

Title	Demonstrate knowledge of plant biochemistry		
Level	6	Credits	6

Purpose	People credited with this unit standard are able to describe: the processes of photosynthesis; nitrogen fixation; secondary metabolism of plants; and the biochemical basis for the control of plant growth.
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Classification	Science > Biochemistry
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Available grade	Achieved
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Guidance Information

Recommended for entry: Unit 26487, *Explain the characteristics of enzymes*; and Unit 26491, *Discuss the cellular metabolism of glucose, amino acids, and fatty acids*.

Outcomes and performance criteria

Outcome 1

Describe the processes of photosynthesis.

Performance criteria

- 1.1 Photosynthetic pigments are described in terms of their absorption spectra.
Range chlorophylls, carotenoids, xanthophylls.
- 1.2 The description outlines the reactions of the light phase.
Range pigment systems I and II, cyclic and non-cyclic electron flow.
- 1.3 The description compares carbon dioxide fixation in C3 and C4 plants.
- 1.4 The description outlines the formation of carbohydrates.
Range sucrose, starch, cellulose.

Outcome 2

Describe nitrogen fixation.

Performance criteria

- 2.1 The description outlines the symbiotic relationship between plants and nitrogen-fixing microorganisms in terms of biochemical pathways.

Outcome 3

Describe secondary metabolism of plants.

Range tannins, terpenoids, alkaloids, plant phenolics.

Performance criteria

- 3.1 The description identifies secondary plant products in terms of biochemical pathways.
- 3.2 The description identifies secondary plant products in terms of function in the plant.

Outcome 4

Describe the biochemical basis for the control of plant growth.

Performance criteria

- 4.1 Endogenous plant growth regulators are described in terms of physiological effects and biochemical modes of action.

Range two of – auxins, gibberellins, cytokinins, abscisic acid, ethylene, jasmonic acid, salicylic acid.

- 4.2 The description outlines the principles of phytochrome control of plants in terms of plant growth responses.

- 4.3 Models for differential control of gene expression during plant growth are described.

Range one of – seed development, inhibition phase of seed germination, mobilisation of seed food reserves, leaf expansion, fruit ripening, abscission.

Planned review date	31 December 2023
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	22 December 1996	31 December 2014
Review	2	23 November 1999	31 December 2014
Review	3	22 September 2004	31 December 2014
Review	4	17 September 2010	N/A
Rollover	5	27 January 2015	N/A
Review	6	27 September 2018	N/A

Consent and Moderation Requirements (CMR) reference

0113

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact NZQA National Qualifications Services nqs@nzqa.govt.nz if you wish to suggest changes to the content of this unit standard.