



TREEMODEL

Development of single tree volume models and stem profile models

PROJECT TEAM

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COMPLETION DATE: December 2011

BACKGROUND

The National Forest Inventory has collected tree and stand measurement data at over 1,800 permanent sample plots across the country. Investigations to determine the suitability of these data for updating dynamic yield models are required. Work associated with the National Forest Inventory has derived very accurate Sitka spruce tree volume equations that have an application not only in deriving stand volume estimates, but as a cost-effective mensuration tool. Further work is required in this area, extending to other species, as is research on deriving wood supply indications from the national inventory and other data sources.

OBJECTIVES

- Produce stem profile models for Sitka spruce, Norway spruce, Douglas fir, lodgepole pine, Japanese larch, Scots pine and ash, and validate these with newly collected stem data.
- Describe the different inventory tools available for collecting data necessary for stem profile model development.
- Develop recommendations for the integration of stem profile models into everyday inventory and management practice.

PROGRESS

A range of stem profile data from 280 Japanese larch stems were collected in 2009. These data, representative of a broad range of tree ages, sizes and geographic locations, were added to the national database containing sectional

stem measurements and will be available for other COFORD projects.

A literature review was completed. As part of the compilation of an Inventory Equipment Database, some initial work has been completed, with the recently purchased Masser RC3H. A paper on stem profile modelling has been completed and is being prepared for submission for publication.

ACTIVITIES PLANNED

- Initial work on stem profile modelling of Japanese larch and ash.
- The integration of the new single models into practical inventory systems.
- A database of measurement equipment available for use in inventory will be prepared.
- A short guide/handbook.

OUTPUTS

- The validated Sitka spruce stem profile model has been produced. Stem profile models for Norway spruce, lodgepole pine, Scots pine and Douglas fir have also been produced. A fully validated MS Access database of all stem data has been produced. A rudimentary querying system for the above models has been produced.
- A research paper: *Stem profile modeling of the main coniferous tree species in Ireland as a tool for standing volume estimation* has been prepared.
- *Recent developments in Irish stand and stem modelling under the COFORD STANDMODEL and TREEMODEL projects*. Presentation to ITC Technical Group, Portlaoise, 14 July 2009 by Paddy Purser.
- Nieuwenhuis, M. 2009. *COFORD's PLANSFM Research Programme: Planning and implementation of sustainable forest management*. Presentation to the COFORD Council, AFBI Field station, Hillsborough, Co Down, 24 July 2009.
- Harper, C. and Nieuwenhuis, M. 2009. *PLANSFM - Planning and implementation of sustainable forest management* [Poster presentation.] UCD School of Agriculture, Food Science and Veterinary Medicine Research Day, 8 December 2009.