



WALNUT NOTES

First Thinning

Thinning is one of the most important silvicultural practices available to tree growers. It is particularly important with black walnut because walnut trees differ widely in value, depending on their quality and size. Thinning a walnut stand can greatly increase its value by making all the moisture, nutrients, and light available to a few high-quality trees and by removing the low-quality trees.

Deciding when and how much to thin requires some care. Thinning too late allows between-tree competition to slow the growth of the better trees. Thinning too soon eliminates insurance trees, makes the choice of crop trees less certain, and reduces the potential benefits of limited competition in restricting the growth of lower branches. So, thinning often involves compromises.

1. When to Thin?

A useful measure for evaluating the need for thinning is crown competition factor (CCF). For plantations with a regular square spacing, CCF can be easily determined if the size of the plantation, approximate number of trees, and average d.b.h. in inches are known, using the following equation.

$$CCF = \frac{(\text{total \# trees})(3.14)(0.997 \text{ d.b.h.} + 2.436)^2}{44,000 (\# \text{ acres})}$$

The following table gives the average diameter for CCF's of 100 to 150 for several common spacings.

		Tree diameter at which to thin (In inches)				
		Original spacing (feet)				
CCF	5x10	8x12	10x10	11x11	12x12	15x15
100	1.6	3.1	3.2	3.8	4.3	6.0
110	1.8	3.4	3.5	4.1	4.7	6.5
120	1.9	3.6	3.7	4.4	5.0	6.9
130	2.1	3.9	4.0	4.7	5.3	7.2
140	2.3	4.1	4.3	4.9	5.6	7.6
150	2.5	4.3	4.5	5.2	5.9	8.0

If you want to maintain maximum growth rate of your crop trees, thin when CCF is 100. For each additional 10 CCF units above 100, expect the growth rate to go down by 4 to 5 percent per year. For example, if the diameter growth rate were 0.4 inches per year at a CCF of 100, it would be 0.3 inches per year at a CCF of 150, a 25-percent reduction.

For plantations with a wider spacing between rows than within rows, thin when the average tree crown width (CW) within a row is 1.5 to 2 times the distance between the trees, using the following equation:

$$CW(\text{feet}) = 1.993 \text{ d.b.h.}(\text{inches}) + 4.873$$

2. How Much to Thin? Heavy thinning provides plenty of growing space for the crop trees and delays the next thinning. However, the open stand conditions after thinning may encourage the growth of grasses, weeds, or invading trees. Light thinning may not provide enough additional growing space for each crop tree, but it does allow you to retain more insurance trees. It also provides more side shade that may slow the growth of side branches on the crop trees.

3. Which Trees Should Be Left After Thinning? Examine small groups of trees within the planting. If the spacing is much closer within the rows than between them, as in a 5- x 10-foot planting, choose the better tree from groups of two trees within the rows. If a tree has died or is missing, the other tree of the "pair" automatically becomes the tree to keep.

In more regularly spaced plantings, such as 10- x 10-foot, examine groups of 16 (if half of the trees are to be left) or 9 (if two-thirds of the trees are to be left). From a square four trees by four trees, select the best eight to leave, again considering any missing or dead trees as part of the group to remove. From the nine-tree group, a square of three trees by three trees, select the best six. Mark the selected trees by tying a colored plastic ribbon around each at eye level.

Once you've marked all the groups, reexamine the entire stand, looking for areas where too many or too few trees will be left. As a general rule, each tree to be left should benefit from the thinning by the removal of at least one of its nearest neighbors. Also, the thinning should not result in large, open areas unoccupied by trees.

Finally, thin carefully to avoid mechanical damage to the trees that are left. Also, avoid chemical thinning (timber stand improvement) or chemical treatment of cut stumps because chemicals may spread from treated trees to the trees that are left.

Reference

Anonymous. 1981. Quick reference for thinning black walnut. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station and Northeastern Area State & Private Forestry. 32 p.

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