

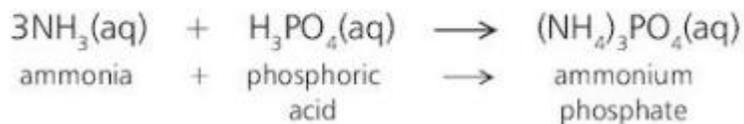
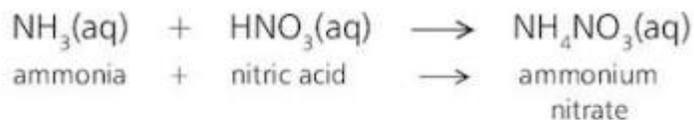
Fertilizers

Fertilizers: Fertilizers are chemical compounds which are essential for plant growth and crop yield. The main plant nutrients are nitrogen, phosphorus and potassium.

Nitrogen makes protein and produce healthy leaves.

Phosphorous produce healthy roots.

Potassium produce healthy flowers and fruits.



STUDY TIP

When you write equations for the formation of ammonium salts remember that no water is formed as a product. For example:
ammonia + sulfuric acid
→ ammonium sulfate.

NPK fertilizers: (Contain a mixture of nitrogen, phosphorous and potassium compounds) .Plants can only take in nutrients in the form of soluble compound.

Practice questions from past papers:

Fertilisers are used to provide three of the elements needed for plant growth.

Which two compounds would give a fertiliser containing all three of these elements?

- A** $\text{Ca}(\text{NO}_3)_2$ and $(\text{NH}_4)_2\text{SO}_4$

B $\text{Ca}(\text{NO}_3)_2$ and $(\text{NH}_4)_3\text{PO}_4$

C KNO_3 and $(\text{NH}_4)_2\text{SO}_4$

D KNO_3 and $(\text{NH}_4)_3\text{PO}_4$

Answer: D

- Which element is **not** added to a fertiliser?

- A** aluminium
- B** nitrogen
- C** phosphorus
- D** potassium

Answer: A

- A bag of fertiliser 'Watch it grow' contains ammonium sulfate and potassium sulfate.

Which of the three elements N, P and K does 'Watch it grow' contain?

	N	P	K
A	✓	✓	x
B	✓	x	✓
C	x	✓	x
D	x	x	✓

Answer: B

Fertilisers are used to promote plant growth.

Two fertilisers are ammonium phosphate, $(\text{NH}_4)_3\text{PO}_4$, and calcium dihydrogenphosphate, $\text{Ca}(\text{H}_2\text{PO}_4)_2$.

(a) Describe a test to distinguish between these two fertilisers.

test add sodium hydroxide and warm / Flame test / Add sodium hydroxide

[2]

result only ammonium phosphate gives off ammonia / Ca^{2+} orange red and NH_4^+ No colour /

Ca²⁺ white precipitate
NH₄⁺ dissolves [1]