Achievement Standard

Subject Reference Science 2.8

Title Describe the chemical properties and effects of fertilisers

Level 2 **Credits** 4 **Assessment** External

Subfield Science

Domain Science – Core

Registration date 20 October 2004 **Date version published** 20 October 2004

This achievement standard involves using chemical principles to describe aspects of the properties and effects of fertilisers.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Describe the properties and effects of fertilisers.	• Explain the effects of fertilisers in terms of their properties.	• Discuss the effects of fertilisers in terms of their properties.

Explanatory Notes

1 This achievement standard is derived from *Science in the New Zealand Curriculum,* Learning Media, Ministry of Education, 1993, Making Sense of the Material World pp. 102-103.
This achievement standard is also related to *Pūtaiao i roto i te Marautanga o Aotearoa,* Learning Media, Ministry of Education, 1996, Ō Kawekawe: Te Kune, pp. 66-67.

2 *Fertilisers* include but are not limited to inorganic: superphosphate, urea, ammonium nitrate, ammonium sulphate, potassium sulphate; and organic: manures, blood and bone.

3 The *properties* of fertilisers will be limited to:
- ionic bonding – in a crystal lattice
- pH – measurement, release of H^+ ions
- solubility – relationship to polarity of water molecule, effect on formulation for application (eg slow release fertilisers)
- melting point and boiling point
- percentage composition
- availability of ions to plants.

4 The *effects* of fertilisers will be limited to the chemistry of the:
- elements in plant growth (N, P, K, S, Mg, Co, Mo, B)
- soil particle charge in holding and releasing ions
- ions in pollution and eutrophication.

5 Terms:
- *Describe* requires the student to give characteristics of, or an account of.
- *Explain* requires the student to provide reasons for how or why.
- *Discuss* requires the student to link scientific ideas to justify, relate, evaluate, compare and contrast, or analyse.

Quality Assurance

1 Providers and Industry Training Organisations must be accredited by the Qualifications Authority 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 0226