

COURSE CODE: BOT 325

COURSE DESCRIPTION: PLANT MYCOLOGY

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The branch of botany that studies fungi and fungus-caused diseases - their genetic and biochemical properties, their taxonomy and their use to humans as sources for medicinals and food, as well as their dangers, such as poisoning or infection.

Mycology is closely related to phytopathology: the study of plant diseases.

Fungi are a diverse group that have a whole kingdom all to themselves--Kingdom Fungi. Classification of mushrooms, molds and yeasts is based on reproductive structures.

Fungi play a vital role in the environment, and are economically important as a food source, as destructive pests, and as agents of disease. The study of fungi continues to produce important advancements in science.

A Fungus

It is an organism that is (1)Eukaryotic (2) possess cell walls (3) grow by extending filamentous cells called hyphae, or by budding (4) obtain nutrients by releasing digestive enzymes into the environment to break down organic molecules, which are then absorbed and (5) have no chlorophyll.

Fungi do not ingest their food (by eating). They have a filamentous or budding growth habit, along with the presence of cells walls

Most fungi reproduce through the generation of spores. Fungal spores are non-motile (meaning they cannot move of their own accord).

Fungi are mostly saprophytes, meaning they obtain their nutrients from dead organic matter. They play an important role in the environment by decomposing and recycling organic matter. A few are parasitic on plants causing major losses of crops while others cause various infections on humans or other animals.

The Structure of Fungi

The basic cell type of the majority of fungi is the *hypha* (pl *hyphae*), which is thin and tubular in shape. A network arrangement of hyphae is referred to as mycelium

Not all fungi have hyphae. Yeasts are essentially unicellular, producing round or oblong cells that bud from a mother cell to produce daughter cells.

Spores are specialized for dispersal and survival. Though produced in large numbers only few find their way to plants to cause infection.

Spores can be produced asexually via mitosis, in which case they are called *conidia*. Spores may also be produced sexually.

Fungal Classification

The fungi can be divided into four or five major divisions. There is little disagreement about the "big four" Basidiomycota, Ascomycota, Zygomycota and Deuteromycota. However, the Oomycota (water molds) are considered by some to be "fungal protists" because they have a motile phase. Fungal classification is based on the morphology of sexually produced spores.

The Zygomycota can produce numerous conidia or reproduce sexually to form microscopic zygospores. Black bread mold is a zygomycete.

Members of Ascomycota may form conidia as well as larger fruit bodies that contain sexually derived ascospores inside a cell type called the ascus.

Basidiomycota are characterized by sexually produced basidiospores that form at the ends of cells called basidia. Examples *Agaricus bisporus*, *Pleurotus subnudus*, *Termitomyces sp.*

Some fungi have no known sexual phase and these are put in the Deuteromycota. These kinds of fungi are commonly called molds.