

ISOLATION AND IDENTIFICATION OF MICROBIAL STRAINS IN TEA LANDS AND SCREENING FOR ECONOMICALLY IMPORTANT PROPERTIES

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By
JAYASINGHAGE OMESHA SHENALI BALASOORIYA

**Export Agriculture Degree Programme
Faculty of Animal Science and Export Agriculture
Uva Wellassa University of Sri Lanka**

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ABSTRACT

Tea is one of the main export products of Sri Lanka that brings valuable foreign exchange to the country. At present, production of tea has gone down due to several reasons and, soil fertility is one of them. To enhance the soil fertility of tea plantations, cultivators mainly focus on chemical fertilizer. As an exporting product, chemical residues may have an impact on the final quality of tea, resulting poor consumer attraction in the international market. The use of beneficial microorganisms to enhance soil fertility of plantations may be a demand driven solution. Thus the study was conducted to isolate native microbial strains in tea soils and screen for their economically important properties viz. cellulose degradation, nitrogen fixation and antagonistic effects. Samples were collected from organic and inorganic tea lands and eight *Penicillium* spp, one *Fusarium* spp, one *Aspergillus* spp and two unidentified spp of fungi and five gram positive bacteria and five gram negative bacteria were isolated and identified. Among them, six *Penicillium* spp and two bacterial isolates degraded cellulose in cellulose agar media and five *Penicillium* spp fixed nitrogen in Mannite media. Five fungal species suppressed the growth of *Pestalotia* and four fungal species and six bacterial isolates suppressed the growth of *Phomopsis*. Thus the results revealed that economically important microbes are rich in tea soils are capable of cellulose degradation, nitrogen fixation and antagonistic effects, in tea soils, which can be used for the improvement of tea plantations as a bio-fertilizer or biological control agents.

Key words: Beneficial microorganisms, Soil fertility, Tea