

91931



Draw a cross through the box (X)
 if you have NOT written in this booklet

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Mana Tohu Mātauranga o Aotearoa
 New Zealand Qualifications Authority

Level 1 Agricultural and Horticultural Science 2025

91931 Demonstrate understanding of
 environmental sustainability in
 primary production management practices

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of environmental sustainability in primary production management practices.	Explain environmental sustainability in primary production management practices.	Evaluate environmental sustainability in primary production management practices.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–15 in the correct order and that none of these pages is blank.

Do not write in the margins (/////////). This area will be cut off when the booklet is marked.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

INSTRUCTIONS

Read ALL parts of the questions before choosing a production system.

Ensure reference to a Māori concept or value related to environmental sustainability is included in your response.

QUESTION ONE: Water quality

“Many of our rivers, lakes, and groundwaters

activities.”

Ministry for the Environment: *Our freshwater 2020*

Name a primary production system.

Primary production system: _____

(a) Complete the table below, describing:

- two ways your named production system has had a **negative** impact on waterways
- how each impact has reduced the overall water quality.

	Negative impact on waterways	How this impact has reduced overall water quality
Impact 1		
Impact 2		

The photos below show a range of management practices that have been used by farmers to improve New Zealand water quality.



Planting poplar poles



Biological control of pests and diseases



Fencing waterways



Planting pine trees

Choose one management practice from the photos above that could be used on your chosen primary production system.

Management practice: _____

- (b) Explain how this practice is carried out, and how it has a positive impact on water quality.

Alternative management practice: _____

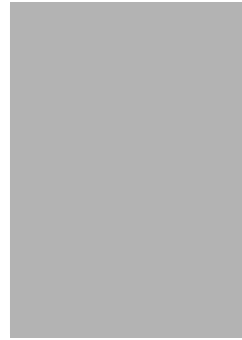
Ensure reference to a Māori concept or value related to environmental sustainability is included in your response.

QUESTION TWO: Inorganic fertiliser

Inorganic fertilisers, such as potash or superphosphate, are used to increase plant growth.



Potash fertiliser



Superphosphate fertiliser

- (a) Describe the negative impact that inorganic fertiliser can have on:

Air

Water

Biodiversity

Soil tests are often carried out before fertiliser is applied.

- (b) How do soil tests allow growers to reduce the potential negative environmental impacts of fertiliser use?

Name an environmentally sustainable alternative to inorganic fertiliser application.

Alternative management practice: _____

- (c) Justify why your chosen method is more environmentally sustainable by comparing it to fertiliser application.

In your answer consider:

- strengths and weaknesses of both methods
- impact on the air, water, or soil quality
- long-term sustainability.

Ensure reference to a Māori concept or value related to environmental sustainability is included in your response.

QUESTION THREE: Cultivation

Cultivation is used to prepare the soil before planting a crop.

(a) How can cultivation have a negative impact on soil?

(b) Explain how cultivating in a sustainable way has a positive impact on soil.

Name one other management practice used to reduce the negative impacts of cultivation.

Management practice: _____

- (c) Comparing your chosen management practice with direct drilling, which method is more effective at ensuring soils remain sustainable?

In your answer consider:

- how each method reduces the negative impacts of cultivation on soil
- short- and long-term sustainability of soils.

**Extra space if required.
Write the question number(s) if applicable.**

QUESTION
NUMBER

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QUESTION
NUMBER

**Extra space if required.
Write the question number(s) if applicable.**

QUESTION
NUMBER

Acknowledgements

Material from the following sources has been adapted for use in this assessment:

Page 3

(polar poles) <https://www.hbrc.govt.nz/our-council/news/article/449/time-to-order-poplar-and-willow-poles-for-soil-conservation>

(caterpillars) <https://trogtrogblog.blogspot.com/2017/06/cinnabar-moth.html>

(fencing) <https://www.horizons.govt.nz/news/funding-still-available-for-fencing-and-planting>

(pine trees) <https://environment.govt.nz/news/new-forestry-rules-increase-council-controls-and-require-large-slash-removal/>

Page 6

(potash) <https://media.generalkinematics.com/wp-content/uploads/2022/05/Potash.jpg>

(tui) <https://tuigarden.co.nz/product/tui-superphosphate/>

