

Diversity of *Trichoderma* species isolated from soil

Sharifah Siti Maryam Syd Abdul Rahman, Nor Azwady Abd. Aziz
and Nur Ain Izzati Mohd Zainudin*

Department of Biology, Faculty of Science, Universiti Putra Malaysia,
43400 Serdang, Selangor Darul Ehsan.

Abstract

Soils consist of complex mixtures of mineral, water, air, organic matter and as an ecosystem of a large number of countless microorganisms such as bacteria, fungi and nematodes. Due to the limitation on understanding of fungi biodiversity in soil, many people do not know there consists of very useful microbe that can help in suppression of plant pathogens. *Trichoderma* (Hypocreales, Ascomycota) is one of the microorganisms that living in all types of soil. *Trichoderma* species has been used as a biological control agent of phytopathogens due to its abundance and having an antagonistic property. This study will provide checklists of *Trichoderma* species that have been isolated from cultivated crop soils in Malaysia. The objectives of this study are to isolate and identify *Trichoderma* species from soil based on morphological characterization and to calculate diversity of *Trichoderma* species based on Shannon-Wiener Index. Soil samples from each cultivated agricultural crops were collected in three spots in 17 locations around Malaysia. Isolation of *Trichoderma* was completed using soil dilution technique to obtain a pure single colony-forming unit (CFU). A total of 253 of *Trichoderma* isolates were successfully isolated from rhizosphere of different crops. All isolates were tentatively identified into six species such as *T. harzianum* (114 isolates), *T. asperellum* (65 isolates), *T. hamatum* (22 isolates), *T. viride* (26 isolates), *T. koningii* (20 isolates) and *T. virens* (6 isolates). The differences between species were characterized based on their colony features, pigmentation on potato dextrose agar (PDA) and the branching of conidiophores. The diversity index of *Trichoderma* species found in the Malaysia soil was 1.43 and *T. harzianum* was dominated. Due to diverse species of *Trichoderma* found in Malaysia, it will increase the opportunity in selection for biological control agent of plant diseases.

Keywords: *Trichoderma* species, soil fungi, biological control, diversity.

*Corresponding author: ainizzati@upm.edu.my