



# Weeding and Thinning Young Forest Stands

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## Introduction

There are many benefits to having closely spaced trees in young stands.

- ✿ In vulnerable early years trees shelter each other from harsh environmental conditions and other threats such as browsing.
- ✿ Unwanted species may act as “trainer” or “filler” trees, encouraging straight upward reach and minimizing branching of crop trees.
- ✿ “Self-pruning” of lower branches is promoted.

As saplings mature and the canopy closes competition for limited resources reduces growth and growth decline can outweigh the benefits of close spacing. Most stands will thin through natural mortality. However, the individuals that survive might not be ones that meet your objectives. Weeding and thinning allow you to select which trees survive, and allow free growth of those you select.

## What are weeding and thinning?

Weeding and thinning are forestry practices that improve forest stand quality by removing undesirable species and poor quality individuals of desirable species.

***Weeding kills or removes undesired tree species to free up resources (space, light, water, nutrients) for desired species.***

***Thinning removes damaged, diseased or deformed individuals of preferred species in a stand that is too closely spaced. This promotes the growth of individuals with the best form and highest potential to meet the landowner’s goals.***

These operations increase the proportion of desired trees and improve the overall quality of forest stands. They can be done to improve timber production or for other purposes.

## What should be removed?

From the perspective of timber production, forest stands are composed of:

- ✿ Desired crop trees (these should be free from wounds, forks within the first 17’, damage and disease and have deep, healthy crowns).

- ✿ “Trainers” or “fillers”—trees that help development of crop trees (these should not have the potential to outgrow crop trees before the next operation).

- ✿ Unwanted trees selected for elimination.

Weeding is the first step towards improving growth of crop trees. It should be done in stands with stems up to 4” in diameter (diameter measured at 4.5’). When *weeding*, remove competitive, undesired species that are the same height or taller than the desired crop trees. In subsequent *thinnings* remove the more poorly formed, less vigorous among the desired species—this favors the growth of trees with the most potential value. Without thoughtful tree selection based on an understanding of forest ecology and silviculture the quality and outcome of weeding or thinning can be disappointing.

## Why weed and/or thin?

Much of our forestland produces an abundance of valuable native species. Weeding and thinning help the desired species already established and are generally more cost effective than planting. Trees remaining after weeding and thinning will respond quickly with increased growth. Weeding or thinning are priority forestry activities for Maine landowners wishing to improve the quality and value of future timber harvests. However, these operations can promote other values in forest stands. For example, they might:

- ✿ Favor food-producing trees for wildlife,
- ✿ Protect rare species or foster a diversity of species for ecological values,
- ✿ Develop a non-timber forest product. For example, weeding and thinning a stand of sugar maples for development of a sugarbush.
- ✿ Encourage the growth of trees to enhance spring flowers or autumn color.

## Consideration of soil type—What should be left?

Understanding which species are suited to different soil types will help determine what to favor. Consult with a licensed forester for advice tailored to your woodland. With some exceptions one should

**generally favor the best stems of preferred species** according to the following groupings.

**Dry Sites** usually have sandy or shallow soils. **White and red pines** are preferred on these sites. **Red and white oak, red maple, white birch and white spruce** are acceptable. Trees that are not desired include *aspens, ash, sugar maple, yellow birch, beech, basswood and hickories*.

**Moist Sites** usually have deeper topsoil and loam. Those sites with moderately to well drained soils are suitable for growing a greater variety of valuable species than either dry or wet soils. However, as all species tend to thrive in these, additional weeding or thinnings might be needed. Preference should be given to **red oak, sugar maple, yellow and white birch, basswood, ash, white and red pine, hemlock, white and red spruce. Red maple and American beech** may be acceptable on these sites.

**Wet or Poorly Drained Sites** are not generally well suited for weeding and thinning operations.

Trees that are generally undesirable for timber production and should be culled in most operations include *elm, gray birch, pin cherry, hop-hornbeam, willows, alder, blue beech and mountain and striped maples*. These species are valuable for other goals.

These groupings are only general tendencies, and should be considered in context. For example:

- 🌿 **Acceptable** species should be favored when **preferred** species are not present.
- 🌿 A good straight stem in an **acceptable** species should take precedence over a poor quality (crooked or forked) stem in a **preferred** species.
- 🌿 **Undesirable** species may be kept as "trainers" but should be eliminated if they outgrow **preferred** or **acceptable** trees.
- 🌿 Of course, species unsuitable for timber might be valued for other reasons.
- 🌿 In general, young hardwood stands should be thinned after they reach commercial size using a treatment called crop tree release. Early thinning in these stands can cause damage and provides little benefit.

Talk to your local Maine Forest Service District Forester or consulting forester for recommendations concerning your particular parcel of forestland and your goals. Consider having a consulting forester mark the trees to remove or favor in stands where you plan to conduct weeding or thinning operations.

**Pure stands** of either conifers or hardwoods, because of their more uniform growth rate, may need little or

no weeding. The need for weeding is usually greatest in mixed stands of conifers and hardwoods. Where conifers are the crop trees, several weeding may be required to assure the conifers maintain a dominant position in the stand. In mixed stands where hardwoods are to be favored, the need for weeding is reduced. When weeding in mixed stands of conifers and hardwood, work toward smaller patches of pure hardwoods or conifers. By doing so, rates of height growth are more uniform within the group, response to treatment is more effective and the need for future weeding is reduced.

### Other considerations for weeding and thinning

- 🌿 Preserve adequate spacing to maintain wind firmness. Leave trees that do not threaten to outgrow crop trees.
- 🌿 Consider the potential of selected trees to respond positively to release. Poor growing, small-crowned trees should not be selected to be released with weeding and thinning.
- 🌿 Avoid damaging roots, stems and crowns of selected trees.

### Methods

In general, weeding and thinning operations are pre-commercial—that is the trees removed do not have any value in the market. Therefore, undesirable trees are often left in place. Trees targeted in weeding or thinning may be cut from the stump or girdled with an ax, hatchet, machete or similar tool. **Herbicides** may be applied in frills or used as a basal spray, but **must be federally, state, and locally registered and applied according to authorized uses, directions on the label and other federal or state requirements.**

**NOTE:** Weeding and thinning practices, including marking by a consulting forester, may be eligible for federal cost-share funds. Contact your Maine Forest Service District Forester for information.

**For more information, please contact:**

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