

FARM FORESTRY SERIES NO. 11

# WOOD FUEL

ANOTHER MARKET FOR FARM FORESTRY



# What is wood energy?

Spiralling oil prices remind us that we are gradually running out of fossil fuels (oil, coal, etc.) while the burning of these cause serious environmental damage such as global warming.

Wood energy is energy produced from wood fuel. It is a renewable, sustainable and carbon-neutral source of heat, electricity and bio-fuel.



# Growing wood for energy

Farmers are in a good position to benefit: both as growers of wood fuel and as users of cost-effective wood energy.

Ireland's soil and climatic conditions are excellent for timber growth.

Smaller diameter wood produced in early thinnings can be used or sold for energy production.



# Sources of wood fuel

Conventional forestry provides different categories of wood. Higher value categories (sawlog, palletwood and stakewood) provide a welcome tax-free income. Lower value pulpwood, normally the raw material for panelboards (MDF, OSB and chipboard) can also supply a new emerging wood energy market.



*Most fuel wood comes from thinnings from conventional forestry.*



*Sawmills produce off-cuts, sawdust, etc. as a by-product.*

## **Short rotation forestry (SRF)**

Fast-growing species such as willow are planted and cut every three years (short rotation forestry).

SRF should only be established on land with sufficient road access for heavy machinery in winter.

After cutting, the stumps will resprout and the cycle recommences.

SRF tends to be cost-effective in conjunction with another enterprise (e.g. spreading of sewage sludge).

Market outlets must be secured in advance.



*Forage harvester with adapted maize head harvesting willow*

# Wood fuel

Wood fuel can be used for the production of heat and electricity or converted to bio-fuel. It is most commonly used for the production of heat.

Traditionally, **firewood** has been used. Nowadays, it is produced more efficiently using mechanical firewood processors.



*A firewood processor will cut and split logs into suitable lengths.*



**Wood pellets** are made from compressed sawdust in an industrial process. Pellets are more expensive but easy to handle and are mostly used to heat smaller houses and apartments.



# Wood fuel continued

**Wood chips** can be produced and handled without additional processing costs. They are suitable for heating large premises where space for storing chips is available.

Once cut, the wood needs to dry out for at least six months before chipping.

Chipping green wood attracts lower prices and requires additional drying facilities.



*Harvesting machine chipping wood in the forest.*



*Farmers are in a good position to process their own wood and use it to heat their homes.*



*Wood can also be chipped at the roadside using a mobile chipper.*

## Some facts and figures

- 1000 litres of home-heating oil = 6 tonnes of dried chips = 2.5 tonnes of wood pellets
- One hectare of thinnings can heat a house for over a year
- A large detached house (200 m<sup>2</sup>) will need approx. 14 tonnes of wood chips or 6 tonnes of wood pellets per year
- Normally, 5 kilowatt (boiler output) is required per 100 m<sup>2</sup> of house floor area.

# Wood heating options

## Open fires/Room Stoves

Burning firewood in an open fire is very inefficient and consideration should be given to only burning wood in enclosed stoves/boilers. Many stand-alone room heaters are now available. They range from a simple design burning logs to fully automated pellet-burning stoves.



## Central heating systems

Many houses in Europe have wood-fuelled systems as their sole source of central heating. These run on chips, pellets and/or logs and are sophisticated, automated systems.



## District heating systems

Wood-fuelled systems that provide heat to towns or areas within towns, are very common in Europe and have been operating successfully for over twenty years. All types of wood fuel can be used for these larger installations.



## For further information

Contact your local Teagasc Forestry Development Officer for further information or log on to: [www.teagasc.ie](http://www.teagasc.ie), [www.woodenergy.ie](http://www.woodenergy.ie), [www.sei.ie](http://www.sei.ie)