



“बेटी बचाओ, बेटी पढ़ाओ”

## JAYOTI VIDYAPEETH WOMEN'S UNIVERSITY, JAIPUR

(Format for Preparing E Notes)

### Faculty of FEM

**Faculty Name-**                    **JV'n Anupama Goyal (Associate Professor)**

**Program-**                            **M. Sc BOTANY IST/Semester / 23**

**Course Name -**                    **DIVERSITY OF MICROBES**

**Session No. & Name –**    **1.1/ 2023**

#### **Academic Day starts with –**

- Greeting with saying ‘**Namaste**’ by joining Hands together following by 2-3 Minutes Happy session, Celebrating birthday of any student of respective class and **National Anthem**.

Lecture Starts with- of previous Session- .....

- Topic to be discussed today- Today We will discuss about ...Economic Importance Of Fungi Introduction & Brief Discussion aboutthe Topic

## Economic Importance of fungi

• Fungi are heterotrophic eukaryotes, that lacks chlorophyll • They get nutrition from other organic matters either dead or living • Fungi influences our daily life directly or indirectly and plays a vital role in the biosphere and has great economic importance on account of their both benefits and harmful effects • Fungi are one of the most important groups of organisms on the planet as it include hundreds of species, some are prized for its usefulness and others are rejected for causing great harm to plant, animals and Humans .

### Beneficial activities of fungi

- (i) Edible Fungi – Fungi provide us food that is rich in proteins. Dried yeasts contain about 50 per cent protein. Besides, they are rich in vitamin and B-complex. Mushrooms are generally members of Basidiomycetes. Fruiting bodies of about 105 saprophytic mushrooms are edible; they are preferred for both their taste and food value. Most of the edible fungi are the members of Basidiomycetes and Ascomycetes, for example: Edible fungi of Ascomycetes-
- (ii) • Saddle fungi – *Helvella* and *Gyromitra*•
- (iii) Morels – *Morchella* and *Verpa*•
- (iv) Truffles – Species of *Tuber* and *Cyttaria*
- (v) Edible fungi of Basidiomycetes –
- (vi) • Jew's ear fungi – *Hirneola auricula-judae* and *Hirneola polytricha*
- (vii) • Mushrooms – Species of *Agaricus*

• Pore fungi – *Boletus*, *Strobilomyces* and *Fistulina*

• Teeth fungi – Species of *Hydnum*

• Giant puffball – *Clavatia mexicana* and *Lycoperdon* species

### (ii) Role of Fungi in Agriculture:

Fungi and nitrogen fixation – Some soil fungi are beneficial to agriculture because, a small amount of atmosphere nitrogen is also fixed by non-symbiotic fungi such as *Rhodotorula* and

Saccharomyces. Soil fertility – Some soil fungi maintain the fertility of soil. The saprophytic fungi particularly in acid soils where bacterial activity is at its minimum cause decay and decomposition of dead bodies of plants and their wastes taking up the complex organic compounds (cellulose and lignin) by secreting enzymes. The enzymes convert the fatty, carbohydrate and nitrogenous constituents into simpler compounds such as carbon dioxide, water, ammonia, hydrogen sulphide etc. Some of these return to the soil to form humus and rest to the air from where they can again be used as raw material for food synthesis. Some fungi like *Aspergillus*, *Cladosporium*, *Rhizopus*, *Penicillium*, etc. have soil binding property. This is achieved by the secretion of mucilaginous substances. Some common fungal inhabitants of the soil help to combat diseases caused by soil borne fungi. *Trichoderma lignorum* and *Gliocladium fimbriatum* are found in damp soils. They have an inhibitory effect on the growth of the mycelium of *Pythium*. They serve to suppress fungi causing the damping off disease of seedlings and thereby influence favourable the growth of crops. There are some predacious fungi in the soil. They trap and destroy the nematodes.

### (iii) Role of Fungi in Industry:

Baking industry – *Saccharomyces cerevisiae* (yeast) popularly known as baker's yeast is widely used in baking industry. Alcoholic fermentation is the basis of baking industry, because the fermentation of sugar solutions by yeasts produces ethyl alcohol and carbon dioxide. Carbon dioxide is collected, solidified and sold as dry ice. In the baking industry CO<sub>2</sub> is the useful product. It serves two purposes: (i) causes the dough to rise, (ii) makes the bread light.

Production of alcoholic beverages – The other by product of fermentation of sugar or malt solution is alcohol. The enzyme zymase present in yeast cells convert hexose sugars into alcohol.

Acid production – Several fungi are helpful in the commercial production of many organic acids, for example, *Aspergillus niger* in citric and oxalic acid, *A. Gallomyces* in gallic acid, *Penicillium purpurogenum* in gluconic acid, *Mucor* in fumeric acid, *Rhizopus oryzae* in lactic acid.

Enzyme production – Many fungi produce enzymes which have industrial uses, for example, amylase from *Aspergillus*, invertase from *Alternaria* and *Saccharomyces*, and zymase from *Saccharomyces*

(iv) Fungi in Biological Research – Use of microorganisms in determining the potency of drugs, detection and estimation of various chemicals in given samples is known as the biological assay. Amongst fungi, *Aspergillusniger* is used to detect very minute quantities of Zn, Ca, Pb, Mn, Cu, etc. in given samples. *Neurospora* is an ideal material for genetic and biochemical studies. It is popularly known as ‘*Drosophila* of Plant Kingdom’, because of its suitability in the studies of biological sciences.

- University Library Reference-
- Online Reference if Any. Internet
- Suggestions to secure good marks to answer in exa-Explain answer with key point answers
- Questions to check understanding level of students-
- Small Discussion About Next Topic-
- Academic Day ends with-  
National song’ VandeMataram’