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.

Classification	Science > Biochemistry

Available grade	Achieved

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.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions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	31 December 2025
Rollover	5	27 January 2015	31 December 2025
Review	6	27 September 2018	31 December 2025
Review	7	30 November 2023	31 December 2025

Consent and Moderation Requirements (CMR) reference	0113

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