

M1. (a) to kill virus
or
to prevent virus spreading 1

(b) take (stem) cells from meristem
or
tissue culture
allow take cuttings 1

(c) use Benedict's solution 1

glucoses turns solution blue to orange 1

(d) **Level 2 (3–4 marks):**
A detailed and coherent explanation is provided. The student makes logical links between clearly identified, relevant points that explain why plants with TMV have stunted growth.

Level 1 (1–2 marks):
Simple statements are made, but not precisely. The logic is unclear.

0 marks:
No relevant content.

Indicative content

- less photosynthesis because of lack of chlorophyll
- therefore less glucose made
so
- less energy released for growth
- because glucose is needed for respiration
and / or
- therefore less amino acids / proteins / cellulose for growth
- because glucose is needed for making amino acids / proteins / cellulose

4

[8]

- M2.** (a) *idea:*
wood goodness recycled/crops goodness removed
gains 1 mark 1
- but**
wood minerals/nutrients recycled/crops remove nutrients/minerals
gains 2 marks
- wood and crops compared
for 1 mark 2
- (b) (add) fertiliser/nutrients/minerals
(add) manure/animal waste/compost
any two for 1 mark each
- (accept move to new area for 1 mark)
rotation
max marks 2 2

[5]

M3. use less nitrate / fertiliser
accept use none
use a different fertiliser is neutral
prevent nitrate fertiliser run off is neutral

1

any **two** from:

explanation that with less or none the crops still grow

make more land available to grow more crops

monitoring of water

legislation

organic farming / manure

genetically modified crops

give babies bottled water

2

[3]

M4. (a) less carbon dioxide used
or higher carbon dioxide (concentration) in jar
*do **not** allow no carbon dioxide used or no change in carbon dioxide*

1

because less photosynthesis **or** light was a limiting factor
*do **not** allow no photosynthesis*

1

(b) magnesium / Mg
*do **not** allow manganese / Mn*
allow iron / Fe
ignore nitrates

1

[3]

- M5.** (a) **A** 1
- (b) **D** 1
- (c) use the same type of plant
or
give equal amount of water to each plant
ignore size of pot 1
- (d) (advantage) more minerals 1
- (disadvantage) cost / not free 1
- [5]**