Characterization of endophytic bacteria associated with sesame (*Sesamum indicum* L.) roots for plant growth-promoting potential

J Ramya, M Gurivi Reddy , K Sakthivel, R Sarada Jaya Lakshmi Devi and D V Sai Ram Kumar

Department of Plant Pathology, Acharya N G Ranga Agricultural University, Agricultural College, Bapatla - 522101, Andhra Pradesh, India

ABSTRACT

Sesame (*Sesamum indicum* L.) is an important oilseed crop, and the use of endophytic bacteria as plant growth-promoting microorganisms offers a sustainable approach to enhance its productivity. The present study was undertaken to isolate and evaluate endophytic bacterial isolates from sesame roots collected from different districts of Andhra Pradesh and Telangana. A total of 19 endophytic bacterial isolates were recovered and screened for plant growth-promoting traits, including phosphate, potassium and zinc solubilization, siderophore production, and hydrogen cyanide (HCN) production. Among the isolates, three exhibited phosphate-solubilizing activity, four showed potassium solubilization, fourteen demonstrated zinc solubilization, eight produced siderophores, and only two were positive for HCN production. Isolates SiRe-10, SiRe-11, SiRe-17, and SiRe-19 expressed multiple plant growth-promoting traits, indicating their potential as promising bioinoculants for improving nutrient availability and sesame productivity. These findings highlight the diversity of endophytic bacteria associated with sesame roots and their potential application in sustainable agriculture.

Key Words: *Bacillus spp, Endophytic bacteria, Nutrient solubilization, Plant growth promotion and Sesamum indicum*