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RHIZOSPHERE BACTERIA IN WEEDS

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ABSTRACT

Rhizobacteria were isolated and identified from five common weeds and further characterized for the effects on seedling growth, antifungal, antimetabolite and antibiotic properties. Weed rhizosphere provided favourable environment for both gram positive and negative bacteria. *Bacillus* species were often dominant inhabitants of the rhizosphere. Differences in composition of rhizobacteria of weeds and even within species have been observed. Distinctive rhizosphere bacteria observed for some different weeds might be influenced by specific root exudates and were possibly controlled by specific genes in the plant. Growth inhibiting rhizobacteria were found along with beneficial bacteria as a part of the normal microflora of the rhizosphere. Majority of the isolated rhizobacteria were growth promotors. Most of the rhizobacteria reduced plant growth without causing obvious tissue damage except *Pseudomonas syringae* which caused chlorosis. The inconsistent relationship observed between seedling growth effects and *E coli* indicator assay for antimetabolite production. But there was a significant correlation between antibiotic production and growth promotion. Antifungal property was commonly observed in all weeds' rhizosphere and most of rhizobacteria that had shown antifungal property were growth promoting types. It is suggested that the presence of favourable rhizobacterial community (Majority were growth promoters with antagonistic effects) could be one of the reason for the excellent survival of weeds in any habitat. It also suggested that the development of effective biocontrol agent for weed control, deleterious rhizobacteria must be screened directly on weed seedlings and must possess several properties including high colonizing ability, specific phytotoxin production etc.