Achievement Standard

Subject Reference	Agricultural and Horticultural Science 1.3				
Title	Demonstrate knowledge of soil management practices				
Level	1	**Credits**	4	**Assessment**	External
Subfield	Science				
Domain	Agricultural and Horticultural Science				
Status	Registered	**Status date**		17 December 2010	
Planned review date	31 December 2014	**Date version published**		17 December 2010	

This achievement standard involves demonstrating knowledge of soil components, their effects on the properties of soil and the management practices used to modify soil.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Demonstrate knowledge of soil management practices.	• Demonstrate in-depth knowledge of soil management practices.	• Demonstrate comprehensive knowledge of soil management practices.

Explanatory Notes

1 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and based on the outcomes in the *Teaching and Learning Guide for Agricultural and Horticultural Science*, Ministry of Education, 2010 at http://seniorsecondary.tki.org.nz/.

2 *Demonstrate knowledge* requires describing how soil management practices are carried out.

Demonstrate in-depth knowledge requires explaining why soil management practices or steps within practices are carried out.

Demonstrate comprehensive knowledge requires applying knowledge of soil management practices to given situations. This may involve comparing and/or contrasting, or justifying management practices.

3 *Soil management practices* are those carried out by the grower to improve plant growing conditions. These could include fertiliser application, liming, cultivation, adding compost material, drainage, irrigation, crop rotation, effluent application.

4 Explanations of soil management practices relating to soil properties and how these influence plant growth will refer, where relevant, to soil components, soil texture and soil structure.

5 Soil components include mineral matter (sand, silt, clay), organic matter, soil organisms (earthworms and micro-organisms), air and water.

6 Soil properties include physical, chemical and biological properties.

- Physical properties: drainage and aeration, water holding capacity and temperature.
- Chemical properties: nutrient retention, status and soil pH.
- Biological properties: those influenced by living organisms and organic matter eg decomposition of organic matter and disease status.

7 Soil texture refers to the proportions of sand, silt and clay.

8 Soil structure refers to the way soil particles are grouped together.

9 Assessment Specifications for this achievement standard can be accessed through the Agricultural and Horticultural Science Resources page found at www.nzqa.govt.nz/ncea/resources.

Quality Assurance

1 Providers and Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against achievement standards.

2 Accredited providers and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Accreditation and Moderation Action Plan (AMAP) reference 0233