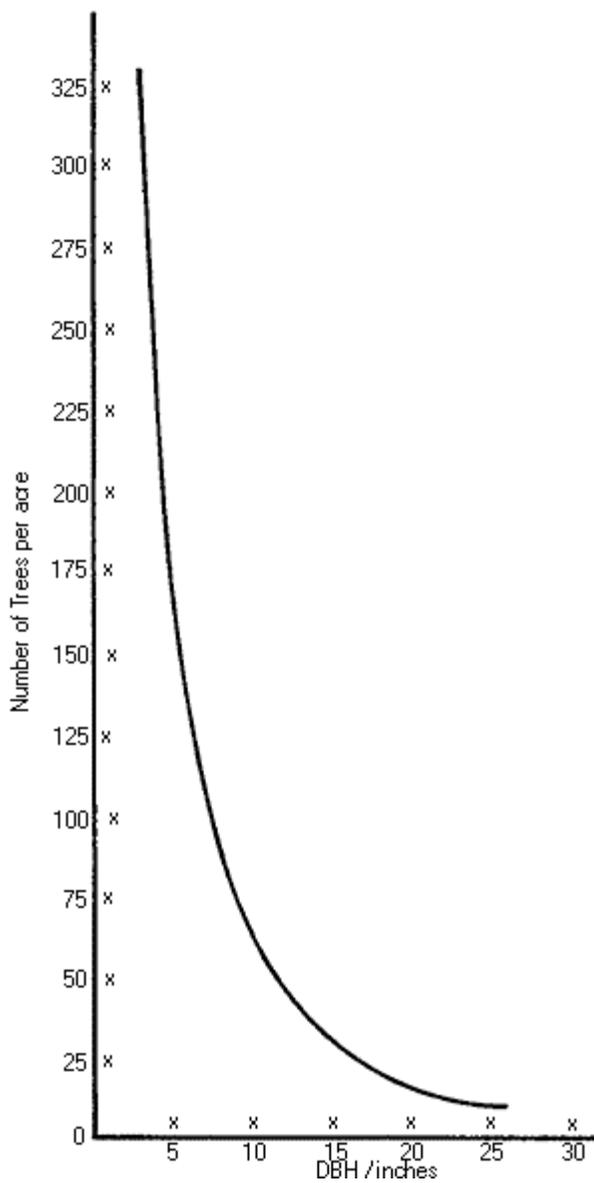


Table II. Stocking density.

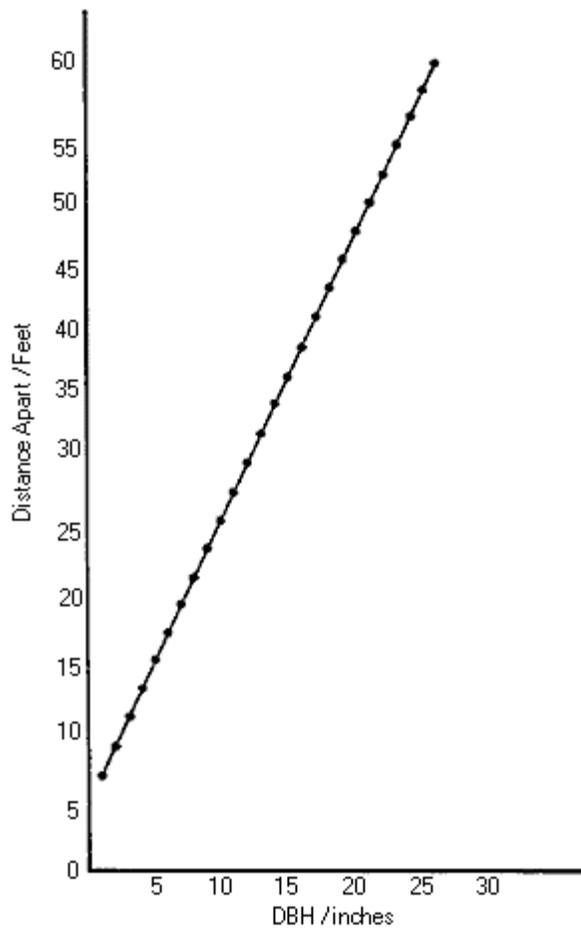


Table III. Approximate spacing between trees.

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