

CHEMICALS IN AGRICULTURE

Pesticides

Pesticides are substances that are meant to control pests , including weeds. Pesticides include insecticides, herbicides, rodenticides etc.

Insecticides

Insecticides are substances used to kill insects.

Ex- Aldrin, DDT, Dieldrin etc.

Herbicides

A herbicide is a pesticide used to kill unwanted plants.

Ex- diclofop, dinoseb, diquat, and paraquat

Fungicides

Fungicides are pesticides that kill or prevent the growth of fungi and their spores. They can be used to control fungi that damage plants, including rusts, mildews and blights.

Ex- captan, sulfur and mancozeb.

Bio-fertilizers:

Biofertilizers are substances that contain microorganisms, which when added to the soil increase its fertility and promotes plant growth. It includes Rhizobium, Azotobacter, Azospirillum, mycorrhizal fungi, blue-green algae, and bacteria.

Types of Biofertilizers

Following are the important types of biofertilizers:

1. Symbiotic Nitrogen Fixing Bacteria

Rhizobium is one of the vital symbiotic nitrogen-fixing bacteria. Here bacteria seek shelter and obtain food from plants. In return, they help by providing fixed nitrogen to the plants.

2. Loose Association of Nitrogen-Fixing Bacteria

Azospirillum is a nitrogen-fixing bacteria that live around the roots of higher plants but do not develop an intimate relationship with plants. It is often termed as rhizosphere association.

3. Symbiotic Nitrogen-Fixing Cyanobacteria

Blue-Green algae or Cyanobacteria form the symbiotic association with several plants. It is responsible for nitrogen fixation.

4. Free-Living Nitrogen-Fixing Bacteria

They are free-living soil bacteria which perform nitrogen fixation. They are saprotrophic anaerobes such as Clostridium, Beijerinckii, Azotobacter, and Bacillus polymyxin.

Among all the types of biofertilizers, Rhizobium and Azospirillum are most widely used.

Uses of Biofertilizers:

- Biofertilizers improve soil texture and yield of plants.
- They do not allow pathogens to flourish.
- They are eco-friendly and cost-effective.
- Biofertilizers protect the environment from pollutants since they are natural fertilizers.
- They destroy many harmful substances present in the soil that can cause plant diseases.
- Biofertilizers are proved to be effective even under semi-arid conditions.