Your notes

GCSE Biology: revision notes

Plant diseases and defences

Contents

1. Signs of plant disease
2. Plant pathogens and pests
3. Mineral ion deficiencies
4. Physical defences
5. Chemical and mechanical defences
6. Key terms
7. Quick questions
8. What to do next

Signs of plant disease

- Signs include stunted growth, spots on leaves, areas of decay (rot), growths, malformed stems or leaves, discolouration and the presence of pests.
- Diseases can be identified using a gardening manual or website, by sending plants to a laboratory, or with testing kits that use monoclonal antibodies.

Plant pathogens and pests

- Plants can be infected by viruses (such as tobacco mosaic virus), bacteria and fungi (such as rose black spot).
- Insects such as **aphids** are pests: they feed on sap from the phloem and can spread pathogens.

Mineral ion deficiencies

- **Nitrate ions** are needed to make proteins. A lack of nitrate causes stunted growth.
- **Magnesium ions** are needed to make chlorophyll. A lack of magnesium causes **chlorosis**: yellow leaves, which reduces photosynthesis.

Physical defences

- Cellulose cell walls are tough and hard for pathogens to break through.
- A tough waxy cuticle on leaves stops pathogens getting in.
- Layers of dead cells on the surface, such as bark, fall off and take pathogens with them.

Chemical and mechanical defences

- Chemical: antibacterial chemicals, for example in mint and witch hazel, and poisons that deter herbivores, for example in foxgloves and tobacco.
- Mechanical: thorns and hairs deter animals; leaves that droop or curl when touched; **mimicry** that tricks animals, for example looking as if eggs have already been laid.

Key terms

Chlorosis	Yellowing of leaves caused by a lack of chlorophyll, often due to magnesium deficiency.
Nitrate ions	Mineral ions needed by plants to make proteins for growth.
Magnesium ions	Mineral ions needed by plants to make chlorophyll.
Aphid	A sap-sucking insect pest that feeds from the phloem.
Physical defence	A structural barrier that stops pathogens entering, such as a waxy cuticle or bark.
Chemical defence	A chemical made by a plant to kill pathogens or deter animals.
Mechanical defence	A feature, such as thorns or hairs, that deters animals from eating a plant.
Mimicry	Looking like something else in order to trick animals.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What causes stunted growth in plants?
2. What causes chlorosis?
3. Why does chlorosis reduce plant growth?
4. Which of these is a physical plant defence?
5. What are thorns an example of?
6. Which plant makes antibacterial chemicals?
7. How can bark protect a tree from pathogens?
8. Which pest feeds on sap from the phloem?

Answers

1. A lack of nitrate ions
2. A lack of magnesium ions
3. Less chlorophyll means less photosynthesis
4. A waxy cuticle
5. A mechanical defence
6. Mint

Your notes

7. Dead cells on the surface fall off, taking pathogens with them
8. Aphids

What to do next

Practise 10 questions on this topic

Try 7 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

Your notes