

WOODLOT MANAGEMENT HOME STUDY

- a Brief Introduction to - THINNING FOR VALUE

What is Thinning?

Thinning is the felling or removal of selected trees in a stand to improve the quality of the remaining stand. For the saw miller, it may be higher quality logs. For the hunter, it may result in more trees suitable as browse for ruffed grouse. For many people, larger trees left after thinning creates a better looking forest. This improvement may be more valuable to the landowner than the increased revenues generated by higher value timber.

Thinning treatments remove undesirable trees and free the best ones from competition. Which trees are undesirable will vary with each situation. Therefore, it is important to always know what type of tree species or forest product you want to encourage on your woodlot.

Benefits of Thinning

Thinning a forest offers many benefits:

1. Foot access can be improved and more light can penetrate the canopy;
2. Future thinning and harvesting costs are reduced;
3. Thinning increases the growth of the remaining crop trees. When poor quality trees are removed, the remaining trees get more space, nutrients, sunlight and water.
4. Commercial thinning helps recover wood volume from trees that would normally die from competition for light, nutrients or space. Recovering this wood allows the stand to produce more wood over its rotation.

Nature's Way

Thinning occurs naturally in all stages of stand

capable of producing a fixed amount of plant or living matter. This is its carrying capacity. For individual trees to reach a large size there must be fewer of them. Every stand is different, but the rule never changes.

Pre-Commercial Thinning (PCT)

Pre-commercial thinning (PCT) is the removal of selected trees from young stands to allow more space for crop trees. There is no immediate economic benefit from PCT because no saleable wood is removed.

Why do Pre-Commercial Thinning?

Trees are ready for harvest sooner, shortening the *rotation* of the stand.

Harvest costs will be reduced. Fewer stems, similar sized and uniformly spaced trees will reduce the costs of harvesting.

Reduction of short-lived, less desirable species will **improve stand composition.**

Larger crowns and root systems produce more wind firm trees that are **better suited for commercial thinning and selection cuts later on.**

Trees will suffer **much less from the physical damage** caused by wind whipping.



This thicket of crowded trees will benefit from a thinning.

When and where?

PCTs are done on dense young softwood stands that are less than 20 years old and between 2 and 6 metres in height. In these stands, growth will have slowed due to competition between trees. Stands older than 20 years may have already begun thinning themselves and the dominant trees may be taking over. Although stand quality may be improved from thinning, at this stage growth benefits would be reduced.

A PCT should be done as soon as side branches begin to die. This will help trees respond faster to the thinning. However, PCTs are not commonly done on stands less than 2 metres in height because live branches will likely be found on the stem near the ground, making it difficult to cut them all. Better trees may not yet exhibit dominant characteristics and some species may be subjected to insect damage (eg. white pine weevil damage).

Thinning hardwood

Some considerations should be made when planning PCTs in hardwood stands. Crop trees selected for hardwood saw logs or veneer logs should be a high value species such as red oak, yellow birch, white birch, or sugar maple. At the PCT stage they should show good form - straight stems, no forks, right angle branching and no signs of insect or disease.

Choose trees that are fast growing, usually specimens that are dominant or co-dominant.

Trees selected for wildlife should be long-lived, mass producers such as red oak or beech.

Thinning for maple syrup production requires healthy, vigorous trees, but not necessarily saw log quality.



Spaced hardwood stands can provide high value products in the future.

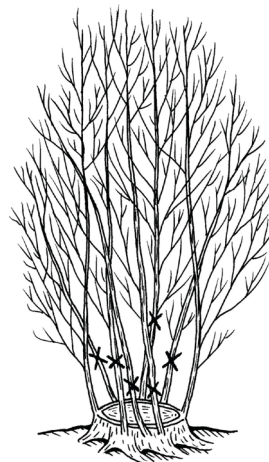
PCT in hardwoods is done later than softwoods, preferably when they reach a height of 6 to 9 metres (20 to 30 ft). This additional time allows the stems to straighten and self-prune lower branches of valuable lower bolts. This will also help prevent the formation of epicormic branches, which develop from dormant buds under the bark. They form on the main stem and reduce the value of the finished product.

Spacing is generally wider for softwoods since hardwoods grow fewer stems per hectare. However, wider spacing may encourage epicormic branching. A good compromise would be spacing to 8 feet (2.4 m), which would discourage branching while producing a 6 inch stem at commercial thinning time.

When selecting hardwoods to thin, preference should always be given to individuals that have grown from seed. When this is not possible, trees from sprouts may be used.

Sprouts, common in maples and birches, are caused by growth of dormant buds near the ground on remaining stumps. This occurs immediately after cutting, and more noticeable after the felling of mature trees. These sprouts grow very fast as they develop from an established root system.

When thinning sprouts, release one or two widely spaced stems per stump. Selected stems should be positioned on the stump as close to the ground as possible. This will encourage sprouts to develop their own root system as the stump begins to decompose. Sprouts that leave the stump in a J-shape are preferable to those of a V-shape. The V-shape is more likely to collect debris and introduce rot to the developing clump. J-shaped sprouts are also more likely to grow their own root systems.



Spacing hardwood clumps to one or two stems will result in valuable stems later.

Spacing Guidelines

Land Capability	Spacing (m)		Density (stems per ha)
	hardwoods	softwoods	
1.5+	2.4	N/A	1700
4 to 7	2.4	2.1 to 2.4	2300 to 1700
8 to 9	2.4	2.1 to 3.0	2300 to 1100

Commercial Thinning (CT) - removing saleable products

Why do a commercial thinning?

A commercial thinning (CT) results in direct, immediate economic benefit, increased future value, and improved health and vigour of the forest stand.

Other types of thinning and considerations: Semi-Commercial Thinning

Semi-commercial thinning is a combination of a PCT and a CT. Much of the wood will remain on site to complement the organic layer as in a PCT, but some will be removed as salable product like a CT.

Shelterwood

A treatment similar to commercial thinning is a shelterwood. However, the goal of a shelterwood is to encourage natural regeneration. The best trees are left to produce seed and give shelter to regeneration.

Selection Harvesting

Selection harvesting involves the removal of a small number of merchantable stems per hectare every 10 to 20 years. This is the harvesting method of choice for uneven-aged stands. Uneven-aged stands have healthy crop trees in several age classes. Most people think that this harvesting method most closely mimics the natural disturbance regime of tolerant old growth stand of the Acadian Forest.

Glossary

Coarse Woody Debris - Remains of fallen trees on the forest floor.

Clear Cutting - Removing all trees from an area at one time.

Cavity Tree - Living or dead trees with natural or excavated holes or cavities.

Contractor - A person or entity that enters into a contractual agreement with the owner to perform work in accordance with the specified requirements and standards.

Harvesting - Removing saleable mature forest trees either individually or as stands.

Shelterwood - The Stand is removed in a series of cuts begun several years before the final harvest.

Selection Cutting - Mature trees and less vigorous immature trees are periodically harvested over the whole area, singly and in groups.

Silvics - Understanding how trees grow, reproduce and respond to environmental changes.

Snag Tree - A standing dead tree.

Special Management Zone - A strip along each edge of a watercourse where partial harvesting under certain conditions is permitted within the zone.

Stand - A group of trees, with similarities in species composition, height/diameter distribution, and age composition.

Thinning - A spacing operation to improve growth, quality, and percentage of desirable trees.

Wildlife Corridor - A continuous undisturbed area left after harvesting where wildlife can travel, feed, and find shelter. Usually connecting isolated patches of habitat; often along watercourses.

For More Information

Please refer to the full length version of,
Home Study Module 3: Thinning For Value.
This module, along with others in the Home
Study series, are available free from:

Stewardship and Outreach Section Department of Natural Resources

P.O. Box 698, Halifax NS, B3J 2T9

Phone: (902) 424-5444

Toll free: 1-866-226-7577

Fax: (902) 424-7735

e-mail: woodlot@gov.ns.ca

web: www.gov.ns.ca/natr/extension/