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NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

2

SUPERVISOR'S USE ONLY

Level 2 Agricultural and Horticultural Science, 2013

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

2.00 pm Friday 29 November 2013

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

ASSESSOR'S USE ONLY

You are advised to spend 60 minutes answering the questions in this booklet.

QUESTION ONE: OUTDOOR VEGETABLE PRODUCTION

- (a) (i) Describe how plant spacing modifies physical factors of the environment for an outdoor vegetable crop.

- (ii) Explain how plant spacing could affect the yield of an outdoor vegetable crop.

- (b) (i) Describe how the use of irrigation systems for outdoor vegetable production modifies physical factors of the environment.

- (ii) Explain how irrigation improves the growth and quality of outdoor vegetables.

A yellow bag of 'COURA POTATO' potatoes. The bag features a cartoon illustration of a bowl filled with potatoes, with a pyramid in the background. The text 'COURA POTATO' is written in a stylized font. Below the illustration, it says '2kg' and 'MAISON'. To the right of the bag, several whole potatoes are visible.

(c) Justify the use of both controlled irrigation and plant spacing in the production of uniform, small potatoes by explaining why they are likely to provide a greater increase in economic returns if the techniques are used together.

QUESTION TWO: OUTDOOR FRUIT PRODUCTION

Some fruits, such as strawberries, are produced in paddocks, outdoors. To improve outdoor fruit production, growers often use mulch, such as pea straw, and black polythene.

Strawberry mulch



- (a) The soil conditions are improved with the use of mulches. Explain how mulching improves soil conditions, providing higher quality fruit in outdoor fruit production.

(b) Justify the grower's decision to use north-facing land and mulching.

- describe how north-facing land can improve outdoor fruit production
- explain how north-facing land can increase soil temperature and fruit quality
- compare the environmental impacts of planting on north-facing slopes and the use of mulching.

The growth of maize for animal feed is important throughout New Zealand. Maize does not tolerate frost in later growth, and grows best in regions with warm soils and a high number of sunshine hours.

A photograph showing a dense field of corn plants. The plants are tall and green, with long, pointed leaves. They are arranged in neat rows, and the ground between them is dark and appears to be covered in mulch or soil. The lighting is bright, suggesting a sunny day.

(a) Explain how planting the crop later in the year in the South Island may affect the yield of maize produced.

(b) Justify the farmer's decision to use cultivation practices over a no-cultivation programme when producing maize.

- describe how the practice of cultivation improves the production of maize
- explain the advantages of using cultivation for the yield of maize produced
- compare the economic and environmental impacts of these two systems (cultivation versus no-cultivation) with respect to the yield of maize produced.

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

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QUESTION
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