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QUALIFY FOR THE FUTURE WORLD
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Level 1 Agricultural and Horticultural Science 2022

90924 Demonstrate knowledge of horticultural plant management practices and related plant physiology

Credits: Five

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate knowledge of horticultural plant management practices and related plant physiology.	Demonstrate in-depth knowledge of horticultural plant management practices and related plant physiology.	Demonstrate comprehensive knowledge of horticultural plant management practices and related plant physiology.

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 2–12 in the correct order and that none of these pages is blank.

Do not write in any cross-hatched area (▨). This area may be cut off when the booklet is marked.

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

QUESTION ONE: Apple orchards

Apple orchards have irrigation systems.

(a) (i) Describe a suitable irrigation system for an apple orchard.

(ii) Why is water needed for plant growth? Link your answer to plant growing processes.

(b) Orchardists often irrigate trees early morning, or early evening. Explain why they would irrigate during these times.

Orchardists can provide shelter through either a natural or an artificial shelter belt.

Natural shelter belt Artificial shelter belt

(c) Which of the two shelter belts shown above is better in terms of improving a growing environment as well as increasing apple yield? Explain why this type of shelter belt is better than the other.

Chosen shelter belt: _____

QUESTION TWO: Carrots

Plants, including carrots, require a range of nutrients to grow. Nitrogen, phosphorus, and potassium (NPK) are the key nutrients required.

(a) Why is each nutrient required for plant growth?

Nitrogen:

Phosphorus:

Potassium:

(b) With reference to crop yield, why would a carrot grower thin carrots once seedlings have grown 3–5 cm?

To control weeds, growers can manually remove them or spray with a herbicide.

(c) Which of these two weed control methods is the most effective at increasing crop yield? Explain why you have chosen this method by comparing it with the other.

Chosen method: _____

QUESTION THREE: Stone fruit

(a) How do warm temperatures affect plant growth?

Stone fruit trees are pruned.

(b) (i) How is pruning carried out?

(ii) Why is pruning important? How does it increase fruit yield?

Brown rot is a fungal disease that can impact almost-ripe stone fruit. It is spread by wind and rain and enters the fruit through a blemish and develops quickly. It can cause rot within a couple of days, shedding spores while the fruit rots on the tree.

Brown rot

Growers prevent brown rot through pruning in late summer during dry weather and spraying copper fungicide in autumn.

(c) Justify why a grower would use both methods to prevent brown rot.

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

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
Image: (natural shelter belt) https://www.pukeraunursery.co.nz/farm-shelter/
(artificial shelter belt) https://growtechgroup.co.nz/growtech-orchard-projects/vertical-shelter-te-awamutu-project

Page 8
Image: (brown rot) https://www.stuff.co.nz/life-style/home-property/nz-gardener/91790559/qa-how-to-prevent-brown-rot-in-peaches-and-other-stone-fruit