

Title	Describe soil properties and their effect on plant growth		
Level	3	Credits	6

Purpose	People credited with this unit standard are able to describe: the influence of soil composition and structure on plant growth; water properties of soil, and the effects of excess and insufficient water on plant growth; the effects of chemical and biological properties of soil on plant growth; the role of fertilisers and lime in plant health and growth; and how modifying soil properties in a horticulture sector can influence plant growth, and sustainable soil management practices.
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Classification	Horticulture > Production Horticulture
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Available grade	Achieved
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Guidance Information

- 1 Legislation relevant to this unit standard includes but is not limited to:
 - Health and Safety at Work Act 2015; and any subsequent amendments.
- 2 All evidence presented in this unit standard must be in accordance with:
 - Workplace procedures.

Outcomes and performance criteria

Outcome 1

Describe the influence of soil composition and structure on plant growth.

Performance criteria

- 1.1 Describe plant growth in terms of the influence of major soil components.
Range mineral particles, organic material, water, air.
- 1.2 Describe plant growth in terms of the effect of the main soil horizons.
- 1.3 Describe plant growth in terms of the influence of soil texture and structure.
- 1.4 Describe plant growth in terms of the major factors affecting soil suitability.
Range evidence of four factors is required.

Outcome 2

Describe the water properties of soil, and the effects of excess and insufficient water on plant growth.

Performance criteria

2.1 Describe water properties of soil in terms of the effects of soil texture and structure.

Range evidence of five effects is required.

2.2 Describe soil structure in terms of the effects of excess soil water.

2.3 Describe plant growth in terms of the effects of excess and insufficient water.

Outcome 3

Describe the effects of chemical properties of soil on plant growth.

Performance criteria

3.1 Describe soil nutrient availability in terms of the influencing factors.

Range evidence of five factors is required.

3.2 Describe the effect of macronutrients and micronutrients in terms of plant health and growth.

3.3 Describe common nutrient deficiencies of New Zealand soils in terms of the symptoms and/or effects on plant growth.

Range evidence of five macronutrients, and three micronutrients is required.

Outcome 4

Describe the effects of biological properties of soil on plant growth.

Performance criteria

4.1 Describe organic matter in terms of the factors that promote its formation.

4.2 Describe physical and chemical properties of soil in terms of the beneficial effects of adding organic matter.

Range evidence of five beneficial effects is required.

4.3 Describe soil organisms and beneficial micro-organisms in terms of their functions and effects on plant growth.

Outcome 5

Describe the role of fertilisers and lime in plant health and growth.

Performance criteria

5.1 Describe plant health and growth in terms of the influence of fertilisers and lime.

Range evidence of two fertilisers and lime is required.

Outcome 6

Describe how modifying soil properties in a horticulture sector can influence plant growth, and sustainable soil management practices.

Performance criteria

6.1 Describe plant growth in terms of the practices that modify the physical, chemical and biological properties of soil for maintaining and improving soil suitability.

Range evidence of five practices is required.

6.2 Describe sustainable soil management in terms of the practices used.

Range evidence of four practices is required.

Planned review date	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 July 2006	31 December 2018
Review	2	19 January 2017	31 December 2024
Review	3	27 May 2021	N/A

Consent and Moderation Requirements (CMR) reference	0052
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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 the Primary ITO standards@primaryito.ac.nz if you wish to suggest changes to the content of this unit standard.