

Key Area 3—Crop Protection

Weeds compete with crop plants, while other **pests** and diseases **damage** crop plants, all of which reduce the crop yield or productivity.

Weeds

Weeds compete with crop plants for resources such as light, nutrients, water and space and by doing so reduce the growth of the crop and thus productivity.

Type of Weed	Properties
Annual	Rapid growth, short lifecycle, high seed output and long term seed viability
Perennial	Storage organs and vegetative (asexual) reproduction.

Pests

Most of the pests of crop plants are invertebrate animals such as **insects**, **nematode worms** and **molluscs**.

Diseases

Plant disease can be caused by fungi, bacteria or viruses, which are often carried by invertebrates.

Crop Protection

Cultural methods can be used to control weeds, other pests and diseases eg.

- Ploughing
- Weeding
- Crop Protection

Using pesticides

Pesticides can be used to control weeds, pests and diseases.

- **Herbicides** are used to control **weeds**.
- **Fungicides** to control **fungal** diseases.
- **Insecticides** to kill pest **insects**.
- **Molluscicide** to kill mollusc **pests**.
- **Nematicides** to kill nematode **pests**.

Pesticides can be selective or systemic.

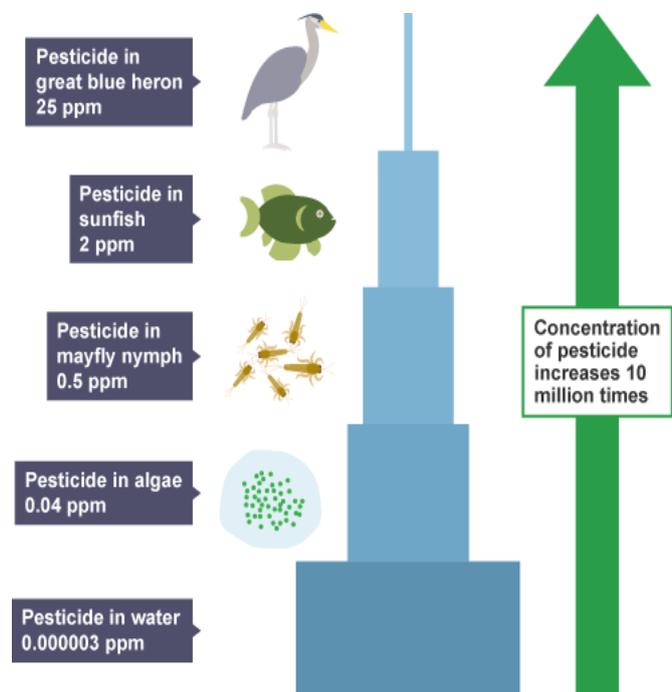
- **Selective** herbicides have a greater effect on **certain** plant species.
- **Systemic** herbicides **spreads through the vascular system** of the plant and **prevents regrowth**.
- **Systemic** insecticides, molluscicides and nematicides **spread through the vascular system of plants and kill the pests feeding on the plants**.

Problems with pesticides

- **Toxicity** to non target species.
- They **persist** in the environments ie once they have got into the environment they do not degrade.
- **Bioaccumulation** is the build up of a chemical in an organism (usually from eating prey that contain the chemical).

If an area is polluted with a chemical eg. a pesticide then the concentration of the pesticide will increase as you move up the food chain as more of the chemical is being ingested.

This is called **biomagnification**.



Biological Control

An **alternative** to pesticides where the control agent is a **natural predator**, parasite or pathogen of the pest. When using this method care must be taken to ensure that the control organisms does not become an **invasive species**.

Integrated Pest Management

Where the pest is managed by a **combination** of biological, chemical and cultural control.