

Assessment Schedule – 2014

Agricultural and Horticultural Science: Demonstrate knowledge of horticultural plant management practices and related plant physiology (90924)

Evidence Statement

Question One: Council parks and reserves

Not Achieved		Achievement		Achievement with Merit		Achievement with Excellence	
		Describes horticultural plant management practices and related plant physiology and /or growing conditions.		Links ideas to explain why horticultural plant management practices, or steps within practices, are carried out.		Applies knowledge of horticultural plant management practices to given situations. This may involve comparing and contrasting or justifying management practices.	
N1	N2	A3	A4	M5	M6	E7	E8
Describes ONE idea at Achievement level.	Describes TWO ideas at Achievement level.	Describes THREE ideas at Achievement level.	Describes FOUR ideas at Achievement level.	Explains THREE ideas at Merit level.	Explains FOUR ideas at Merit level.	Justifies the method chosen.	Fully justifies the method chosen by comparing and contrasting.

N0 = No response; no relevant evidence.

Examples of evidence for answers

Describes (Achievement) two methods of cultivation in council flower beds

Cultivation is the breaking up of soil particles. This can be done using a rotary hoe, or digging with a garden fork or spade.

Describes (Achievement) THREE actions taken when preparing a flower bed for transplanting plants / **Explains** (Merit) why each of the actions should be carried out

Description (Achievement)	Explanation (Merit)
Remove weeds.	To reduce competition for light, space, water, and nutrients.
Add fertiliser.	To provide nutrients for the new plants, so that plant processes can occur at an optimum rate for healthy growth.
Cultivate the soil.	To incorporate fertiliser; to loosen the soil for easier planting; to make soil particles smaller for easier root growth and penetration into the soil.
Level and contour the soil.	To keep soil within the boundaries of the bed; to avoid water pooling in the bed and around plants when it rains or is irrigated; to make the bed more appealing visually.
Use string or a spacer.	To get plants evenly spaced, so there are no gaps for weed growth, and for a more even coverage of the soil by the transplanted plants.
Wet the soil/water	So that soil is wet/ has soil water for when plant is put into soil.

Comparison between chemical control and the use of a push hoe – selects and **justifies** (Excellence) the best management practice by comparing and contrasting it with the other management practice

Chemical control	Use of a push hoe
<p><i>Advantages</i></p> <ul style="list-style-type: none"> • Can be done quickly (Achievement), so labour costs are low (Merit). Herbicides may be used which are very safe or selective for certain weeds (Achievement), so they don't affect non-target plants (Merit). • Long-lasting in soil (Achievement), preventing regrowth (Merit). • Kills the weeds quickly and thoroughly (Achievement), preventing regrowth (Merit). 	<p><i>Advantages</i></p> <ul style="list-style-type: none"> • Weeds may be removed immediately (Achievement), avoiding a return visit to remove dried-up weeds (Merit). • No spray drift (Achievement) or potential irritation to members of the public. • Breaks up the soil surface (Achievement), increasing aeration of the soil (Merit).
<p><i>Disadvantages</i></p> <ul style="list-style-type: none"> • Spray drift may affect non-target plants. • Resistance from the public, due to people's fear of chemical sprays when being applied in public places with the applicator wearing safety gear. • Weeds are visible after application, and dead weeds may be unattractive. 	<p><i>Disadvantages</i></p> <ul style="list-style-type: none"> • It is time-consuming, so there is a high labour cost. • Non-target plants may be damaged if weeding occurs around planting. • Don't always get entire plant, so can regrow.

Question Two: Rose garden

Not Achieved		Achievement		Achievement with Merit		Achievement with Excellence	
		Describes horticultural plant management practices and related plant physiology and / or growing conditions.		Links ideas to explain why horticultural plant management practices, or steps within practices, are carried out.		Applies knowledge of horticultural plant management practices to given situations. This may involve comparing and contrasting or justifying management practices.	
N1	N2	A3	A4	M5	M6	E7	E8
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N0 = No response; no relevant evidence.

Examples of evidence for answers

Describes (Achievement) THREE reasons why instructions on pesticide product labels should be read

- So the correct chemical for the pest is being applied.
- So the safety precautions are known, eg wearing gloves.
- So the correct action can be taken if the chemical makes contact with skin or eyes, or is ingested.
- So the correct dilution is known.
- So the correct environmental conditions are known, eg absence of bees, moisture levels of the soil, plant growth rate.

Describes (Achievement) THREE actions a rose grower would take to reduce fungal disease / **Explains** (Merit) the reason for each decision

Description (Achievement)	Explanation (Merit)
Observe the plant for signs of the disease and identify diseases.	So that actions may be taken to control it.
Remove infected plant material.	To reduce a source of the disease.
Spray fungicide.	To control or prevent the disease from getting established.
Avoid watering in the evening.	To reduce the humidity, which suits the growth of fungal diseases.
Remove dead plant material.	To remove plant material which is easily infected.
Remove weeds and ensure plant spacing is adequate.	To reduce humidity.
Planting resistant varieties.	Varieties that are resistant to fungal diseases reduce the occurrence of fungus.

Justifies (Excellence) the management practice of dead-heading, compared with leaving the flowerheads on the plant

Advantages of dead-heading	Disadvantages of dead-heading
<ul style="list-style-type: none"> • Removes decaying plant material (Achievement), which is a potential source of disease (Merit). • Removes a location where insect pests / diseases can live (Achievement), thus breaking the life-cycle (Merit). • Improves the appearance of the plants by removing the dead parts (Achievement). • The plants' energy goes into producing more flowers (Achievement) rather than producing seeds (Merit), resulting in strong, healthy regrowth (Merit). 	<ul style="list-style-type: none"> • It is time-consuming / labour intensive / skills needed. • It must be done frequently, because the flowers die frequently. • Some plants do not flower again, despite dead-heading.

Question Three: Kiwifruit orchards

Not Achieved		Achievement		Achievement with Merit		Achievement with Excellence	
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N0 = No response; no relevant evidence.

Examples of evidence for answers

Describes (Achievement) / **Explains** (Merit) the reasons why kiwifruit are grown on structures

- Kiwifruit vines will naturally climb any vertical object, and so are tied to a structure to keep the plant and fruit within reach, which also helps to support the vine.
- To prevent plant movement (Achievement), so the fruit is not damaged (fruit not bruised, rubbed or falls off).
- The vines are tied to the structure to make the fruit more accessible during harvesting (Achievement).
- So the vines can be thinned at pruning (Achievement) to maximise chemical spray penetration into the plant (Merit).
- Vines can have more access to light for photosynthesis, and it also reduces humidity and therefore fungal build-up (Merit).
- Kiwifruit need high levels of pollination from bees, and mechanically, growing on frames allows easy access (Merit).

Describes (Achievement) THREE actions a grower should carry out when pruning kiwifruit / **Explains** (Merit) the reason for each action

Description (Achievement)	Explanation (Merit)
Remove dead wood.	To remove a possible source of disease infection or a place that insects could inhabit.
Remove diseased wood.	To reduce the likelihood of re-infection.
Use pruning paste on cuts.	To seal the plant against infection.
Sterilise tools.	To reduce the likelihood of passing disease from one plant to the next.
Sharpen tools.	So that cuts leave a clean edge, which is less likely to become infected than a ragged edge.
Remove pruned material.	So diseases that may infect the cut plant material will not provide a source for the plants.
Remove non-fruit-bearing wood and excess wood.	This improves energy going into fruiting wood, and increases light penetration for photosynthesis.
Cut above node	So that die-back doesn't occur.

Justifies (Excellence) the better management practice for kiwifruit production by comparing and contrasting the use of shelterbelts with the option of having no shelter

Use of shelter	No shelter
<p><i>Advantages</i></p> <ul style="list-style-type: none"> • Reduces wind movement of vines and fruit, and so reduces damage to fruit (Achievement); reduces loss of water through transpiration (Merit). • Temperature is higher with the reduction in wind (Achievement), so plant growth is faster and ripening is earlier (Merit). • Cold air associated with frosts can be trapped by shelterbelts (Achievement), which can help with winter chilling of the buds (Merit). • Beneficial insects prefer protected environments (Achievement); this is important for pollination (Merit). 	<p><i>Advantages</i></p> <ul style="list-style-type: none"> • There is no cost to establish or maintain the shelter.
<p><i>Disadvantages</i></p> <ul style="list-style-type: none"> • Shelter can cause shading, which can reduce photosynthesis by the plant. • Blocks are broken up by shelter, so use of machinery such as sprayers occurs in short runs with a lot of turning, which is less efficient. • Late frosts can be trapped by shelterbelts, slowing the growth of fruit (Achievement); frosts can damage new growth and flower buds, so frost protection devices are needed. • Constant maintenance, either by trimming hedges or repairing/replacing damaged material. • Shelterbelts can be a host for pests and diseases that can affect kiwifruit plants and fruit. 	<p><i>Disadvantages</i></p> <ul style="list-style-type: none"> • Wind movement of vines and fruit can cause damage to fruit (Achievement), and increase the rate of transpiration (Merit).

Cut Scores

	Not Achieved	Achievement	Achievement with Merit	Achievement with Excellence
Score range	0 – 7	8 – 13	14 – 18	19 – 24