

GCSE Combined Science: Trilogy

Worksheet: Fungal diseases

TIME 30 min	TOTAL 28 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Fungal diseases

NAME	CLASS	DATE
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- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Answer all questions in the spaces provided.
- In all calculations, show clearly how you work out your answer.
- The marks for questions are shown in brackets.

0 1

Rose black spot is a disease of rose plants caused by a fungus.

0 1 . 1

Describe how the leaves of a rose plant change when the plant is infected with black spot.

[2 marks]

0 1 . 2

How is rose black spot spread?

Tick (✓) **one** box.

By insects that feed on the roots

☐

By water or wind

☐

By birds that eat the flowers

☐

By roots growing into infected soil

☐

[1 mark]

0 1 . 3

Give **one** way of treating rose black spot.

.....

.....

[1 mark]

0 2

Rose black spot is a disease of rose plants.

0 2 . 1

What type of pathogen causes rose black spot?

Tick (✓) **one** box.

Bacterium

☐

Fungus

☐

Protist

☐

Virus

☐

[1 mark]

0 2 . 2

Describe what the leaves of a rose plant with black spot look like.

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.....

[2 marks]

0 2 . 3

Give **one** way that rose black spot is spread.

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[1 mark]

0 2 . 4

Give **two** ways that a gardener could treat rose black spot.

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.....

[2 marks]

0 3

Table 1 shows the mean monthly rainfall and the percentage of rose leaves with black spot in a garden over six months.

Table 1

Month	Mean rainfall in mm	Percentage of leaves with black spot
April	40	5
May	55	12
June	70	22
July	85	35
August	60	24
September	45	14

0 3 . 1

Describe the relationship between rainfall and the percentage of leaves with black spot shown in Table 1.

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[2 marks]

0 3 . 2

Calculate the percentage increase in the percentage of leaves with black spot from April to July.

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.....

Percentage increase = %

[2 marks]

0 3 . 3

Explain why more rainfall increases the spread of black spot.

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[2 marks]

0 4

Ash dieback is a fungal disease of ash trees. It is spread mainly by fungal spores carried in the wind, and also on young infected trees moved from tree nurseries. The fungus also grows on fallen ash leaves, where it produces more spores. Infected trees develop dark patches on their bark and lose leaves, and often die within a few years.

0 4 . 1

Suggest **two** ways the spread of ash dieback between different woodlands could be reduced.

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[2 marks]

0 4 . 2

Explain why ash dieback is difficult to control once it has spread to an area.

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[2 marks]

0 4 . 3

Explain why trees with ash dieback often die within a few years.

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[2 marks]

0 5

A gardener noticed black spot on some rose bushes. Many of the leaves turned yellow and fell off early.

0 5 . 1

Explain why rose bushes with black spot grow less than healthy rose bushes.

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[3 marks]

0 5 . 2

The gardener collected the fallen leaves from the ground and burned them.
Explain why this helps to stop black spot spreading.

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[2 marks]

0 5 . 3

Suggest why black spot spreads more quickly in wet weather.

.....

.....

[1 mark]

END OF QUESTIONS

Original practice questions written to match the specification. Not produced by, affiliated with or endorsed by AQA.

Mark scheme

GCSE Combined Science: Trilogy · Worksheet: Fungal diseases · 28 marks

Question 1 (4 marks)

01.1 [2 marks]

- purple or black spots develop on the leaves (1)
 - the leaves (often) turn yellow and drop off early (1)
-

01.2 [1 mark]

Correct: By water or wind

01.3 [1 mark]

- spray the plant with a fungicide (1)
- remove and destroy the affected leaves (1)

Any 1 of the points above.

Question 2 (6 marks)

02.1 [1 mark]

Correct: Fungus

02.2 [2 marks]

- purple / black spots on the leaves (1)
 - leaves turn yellow (and drop off early) (1)
-

02.3 [1 mark]

Answer: By water or wind.

- (by) water / rain (1)
- (by) wind (1)

Any 1 of the points above.

02.4 [2 marks]

- spray with a fungicide (1)
 - remove and destroy the affected leaves (1)
-

Question 3 (6 marks)

03.1 [2 marks]

- as rainfall increases, the percentage of leaves with black spot increases / positive correlation (1)
- the highest rainfall (85 mm in July) matches the highest percentage of leaves with black spot (35%) (1)
- the pattern is not exact, e.g. August had less rain than June but more leaves with black spot (1)

Any 2 of the points above.

03.2 [2 marks]

Answer: 600%

- $(35 - 5) \div 5 \times 100$ (1)
 - 600 (%) (1)
-

03.3 [2 marks]

- black spot spores are spread by water, e.g. rain splashes spores from infected leaves onto other leaves (1)
- so more rain spreads spores to more leaves (1)
- wet leaf surfaces allow spores to germinate and infect the leaf more easily (1)

Any 2 of the points above.

Question 4 (6 marks)

04.1 [2 marks]

- do not move young ash trees from nurseries or from areas where the disease has been found (1)
- fell and destroy infected trees before spores can spread further (1)
- collect and destroy fallen ash leaves (1)
- plant a mixture of tree species / plant ash trees that are resistant to the disease (1)

Any 2 of the points above.

04.2 [2 marks]

- spores are carried long distances by the wind, so they reach new trees over a wide area (1)
- the fungus produces more spores on fallen leaves, so there is a continuing source of infection that is hard to remove (1)

04.3 [2 marks]

- infected trees lose leaves, so less photosynthesis takes place (1)
- so less glucose is made for respiration and growth / the tree cannot make enough food to survive (1)

Notes: Allow the fungus damages the bark / the tissues that transport water and sugars, so the tree cannot transport enough water or food.

Question 5 (6 marks)

05.1 [3 marks]

- fewer leaves / less green leaf area / less chlorophyll (1)
- (so) less photosynthesis (1)
- (so) less glucose for respiration / for making new cells / for growth (1)

05.2 [2 marks]

- the fallen leaves contain the fungus / spores (1)
- burning destroys the fungus, so it cannot be spread (by wind or water) to healthy leaves / plants (1)

05.3 [1 mark]

- the fungus / spores are spread by water, e.g. rain splashes spores onto other leaves (1)
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