

<b>Title</b>	<b>Describe the production of bare root seedlings in a forest nursery</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>8</b>

<b>Purpose</b>	People credited with this unit standard are able to: describe sowing depth and spacing; weed, pest, and disease control to maintain seedling vigour; seedling development conditioning and topping; and lifting and root trimming principles.
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<b>Classification</b>	Horticulture > Forest Nursery
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<b>Available grade</b>	Achieved
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### Guidance Information

None

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### Outcomes and performance criteria

#### Outcome 1

Describe seed sowing depth and spacing.

#### Performance criteria

1.1 Describe the factors affecting optimal seed sowing depth in terms of its/their effects on tree seedling emergence.

Range may include but is not limited to – seed size, drying out, seed covering, herbicide beneficial and detrimental effects; evidence of three factors is required.

1.2 Describe optimal seed spacings, and its effect on seedling development.

Range may include but is not limited to – sturdiness, basal branch development, root collar diameter, light, evidence of three effects is required.

#### Outcome 2

Describe weed, pest, and disease control to maintain seedling vigour.

**Performance criteria**

- 2.1 Describe weed control requirements for seedling quality and nursery management in terms of the consequences of inadequate weed control on a forest nursery.
- Range weed control may include but is not limited to – hand weeding, residual herbicides, knock down herbicides, selective herbicide, non-selective herbicides, spot spraying, timing of application; evidence of three requirements is required.  
consequences may include but are not limited to – lifting costs, weed competition, root damage, weed seeds; evidence of three consequences is required.
- 2.2 Describe major pests and diseases affecting seedlings in terms of their effect on seedling quality.
- Range pests and diseases may include but are not limited to – leaf rust, needle blight, stem canker, phytophthora, botrytis, thrips, terminal crook, damping off, evidence of three pests and diseases is required; effects may include but are not limited to – malformation, culling, plant loss, slow establishment; evidence of two effects is required.
- 2.3 Describe a forest nursery in terms of practices used to maintain nutritional requirements and seedling.
- Range practices may include but are not limited to – inter-row fertiliser applications, foliar applications, foliage testing, controlled release fertiliser, observation of signs and symptoms; evidence of three practices is required.

**Outcome 3**

Describe conditioning and topping on seedling development.

**Performance criteria**

- 3.1 Describe conditioning methods in terms of their effect on seedling development.
- Range conditioning methods may include but are not limited to – undercutting, lateral root pruning, wrenching; evidence of two conditioning methods is required; effects – height growth, diameter growth, sturdiness, root development, mycorrhizal development; evidence of two effects is required.

3.2 Describe reasons for topping seedlings, and topping practice in terms of their effects on seedling shoot development.

Range effects may include but are not limited to – fascicle bud development, hardening off, increased stem diameter, root development, shoot to root ratios; evidence of three effects is required.

**Outcome 4**

Describe lifting and root trimming principles in a forest nursery.

**Performance criteria**

4.1 Describe lifting techniques in terms of their effect on seedling quality.

Range lifting techniques may include but are not limited to – pre-lift loosening by machine, pre-lift loosening by hand, teasing, bunch lifting, single tree lifting; evidence of three lifting techniques is required; effects may include but are not limited to – tertiary root damage including mycorrhizae, root regeneration, height growth, foliage damage, root stripping, root desiccation; evidence of three effects is required.

4.2 Describe root trimming in terms of its effect on root placement at time of planting.

<b>Planned review date</b>	31 December 2026
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**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	25 September 1997	31 December 2024
Revision	2	19 July 2001	31 December 2024
Revision	3	24 February 2006	31 December 2024
Review	4	24 February 2022	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0052
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This CMR can be accessed at [www.nzqa.govt.nz/framework/search/index.do](http://www.nzqa.govt.nz/framework/search/index.do).

**Comments on this unit standard**

Please contact the 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.