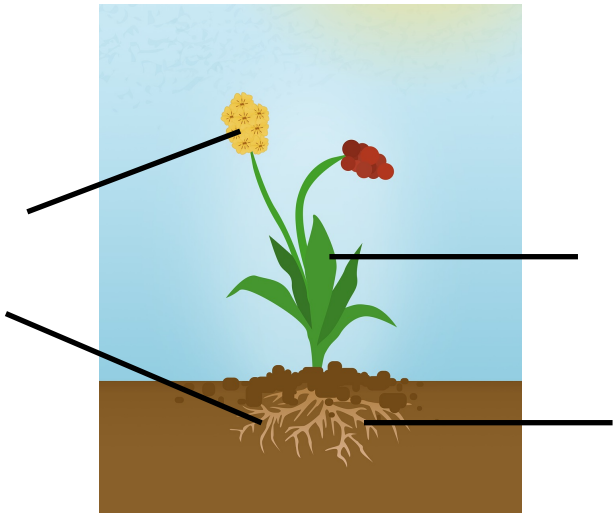
National 5: Fertilisers



Fertilisers are substances that restore the elements needed for healthy plant growth to the soil.

Fertilisers must:

-
-

?

Which of these chemicals could be used as a fertiliser?

A) sodium nitrate
B) Ammonium phosphate
C) Calcium chloride
D) Potassium phosphate
E) Ammonium carbonate
F) Barium phosphate

Percentage by mass calculations can be carried out to find out the percentage of essential elements in fertilisers.

% by mass =

E.g. Calculate the percentage by mass of potassium and nitrogen in potassium nitrate (KNO_3)

?

Calculate the percentage by mass of:

A) phosphorus in sodium phosphate (Na_3PO_4)

B) nitrogen in ammonium chloride (NH_4Cl)

C) nitrogen in ammonium nitrate (NH_4NO_3)

Ammonia is important in producing salts that can be used for fertilisers.

Ammonia, _____, is a clear, colourless, pungent gas that is soluble in water.

When ammonia solutions react with acids they form ammonium salts (_____).

E.g.

_____ + _____ —> _____

_____ + _____ −> _____

Ammonia is produced in the Haber process.

Nitrogen + hydrogen _____ ammonia

_____ + _____ ⇌ _____

This is a reversible reaction, the products are converted into reactants as they are made. To ensure that ammonia is produced in an economical way certain conditions must be chosen:

- _____
- _____

The Ostwald process uses _____ to produce _____ _____, another essential compound in fertiliser production.

The process uses oxygen and water with a platinum catalyst. The reaction is exothermic and once started produces enough heat to continue the reaction.