



CENTRAL HARDWOOD NOTES

Silvicultural Treatments In Sapling Stands

Sapling stands are those in which codominant trees average less than 5 inches d.b.h. Silvicultural treatments in sapling stands can be summed up in two words: CROP TREES. Any silvicultural treatment must help crop trees if the investment in sapling stands is going to pay off. Just cutting "bad" or "undesirable" trees does not insure that crop trees will be helped (see Note 6.04 *Response of Sapling Stands to Cultural Treatments*).

There are four silvicultural treatments that you can apply in sapling stands: (1) cleaning or weeding, (2) thinning by basal area control, (3) liberation cutting, and (4) crop tree release.

Cleaning or weeding, normally applied in very young sapling stands, removes undesirable species and poor quality trees without basal-area control or selecting crop trees. In older sapling stands, *thinning by basal area control* removes 1/3 to 1/2 of the basal area by thinning from below and cutting codominants that are poor quality or of undesirable species. Research has shown that neither of these treatments can be expected to increase growth or significantly alter species composition because in most cases too few trees were cut.

Liberation cutting is the release of young trees by cutting older or larger trees that are overtopping them. Desirable young stems can be overtopped by residual trees left after timber harvesting or by faster growing sprouts of an undesirable species. Liberation cutting should be applied only when potentially valuable crop trees can be helped. As such, it is best thought of as type of crop tree release where less desirable, larger trees are cut that overtop desirable crop trees.

Crop tree release is the selection and release of individual trees by eliminating stems that compete with or are likely to compete with the crop tree. Crop tree release is the best silvicultural treatment to apply in sapling hardwood stands. This is true for upland oaks, cove hardwoods, bottomland hardwoods, and the oak-pine type. Use the following guidelines to select and release crop trees.

1. Select crop trees that are:

Dominant or Codominant. Intermediate crown class trees should be released only if they are relatively tolerant species, such as maple. Intermediate black walnuts can also be released because of their potential high value.

Never release overtopped trees.

Well-formed. Crop trees at least 3 inches d.b.h. should be free from forks, crooks, and seams in the lower 17 feet of the bole and free from serious insect or disease problems.

Valuable Species. In order for crop tree release in sapling stands to return at least 4 percent on the investment, crop trees must be capable of producing high-value saw logs, such as red and white oak, black walnut, black cherry, and white ash. Never release crop trees that will be cut for poletimber products, small saw logs or low-value saw logs.

2. Select stump sprouts as crop trees if they meet all the previous crop tree criteria and originate at or below groundline. Select only one or two crop trees per clump and cut all remaining sprouts. Two crop trees can be retained on the same stump only when widely spaced with a U-shaped connection (see Note 6.12 *Thinning Sprout Clumps*).
3. For seedlings, wait until codominant trees in the stand average at least 25 feet tall before releasing. This usually occurs between 10 and 20 years.
Very small seedlings do not respond well to release. However, sprout clumps can be thinned as early as age 5 to improve stem quality and increase diameter growth.
4. Release 50 to 100 crop trees per acre. Spacing for 100 crop trees per acre is about 21 x 21 feet and about 30 x 30 feet for 50 per acre.
5. Apply a *crown* release that leaves the crop tree crown free to grow on all sides. Just removing 1 or 2 main canopy trees is not enough. In most sapling stands, a *crown touching* release is needed, i.e. cutting all main canopy trees, except another crop tree, whose crowns touch the crop tree crown.
6. Do not release substandard trees in areas void of good crop trees.
7. Do not leave groups of more than 2 individual crop trees. Two crop trees can be left close to each other provided each has the potential to reach saw log size. Treat the two as a single crop tree and apply a *crown touching release*. In areas where there is a concentration of potential crop trees, you will have to remove some good trees to release the best crop trees.
8. In oak-pine sapling stands, both hardwood and pine crop trees can be released, depending upon management objectives.
9. Generally, do not release crop trees in sapling stands where poletimber thinning are economical. Let the stand develop naturally and apply a commercial thinning that removes poletimber products such as posts or pulpwood. However, crop tree release should be carried out in stands where a slower-growing, valuable species, such as red oak, is in danger of being crowded out by a less valuable species like red maple or blackgum. Also, sprout clumps should be thinned whenever the best quality sprouts are likely to be crowded out by lower quality stems within the same clump.

References

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