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NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

SUPERVISOR'S USE ONLY

Level 1 Agricultural and Horticultural Science, 2014

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

9.30 am Tuesday 11 November 2014
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 2–8 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

Merit
16

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QUESTION ONE: COUNCIL PARKS AND RESERVES

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Council flower bed



Describe TWO methods of cultivation that would be used in council flower beds.

Two methods of cultivation that would be used in council flower beds are the weeding of unwanted plants and ~~the~~ irrigation/watering of plants. //

Describe THREE actions that are taken when preparing a flower bed for transplanting plants. Explain why each of the actions should be carried out in the way you have described.

Description of the action	Reason for the action
Action (1) Rake soil until, it is a fine crumb, and remove all weeds. //	Transplanted plants will need to re-grow roots, so will need a fine soil to easily grow through, and no competition from existing plants. //
Action (2) Add nutrients to soil to give correct pH level. //	To ensure plants grow healthily with the correct nutrients to thrive. i.e. not enough nitrogen will cause leaves to wilt. //
Action (3) Water soil lightly to moisten. Let water soak into ground and water nutrients in. //	plants can retain water easily and gain strength and support to grow. This is important so the plant can photosynthesise to gain enough energy to grow well and live. //

* can hold its leaves up to the sun to

Weeds can be controlled by chemicals or by using a push hoe.

Select and justify the better management practice for controlling weeds by comparing and contrasting it with the other management practice.

Selected management practice: Using a push hoe. //

In your answer, you could consider:

- damage to non-targeted plants
- effectiveness of control
- members of the public.

Controlling ~~plants~~ ^{weeds} through the use of chemical sprays will effectively remove unwanted plants, but it will also harm / cause damage to non-targeted plants. Spraying is an easy practice to carry out and does not require much skill or knowledge.

However, spray drift is a risk to neighbouring properties and people.

Using a push hoe to control weeds will effectively ~~also~~ eradicate weeds as it removes the entire root and non-targeted plants will not be negatively affected.

However using a push hoe is a long process that requires some skill and knowledge overall to know how to remove weeds and what plants to remove.

The most ~~effective~~ practice to control weeds is by using a push hoe, as even though it takes longer and spraying is much easier and quicker, by using a push hoe it is ~~a~~ environmentally friendly and still effectively removes / controls the weeds //

QUESTION TWO: ROSE GARDENS

Rose gardens are usually planted in beds or groups of plants to look good when they flower.

Rose garden



Rose flower-heads before dead-heading



Before applying pesticides with a knapsack sprayer, reading the product label is an essential step. Describe THREE reasons why instructions on the product label should be read.

Instructions on the product label should be read for safety reasons for the person spraying, knowing how much spray to use and knowing the correct conditions to spray in.

Describe THREE actions a grower would take to reduce fungal disease on roses. Explain the reason for each decision.

Description of the action	Reason for the action
Action (1) Remove affected parts of plant, i.e. dead-heading dead, damaged flower.	By removing the affected parts of the plant it would reduce fungal disease as the affected parts are gone.
Action (2) Remove entire ^{affected} plant and burn it. to completely remove disease from that area.	Removing the entire plant and burning it will completely eradicate the disease in that area.
Action (3) Spray with a <u>herbicide</u> to eradicate disease.	Sprays can be used to reduce diseases, however they would be sprayed directly onto the plant which would not be good for it.

The rose flower-head can be removed once the petals have fallen. This is called "dead-heading". Justify the management practice of removing dead-heads, compared with leaving the dead flower-heads on the plant.

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In your answer, you could consider:

- plant health
- plant energy.

Removing dead heads on a rose plant will benefit the plant overall. This is because the plants energy will not be wasted on restoring new petals on a dead plant and will instead focus its energy on growing new flowers. The health of the plant will also be benefitted by removing dead heads as dead matter can affect the nutrients etc in the plant and cause the entire plant to wilt. By not removing the dead heads on a rose plant, the plants health and energy will be affected badly. The plants health may drop as ~~affected~~ dead material is still attached to it and also the plants energy will be partly lost as focusing on the restoration of old flowers rather than growing new ones. Obviously the best ~~to~~ option is to remove the dead flower heads as it benefits the plant in a healthy way ~~opposed~~ ~~to~~ leaving dead heads on the plant. It does not take a lot of skill to remove dead matter so that aspect is not a problem. //

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QUESTION THREE: KIWIFRUIT ORCHARDS

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Kiwifruit training structures



Shelterbelt for kiwifruit



Explain the reasons why kiwifruit are grown on training structures.

Kiwifruit are grown on training structures to support the vines and hold the fruit up in the air, opposed to it all over the ground. If there were no training structures the vines may not manage to support the weight of the fruit.

Describe THREE actions a grower should carry out when pruning kiwifruit. Explain the reason for each action.

Description of the action	Reason for the action
<p>Action (1) Use clean, sharp secateurs when pruning.</p>	<p>This ensures no disease is given to the plant through unhygienic cuts or dirty blades.</p>
<p>Action (2) Remove dead matter.</p>	<p>Removing dead matter unclogs the space for strong healthy vines to grow and also is good for the plants overall health.</p>
<p>Action (3) Remove useless canes.</p>	<p>Removing off shoots that do not grow very many leaves is important as they take away the plants energy from healthy vines that do produce fruit.</p>

Kiwifruit orchards frequently have shelter around blocks of kiwifruit plants. Justify this as the better management practice for kiwifruit production, by comparing and contrasting it with having no shelter.

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In your answer, you could consider:

- the way in which the environment is altered by a shelterbelt
- the effect on fruit quality.

Having shelter around blocks of kiwifruit plants is important as it influences the plant and fruit growth of the kiwi fruit. Shelter protects the plants from wind, spray drift, too much sun and supplies some shade for workers and plants. Without shelter, plants could be damaged by winds, ~~things~~ such as broken vines, & fruit blown onto ground and ~~sp~~ ^{also} unwanted spray drift and chemicals could easily reach the plants if ~~not prevented~~ ^{there is no shelter}. It is definitely a better management practice to have shelter around kiwifruit orchards than to not. This is because they protect the plants well. A negative part of shelter is it can take a while to ~~establish~~ establish (shelter belt trees) and can be broken in strong weather conditions (artificial shelters). But overall it is important for the plants ~~total~~ health and well being as shelter supplies a protection and barrier for the plants against factors such as strong ~~sp~~ winds that can damage fruit/plant production.

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Merit exemplar for Horticulture 90924 2014		Total score	16
Q	Grade score	Annotation	
1	M6	In order for this student to have moved from M6 to E7, they would have needed to include a clearer description on the effect of weed management practices on the public. The student would need to describe and justify how their statements 'environmentally friendly' and 'spray drift' affect the public.	
2	M5	Although the student showed an understanding, that by removing dead-heads the rose can use its energy for producing more flowers, they did not give an in-depth explanation as to why this is the case. The statement concerning 'restoring' dead heads' is incorrect. The student did not discuss the link between dead heads and their being an entry point for disease and spread of disease. The term 'pesticide or herbicide' is incorrect for the control of disease; instead, the term should be 'fungicide'.	
3	M5	In order for this student to move from Merit to Excellence, they would need to have formed a deeper discussion on how the environment and plant physiology has been altered by the shelterbelt. The student repeats the word 'protects' often, but there is little justification on how shelterbelts affect fruit quality. Spray drift is reduced by the presence of shelterbelts; however, the use of the concepts 'protection of the plants from unwanted chemicals' and 'too much sun' are not the purpose of a shelterbelt.	