



Applied Microbiology in Plant Pathology

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ABOUT THE STUDY

The inorganic constituents of plants are obtained from the soil, which serves as the natural environment for terrestrial plants. Soil is the loose outer layer that covers the Earth's surface. Soil quality, a major determinant along with climate, plant distribution and growth, depends not only on soil nature, but also on topography and the presence of organisms.

Endotrophs are endosymbionts, often bacteria or fungi, which parasitize plants without causing overt disease at least for life. Endogenous plants are ubiquitous and are found in all plant species studied to date. However, most of these relationships between endophytes and plants are not well understood. Many economically important forage and turf weeds have fungal endophytes that can enhance the weed's ability to withstand abiotic stresses such as drought, as well as increase resistance to insects and herbivorous mammals.

Endophytes can be transmitted vertically and horizontally. Vertically propagating fungal endophytes are asexual and propagate through fungal hyphae that penetrate the host seed. Because their reproductive fitness is closely related to that of the host plant, these fungi are often reciprocal. Conversely, fungal endophytes transmitted horizontally are sexual and transmitted through spores that can spread by wind and/or insect vectors. Because it is applied in the same manner as the pathogen, the endophytes delivered horizontally are often related to pathogenic fungi, even not pathogenic themselves.

Many plants form together are called *mycorrhizae* along with fungi are approaching the nutrients of the soil and protecting from disease and toxicity. If the rapid absorption of the soil

solution, low nutritional concentration, low density, low diffusion rate, or low soil humidity may result in an area in which the nutrient is depleted. These conditions are very common. Therefore, most plants alleviate fungi to promote the absorption of soil minerals. Mycorrhizal fungi, also known as root fungi, form a symbiotic relationship with plant roots. In this association, the fungus is actually incorporated into the physical structure of the root. Fungi colonize living root tissues during active plant growth.

Mycorrhizae help to increase the surface area of plant roots because narrow hyphae can extend beyond nutrient-depleted zones. Mycelium is a long extension of a fungus that can grow into tiny pores in the soil, giving plants access to phosphorus that would otherwise be unavailable. Useful impacts on plants are best observed in poor soils.

The most important recent achievements in the plant microorganisms have interdisciplinary approaches that associate various methods. The interdisciplinary study of new methods and cooperation has the opportunity to solve many problems of changing worlds, but we can solve the main hypothesis and issues of microbial environment and economic microorganisms. The use of knowledge obtained by microbial scholars during studying microorganisms has formed several areas of the applied microbiology. Although food and medicinal applications are the most applicable microbiology, microbial studies have led to all commercial industries that affect almost all aspects of human life. There are many practical applications to which microbiology contributes, including many aspects of food production and medical applications.

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