

## RESEARCH ON BIOLOGICAL NITROGEN FIXATION

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Nitrogen is generally the major limiting factor in crop production. Agricultural production has always relied on nitrogen produced by nitrogen fixing organisms. The world requirement of nitrogen for crop production is estimated to be about  $125 \times 10^6$  metric tons per year and this is expected to increase to about  $245 \times 10^6$  metric tons by 200 A.D. Industrial production of nitrogenous fertilizer is quite expensive and the production costs are expected to escalate in the near future. Therefore, it is important to explore ways of biological processes as a partial substitute for the use of chemical fertilizer.

There are four well defined project areas in this programme, namely,

1. Data on nitrogen fixing plants endemic to Sri Lanka,
2. Resource centre for nitrogen fixing organisms,
3. Associative nitrogen fixation in rice, and
4. Efficiency of chemically treated Eppawala phosphate as a phosphorus fertilizer for rice cultivation.

The aim of the first project is to prepare a complete, scientific documentation of all the nitrogen fixing endemic plant species of Sri Lanka. The second project on resource centre for nitrogen fixing microorganisms is aimed at isolation, authentication and maintenance of nitrogen fixing microorganisms and different species of Azolla. In addition to the routine work on the culture collection, a phosphorus screening experiment on Azolla was performed. Some work on the rhizobiology of leucaena rhizobia was also undertaken.

The third project was aimed at improving rhizospheric, associative nitrogen fixing ability of rice. The rhizospheric, diazotrophic activity at different growth stages of the rice plant was also investigated.

In the last project the efficiency of chemically treated Eppawala phosphate on the growth and yield of a rice variety, Bg 450, was evaluated in a screen house pot experiment.