

10.1 Using Chemicals to Save Plants

- a) The **yield of healthy crops** can be reduced in the following ways:
- crops are eaten by **pests** like insects and slugs
 - **bacteria** and **fungi** can cause plants to become diseased
 - **weeds** can inhibit growth of plants by using up essential substances in the soil. This stops crops from growing as well as they can.
- b) Crops can be treated with chemicals to improve the yield produced:
- **Pesticides** are used to control/kill pests like insects and slugs
 - **Fungicides** prevent diseases in plants
 - **Herbicides** kill weeds.
- c) Pesticides are **toxic** and so must be used with care.
- vegetables and fruit should be washed before being eaten
- d) **Natural predators** can also be used to safely control pests. This means less chemicals need to be used to grow crops.
- greenfly are eaten by ladybirds
 - slugs are eaten by hedgehogs



10.2 Fertilisers

a) **Essential elements** for healthy plant growth are:

nitrogen	phosphorus	potassium
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b) Plants **absorb** the elements Nitrogen, Phosphorus and Potassium

- taken in through the roots
- soluble compounds of these elements in fertilisers (not free elements)

c) In areas of natural vegetation, **decay** of vegetable and animal remains returns all essential elements to the soil.

- in woodlands leaves fall to ground and return essential elements back to soil.
- harvesting of crops for food prevents the natural return of essential elements to the soil.

d) **Fertilisers** are added to the soil to restore essential elements.

- fertilisers must contain nitrogen, phosphorus or potassium

e) Examples of **natural fertilisers** are:

compost	manure	dung	slurry
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f) Use of **artificial fertilisers** has increased because there is

- increased demand for food
- more people to feed on the planet
- not enough natural fertiliser available to restore essential elements in soil.

g) Artificial fertilisers are **made by the chemical industry**

- The major artificial fertilisers are compounds with ammonium, potassium, nitrate or phosphate in their name.
- fertilisers must be soluble in water to be effective

h) The extensive use of **nitrate fertilisers** may have increased the levels of nitrate in rivers, lochs and the public water supply

- the presence of large quantities of nitrates can leave the water lifeless.

- i) Some plants such as clover, beans and peas have **root nodules** where nitrogen from air is converted into nitrate compounds and absorbed.

