



Australian Government

FWPFRM5005 Contribute to selection and application of forest growth models

Release: 1

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Modification History

Release	Comments
Release 1	This version released with Forest and Wood Products Training Package Version 7.0.

Application

This unit of competency describes the skills and knowledge required to select and apply a forest growth model to forecast forest growth and yield of a forest stand and to compare forecasts with actual yields.

The unit applies to individuals who undertake forester or forestry field officer job roles in the forest industry.

All work must be carried out to comply with workplace procedures according to state/territory health and safety regulations, legislation and standards that apply to the workplace.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Forest Resource Management (FRM)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Select method of forecasting forest growth and yield	1.1 Classify stand characteristics that most affect forest growth and yield 1.2 Research different methods of forecasting forest growth and yield 1.3 Determine the key features and data requirements for different

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	forest growth models 1.4 Establish criteria for selecting a method of forecasting forest growth and yield 1.5 Apply the selection criteria to determine the appropriate method for forecasting forest growth and yield for a stand
2. Apply a forest growth model to forecast forest growth and yield	2.1 Explain how growth models are used to compare results of different silvicultural regimes and scheduling pruning and thinning operations to forestry personnel 2.2 Determine the data, including site index, species and genotype, age, establishment stocking, current stocking and basal area, required to simulate forest growth and forecast yield using a growth model 2.3 Acknowledge the limitations of inventory data and the effects of inaccurate data from pre-harvest inventory on forecasts 2.4 Use a simple stand volume formula to derive the total stand volume for a set of forecasts of basal area and mean top height 2.5 Derive current annual increment and mean annual increment 2.6 Use a stand growth model software package to simulate the growth and yield of a stand from establishment to clear felling
3. Compare forecasts with actual harvest yields	3.1 Review forecasted yield data for a forest stand 3.2 Collate actual harvest yield data for a forest stand, and compare with forecast yield 3.3 Document and account for discrepancies between actual and forecast harvest yield 3.4 Report on comparison of forecast and actual harvest yield to appropriate personnel, noting potential implications for silviculture practices and forest growth modelling techniques

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
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Skill	Description
Reading	Interpret complex written, technical information in source documents related to forest growth models
Writing	Design, develop and revise strategic documents appropriate to audience and context
Oral communication	Use active listening and questioning techniques to convey and clarify information
Numeracy	Analyse and compare complex statistical information related to forest growth and yield

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FWPFRM5005 Contribute to selection and application of forest growth models	Not applicable	The unit has been created to address a skill or task required by industry that is not covered by an existing unit	Newly created

Links

Companion Volumes, including Implementation Guides, are available at VETNet: - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0d96fe23-5747-4c01-9d6f-3509ff8d3d47>

Assessment Requirements for FWPFRM5005 Contribute to selection and application of forest growth models

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Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that the individual has:

- simulated the growth and yield of one stand from establishment to clear felling using a stand growth model software package. In undertaking this activity, the individual has:
 - determined data requirements for simulation
 - selected a stand growth model software package
 - assessed quality of inventory data
 - applied software package to simulate stand growth and yield
 - compared and reported on forecast and actual yields.
- simulated the yield of one stand with a recorded silvicultural history and a current inventory data using a stand growth model. In undertaking this activity, the individual has:
 - determined data requirements
 - selected a stand growth model
 - assessed quality of recorded silvicultural history and current inventory data
 - applied model to simulate stand growth and yield
 - compared and reported on forecast and actual yields.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- distinguishing between growth and yield
- methods of forecasting growth and yield:
 - continuous forest inventories
 - permanent sample plots
 - replicated trials

- growth models
- types, features and data requirements of growth models:
 - stand-based models
 - individual tree models
 - diameter class models
- advantages and disadvantages of different forest growth models
- stand characteristics that affect growth and yield:
 - mix of species in a stand
 - stand age
 - site quality
 - density or stocking
 - competition
- stand growth terminology:
 - annual increment
 - mean annual increment
 - annual compound interest rate of growth
- growth model software packages
- inputs to a growth model software package and their limitations:
 - basal area increment factors
 - Weibull functions and breakage functions
 - taper and volume tables
 - site and regime variables
 - log cutting patterns
- formula for calculating forest growth and yield
- techniques for comparing forecasts with actual harvest yields.

Assessment Conditions

Assessment of the skills in this unit of competency must take place under the following conditions:

- physical conditions:
 - skills must be demonstrated in a forest work environment or an environment that accurately represents workplace conditions
- resources, equipment and materials:
 - growth model software packages
 - computing hardware required for operation of growth model software packages
 - stand data to be inputted into growth model software package
- specifications:
 - workplace policies and procedures regarding forest growth modelling.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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