

Soil fungi of semi natural montane forest and adjacent pine plantation in Peacock hill, Pussellawa, in Nuwara Eliya district

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Many ecosystem studies which were mainly for temperate situations have shown that the establishment of monocultures such as *Pinus*, *Eucalyptus* etc., affects soil microbial community and soil physicochemical properties. In Sri Lanka, there are only few recorded studies in this area and most of them are only on soil physicochemical properties of different ecosystems. Also, there is little published literature on identification of soil fungal species in different forest ecosystems in Sri Lanka. Hence, this study was carried out to investigate soil fungal diversity and their potential decomposing abilities in the soils of a *Pinus* plantation and adjacent semi natural montane forest in Peacock hill, in Pussellawa, in Nuwara Eliya district of Sri Lanka. Soil samples (15 replications) were collected following stratified random sampling technique from each of the two study sites and comparative studies of fungi in each sample were carried out according to the soil plate method. Potential decomposing abilities and metabolic capacities of fungi which were isolated in highest frequencies of occurrence (>30%) were tested using pure substrates, starch, pectin, cellulose and lignin. Results showed significantly higher fungal diversity in semi natural forest (32 fungal spp.) compared to *Pinus* plantation (9 fungal spp). *Trichoderma* spp. [*Trichoderma hamatum* (49.00±1.52), *Trichoderma piluliferum* (53.00±1.69), *Trichoderma polysporum* (39.33±2.24), *Trichoderma pseudokoningii* (62.00±1.21), *Trichoderma viride* (61.33±3.10), *Trichoderma* sp.1 (36.67±1.39), *Trichoderma* sp.2 (36.33±1.16), *Trichoderma* sp.3 (31.67±0.55), *Trichoderma* sp.4 (35.67±1.12)], *Mortierella* spp. [*Mortierella* sp.5 (35.00±2.80), *Mortierella* sp.6 (30.00±4.00), *Mortierella* sp.7 (59.33±1.73), *Mortierella* sp.8 (25.33±0.49)], *Penicillium* spp. [*Penicillium* sp.1 (43.00±1.36), *Penicillium* sp.2 (48.00±1.29), *Penicillium* sp.3 (27.67±0.66), *Penicillium* sp.4 (13.33±1.16)], *Acremonium* spp. [*Acremonium* sp.1 (8.30±0.71), *Acremonium* sp.2 (22.33±0.24), *Acremonium* sp.3 (19.67±0.81)], *Aspergillus* spp. [*Aspergillus* sp.1 (22.00±1.03), *Aspergillus* sp.2 (42.00±0.86), *Aspergillus* sp.3 (24.33±1.29), *Aspergillus* sp.4 (9.67±0.73), *Aspergillus* sp.5 (8.33±0.63)], *Rhizopus* spp. [*Rhizopus* sp.1 (22.00±1.63), *Rhizopus* sp.2 (26.67±0.73)] and white sterile spp. [White sterile sp.2 (28.67±0.87), White sterile sp.3 (14.00±1.61), White sterile sp.4 (17.66±1.37)] were isolated at higher frequencies from semi natural montane forest. Frequently isolated fungal species from the *Pinus* plantation were *Mortierella* spp. [*Mortierella* sp.1 (17.67±0.00), *Mortierella* sp.2 (10.67±0.00), *Mortierella* sp.3 (58.00±8.16), *Mortierella* sp.4 (23.00±4.90)] and Dark sterile sp.1 (83.33±17.15). *Penicillium* sp.1 and *Trichoderma viride* were common to both sites. Fungi isolated from both sites showed versatile abilities in utilization of many substrates such as starch, cellulose, lignin and pectin. Present study showed significantly negative impacts from exotic *Pinus* plantation on fungal community structure in the particular sites.