Biomass Workshops

Section 1 - Measuring the Resource

(The Non-Technical Version)

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Scope

- Why thin?
- What is thinning?
- When to thin?
- Preparation
- Product Categories
- Calculating the harvest
- The Dark Art of conversion;

Moisture Content
m^3 to t to kWh

Key to profitable energy

Why Thin?

- To concentrate volume on a fewer number of trees. End result larger trees better price
- Generate income during the rotation
- Removes timber which would otherwise be left to rot

When to thin?

Essentials - Need to know

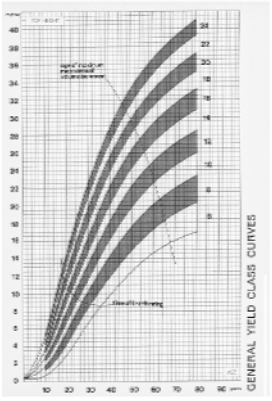
- Age of the trees
- Height of the trees
- Map - The harvest area
- Chest height diameter dbh

Above information is used to determine the productivity of the site – Yield Class YC

When to Thin?

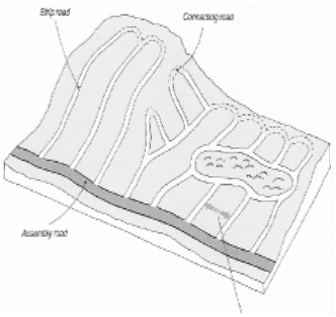
1st thinning normally takes place when the crop reaches a height of 10.5m.

This height can be reduced in exposed areas to 8 – 9m this will improve the stability of the crop



Preparation - Successful and profitable thinning depends on advanced planning get professional help

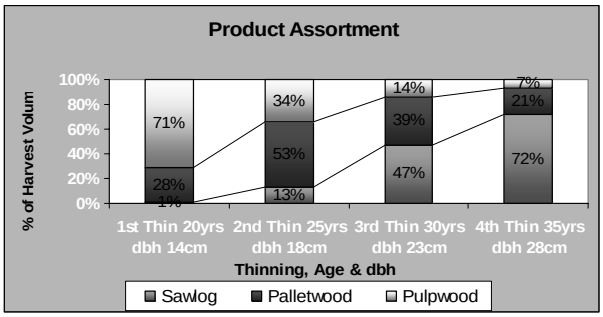
1. Prepare felling licence application include trees along road. Decide on thinning system and calculate volume to be removed.
2. Fell trees along road line 2yrs before thinning. Construct road during dry periods (uses less materials)
3. In spring of thinning year advertise volume to local sawmills and buyers.
4. Harvest in dry weather reduces soil damage



Product Categories

Category	Section	Market	Min Top Dia cm	Roadside €
Sawlog	Butt	Construction	20	48 - 55
Palletwood	Mid	Packaging Strainers	14	38 – 45
Pulpwood	Top	Stakewood Pulpwood Wood energy	7	38 – 45 26 – 30 28 - 30
Brash	Branches	Wood Energy		20?

Product Categories



How to determine the resource – i.e. woodfuel

Area – 5ha; Age 15yrs; 1st thinning due

Dbh 14cm

How much pulpwood?

Models say total harvest = 70m³ per ha

5ha x 70m³ = 350m³

Pulpwood 350m³ x 71% = 248m³

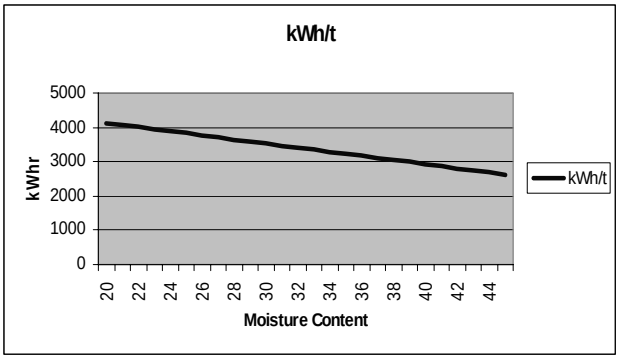
The Dark Art of Conversion

- Moisture Content; The amount of water in a log described as a percentage of its total fresh weight – typically in Ireland fresh timber has a moisture content (MC) of about 55%.
- So 1t of fresh timber contains 550kg of water and 450kg of wood.
- Wet wood is difficult to burn because a lot of energy contained in the wood is consumed in drying the wood before heat is given off.

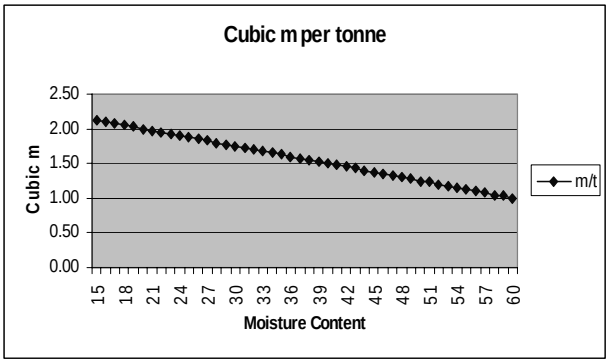
The Dark Art of Conversion - m³, tonnes and energy kWh

- The good news is that the end points are fixed i.e. 1m³ is always equal to 1m³.
- The energy content for oven dry wood is constant
- However, the relationship between m³ and tonnes varies with moisture content

The Dark Art of Conversion – m³, tonnes and energy kWh



The Dark Art of Conversion – m³, tonnes and energy kWh



Continuing with the example

- 248m³ @ 55%MC = 219t
- 219t @t 55%MC = 443,913kWh

- 248m³ @ 35%MC = 152t (difference is that the timber has been allowed to dry)
- 152t @ 35%MC = 490,808kWh

Most energy wood sold in Europe is sold by its energy content calculated from its moisture content.