



# ROMANCING THE CROP TREE

New Perspectives in Hardwood Management for the Nonindustrial Private Landowner

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Foresters and landowners alike desire alternatives to traditional silvicultural techniques. For example, many landowners are unwilling to clearcut their forest. They want economic return, but not at the expense of removing the entire forest. Yet, in the South, most knowledgeable foresters are reluctant to recommend selection cutting because it too readily drifts into "high grading" if done improperly. In addition, on public lands, society often places a higher value on forest amenities other than commercial timber production.

It may come as a note of relief to foresters and the public as well that there is an array of literature residing between the uneasy bookends of "selection" and "clear" cutting that remains to be written. Forest researchers nationwide are reacting to a call for "new perspectives" in dealing with

today's societal and landowner demands. Within this call is a fundamental concept that forest values other than a classical emphasis on wood fiber must be synchronized with good silviculture, a concept that landscapes be managed with ecosystem-sized values. It is a bold summons and exciting times lie ahead.

What follows is a description of a forest management option that may have merit. It is the combination of proven methodologies into a novel approach that may have the potential of keeping a forest intact while simultaneously realizing a monetary return. It is designed to take into account multiple forest amenities under the guidelines of formal priorities. Although it may have wider applicability, it seems primarily suited to the hardwood resource. Another main attraction of the technique is that it transfers signifi-

cant management responsibility to the landowner. It is Crop Tree Management (CTM) and there are two main phases: crop tree assessment and crop tree enhancement.

## Getting Started

### Setting Priorities

Before going to the woods, before the first chainsaw is cranked, management objectives must be nailed down. The most commonly stated priorities of Southern forest landowners can be categorized under three general headings: 1) aesthetics, 2) income and 3) wildlife.

Based on the weight given to specific priorities and the constraints associated with each, a forester's first responsibility to the landowner is to assess the stand to see if the management goals are feasible.

If a stand is unsuitable to reasonably at-

*Establishment, development and end product for the white oak under Crop Tree Enhancement Project at Ames Plantation. Photos by Allan Houston. The middle photo shows a tree (center of photo) that is part of the Crop Tree Enhancement Project. The goal is to make it grow into a 30/30 in the shortest time possible. The right photo shows a 30/30 tree - meaning there are 30 linear feet of veneer quality bole and the small end of the log is at least 30 inches diameter. The tree is worth a small fortune, \$2,000 to \$4,000 depending on the strength of the veneer market.*



1. Assessment: A white oak seedling.



2. Enhancement: Pole sized white oak.



3. Payoff: Veneer quality timber

A Landowner's Question:

*"This is my forest. These are my trees.*

*"In the dog days of summer, I stand in the trembling shade and listen to the green tambourines rippling from a million slender hands. In fall, I hunt midst the hillside hues and marvel at the kaleidoscope of color. In winter, I visit these woods when their grey eyes give promise of next morn 's silent shout of snow. In spring, I walk beneath the translucent roof and taste the mist-laden scents of honeysuckle upon the air*

*"I like to think my trees are doing well. I hope they are worth a great deal of money. I am not a forester; so I must ask: can I have the sights and smells and sounds of my forest, and realize a sustained monetary value as well? "*

A Forester's Reply:

*"Does this mean you don 't want to clear-cut? "*

tain stated goals, then traditional options may include: waiting for the stand to develop, clearcutting to produce a new stand or artificial regeneration. However, if the forester decides that the current stand has adequate potential for management within a framework of specified goals, then CTM may be an option.

**Setting Criteria**

Generally, to satisfy the question of aesthetics the stand must always appear as an intact forest. Wholesale clearcutting will rarely be an option. Yet, some degree of harvest is necessary to accomplish other priorities. The scale of allowable harvest must then be decided.

Depending on local markets and landowner desires, a list of acceptable tree species and stem quality classes must be designed. These form a set of criteria by which to judge the potential of any crop tree. The list might include primary (favored), secondary (acceptable) and undesirable (not acceptable) species.

Also, the manager must have a working knowledge of the habitat requirements of the desirable wildlife species. A list of tree species that serve to meet those needs is made, again on a favored, acceptable and undesirable basis. Of course, trees commonly listed as crop trees for timber production also may have value as wildlife trees. But occasionally the reverse may not be true (e.g., in most areas: blackgum and hickory, valuable species for wildlife have little timber value).

*Going to the Woods*

**Crop Tree Assessment**

To begin in the woods, the stand is divided into equal squares (cells) with 35 feet on a side. Therefore, there are approximately 36 "cells" per acre. Little in the way of technical expertise is needed to accomplish this

initial task except some knowledge of pacing and a compass. Moving through the stand in a manner similar to "mowing the lawn," the center of the first cell is located and temporarily established with some type of marker, maybe just a scuffed-out place in the leaves.

Inspection of the cell will decide if there is a tree that meets the criteria outlined above. If so, that tree is clearly and permanently marked. The process is repeated in every cell throughout the stand.

Each cell is appraised and assigned a condition based on the availability of a potential timber tree, a wildlife tree, or the absence of a suitable tree. Merchantable timber trees are chosen based on species and form, with a clear emphasis on "favored" species.

Wildlife trees must also be chosen under strict criteria and not simply as a default because no suitable timber tree can be found. If a wildlife tree and timber tree vie in the same cell, the one chosen will depend on several considerations (e.g., number of each already selected, management objectives).

Given the realities of the marketplace, timber trees might assume priority over wildlife trees in most cases where they compete. And often good timber trees will also serve wildlife needs. However, in some cells two crop trees may be selected.

Now a clear assessment of the entire tract is possible and recommendations for management can be based on real data. Stocking rates for the whole stand may be determined. For example, some cells will be stocked with potential timber trees, others will have wildlife trees, and others will have no suitable tree. If this last component is too high, then artificial or natural regenera-

tion of unstocked cells or clusters of cells, developing an uneven-aged stand, may be a potential alternative. Following harvest of unfilled cells, it may be possible to select potential crop trees at a relatively early age from this cohort. Small, temporary clearings have beneficial effects on certain wildlife populations as well. Underplanting and release also may be an option.

**Crop Tree Enhancement**

Once the assessment phase is completed, the enhancement phase begins. There are two treatments that research findings have proved to be widely effective in improving the growth and quality of standing trees: thinning and fertilization. While the actual

response from either treatment cannot yet be predicted across all species and sites, especially for southern forests, early research findings in west Tennessee are very promising.

Crop trees should be released from crown competition on at least three sides by severing or, perhaps, poisoning competitors. Trees slated for removal might be attractive to small saw-timber or firewood markets, thereby saving the cost of removal.

Commercial fertilizers should be applied within the rooting zone of each crop tree in early March of the first, and possibly, subsequent growing season(s).

**Crop Tree Management**

As the stand matures, several options become available to the landowner. For example, a truly uneven-aged system may be invoked by harvesting some portion of all stocked cells each cutting cycle. Or, conditions may encourage development of a two-

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aged system, a newer silvicultural concept.

Before harvest, stocked cells must be reassessed. Crop trees have already been identified. Assuming that thinning and fertilization regimes have been effective, crop trees have also been enhanced. Thinning of harvest and regeneration within individual cells (i.e., removal of an individual crop tree) will be dependent on several factors: 1) is the crop tree mature, 2) is there a replacement crop tree and 3) have management objectives remained constant?

For example, most crop trees would be allowed to develop to maturity. However, a crop tree may be removed prior to maturity if a more suitable replacement tree is developing within that cell. This would be particularly true where the replacement tree is of a "favored" species and condition. Conversely, a mature tree may be left beyond optimum maturity, if no replacement tree is available and if the mature tree will survive to the next cutting cycle. On some cells timber trees may replace wildlife trees as crop trees and vice versa. This would allow a flexible response to changing objectives.

Crop trees occur within a forest "matrix." Although this matrix would be disturbed for the purposes of enhancement and regeneration, it remains largely intact. Therefore, when individual crop trees are removed from isolated or clustered cells, the forest itself largely remains in place.

This management approach gives an opportunity to the landowner to become very involved with his woodlot. It is a con-

tinuing cycle of assessment and enhancement, with judicious removal of individual crop trees and regeneration of cells tied directly to the objectives of the landowner. Once begun, it can easily be administered systematically.

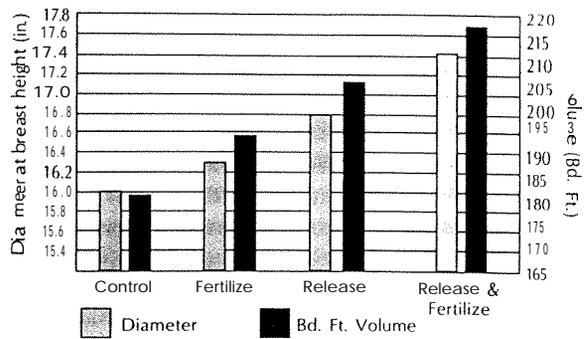
### New Perspectives

In the past the forestry profession has had difficulty responding effectively to those who approach their land in the manner illustrated at the beginning of this article. It was not a miscommunication of spirit, for foresters also love the woods, and are well aware of the seemingly inherent mystical qualities there. But the profession has been poorly equipped to meet the needs of landowners who desire both income as well as an intact forest with all its associated amenities.

In the vacuum created by a lack of accepted silviculture, landowners have often defaulted to pseudo-silviculture. For example, like a thug in a silk suit, high grading often has been paraded in the clothes of "selection" cutting, and many landowners have been lured by its charms to bankrupt their forest. Although CTM cannot magically rejuvenate a depleted forest, it may be a credible alternative to the poorly accepted practices of the past.

Much research needs to be done before the practical applicability of CTM can be

Projected 10-year diameter and board-foot volume increases for high quality 14-inch, 40-year-old, white oak trees grown under various crop tree enhancement techniques.



Volumes are International Log Rule for 2-log trees, Form Class 78. Note: Value increases with increasing diameter will likely be much steeper than the Bd. Ft. volume increase. Larger trees generally bring a higher price per Bd. Ft. Diameters in excess of 17" may be veneer quality.

systematically predicted across all species/site situations. However, these are exciting times. The array of demands which play across our forest resource are like the lights of an ever-changing spectrum. The forestry profession is sensitive to the priorities represented within this spectrum and CTM is but one of many innovative ideas that are being explored under the framework of "New Perspectives."

As the answers become clear, perhaps we can respond to our landowner's question at the beginning of this article with: "Yes, what about Crop Tree Management?"

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