

# WOODLOT MANAGEMENT HOME STUDY

## - a Brief Introduction to - STAND ESTABLISHMENT

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### *Forest Stand Establishment*

Forest stand establishment ensures new healthy seedlings replace mature and over mature stands of trees as they are harvested. Successful stand establishment is the most important step toward good forest management. Without new seedlings, the site will not reach its full productive potential.

### *Stocking*

Stocking is the term used to describe whether there are enough trees per area and is usually expressed as a percentage.

In Nova Scotia seedlings are planted and young stands thinned to a spacing of approximately 1.8 - 2.4 metres (6 - 8 feet) between stems.

### *Forest Succession*

Have you ever wondered why one or several tree species occupy much of your woodlot? The answer may be that these trees are best suited and compete well in that particular woodlot environment. Climate, soils, topography, and site history are important factors that help determine the types of trees that grow on your woodlot.

### *When is it necessary to establish stands?*

The main priority of stand establishment practices is to ensure that the percentage of high value species are maintained or increased on our woodlands.

#### *Where do you begin?*

Start first by examining your land to see what is

there. Does your woodlot have the following:

1. Old stands
2. Poorly stocked stands
3. Young, immature stands with species of very low value

If your woodlot has these types of stands, establishing new stands will improve productivity.

### *Natural Regeneration Management*

Natural regeneration develops when seeds from surrounding trees fall to the forest floor, or stump sprouts and root suckers develop on some hardwoods. To regenerate our forest stands naturally, it is necessary to understand the strategy for survival of each tree species.

### *Strategy for Survival*

For each tree species we need to know:

1. At what age will a particular tree begin producing seed crops?
2. How often do good seed years occur?
3. How far can seeds travel from the parent tree either by wind, squirrels, or birds?
4. Once on the forest floor, how long will the seed remain good (viable) - a few weeks? a year? several years?
5. What type of seed bed is preferred by each species? How much moisture is required?
6. How much sunlight (full versus partial) is required to keep seedlings alive and growing? Are young seedlings usually present as advanced regeneration in mature and over mature stands?

7. Is the species capable of vegetative reproduction (sprouts, suckers)?
8. Using the answers to these questions, what cutting strategy can be used to ensure that the new stands will contain sufficient numbers of preferred species?

## ***Shelterwood Cutting System***

Shelterwood cutting is the removal of mature timber in two or three partial cuts which extend over 10 to 20 years. The system encourages even aged regeneration of preferred species under the partial shade of valuable seed trees, and is a good way to promote natural regeneration of desirable species.

## ***Clearcutting***

Clearcutting is a common method of harvesting that removes all, or most of the trees on a piece of forested land during one harvest operation.

When applied properly, clearcutting is a safe and effective way to manage your stands. It is suited to stands of over mature trees; areas extensively damaged by fire, insects, diseases, or wind; and stands that have been highgraded or are composed of poor quality trees.

Before clearcutting, an assessment should be made of the existing regeneration and a forecast made for possible seedling establishment after the cut.

## ***Selection Cutting System***

Selection cutting is the removal of trees from a stand to provide a steady flow of forest products from the woodlot. This uneven-aged management system can remove single trees, groups of trees, or strips of trees from a stand.

## ***Seed Tree System***

This method of stand establishment is a modification of clearcutting, except that scattered good quality, mature trees are left to provide seed for a new crop.

This system has been used successfully to regenerate white pine in Nova Scotia.

## ***Artificial Regeneration Management***

Planting is usually recommended on woodlots in the following cases:

1. Mature and over-mature stands that will not likely regenerate naturally, such as white spruce, or that will regenerate to undesirable species.
2. Non-regenerating, understocked, stands, regardless of species composition, since the site is not being fully utilized, if it will not likely improve.
3. Young stands stocked with low value species such as grey birch, white birch, aspen or beech.
4. Stands that have been damaged by insect, disease or fire and which will not regenerate naturally.

Artificial regeneration of softwood begins when cones are collected from the forest or from special seed production areas called seed orchards. Seed orchards contain trees grown from seed or shoots from the very best trees, often called "plus" trees. The seeds are extracted mechanically and stored under controlled conditions.

Seeds are germinated and grown into seedlings in forest nurseries. Softwood species dominate artificial regeneration programs. Hardwood seedlings are more difficult and expensive to produce and planting success is poor.

### ***Site Preparation***

The primary objective of site preparation is to create as many suitable planting spots as possible. Suitability for planting means easy access for planters and sufficient suitable microsites for seedling survival and growth. These microsites generally have adequate drainage, mineral soil and humus mixture, and minimal weed competition.

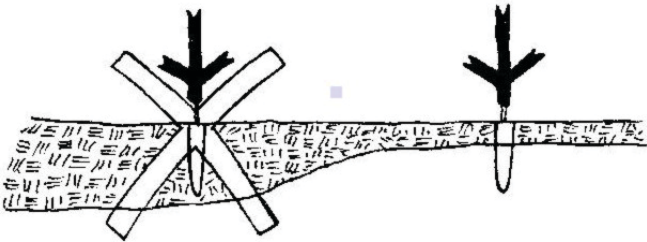
## *How to Plant*

When deciding which species to plant, choose species that are likely to compete and grow best under the existing site conditions.

### *Planting Spot Selection*

The following are general guidelines for choosing suitable planting spots or microsites:

1. Plant on the tops and sides of mounds, never in depressions where water will collect and roots will suffocate.
2. Avoid planting on rotten wood or thick duff because seedling roots need to contact mineral soil. Clean some of the duff away using your boot or planting tool.



3. Avoid bare mineral soil because frost heaving will likely occur.
4. Do not plant in excessively weedy or grassy spots because the competition may choke out the young trees.

### *Timing*

Choosing the best time of year to plant will help increase the chances of success. Adequate soil moisture is the most critical factor affecting early survival and growth. For best results, plant in the spring soon after the frost leaves the ground (April 15 to June 15) or in later summer (August 1 to September 15). Avoid planting during the potentially hot, dry period of early summer.

## *Glossary*

Clearcutting - The removal of all trees from an area at one time.

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

Microsite - A small area with physical and ecological characteristics that distinguish it from its immediate surrounding area.

Selection Cutting - The removal of mature trees and less vigorous immature trees periodically over the whole area, singly and in groups.

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

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.

Tolerance - Ability of a tree to regenerate and grow under shaded conditions.

## *For More Information*

Please refer to the full length version of, **Home Study Module 5: Stand Establishment**. This module, along with others in the Home Study series, are available free from:

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