10.2 Fertilisers

Name: _____ Class: _____ Date: _____ **Total: 12 marks**

KEY WORDS potassium • phosphorus • fertilisers • nitrogen • deoxygenation

Objective

Build the skills to answer exam questions on **fertilisers** – what they do and the three key elements (**NPK**).

You must be able to:

- state what fertilisers are used for
- name the three elements in NPK fertilisers
- recognise common fertilisers (ammonium salts, nitrates)

1 Key knowledge and worked examples

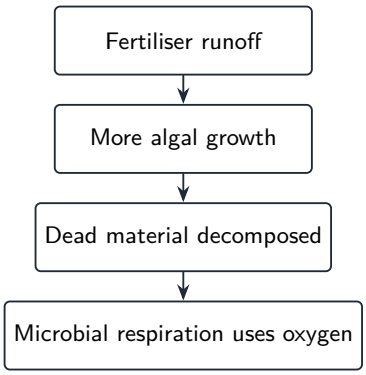
■ NPK fertilisers

Fertilisers supply mineral nutrients; runoff can carry excess nutrients into water.

- **fertilisers** help plants grow; common ones are ammonium salts and nitrates.
- **NPK** supplies **N**itrogen, **P**hosphorus and **K** (potassium).

■ Worked application: Read fertiliser elements from their formula

Ammonium nitrate, NH_4NO_3, supplies nitrogen because its formula contains N. Potassium phosphate supplies potassium and phosphorus; the letters in NPK refer to elements, not three compulsory compounds in every product. Fertilisers replace mineral nutrients that plants need; they do not provide the energy for photosynthesis. Excess nitrate washed into water can promote algal growth. When that material dies, decomposition by microorganisms uses dissolved oxygen, which can harm aquatic animals. The oxygen fall follows decomposition, rather than nitrates directly consuming oxygen.



2 Practice

2.1 State what fertilisers are used for. [1]

2.2 Name the three elements in an NPK fertiliser. [3]

3 Exam-style questions

3.1 The letter N in NPK fertiliser stands for: [1]

- ☐ **A** sodium
- **B** nickel
- **C** nitrogen
- **D** neon

3.2 Ammonium nitrate is used as a fertiliser.

(a) Name the element it supplies that promotes leaf growth. [1]

(b) Explain one problem caused if too much fertiliser washes into rivers. [2]

3.3 An NPK fertiliser supplies nitrogen, phosphorus and potassium. Explain why ammonium nitrate supplies only one of those NPK elements. Give a three-step explanation of how excess fertiliser runoff can reduce dissolved oxygen in a lake. [4]

Solutions

Each answer shows the steps, then the **result**.

2.1

- fertilisers **help plants grow** by replacing nutrients in the soil

2.2

- **nitrogen**, **phosphorus** and **potassium**

3.1 C

- N stands for **nitrogen**
- A, B and D are different elements

3.2

(a)

- **nitrogen** promotes leaf growth

(b)

- extra nitrates cause **deoxygenation** of the water
- which **harms aquatic life**

3.3

Its formula contains N but no P or K; nutrients promote algal growth; algae or other increased plant material dies and is decomposed by microorganisms; their respiration uses dissolved oxygen.