ISOLATION AND CHARACTERIZATION OF ROOT-ASSOCIATED MICROFLORA FROM *Eliocharis dulcis*, A GRASS GROWN ON IRON-TOXIC ACID SOILS

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Investigations on plant root-associated microbial activity and associative nitrogen fixation in plants other than legumes are of great importance in identifying any genetically determined associative interactions between the nonleguminous plants such as cereals and grasses and the microbial population that invades the immediate root environment. These interactions should be obvious in extreme conditions where the selective pressure favours only a limited number of bacteria that can survive under these conditions. On the other hand, microbial species that can tolerate stress conditions such as acidity and salinity are of extreme importance in agriculture, especially in problem soil-utilization programmes. The prerequisite for this is the determination of beneficial effects of such organisms to the host plant if there is association between the two organisms.

During the latter part of 1989, root-associated bacteria from *Eliocharis dulcis*—a grass grown in the southern part of Sri Lanka in acid soil containing excess iron—have been isolated. Biochemical tests of isolated strains included gram stain, acid fast stain, spore formation, motility, growth in air, catalase activity, growth on glucose, oxidative fermentative test, oxidase activity, growth on pH4 and pH5, acid tolerance, iron reduction, growth on nitrogen-free medium, and growth on glucose yeast extract medium. Results indicated that the isolated species belong to the *Bacillus, Coryneform bacillus, Coreny bacterium, Flavo bacterium*, and to *Pseudomonas* groups. As all bacterial isolates grow on nitrogen-free medium, acetylene reduction assays (ARAs) of the isolates have been examined. Some of them showed low but positive nitrogenase activity under normal conditions.

At present, ARAs are being conducted under different environmental conditions in respect of oxygen concentration to determine the optimum conditions for nitrogenase activity.