(ID 045)

Isolation of Phosphate Solubilizing Fungi from Soil and Their Application in Plant Growth Promotion

Jayathilake, K.M.P.I.[1,2], Manage, P.M.[1], Idroos, F.S.[1]*

[1]Centre for Water Quality and Algae Research, Department of Zoology, University of Sri Jayewardenepura, Nugegoda, Sri Lanka
[2]Faculty of Graduate Studies, University of Sri Jayewardenepura, Nugegoda, Sri Lanka
*sumaiyaidroos@sci.sjp.ac.lk

Abstract

Phosphorus plays a significant role in numerous physiological and metabolic processes in plants. Soil phosphorus is immobilized due to the formation of insoluble complexes. The use of efficient phosphate-solubilizing microorganisms opens up a new prospect for better crop productivity and for greater yield performance without affecting the soil health. Phosphate-solubilizing fungi (PSF) enhance available phosphorus released from soil, which contributes to P requirement of plants. Hence, the present study was designed to evaluate the utilization of PSF as a biofertilizer. Pikovskaya's Agar medium was used to isolate fungal species from compost and open dumpsite soil. Isolated fungi were labelled as PSF-X, PSF-Y, and PSF-Z. A pot experiment was carried out to determine the effect of isolated fungal strains. The isolated fungal strain was introduced to the developed potting media which contained compost and soil at 1:1 ratio. Soya bean was selected as the experimental plant. Plant growth parameters (shoot length and root length) were measured to determine the effect of isolated fungal strains. Plant growth parameters were recorded after 21 days. Fungi inoculated pots showed a significant increase in both shoot and root lengths in comparison to the control (n=9, $p<0.05$). Potting media consisting of PSF-X showed the best result. The highest root length (4.7 ± 0.1 cm) and shoot length (35.8 ± 1.2 cm) were recorded in pots inoculated with PSF-X. Hence, isolated PSF-X, PSF-Y, and PSF-Z are recommended as suitable biofertilizer strains for potting medium.

Keywords: Fertilizer, Fungi strain, Phosphorus, Plant growth

Proceedings of the 28th International Forestry and Environment Symposium 2024 of the Department of Forestry and Environmental Science, University of Sri Jayewardenepura, Sri Lanka

151