WALNUT NOTES

Revitalizing Stagnating Stands

Has your plantation or natural stand of black walnut trees stopped growing rapidly enough in height and/or diameter to meet your objectives? As a rule of thumb, walnut trees should grow at least 1.5 feet in height each year during the early part of the rotation and 0.3 inches in diameter during the latter part in short-rotation forestry.

Are the leaves of your trees smaller than normal (usually less than 12 inches long)? Do they turn yellow in late June and early July? If so, your stand may be stagnating; and the first step in revitalizing it is to look for the cause.

Why Stands Stagnate

Several factors could be involved:

- The plantation or natural stand could be growing on soil unsuitable for walnut (see Note 2.01: Choosing a Good Walnut Site).
- The trees may be too crowded (see Notes 3.03: First Thinning and 3.04: Second Thinning) or overpruned (see Notes 3.01: Corrective Pruning and 3.02: Lateral Pruning).
- The ground vegetation may be taking away too much of the moisture and nutrients the trees need for growth.

Tree growth depends on light, water, nutrients, carbon dioxide, and oxygen. If the trees are overtopped by other trees or vegetation, they may not get enough sunlight and carbon dioxide. If they're in inadequately aerated soil without enough oxygen, their roots may grow poorly.

Trees may not get enough nutrients and moisture if they have to compete directly with the understory vegetation. They may also have to compete indirectly with other types of vegetation that produce chemicals that reduce the trees' ability to extract moisture and nutrients from the soil. Possible examples of this vegetation are: tall fescue, quack grass, goldenrod, asters, and ferns. Less than optimum walnut sites are more likely to have inadequate supplies of nutrients and moisture for both trees and vegetation.

Three Ways to Revitalize Your Stand

If the ground vegetation seems to be causing the stagnation, here are three ways to put some life back into your stand:

1. Control the vegetation with herbicides or with mechanical cultivation.. Weed control is essential during the first 2 to 3 years after planting (see Note 2.05: Weed Control). However, even after the trees are taller than the weeds, they apparently do not produce dense enough shade to dominate the site. So, chemical or mechanical control of the ground vegetation may also be needed in later years to increase the nutrients and moisture available to the trees.

On some sites, removing the ground vegetation may temporarily stimulate tree growth while nutrients, especially nitrogen, are released from the decaying vegetation. Available nitrogen is often low in stagnating stands. Premature yellowing of the leaves is one sign of this. If foliar nitrogen content is more than 2.5 percent, adequate soil nitrogen is available. If it's less than 2.5 percent, fertilization may be necessary along with continuous weed control (see Notes 2.07: Fertilization and 2.06: Ground Cover Management).

2. Plant nurse or companion trees or shrubs with the walnut trees (see Note 2.09: Interplantings). Autumn olive has been particularly effective in increasing soil nitrogen through fixation, altering the types of understory vegetation, increasing wind protection, and reducing the incidence of leaf diseases. Russian olive, European alder, and black locust (all nitrogen fixers) and white pine (not a nitrogen fixer) also appear to be potential nurse trees.

3. Replace the existing understory vegetation with one that is compatible with walnut trees (see Note 2.06: Ground Cover Management). Hairy vetch (an annual legume), crownvetch, and sericea lespedeza (perennial legumes) appear to be good choices.

Consider the following management questions before attempting to revitalize a stagnating stand. Will the trees continue to grow slowly or just persist and eventually die if nothing is done? If you do remove the understory vegetation, are you likely to improve growth enough to offset the additional costs? If the trees will continue to grow slowly and you decide to do nothing, are you willing to accept the lower quality logs that will be produced in a longer time? Is it time to place less emphasis on timber and more on nuts from your stand? If the trees will eventually die if you do nothing, you must decide between growing and not growing walnut trees. In either case, consider the consequences.

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