

<b>Title</b>	<b>Use stand growth models to forecast growth and yield in commercial forestry</b>		
<b>Level</b>	<b>6</b>	<b>Credits</b>	<b>5</b>

<b>Purpose</b>	People credited with this unit standard are able to: describe methods of forecasting forest growth and yield; simulate the growth and forecast the yield of a forest stand using growth models; and describe the use of growth models in silvicultural operations.
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<b>Classification</b>	Forestry > Forest Inventory
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<b>Available grade</b>	Achieved
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### Guidance Information

#### References

Colley, M. *NZIF Forestry handbook*. (4<sup>th</sup> ed). (2005) available at <https://www.nzif.org.nz/>.

McLaren, J.P. *Radiata Pine Growers Manual* (1993) available at <http://www.scionresearch.com>.

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### Outcomes and performance criteria

#### Outcome 1

Describe methods of forecasting forest growth and yield.

#### Performance criteria

1.1 Methods of forecasting growth and yield and their data needs are described in accordance with the reference texts.

Range continuous forest inventories, permanent sample plots, replicated trials, growth models.

1.2 The features of forest growth models are described in accordance with the reference texts.

Range stand-based, distance dependent individual tree, distance independent individual tree.

1.3 The advantages and disadvantages of forest growth models are described in accordance with the reference texts.

Range stand-based, distance-dependent individual tree, distance-independent individual tree.

## Outcome 2

Simulate the growth and forecast the yield of a forest stand using growth models.

### Performance criteria

2.1 The inputs to be used in a stand simulation and how they can be obtained are determined in accordance with the reference texts.

Range site index, species and genotype, age, establishment stocking, current stocking, basal area.

2.2 The effect of inaccurate data from pre-harvest inventory on simulated forest yield is described in accordance with the reference texts.

2.3 A simple stand volume function is used to derive the total stand volume for a set of forecasts of basal area and mean top height.

2.4 Current annual increment and mean annual increment are derived and graphed against age in accordance with the reference texts.

2.5 Inputs to a growth model software package and their limitations are described in accordance with the reference texts.

Range basal area increment factors, Wiebull functions and breakage functions, taper and volume tables, site and regime variables, log cutting patterns.

2.6 A stand growth model software package is used to simulate the growth and yield of a stand from establishment to clearfelling in accordance with the reference texts.

2.7 A stand growth model is used to simulate the yield of a stand with a recorded silvicultural history and a current condition defined by a set of inventory data in accordance with the reference texts.

## Outcome 3

Describe the use of growth models in silvicultural operations.

### Performance criteria

3.1 The way that stand growth models are used to compare results of different silvicultural regimes is described.

- 3.2 The role of growth models in scheduling pruning and thinning operations is described in accordance with the reference texts.

<b>Planned review date</b>	31 December 2028
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#### Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	28 January 1995	31 December 2017
Review	2	27 May 1998	31 December 2017
Review	3	27 May 2002	31 December 2017
Review	4	16 October 2009	31 December 2017
Review	5	10 December 2015	N/A
Rollover and Revision	6	28 May 2020	N/A
Rollover	7	30 May 2024	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0173
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

#### Comments on this unit standard

Please contact Muka Tangata - People, Food and Fibre Workforce Development Council [qualifications@mukatangata.nz](mailto:qualifications@mukatangata.nz) if you wish to suggest changes to the content of this unit standard.