

TIMBER HARVESTING TECHNIQUES

PART I: INTERMEDIATE HARVESTS

BY BILLY RYE



This is an example of a Thin-From-Below where smaller and poor-quality trees are removed, leaving well-spaced good trees. This technique is most often implemented in the second thinning of pine plantations.

The harvesting of trees is the primary method for change used by land managers. Since no other management practice impacts forestland more, all timber harvesting should be coordinated by a written forest management plan prepared by an Alabama Registered Forester. Most methods of harvesting fall into one of the two following categories: (1) Intermediate, or those applied to an existing stand, and (2) Final, or those used to remove an existing stand and prepare the way for the stand to follow. In Part I of this article,

we will review intermediate harvesting.

There are basically three types of intermediate harvesting: (1) Thinning, (2) Improvement, and (3) Salvage/Sanitation.

THINNING

Thinning is by far the most utilized intermediate harvest employed by nonindustrial private landowners, particularly in pine plantations. It is used primarily

to stimulate growth of the final crop trees, improve deer and turkey habitat, and to provide intermediate income. To accomplish this, several thinning methods have been created: (1) Thin-from-below, (2) Crown, (3) Selection, (4) Geometric, and (5) Combination.

Thinning from Below – This is the oldest method of thinning used in forest management. Using the thin-from-below method, trees are removed from the lower crown and diameter classes (i.e., the smaller trees). Trees that are overtopped and some of the trees classified as intermediate are removed. This is the only method of thinning that can be done without risk of reducing the gross production of wood, as no potential crop trees are removed. However, since removals are concentrated in the smaller trees, those removed in the first thinning may not be of commercial size. Therefore, the landowner may have to postpone thinning until all the trees are of commercial size or pay to have them removed.

Crown – The crown thinning method was created to overcome some of the limitations of the thin-from-below method. Under this method, trees are removed from the middle and upper portion of the crown and diameter classes rather than from the lower end. Trees are removed from the upper crown classes

CROWN CLASSIFICATIONS

Dominant – trees with crowns extending above the general level of crown cover and receiving full light from above and partly from the side; larger than the average trees in the stand, and with crowns well developed but possibly somewhat crowded on the sides.

Co-dominant – trees with crowns forming the general level of the crown cover and receiving full light from above but comparatively little from the sides; usually with medium-sized crowns crowded on the sides.

Intermediate – trees shorter than those in the two preceding classes but with crowns extending into the crown cover formed by dominants and co-dominants; receiving a little direct light from above but none from the sides; usually with small crowns considerably crowded on the sides.

Suppressed – trees with small, thin crowns entirely below the general level of the crown cover, receiving virtually no direct light either from above or from the sides.



The crown thinning method removes trees from the upper portion of the canopy while leaving the best trees. In hardwood management, this technique is often referred to as a crop tree release.



A Combination Thin is often implemented in the first thinning of a Southern Yellow Pine plantation. Here, a combination of row thinning and a Thin-From-Below were implemented to reach the landowner's objective.

to open the canopy and favor development of the most promising trees. While most of the trees cut are classified as co-dominant, any other trees that interfere with the development of potential crop trees may also be removed (even if they are dominant). This method differs from the thin-from-below in that most of the trees removed are from the upper portion of the crown classes while most of the intermediate and overtopped trees are left. The advantage of this type of harvest is that the immediate returns are greater, and the growth of the final crop trees is stimulated more than with the thin-from-below. The disadvantage is obvious; a landowner may accidentally over-cut the dominants and reduce future growth!

Selection — Under this thinning method, the dominants (largest trees) are removed. The only practical application of the selection method is in areas where the trees in the upper canopy of the forest are composed primarily of poorly formed trees or trees of an undesirable species. This method of thinning is best carried out early in the life of the stand and should later be replaced by other thinning methods.

Geometric — This method is so named because the trees to be cut or retained are selected based on

some predetermined spacing. No regard is given to a tree's position in the canopy or size class. This type of thinning is advantageous in treating young stands that are densely crowded and have not been previously thinned. It is also advantageous to the use of large, cumbersome equipment often used for thinning purposes. Geometric thinning is typically applied only in the first thinning or for pre-commercial thins. Under the "spacing thinning" method, trees at fixed intervals are chosen for retention and all others are cut. A "row thinning" occurs when trees are cut out in lines or narrow strips at fixed intervals throughout the stand. The advantage of this type of thinning is that it takes less training and supervision to implement. The primary disadvantage is that potential crop trees will be removed in areas designated to be harvested and less desirable trees will often be retained in areas that are not cut.

Combination — Typically in the South, a combination of thinning methods will be utilized during the life of a stand. For Southern Yellow Pine plantations, the first thinning often consists of a combination "row thin" and "crown thin." The second thinning tends to be thin-from-below. If there is a third thinning, it is usually either a thin-from-below or combination thin-from-be-



This pine stand in Marion County, Alabama was damaged by a tornado in March of this year. The landowner salvaged the damaged trees but had to include some of the un-damaged trees to attract a buyer.



This landowner in Lauderdale County had an infestation of deodar weevil. Both the infested and dead timber were removed in a sanitation harvest to control the pest.

low and spacing thin. The type of harvest that is best for an individual landowner is dependent upon the objectives, the age and density of the timber present, and the potential productivity of the site and timber.

IMPROVEMENT HARVEST

This type of intermediate harvest is designed to free good trees, which have grown beyond the sapling stage, from the competition of the older or less desirable overstory trees. Improvement cuttings are most often applied to stands of irregular age distribution and are often conducted simultaneously with a true thin or reproduction harvest. While they are rare in the South, they are sometimes used to rehabilitate a stand to make it more productive.

SALVAGE/SANITATION HARVEST

Salvage and sanitation harvests are made for the primary purpose of removing trees that have been or are in imminent danger of being killed or damaged by injurious agents such as pests. Using the salvage harvest, a landowner attempts to salvage the value of trees that would be lost. Therefore, the trees removed

are of commercial size and the landowner salvages at least a portion of their value. Under a sanitation cutting, trees are eliminated that have been attacked or are in imminent danger of being attacked to prevent pests from spreading to other trees. A sanitation harvest differs from a salvage harvest primarily in that it is not necessarily confined to the removal of merchantable trees.

CONCLUSION

Intermediate harvesting can be a valuable tool to help landowners achieve their forest management objectives. When properly applied, thinnings, improvement harvests, and salvage/sanitation harvests can be used to improve existing forest stands. As with most forest management activities, the advice of a reputable resource professional should be sought before harvesting efforts are initiated. ●

Reference

Smith, David M., *The Practice of Silviculture: 8th Edition*. New York: John Wiley & Sons, 1986.