

# Tending and Thinning Of Broadleaf Forests



# The Need for Tending/Thinning

**Tending and thinning** are essential operations to produce quality timber in broadleaf forests. They improve the timber value of the future crop.

**Unmanaged crops will have very low value.**

The high stocking density of trees in young broadleaf forests encourages fast upward growth and reduced branch size.

Once the canopy of leaves in the crowns of adjacent trees begin to shade each other, it is necessary to remove the lower grade trees. This will provide space for the crowns and roots of the best trees to expand and grow. It also prepares the crop for later thinning operations.

The trees in broadleaf forests have greater variety in form and vigour than in conifer forests. The emphasis is on the selection and management of quality stems for final crop trees.



*Recently tended ash plantation*



*Quality oak tree for the final crop*

# Tending

## What is tending?

The initial thinning operation in broadleaves is often called tending. Tending prepares forests for future management operations. It involves the selection and marking of 350-500 superior trees in every hectare that will be retained and chosen as potential crop trees (PCTs).

It also involves the removal of:

- Immediate competitors to the PCTs
- Large malformed trees (wolves) and tall spindly trees (whips)
- Diseased trees
- Lines of trees to create access racks for timber extraction



*An ash plantation before (left) and after (right) tending. The amount of available light increases after tending due to the reduction in canopy cover.*

## Why tend?

Tending:

- Identifies and benefits the final crop trees
- Increases girth growth on selected PCTs
- Improves the overall health of the forest
- Improves access to the forest
- Increases the value of the crop

## Tending in broadleaf / conifer mixtures

In forests where broadleaves and conifers have been planted in mixture:

- Conifer lines should be taken out as extraction racks every 12 metres and the most vigorous one third of the remaining conifers should also be removed
- Nurse trees\* must be removed if they begin to dominate or interfere with the height and crown development of broadleaved trees regardless of the height of the broadleaves and the amount of trees to be removed

### When to tend?

Tending is normally carried out when the average height of broadleaf trees reaches 8 metres.

*\*Nurse trees: Trees planted to improve growth and form of a more desirable species eg. larch as a nurse for oak*

## Selecting Potential Crop Trees (PCTs)

Ensure that all Potential Crop Trees (PCTs) selected have the following attributes:

- Disease free
- Good vigour
- Good stem form
- Evenly distributed throughout the wood.

When selecting PCTs, it is essential to view the tree from 2 sides at right angles to each other. Otherwise, stem defects can easily be missed.



*Selected and marked PCTs in an ash plantation*

# Thinning

## What is thinning?

Thinning is a follow-on operation carried out after tending. It is the removal of a proportion of trees from a forest to allow more growing space for the final crop trees.

## Why thin?

Periodic thinning ensures that evenly spaced quality trees have the best growing conditions.

## Thinning:

- Increases the stem volume of these favoured trees over time
- Reduces the time to final felling
- Can provide an interim income

## When to thin?

First thinning should be carried out a few years after tending when the competition for light re-occurs between the canopies of adjacent trees. The timing of thinning can vary depending on species, stocking and growth rates.



*A well-managed, high quality ash stand which has been thinned regularly*

## Thinning in broadleaved / conifer mixtures

- Remove the remaining conifers when they begin to dominate or interfere with the height and crown development of broadleaved trees
- A very small proportion of conifers may be left in site where appropriate

# Steps in Tending and Thinning

1. **Identify extraction racks at tending stage.** Normally 1 line of trees in 7 is removed and trees are selected and marked between racks.

2. **Assess and mark Potential Crop Trees to be retained** (permanently mark with paint).

3. **Assess and mark and fell trees to be removed** (eg. with scribe).

4. **Extract timber to roadside with forwarder, tractor, quad bike, horse or other purpose built machine**



*Extraction rack in which a row of trees is removed*



*Marking trees with paint or scribe*

## **Essential Reading:**

There are varying tending and thinning guidelines for different species, initial stockings and for broadleaf/conifer mixtures.

Detailed recommendations can be found in the Teagasc booklet **Silvicultural Guidelines for the Tending and Thinning of Broadleaves**

# Timber Extraction



*Timber arch for quad bike*



*Terrain chipper producing energy wood*



*Extraction by quad and trailer*



*Extraction by forwarder*

# Planning

## **Planning is essential for successful tending and thinning. This involves:**

- Developing a management plan for your forest
- Obtaining a felling licence from the Forest Service
- Constructing roads and loading bays
- Laying down access racks
- Assessing and permanently marking Potential Crop Trees (PCTs) to be retained
- Marking competitors to be removed
- Harvesting and utilising thinnings
- Adhering to environmental guidelines
- High pruning of selected PCTs, where necessary

## **Co-ordination of tending and thinning with your neighbours makes sense**

- Costs can be reduced if contractors have substantial work in one area
- Large timber volumes may improve prices
- Co-operation in constructing roads may be beneficial to all

Teagasc provide advice, short courses, local and national events on correct techniques for tending and thinning of broadleaf forests. These services are backed up by forestry research work at Teagasc, Kinsealy and are provided in conjunction with the Forest Service (Department of Agriculture, Fisheries and Food).

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For further details on events and short courses, contact your local Teagasc office or log onto [www.teagasc.ie/forestry](http://www.teagasc.ie/forestry).

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