

# 3.3.1 Detection and identification of plant diseases

## AQA GCSE Biology (Higher) Question and answer notes

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### How to use these notes

These notes cover everything you need to know for this part of the specification. They have been written in question-answer format to make them easier for you to study from.

In order to study successfully, I recommend you do the following for each question and answer:

- Read it carefully and make sure you **understand** it.
- **Memorise** the answer.
- **Practice** applying your understanding to past exam questions.

A good way to memorise information is to use **retrieval practice**. This is when you practise retrieving information from your memory. You could do this by making a flashcard for each question with the question on one side and the answer on the other. Or you could use a flashcard app. Alternatively, use a sheet of paper to cover up the answer so you can only see the question. Try to answer the question and then check how you did.

You should practise retrieving each answer from your memory until you can do it perfectly. Even once you can retrieve the answer perfectly, your ability to retrieve it will probably fade as time passes without practising. Therefore you will need to keep going back to the questions that you have previously mastered and practising them again. However, each time you re-learn the answer, the memory will be stronger and will last longer than the time before.

### What kinds of infections can plants get?

Plants can be infected with:

- Viral pathogens
- Bacterial pathogens
- Fungal pathogens
- Insects

**What is an example of a viral disease of plants?**

Tobacco mosaic virus is an example of a viral disease of plants.

**What is an example of a fungal disease of plants?**

Black spot is an example of a fungal disease of plants.

**What is an example of an insect pest of plants?**

Aphids are an example of an insect pest of plants.

**Besides infections, what is another common type of disease in plants?**

Ion deficiency conditions are a common type of disease in plants. An ion deficiency condition is when a plant does not get enough of a particular ion.

**What are two common ion deficiency diseases in plants, and what are the signs of each one?**

Two common ion deficiency diseases in plants are:

- Nitrate deficiency, which causes stunted growth
- Magnesium deficiency, which causes chlorosis (yellowing of the leaves)

**Why does nitrate deficiency cause stunted growth?**

Plants need nitrate ions for protein synthesis. If a plant does not have enough nitrate ions, this limits the amount of proteins it can make, which limits the amount that it can grow.

**Why does magnesium deficiency cause chlorosis?**

Plants need magnesium ions in order to make chlorophyll, which is a green pigment used in photosynthesis. If a plant does not have enough magnesium ions, it cannot make enough chlorophyll. Without the green pigment chlorophyll present, the leaves are yellow in colour.

**What are the common signs of disease in plants?**

The common signs of disease in plants are:

- Stunted growth
- Spots on leaves
- Areas of decay (called 'rot')
- Growths
- Malformed stems or leaves
- Discolouration
- The presence of pests

**What methods can be used to find out which specific disease(s) a plant has?**

The following methods can be used to find out which specific disease(s) a plant has:

- Looking up the signs of the disease in a gardening manual or online
- Taking infected plants to a laboratory to identify the pathogen
- Using test kits containing monoclonal antibodies to test for specific diseases