An investigation of the economic potential of Short Rotation Forestry for fibre and fuel in Ireland

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What is the financial value of Short Rotation Forestry (SRF) in Ireland?

Introduction

What is Short Rotation Forestry?
- Single trees of fast growing species grown on a reduced rotation length (less than 20 years in Ireland) primarily for the production of biomass or fibre.
- Between highly productive short rotation coppice systems and conventional forestry.
- More flexible than a coppice system:
  - A much wider variety of species can be used.
  - Potential to convert stands back into conventional forestry (e.g. due to a change in market environment).

Forest policy is already promoting afforestation for fibre and fuel through targeted support measures (e.g. Irish Forestry Programme 2014-2020. Grant and Premium Category: Forestry for Fibre) in order to meet the supply-demand gap for fibre for energy and other wood product applications that is forecast to arise over the next two decades.

Objectives

- To develop a unit conversion tool to quantify wood resources for different markets.
- To assess the market requirements for fibre and energy from SRF plantations in Ireland.
- To explore how to optimise the value of the SRF plantations in Ireland.

Short Rotation Forestry crops

We are collecting data from SRF stands around Ireland. Those are being targeted for detailed assessments by measuring volumes and taking destructive samples from target trees. Analysis of these samples are being carried out, determining tree biomass parameters (biomass expansion factors, moisture content, basic density, ash content and calorific value).

Standing trees
- Hybrid poplar (Populus sp.) Kinsealy, Dublin.
- Eucalyptus (Eucalyptus nitens) Cappoquin. Waterford.

Forest trucks
- Typical units: Volume (m³)
- Typical units: Weight (Green tonnes)

Short Rotation Forestry potential markets

We will collect data of competing markets, their price paying potential and allowable material specifications of different tree partition assortments, since a good knowledge of the markets’ requirements and prices together with the existence of a market infrastructure is essential to achieve the rapid increase of SRF.

Fibre
- Roundwood (With or without bark)
- Typical units: Bulk volume (m³)
- Typical units: Dry weight (oven dry tonnes)
- Calorific value (GJ kg⁻¹, MWh)

Fibre + Fuel
- Roundwood + Residues (Top diameter)
- Typical units: Bulk volume (m³)
- Typical units: Dry weight (oven dry tonnes)
- Calorific value (GJ kg⁻¹, MWh)

Fuel
- Roundwood
- Typical units: Bulk volume (m³)
- Typical units: Dry weight (Oven dry tonnes)
- Calorific value (GJ kg⁻¹, MWh)

How can we quantify wood resources for different markets?

Value optimisation Software: VALMAX

This optimal log-making algorithm will be the tool to optimally allocate wood products from Short Rotation Forestry.

Different scenarios will be tested to determine the potential value of SRF plantations under market conditions in Ireland.

€ (Potential financial value of SRF)