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Level 2 Agricultural and Horticultural Science, 2015

91290 Demonstrate understanding of techniques used to modify physical factors of the environment for NZ plant production

2.00 p.m. Monday 23 November 2015
Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of techniques used to modify physical factors of the environment for commercial plant production in New Zealand.	Demonstrate in-depth understanding of techniques used to modify physical factors of the environment for commercial plant production in New Zealand.	Demonstrate comprehensive understanding of techniques used to modify physical factors of the environment for commercial plant production in New Zealand.

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 2–8 in the correct order and that none of these pages is blank.

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

TOTAL

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QUESTION ONE: DRAINAGE IN PASTURES AND CROPS

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Drainage systems such as mole or open drains are widely used in New Zealand in heavy soils to improve the productivity of pastures and crops.

Open drain

Mole plough

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(a) Describe how the use of drains modifies TWO physical factors of the soil.

(b) Explain how the use of drains leads to an increase in pasture or crop yield.

A farmer decides to install **mole** drains on their property instead of open drains.

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(c) Evaluate the decision to use mole drains over open drains to modify the physical factors of the soil, for improved yields in crop or pasture production.

In your answer, compare the environmental and economic impacts of each technique.

QUESTION TWO: IMPROVING YIELDS IN FRUIT CROPS

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Misting fruiting plants with overhead sprinklers is a management technique that is used on deciduous fruit crops.

(a) Explain how misting with water may modify TWO physical factors of the environment and improve the yield of fruit in commercial fruit production.

There are a range of techniques presently used to protect commercial horticultural crops from frost damage, such as fans, helicopters, misting, frost pots, and frost cloths.

A kiwifruit grower decides to use either misting, or frost pots, in their orchard to protect their crops from frosts, and to improve fruit yield.

(b) Compare and contrast these two techniques for improving fruit yield in commercial kiwifruit production.
In your answer, consider the economic and social impacts of each technique.

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QUESTION THREE: GERMINATING SEEDS

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Seeds require many physical factors to ensure successful germination. Germinating seeds indoors before planting outdoors allows for management of the environment where germination occurs.

(a) Explain how control of TWO physical factors of the germination environment can lead to more uniform size at harvest.

Some plants such as impatiens and lettuces, require light for germination. To ensure an even germination, higher-quality and uniformly sized plants, growers will use artificial light to treat their seeds.

(b) Justify the use of lighting techniques to treat seeds during germination, over untreated seeds, to increase the quality of plant production.

In your answer, consider the economic and environmental impacts of the seed treatment, compared with untreated methods.

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

QUESTION NUMBER

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