

Farm Forestry Series No. 12

TIMBER HARVESTING IN FARM FORESTRY



WHAT IS HARVESTING?

Harvesting is the cutting and extraction of timber to roadside, usually during **thinning or clearfelling**.

Thinning is the removal of inferior trees, increasing the quality and size of those remaining. It is generally undertaken 2 to 5 times over a forest rotation.

In conifers, first thinning usually removes lines of trees within the crop as well as selected inferior trees in between these lines. This provides access for subsequent selective thinnings.



Conifer forest after first thinning

Thinnings in broadleaf plantations involve the periodic selective removal of competing trees to favour higher quality stems.



First thinning in broadleaf forest

Clearfelling is the harvesting of all marketable trees at the end of a forest rotation, generally between age 30 and 50 in conifer forests and later for broadleaves.

Continuous Cover Forestry is an alternative approach to clearfelling where some trees may be periodically removed but the canopy is continually maintained.



Clearfelled forest

HARVESTING OPERATIONS

- Felling of selected trees
- Removal of branches
- Cross-cutting stems into size categories
- Stacking along tracks in the forest
- Extraction to roadside



TIMBER FELLING

Up to the early 1990's felling was carried out mainly using chainsaws. Manual felling is still an option in smaller plantations or where machine access is limited.



Tractor-mounted timber processors are used to a limited extent in Ireland and may have applications in small harvests. Some systems require trees to be manually cut before being fed by winch or



crane to the processing unit. Processors can debranch, cross-cut and stack timber assortments in the forest.



Most felling now involves the use of specialised harvesting heads, either fitted to standard excavators or purpose built 'harvesters'.



Harvester



On-board computers can maximise timber value



Harvesting Head

ACHIEVING ECONOMIES OF SCALE

Harvesting contractors require significant timber volumes in felling areas to justify transfer of these specialised machines.

Sufficient volumes as well as good economies of scale can be achieved with co-operation between neighbouring forest owners and co-ordination of harvesting activity within local or regional areas.

TIMBER EXTRACTION OPTIONS

Horses were commonly used in the past to extract timber to roadside. This option may still be suitable in small scale forestry or in environmentally sensitive forests areas.



Horse extraction

Quad-based extraction systems may be an option for small scale operations where soil conditions are good.



Quad with timber arch

Tractor 'skidders' provide further extraction options. The timber is winched to the metal plate mounted on the back of a tractor and skidded on the ground to roadside.



Quad with trailer and loading crane



Tractor Skidder

Tractor forwarders with grapple loaders are used to a limited extent in Ireland where soil and ground conditions are favourable.



Cable extraction systems are expensive but may have applications in environmentally sensitive forest areas.



Specialised forwarding machines are the most common extraction system in Ireland. Similar to harvesters, forwarders can be fitted with tracks or chains and can remove on average 9-12 tonnes per journey.



Crucial to the cost-effectiveness of a forwarder is the distance it has to travel to the collection point. The increased cost of forwarding may significantly affect thinning costs beyond an optimal extraction distance of 250-300 metres.

ALTERNATIVE HARVESTING SYSTEMS

Forestry thinnings or residues may be chipped on site for wood energy using tractor mounted chippers or specialised chipping machines.



Timber can be converted to firewood using one of a wide range of processing machines



Trees harvested in the forest can also be sawn and planked on site using a mobile sawmill.



PLANNING OF HARVESTING OPERATIONS

Advanced planning in conjunction with a professional forester is essential and generally involves:

- Assessment of standing timber
- Provision of access and loading areas (grant aid may be available)
- Securing of a market
- Application for a felling licence
- Co-operation/co-ordination of harvesting with other forest owners
- Preparation of a harvesting plan to minimise environmental disturbance

This information should be read together with:

- Forest Service Publications:
 - Forest Harvesting and the Environment Guidelines
 - Code of Best Forest Practice
- Teagasc Farm Forest Series No 10: First Thinning in Conifers
- Teagasc Farm Forest Series No 11: Wood Fuel
- Teagasc Farm Forest Series No 13: Forest Roads

Teagasc provide advice to forest owners on all aspects of timber harvesting. Courses and forest walks are organised regularly in each county in conjunction with the Forest Service.

Contact your local Teagasc office for further details.



Forest Service



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