

## FARM FORESTRY SERIES NO. 10

# FIRST THINNING IN CONIFERS



## What is thinning?

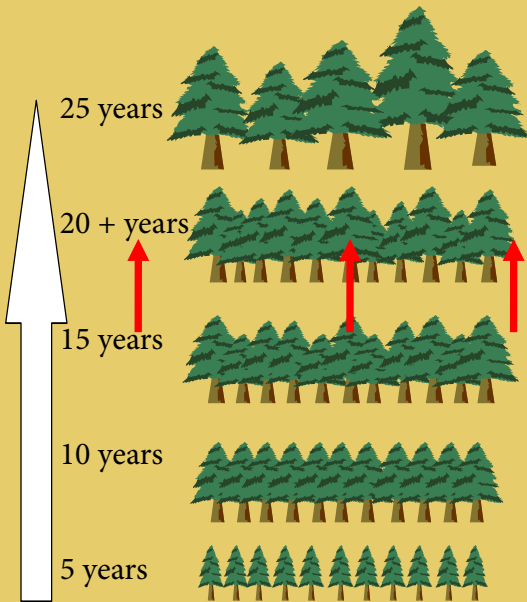
Thinning is the removal of a proportion of trees from a forest crop. This increases the quality and size of the remaining trees, allowing larger commercial timber to grow.

## Why thin?

If properly carried out, thinning:

- optimises the return from your forest crop
- provides periodic returns as the crop matures
- improves the biodiversity of the forest

## When can thinning happen?



- Increased competition amongst stronger trees. Weaker trees suppressed. Further thinning required
- **First thinning to remove inferior trees, provide access & income**
- **Vigorous trees begin to dominate weaker trees**
- Competition for light, moisture and nutrients
- Planting 2,500 stems per hectare



*Unthinned site*



*Windthrow site*

### What happens if I don't thin?

Not thinning will result in a larger number of smaller sized trees, with a likely 10%- 40% reduction in crop value, depending on crop characteristics.

### Is my forest suitable for thinning?

Most conifer forests are ready for thinning between years 14 to 24. In some cases the option may be to thin earlier or not thin at all. Thinning may not be an option where the site:

- is very exposed, and/or very wet
- has restricted access
- is not economically viable
- is prone to windthrow

## Planning for first thinning

It is advisable to plan at least two years in advance of first thinning.

Inspection paths are essential to gain access into the crop.

These paths permit the assessment of the crop by a professional forester.

As **forests become inaccessible, inspection paths should be cut:**

- create inspection paths by removing branches to head height between two lines of trees. This is called “brashing”
- parallel paths should be 50-100 metres apart depending on the size of the forest
- paths should be straight

Take appropriate safety measures if using a chainsaw.



*Inspection path*

## Planning for first thinning (continued)

**Good road access and loading bays are essential for efficient timber extraction.** Construction, where necessary, should be completed well in advance of thinning. Roading grants may be available from the Forest Service.

**A general felling licence is required to carry out thinning.**

Apply well in advance. Application forms are available from the Forest Service or Teagasc. Make sure you have a harvesting contract in place with a timber buyer before beginning to thin.



*Timber stack and forest road*



## How do I know my forest is ready for thinning?

Firstly, you need to know the stocking level of the trees and the average Diameter at Breast Height (DBH) of the trees.

Counting all the trees in a plantation is not practical, so measure sample plots. For first thinning a 0.01 ha plot (100th part of a hectare) is used. To get the average stocking level on a site a number of plots should be taken.

### Step 1- Calculating stocking levels in a 0.01 ha plot

- Measure out a 10m x 10m plot (0.01 ha).
- Count the number of trees in the plot.
- Multiply this figure by 100 to give the stocking level per hectare

i.e. 21 trees counted in the plot, then multiply 21 by 100 => Stocking level of 2,100 stems / hectare

### Step 2- Calculating mean DBH

DBH (Diameter at Breast Height) is a diameter measurement taken at 1.3 m from ground level. It is a standard term used in timber measurement. DBH can be measured using a specialised DBH tape which converts circumference to diameter.

Remember:

- Always measure from the upper side of a slope
- Always round down the measurement
- Don't count trees below 7 cm DBH
- Where a tree is forked below 1.3 m treat as two separate stems
- For leaning trees measure at underside

Calculating mean DBH – example

Total number of trees measured: 63

Multiply-

10 x	2	=	20
11 x	3	=	33
12 x	7	=	84
13 x	6	=	78
14 x	6	=	84
15 x	12	=	180
16 x	9	=	144
17 x	12	=	204
18 x	6	=	<u>108</u>
Sum of above		=	935
935/ 63		=	14.8

Mean DBH = 14 (rounded down)

DBH	No. of trees counted
10	II
11	III
12	IIIIII
13	IIIII
14	IIIII
15	IIIIIIIIII
16	IIIIIIII
17	IIIIIIIIII
18	IIIII

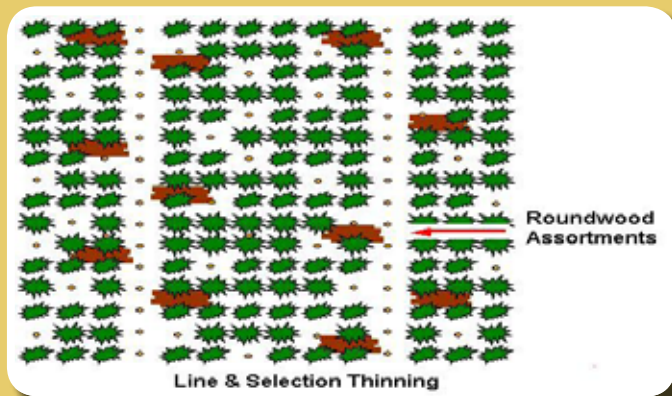
Now that you know both the stocking density per hectare (see Step 1) and the mean DBH (see Step 2), you can use the Ready Reckoner below to see if your Sitka spruce forest may be ready for thinning. But remember, this is meant as a useful guide and you should seek professional forestry advice prior to thinning.

	Not suitable for thinning			Get ready for thinning			Suitable for thinning		
DBH	Stems per hectare								
cm	2500	2400	2300	2200	2100	2000	1900	1800	1700
7	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable
8	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable
9	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable
10	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable
11	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable
12	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable
13	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable
14	Get ready	Get ready	Get ready	Get ready	Not suitable	Not suitable	Not suitable	Not suitable	Not suitable
15	Suitable	Suitable	Suitable	Get ready	Get ready	Get ready	Get ready	Not suitable	Not suitable
16	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Get ready	Get ready	Get ready
17	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
18	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
19	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
20	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable

For this example, a plantation with a stocking of 2,100 stems per hectare and a mean DBH of 14, would not yet be suitable for thinning.

## How to thin

During thinning, normally every 6th or 7th line of trees is removed. This provides access to the crop. A selection of inferior trees is also removed from the remaining lines of trees. As a general rule, approximately 1/3 of the existing numbers of trees are removed in the first thinning.



*(Diagram by T. Kent, WIT)*

**Caution-** Over thinning may permanently reduce crop potential and future returns.

Thinning may either be carried out using a timber harvesting machine (see photo) or using a chainsaw. Subsequent thinnings are carried out at 4-6 year intervals using the access lines that have been created by the first thinning.



*Harvester in 1st thin site*



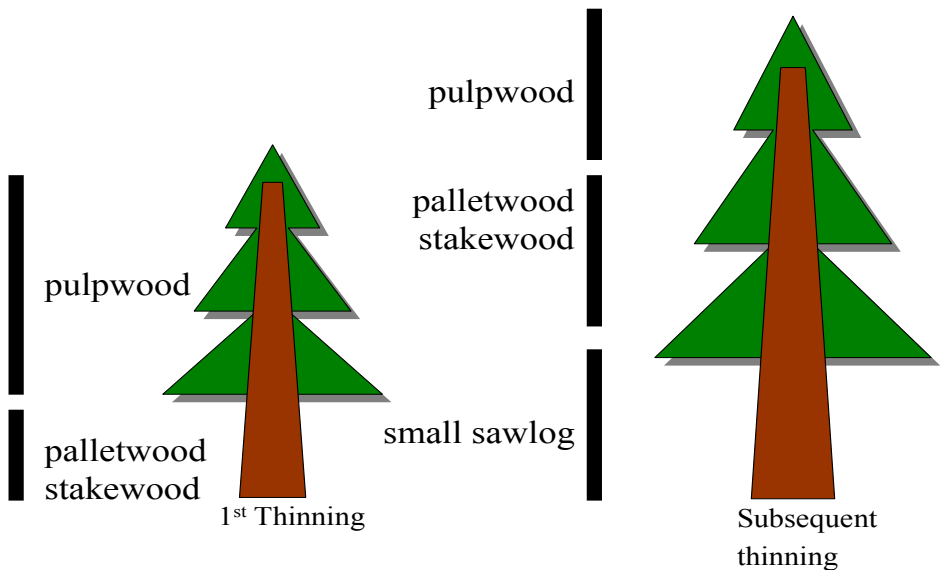
## Selling your timber

- Professional advice on the harvest planning, marketing and thinning of the crop is essential.
- Timber from thinnings can be sold standing, roadside or at the mill.
- Timber is sold either by weight or volume.

## Markets for thinnings

First thinnings are used for pallet products, fencing material, pulpwood and wood energy. Some small sawlog may also be present.

### Timber assortments



*Timber assortments*

## Co-ordination of thinning with your neighbours makes sense

- Co-operation between forest owners in the timing and co-ordination of harvesting operations is beneficial to all.
- Larger timber volumes for sale may reduce harvesting costs and/or improve prices.
- Group thinning can make small individual plantations more marketable



*Forest owner group visiting thinning site*

## Advice on thinning

Before thinning...

- Assess whether the plantation is ready for thinning
- If it is ready, secure a felling licence
- Look at access needs, including roading, public road access, etc.
- Put together plantation details including species, age, volume, maps
- Consider the need for professional supervision
- Check contractors for appropriate insurance
- Ideally, have a harvesting plan in place
- Follow a standard Health and Safety protocol during thinning operations

Teagasc provides advice for forest owners on all aspects of thinning. Courses and forest walks are organised regularly in each county in conjunction with the Forest Service.

Relevant Teagasc Publications

**No. 12 Timber Harvesting in Farm Forestry**

**No. 13 Forest Roads**

Contact your local Teagasc Forestry Development Officer for further details, or visit [www.teagasc.ie/forestry](http://www.teagasc.ie/forestry).



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