

Microorganisms

Synopsis

- Microorganisms are tiny organisms that can be seen only under a microscope.
- Microorganisms are classified into: bacteria, fungi, protozoa, viruses and algae.

Useful microorganisms:

- **E.coli** bacteria produce vitamins B_{12} and K. In herbivores and in some insects, bacteria and protozoa digest cellulose.

Decomposition and recycling of materials:

- Microorganisms such as bacteria, protozoa and fungi break down the harmful organic portion of raw sewage to less harmful sludge.

Medicine and health supplements:

- Antibiotic penicillin is produced by a type of fungus *Penicillium notatum*. Insulin used for treating diabetics is produced by genetically modified bacteria, a vaccine, consisting of dead or weakened harmful microorganisms.

Agriculture:

- Nitrogen fixation by *Rhizobium* bacteria, decomposition of organic wastes by saprophytic bacteria and fungi are some of the uses.

Industries:

- In food industry lactic bacteria is used in the preparation of curd and cheese. In making bread and in brewing alcoholic drinks, yeast is used.

Harmful Microorganisms:

Diseases caused by bacteria in humans.

Name of the disease	Name of the Pathogen	Symptom of the disease
1. Cholera	<i>Vibrio comma</i>	Vomitings, loose motions
2. Leprosy	<i>Mycobacterium leprae</i>	Deformities of limbs
3. Gonorrhoea	<i>Coccus bacteria</i>	Pain in reproductive organs
4. Pneumonia	<i>Diplococcus pneumoniae</i>	Fluid in the lungs
5. Tetanus (lockjaw)	<i>Clostridium tetani</i>	Muscular spasms
6. Tuberculosis	<i>Mycobacterium tuberculosis</i>	Persistent cough, weight loss
7. Typhoid	<i>Salmonella typhi</i>	Fever

Diseases caused by bacteria in plants.

Blackrot in cabbage, fire blight in paddy

Diseases caused by protozoans

Name of the disease	Name of the Pathogen	Symptoms of the disease
Dysentery Malaria Sleeping sickness	Entamoeba histolytica Plasmodium sps Trypanosoma gambiense	Diarrhoea High fever Fever

Diseases caused by virus.

Name of the disease	Symptoms of the disease
Common cold and influenza	Running nose, fever
Dengue fever	Running nose, fever, headache
Mumps	Fever, headache, swelling below the ear
Measles	Fever and red rashes
Poliomyelitis	Weak muscles, paralysis of the limbs
Rubella	Cough, fever
Chicken pox	Fever, headache, rashes
Acquired Immune Deficiency Syndrome (AIDS)	Intermittent fever, diarrhoea, loss of appetite, weight loss
Rabies	Hydrophobia attacks central nervous system

Diseases caused by virus in plants:

Corn stunt, little leaf of brinjal

Diseases caused by Fungi in animals.

Name of the disease	Symptoms of the diseases
Ring worm Athlete's foot	Scaly patches, itchy skin Itchy rash between the toes

Diseases caused by fungi in plants:

Rust, smut, wilt and blight.