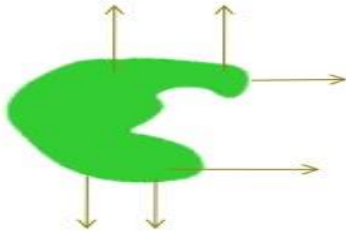


ECONOMIC IMPORTANCE OF FUNGI

1. Use as decomposers of waste:

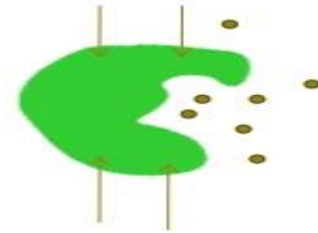
How decomposers decompose dead things?



1. A fungus releases enzymes on to the dead remains



2. The enzymes digest the dead matter and make it soluble



3. The soluble products are taken up by the fungus

2. Mycorrhizae:

- “Fungus roots” **Extremely** important ecological role of fungi
- Mutualism between:
 - Fungus (nutrient & water uptake for plant)
 - Plant (carbohydrate for fungus)
- Several kinds
 - Zygomycota – hyphae invade root cells
 - Ascomycota & Basidiomycota – hyphae invade root but don’t penetrate cells

3.Edible fungi:

There are about 200 species of fungi which are used as food

The most important of them are :

1. Common field mushroom
2. Puff balls
3. Morels or gucchhi
4. khumb

Some of the mushrooms are
poisonous(e.g. amanita muscaris)



4. Yeast cakes:

- The large scale production of yeast cake is called microbial farming .These are prepared by mixing a large number of yeast cells with some inert substances such as , starch and then compressed to form cakes



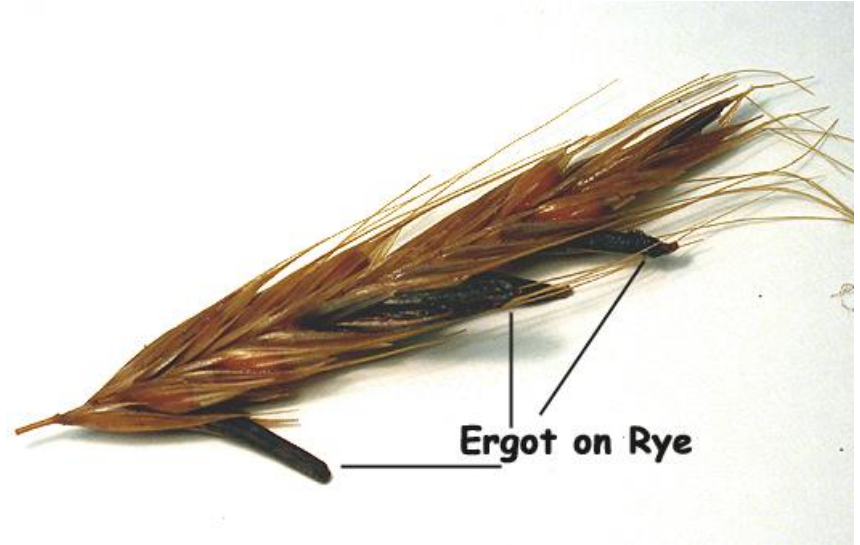
5. Use in medicine:

- Some metabolic products of fungi used in medicine are :
 - A. Ergot
 - B. Antibiotics
 - C. Vitamins



A. Ergot:

- It is a most useful drug obtained from sclerotia of *Claviceps purpurea* . The fungus is parasitic on grasses , especially rye .The disease is called `ergot of rye` . It is also used to increase blood pressure .



B. Antibiotics:

- An organic substance , produced by microorganism , which inhibit or reduce the growth of certain microorganism , is called antibiotic . Some of the antibiotics obtained from fungi is penicillin , Clavacin .



C. Vitamins:

- Fungi are rich source of many vitamins. Vitamin B complex is obtained from yeasts .Other vitamins obtained from yeasts and moulds are – Vitamin D , Riboflavin, Ergosterol etc.

6. Industrial uses:

- **Fungi are used in many important industries in the production of varied products .**


a: Alcoholic fermentation

b: Industrial products

c: Enzymes

d: Gibberellic acid

a:ALCOHOLIC FERMENTATION



alcoholic fermentation, also referred to as, **Ethanol fermentation**, is a biological process in which sugars such as **glucose**, **fructose**, and **sucrose** are converted into cellular energy and thereby produce **ethanol** and **carbon dioxide** as metabolic waste products. Because **yeasts** perform this conversion in the absence of **oxygen** ethanol fermentation is classified as **anaerobic**.

The common alcoholic beverages-wine and beer are fermentation products produced by the activity of different species of Saccharomyces. some of fermentation products are :

- 1: wine : wine is made from juice of grapes or other fruits by allowing yeast to induce alcoholic fermentation. It contains about 10 to 12% alcohol.
- 2:beer :beer is chiefly made from barley grains.It contains 3 to 8% alcohol .

b: Industrial product:

Some Industrial Products and Fungi

Industrial products	Fungi
1. Citric acid	<i>Aspergillus niger, Citromyces pfefferiaur</i>
2. Gallic acid	<i>Penicillium glaucum, Aspergillus gallomyces</i>
3. Gluconic acid	<i>Penicillium purpurogenum</i>
4. Fumaric acid	<i>Mucor, Rhizopus</i>
5. Lactic acid	<i>Rhizopus oryzae</i>
6. Oxalic acid	<i>Aspergillus niger</i>

c:Enzymes:

Some commercial enzymes and source Microorganisms

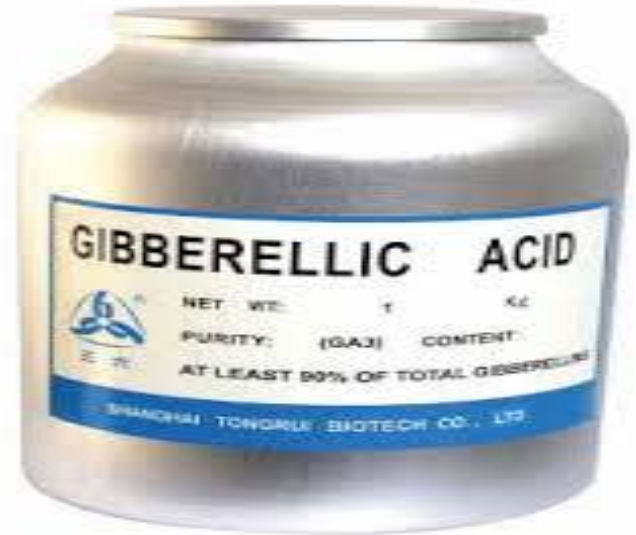
Source	Enzymes	microorganism
FUNGAL	amylases	<i>Aspergillus oryzae</i>
	• glucosidases	<i>Aspergillus flavus</i>
	• proteases	<i>Aspergillus niger</i>
	• pectinases	<i>Aspergillus niger</i>
	• glucose oxidases	<i>Penicillium notatum</i>

d: Gibberellic acid:

- The phytohormone gibberellic acid is obtained from the culture of *Gibberella fujikuroi* and *Fusarium moniliforme*. It is used to induce growth and flowering in plants.

4: Gibberellic acid:

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- It is used to induce growth and flowering in plants.



7:Biological control:

- ⚙ Biocontrol – use fungi that target insects to control crop pests (e.g. Chinese caterpillar fungus; control of California potato beetles). This is cheaper and less damaging to the environment than using chemical pesticides

HARMFUL EFFECTS OF FUNGI

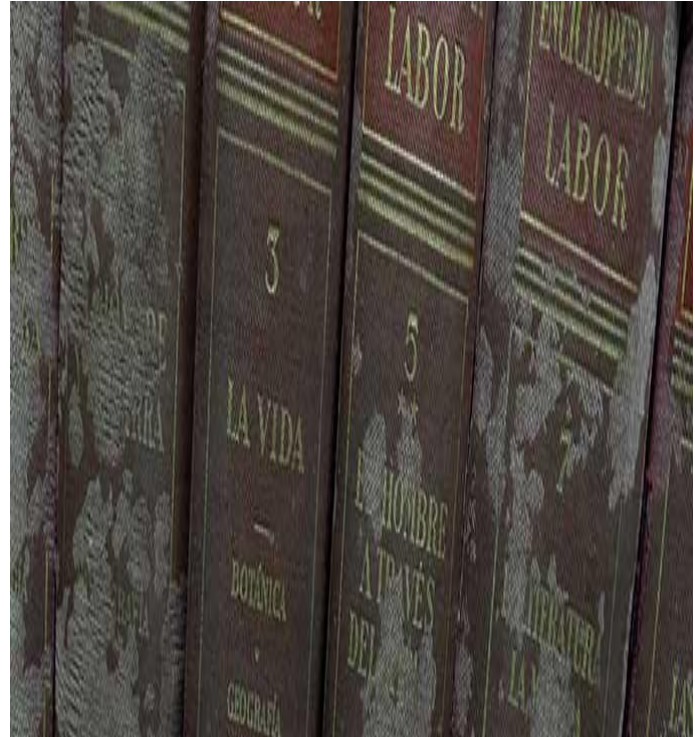
1 . Spoilage of food : many mould fungi such as , Rhizopus , Mucor , Aspergillus and Penicillium grow on bread , butter , jams , jelly , pickles , fruits etc .And render them unfit for human consumption .



2: spoilage of goods:

Many households are destroyed by fungi these include following:

- Electric goods
- Clothing
- Wool
- Paper and books
- hemp,jute
- rubber



3:destruction of timber wood:

- **Felled timber is attacked by *Polyporus schweinitzii*, which decays wood and causes great economic loss.**



4: Allergic fungi:

- Spores of many moulds and fungi imperfecti reach the thorax, lungs and other body parts and produce symptoms of allergy.



Name of diseases	Parts of body affected
1. Dandruff	scalp
2. Mucorosis	Lungs and ear
3. Aspergillosis	Lungs and ear
4. Histoplasmosis	Focal mycosis through out the body

6.Plant disease:

Wheat

Rice

Disease	Causal Organism	Disease	Causal Organism
Root rot	Pythium graminicolum	False smut	Ustilaginoidea virens
Loose smut	Ustilago tritici	Bunt	Tilletia barelayana
Flag smut	Urocystis tritici	Leaf smut	Entyloma oryzae
Stinking smut	Tillmtia caries	Blast	Piticularia oryzae
Black rust	Puccinia graminis tritici	Foot rot	Fusarium moniliforme
Brown rust	Puccinia recondita		

Potato

Disease	Causal Organism
1.Late blight	Phytophthora infestans
2. Black scurf	Rhizoctonia solani
3. Early blight	Alternaria solani
4. Black wart	Synchytrium endobioticum
5.Tuber rot	Pythium artotrogus

Cauliflower

Disease	Causal Organism
1. Brown rot	Alternaria brassicae
2. Root rot	Phytophthora megasperma

Cabbage

Disease	Causal Organism
1 .clubrot	Plasmodiophora brassicae
2. White rust	Albugo candida

Apple

Disease	Causal Organism
1. Soft rot	Rhizopus stolonifer
2. Blue mold rot	Penicillium expansum
3. Scab	Venturia inaequalis

Oat

Disease	Causal Organism
1. Covered smut	Ustilago kolleri