

Key Area 5 Food Production

Increasing human population requires an **increased food yield**.

This can involve the use of:

Fertilisers

Pesticides

Fertilisers provide chemicals such as **Nitrates** which **increase crop yield**.

Plants and animals which reduce crop yield can be **killed by pesticides**.

Nitrates

Nitrates dissolved in soil water are **absorbed into plants**. They are then **used to produce amino acids** which are **synthesised into plant proteins**.

Animals consume plants or other animals to obtain amino acids for protein synthesis.

Fertilisers can be added to soil to **increase the nitrate content** of the soil.

Problems with fertiliser use

Fertilisers can **leach into fresh water**, adding extra **unwanted nitrates**.

This will **increase algal populations** which can cause **algal blooms**.

Algal blooms **reduce light** level, meaning that other plants cannot photosynthesise and this leads to the death of other aquatic plants.

Dead plants and **dead algae**, become **food for bacteria** which **increase** greatly in **number**.

The **bacteria use up** large quantities of **oxygen**, reducing oxygen availability for other organisms.

Other organisms die.

Example:

1. Chemicals leach into water
2. Fish die
3. Overuse of fertilisers
4. Oxygen levels decrease
5. Algal bloom develops

In this example, the correct order is:

3, 1, 5, 4, 2

Place a statement number in each box to complete the sequence of events.



Alternative to using Fertilisers

Genetically Modified (GM) crops can be used as an alternative to using fertilisers. Crops can be genetically modified to increase yield, provide disease-resistant crops or increased vigour (healthy)

Problems with Pesticide use

Pesticides sprayed onto crops can **ACCUMULATE** in the bodies of organisms over time. This is known as **BIOACCUMULATION**.

As they are passed along food chains, **TOXICITY INCREASES** and can reach lethal levels.

Alternatives to using Pesticides

Biological control of pesticides can be used as an alternative to pesticides. This involves introducing a **natural predator or parasite** of the pest to reduce their numbers so that less damage is caused to crops.