**NZQA**

**Approved**

Achievement standard: 90160 Version 5

Standard title: Demonstrate knowledge of the impact on the environment of primary production management practices

Level: 1

Credits: 3

Resource title: Spreading it around

Resource reference: Agricultural and Horticultural Science VP-1.5 v2

Vocational pathway: Primary Industries

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| Date version published | February 2015 Version 2  To support internal assessment from 2015 |
| Quality assurance status | These materials have been quality assured by NZQA.  NZQA Approved number A-A-02-2015-90160-02-7194 |
| Authenticity of evidence | Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material.  Using this assessment resource without modification may mean that learners’ work is not authentic. Assessors/ educators may need to change figures, measurements or data sources or set a different context or topic to be investigated or a different text to read or perform. |

Vocational Pathway Assessment Resource

Achievement standard: 90160

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Learner instructions

# Introduction

This assessment activity requires you to produce three fact sheets and a report explaining the impact of primary production practices on the environment.

You are going to be assessed on how comprehensively you demonstrate knowledge of the impact of three primary management practices on the environment.

The following instructions provide you with a way to structure your work so you can demonstrate what you have learnt and achieve success in this standard.

Assessor/educator note: It is expected that the assessor/educator will read the learner instructions and modify them if necessary to suit their learners.

# Task

Applying fertiliser to land is a way of increasing pasture growth and crop yields, which results in increased financial return from the land. By careful analysis a farmer can identify the unique needs for a paddock and put specific nutrients into the soil in that paddock.

You are a farm cadet who has been asked by your farm manager to write a report, which includes three fact sheets, to explain the impact of applying fertiliser to a paddock on his farm, to help him increase his financial return from this paddock over time.

## Research and develop fact sheets

Primary production management practices can have a positive or negative impact on the environment. Positive management practices include biological control of pests and diseases, crop rotation, treatment and recycling of effluent, and use of compost material.

Negative management practices include indiscriminate/incorrect fertiliser application, over-cultivation, indiscriminate/incorrect chemical spray use, indiscriminate/incorrect disposal of animal manures, and burning off crop stubble.

Select and research three primary production management practices relating to the management of nutrients. For each practice you are to produce a one-page A4 fact sheet that explains their impact on the environment.

Two of the practices selected must impact on the same aspect of the environment (land/soil, water, air, or other living things), so that you can compare and contrast their impact. Make sure at least one of the practices has a positive impact, and at least one has a negative impact. Note that a practice can have both positive and negative impacts. For example, effluent return has a positive impact in that soil fertility is enhanced, but if wrongly applied it can cause water pollution – a negative impact on the environment.

On each fact sheet, describe the management practice and explain how it impacts on your chosen aspect of the environment.

Explain why each management practice is considered to have a positive and/or negative impact on the environment.

Include images and/or diagrams where appropriate.

## Compare two management practices

Choose two of your researched management practices.

Write a report that compares and contrasts the positive and/or negative impacts on the environment of your two chosen management practices.

In your report:

* identify the key points of difference for each management practice and describe how these impact on the environment
* compare the relative effects (both positive and negative) of each management practice on one aspect of the environment.

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Assessor/Educator guidelines

# Introduction

The following guidelines are supplied to enable assessors/educators to carry out valid and consistent assessment using this internal assessment resource.

As with all assessment resources, education providers will need to follow their own quality control processes. Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material. Using this assessment resource without modification may mean that learners' work is not authentic. The assessor/educator may need to change figures, measurements or data sources or set a different context or topic. Assessors/educators need to consider the local context in which learning is taking place and its relevance for learners.

Assessors/educators need to be very familiar with the outcome being assessed by the achievement standard. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing learners against it.

# Context/setting

This activity requires learners to demonstrate comprehensive knowledge of the impact on the environment of primary production management practices, by producing fact sheets for practices relating to the application of fertiliser and the management of nutrients that impact on the environment, then comparing and contrasting two of these practices in a report.

# Conditions

Learners need to work independently to complete this activity and will be assessed individually.

# Resource requirements

Learners should have access to appropriate technology.

# Additional information

<http://www.fertiliser.org.nz> See Code of Practice, Fact Sheets

<http://www.fertqual.co.nz>

# Assessment schedule: Agricultural and Horticultural Science 90160 – Spreading it around

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| Evidence/Judgements for Achievement | Evidence/Judgements for Achievement with Merit | Evidence/Judgements for Achievement with Excellence |
| The learner demonstrates knowledge of the impact on the environment of primary production management practices by:   * describing three primary production management practices and their impacts on an aspect of the environment (at least one positive and at least one negative)   For example:  *Correct level of application of fertiliser: Causes pasture growth with production related benefits.*  *High levels of nutrient (either compost material, effluent or chemical fertiliser) application: Can lead to nutrient leaching which affects the quality of water in waterways.*  *The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates detailed knowledge of the impact on the environment of primary production management practices by:   * describing three primary production management practices and their impacts on an aspect of the environment (at least one positive and at least one negative) * explaining why the impacts are considered to be either positive or negative   For example:  *Correct level of fertiliser: The amount of fertiliser is targeted to each paddock resulting in optimal growth of pasture or crop and no excess runoff. This practice is less likely to damage soil structure.*  *High levels of nutrient application: Causes high levels of toxicity in the land. Liquid application could leave toxic residues in the soil, and may drift onto neighbouring properties, waterways, etc., resulting in them being unfit for use. There is an increase in growth of bacteria in the water as they take up the dissolved oxygen, preventing fish and other living things from absorbing it.*  *The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates comprehensive knowledge of the impact on the environment of primary production management practices by:   * describing three primary production management practices and their impacts on an aspect of the environment (at least one positive and at least one negative) * explaining why the impacts are considered to be either positive or negative * comparing and contrasting two management practices in terms of the positive and negative impacts on a specified part of the environment   For example:  Application of fertiliser vs. using effluent: *Identifying the unique needs of each paddock and applying a fertiliser which is targeted to that paddock is beneficial for the environment. Monitoring soil nutrients, soil organic matter and soil structure will enable fertiliser to be applied to maintain soil fertility. Land uses such as cropping and pasture have different nutrient requirements, which need to be considered when deciding on levels of application to ensure the optimal return.*  *The application of high levels of nutrients from effluent is likely to result in an imbalance of nutrients which could lead to either a drop in some nutrients or increased levels of toxicity in others. This has the potential to affect runoff, waterways and livestock. The increased toxicity could also be harmful for soil structure and biological organisms within the soil.*  *The above expected learner responses are indicative only and relate to just part of what is required.* |

Final grades will be decided using professional judgement based on an examination of the evidence provided against the criteria in the Achievement Standard. Judgements should be holistic, rather than based on a checklist approach.