

Research Article**Comparison of *Pseudomonas aeruginosa* Strains from Tropical Rain Forest and Paddy Cultivated Soils on Plant Growth Promotion and Herbicide Tolerance****CG Sreekala, Surabhi Sankar and C Dileep***Department of Post Graduate Studies and Research in Botany, Santana Dharma College (University of Kerala), Alappuzha-688 003, Kerala, India; Email: drcdileep@rediffmail.com***Abstract**

The diversity of PGPRs and the physical and chemical properties including the agricultural inputs of the soil were evaluated for comparison of two adjacent soils *i.e.* tropical rain forest and paddy cultivated agriculture of the adjacent districts in Kerala. The current study was intended to isolate and characterize the plant growth promoting properties and herbicide tolerance ability of *Pseudomonas aeruginosa* strains from rhizosphere of cultivated and forest soil. Out of 137 isolates, only 48 PGPR strains were isolated, 27 from forest rhizosphere of Pathanamthitta district, 21 strains from cultivated land of Alappuzha district, Kerala. Among 48 PGPR isolates only 12 strains (RRP1, RP12, RP13, H1, SCP, BPS, PS2, KSI, RSP1, RRP2 and MIP) shows significant antagonism. The selected bacterial strains were identified as *Pseudomonas aeruginosa* by biochemical characterization as well as 16s RNA sequencing. These antagonistic strains were evaluated their herbicide resistance to 2, 4-D and Glyphosate, The result revealed that bacterial strains showed a variable response to increasing level of herbicidal dose. These isolates were further characterized for plant growth promotion studies and confirmed that s RP12 from cultivated land withstand maximum herbicide tolerance while, RRP1, isolates from forest soil recorded best root colonization and growth promotion ability. This study also suggest that the synergetic effect of bacteria from different niche might be useful in formulating new inoculants, with combination of different mechanism of action leading to more efficient use for biocontrol strategies to improve cropping systems, and hold great promise for sustainable agriculture.

Key words: Acidic soil, antibiosis, growth promotion, herbicide resistant, PGPR, seed bacterization**Citation:** Sreekala CG, Sankar Surabhi and Dileep C. 2019. Comparison of *Pseudomonas aeruginosa* strains from tropical rain forest and paddy cultivated soils on plant growth promotion and herbicide tolerance. *J Mycol Pl Pathol* 49 (3): 263-272