

Crop Production and Microorganisms

Cultivation

Cultivation is the act of raising plants.



Land preparation and cultivation methodology is among the basic factors which affect the yield of crops. For getting better yield, it is important to prepare land thoroughly, so that the weeds are destroyed and water absorption capacity of the soil is increased.

Crops

When the same kind of plants are grown in the fields on a large scale to obtain foods like cereals, pulses, vegetables and fruits, etc., it is called a crop.

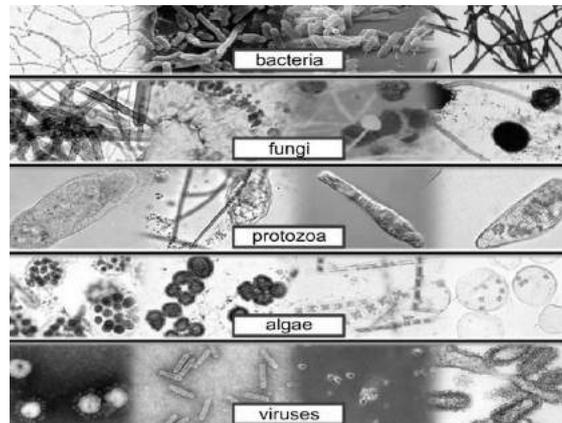
Agriculture

The growing of plants (or crops) in the fields for obtaining food is called agriculture.

Crop production involves various agricultural practices such as:

- ❖ **Preparation of soil**- It includes tilling, levelling and maturing of the fields.
- ❖ **Sowing** - good quality seeds are sown in the fields either with the help of a seed drill or manually.
- ❖ **Adding manure and fertilisers** - the deficiency of plant nutrients and organic matter in the soil is fulfilled by adding manures and fertilizers to the soil.
- ❖ **Irrigation** - Crops can be irrigated by using traditional methods or modern methods of irrigation.
- ❖ **Weeding** - removal of unwanted plants which grow along with a cultivated Crop can be done by hand or by using weedicides.
- ❖ **Harvesting** - is the last step of crop production in which cutting and gathering of the mature crop is done.

Micro-organisms



A microorganism or microbe is an organism that is microscopic (usually too small that cannot be seen by the naked human eye). The study of microorganisms is called microbiology.

Microorganisms live in all parts of the biosphere where there is liquid water, including soil, hot springs, on the ocean floor, high in the atmosphere and deep inside rocks within the earth's crust.

Major Groups of Micro-organisms

- ❖ **Fungi** - fungi are plant like organisms which do not have chlorophyll and do not perform photosynthesis. Some examples of fungi are: Yeast Moulds, Mushrooms, Toadstools and puff balls.
- ❖ **Virus** - Viruses are the smallest microorganisms which can reproduce only inside the cells of the host organisms (which may be animal, plant or bacterium).
- ❖ **Bacteria** - Bacteria are unicellular prokaryotes which have cell walls but do not have an organised nucleus and other structures. On the basis of shapes bacteria can be classified as: bacillus (rod-shaped), coccus (spherical), spirillum (spiral-shaped, vibrio (comma shaped).
- ❖ **Protozoa** - protozoa are unicellular eukaryotes. Some examples of protozoa are: Amoeba, Paramecium and Plasmodium.
- ❖ **Algae** - algae are plant-like organisms that have cell walls and chlorophyll within the cells. They make their own food by photosynthesis. Some examples of algae are: Chlamydomonas, Spirogyra and Blue green algae.

Useful Micro-organisms

Microorganisms are vital to humans and the environment, as they participate in the earth's element cycles such as the carbon cycle and nitrogen cycle, as well as fulfilling other vital roles in virtually all ecosystems.

- ❖ **Use in science:** Microbes are also essential tools in biotechnology, biochemistry, genetics and molecular biology.
- ❖ **Use in water treatment:** Specially-cultured microbes are used in the biological treatment of sewage and industrial waste effluent, a process known as bio augmentation.
- ❖ **Use in food:** Microorganisms are used in brewing, winemaking, baking, pickling and other food-making processes. They are also used to control the fermentation process in the production of cultured dairy products such as yogurt and cheese.
- ❖ **Use in energy:** Microbes are used in fermentation to produce ethanol and in biogas reactors to produce methane.

Harmful Effects

Microorganisms are the cause of many infectious diseases. The organisms involved are pathogenic bacteria, causes diseases like plague, tuberculosis and anthrax. Protozoa, causes diseases like malaria, sleeping sickness and toxoplasmosis and also fungi causes diseases like ringworm, candidiasis or histoplasmosis. Diseases such as influenza, yellow fever and AIDS are caused by pathogenic viruses.