

Assessment Schedule – 2018

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

Assessment Criteria

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 given method.	Fully justifies the given method by comparing and contrasting.
N0 = No response; no relevant evidence.							

Question One: School horticulture

Examples of evidence for answers	
(a)	<p>Describes (Achievement) / Explains (Merit) the need for a level seed bed and correct seed depth.</p> <ul style="list-style-type: none"> Seeds are all sown at the same depth, meaning they will emerge at the same time (Merit). Seeds will not be buried too deep (Achievement), so they will not run out of energy / food before emerging (Merit). Even emergence (Achievement), so earlier seedlings do not shade later ones (Merit). Uneven seedbed will mean water could pool in some areas (Achievement), this will mean the media will be waterlogged so no oxygen for germination (Merit). If seeds are planted too shallow they may get eaten by birds (Achievement).
(b)	<p>Describes (Achievement) / Explains (Merit) the handling of seedlings by their leaves when pricking out.</p> <ul style="list-style-type: none"> Avoids damage to internal structures / xylem / phloem / stem (Achievement), which would prevent movement of water / glucose / nutrients through the plant (Merit). Leaves can regenerate – there are usually other leaves if some are damaged (Achievement), so the plant will still be able to photosynthesise with the remaining leaves (Merit).

Examples of evidence for answers

- | | |
|-----|---|
| (c) | <p>Describes / Explains / Justifies why the automatic irrigation system is better than applying water manually.</p> <ul style="list-style-type: none">• An automated system means the water is applied at the correct rates at specific times (Achievement).• Irrigation increases soil water available to the plant (Achievement), which is required for plant processes such as photosynthesis / respiration / transpiration (Merit).• Accurate application means that nutrients will be dissolved (Achievement) and readily taken up by the plant, which will improve growth (Merit). Water is required during mineral / nutrient uptake (Achievement), because only dissolved minerals / nutrients can be absorbed by the roots (Merit).• Plants can be irrigated when students are not there, e.g. weekends (Achievement).• Can be done at more plant-friendly times of the day – early morning or late afternoon (Achievement), so that less water is lost through evaporation / evapotranspiration (Merit).• Automated system can be applied to the base of the plant (Achievement), which reduces the chance of water sitting on the leaves and causing fungal disease (Merit). |
|-----|---|

Assessment Criteria

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 given methods.	Fully justifies the given methods.
N0 = No response; no relevant evidence.							

Question Two: Plant processes

Examples of evidence for answers	
(a)	<p>Describes (Achievement) <u>what photosynthesis is.</u></p> <p>The process by which plants make their own food, using CO₂, water, and light:</p> $\begin{array}{c} \text{light} \\ \text{carbon dioxide + water} \rightarrow \text{glucose + oxygen} \\ \text{chlorophyll} \end{array}$ <p><i>Note: Chemical equation is acceptable.</i></p>
(b)	<p>Identifies (Achievement)/Explains (Merit) <u>the role of plant structures in photosynthesis.</u></p> <p>A = leaf – site of photosynthesis, with chlorophyll present to act as a catalyst / large surface area to absorb more light.</p> <p>B = root – holds plant in the ground and absorbs water and nutrients from the soil.</p> <p>C = stoma – lets O₂ and H₂O out, and CO₂ in / site of gas exchange.</p>
(c)	<p>Describes / Explains / Justifies <u>why plants would be both trained along wires and pruned.</u></p> <ul style="list-style-type: none"> Vines are wrapped / twisted lengthways along the wire (Achievement), which allows more exposure to light along the vine (Merit). This increases photosynthesis / glucose production (Merit). Also, this method makes it easier to prune / harvest / spray (Merit), and allows the plant to grow off the ground (Merit), which prevents or reduces pests (Merit). Pruning is the removal of leaves / branches / dead or diseased part of the plant (Achievement) to increase air and / or light into the vine (Merit), which improves airflow (Merit) and reduces humidity (Merit) through transpiration (Merit) and increases light to increase photosynthesis (Merit).

Assessment Criteria

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 plan.	Fully justifies the plan.
N0 = No response; no relevant evidence.							

Question Three: Growing tomatoes

Examples of evidence for answers	
(a)	<p>Describes (Achievement) / Explains (Merit) how to remove weeds, and how this helps to maintain healthy plant growth.</p> <ul style="list-style-type: none"> • Weeds can be removed by hand/pulling them out, or by spraying with herbicide (Achievement). • Weeds grow fast, blocking light to the plant (Achievement) and reducing the plant's ability to photosynthesise (Merit). • Weeds compete for nutrients / water / light / growing space (Achievement), and so growth/plant processes are slowed, as chemical processes do not occur as quickly (Merit). • Weeds can create a more humid environment/harbour pests (Achievement) conducive to disease development (Merit), which reduces the photosynthetic area of the leaves (Merit).
(b)	<p>Describes (Achievement) how disbudding is carried out on tomatoes / Explains (Merit) how this affects plant growth and crop yield.</p> <ul style="list-style-type: none"> • Disbudding is picking off /cutting off the new bud shoots/growths (Achievement), so that the plant puts more energy into its fruit-producing parts (Merit), which increases fruit/crop yield (Merit). • Disbudding also reduces leaf growth (Merit), as excess leaves can shade lower fruit and delay ripening (Merit).

Examples of evidence for answers

(c) **Describes / Explains / Justifies** an appropriate plan to reduce pests and disease in tomato plants.

The plan should include a range of integrated pest management (IPM) practices. A justification will cover physical, chemical, and biological practices, and explain how they work together.

Description (Achievement)	Explanation (Merit)
Monitor pest levels.	So that when a threshold level is passed, the best control method can be implemented.
Release predatory insects as a biological control.	To control the pest.
Use selective chemical insecticides.	To target the pests with little impact on other organisms.
Use resistant/tolerant cultivars.	So the pests will not impact on the crop, or the impact is reduced.
Remove weed plants that may host the pests.	So that pest population numbers are reduced around the cultivated plant.
Use insect pheromone baits around the cultivated plants.	To confuse the male insects as to the location of the female insects, disrupting mating.

Cut Scores

Not Achieved	Achievement	Achievement with Merit	Achievement with Excellence
0 – 6	7 – 12	13 – 18	19 – 24