

Soil-borne entomopathogenic bacteria and fungi

ABSTRACT

Being rich in microorganisms, the soil is an ideal environment and important reservoir for harvesting various types of beneficial microorganisms. Soil-borne entomopathogenic bacteria and fungi have been regularly isolated around the world to support crop producer in the never-ending arms race of pest management. Among these microorganisms, entomopathogenic bacteria and their toxins are the most successful microbial insecticides also from the commercial point of view. They grouped into spore- and non-spore-forming entomopathogens, in which the infection process starts upon ingestion by the susceptible insect hosts. Fungi, on the other hand, remain relatively underutilized as natural enemies despite their many advantages over other biological and chemical products. They mainly classified under the class of Entomophthoromycetes and Sordariomycetes in the larger Ascomycota division, which consists around 65,000 described species. In comparison to bacteria, fungi have a wider host range and are especially suitable for controlling pests with piercing and sucking mouthparts. Entomopathogenic bacteria and fungi can be released through inundative application methods and therefore play a critical role in integrated pest management (IPM) against several pests. This chapter provides a selective review on the different types of soil-borne entomopathogenic bacteria and fungi, including their distribution, infection mechanisms and host ranges.

Keyword: Soil-borne; Entomopathogens; Bacteria; Fungi; Bio-insecticides