

**D-30 : THE EFFECT OF PHOSPHATE SOLUBILIZING
MICROORGANISMS ON THE GROWTH OF *Zea mays* AND ON ITS
PHOSPHORUS UPTAKE**

*M Karagaswewa, S A Kulasooriya**; Institute of Fundamental Studies, Kandy,
*Dept. of Botany, University of Peradeniya.

The effect of plant inoculation with two phosphate solubilizing isolates - an *Aspergillus* species and an unidentified gram negative bacteria on the growth of maize and on its P uptake was studied with and without peat addition under greenhouse conditions.

Sterilized maize seeds were germinated in the dark at 28°C in a test tube containing phosphorus deficient nutrient broth with 0.4% agar. Seedlings, 5 days old, were removed from the tubes and transplanted in a jar filled with sand (1 - 2 mm) which was connected to a bottle containing P deficient nutrient solution. The planting hole was inoculated with 1 ml of cell suspension of fungus when required. All the handling was conducted under aseptic conditions and P was supplied as insoluble rock phosphate (Eppawela apatite). After a 9 week cultivation period, plant growth in the different treatments was compared by measuring the root and shoot dry matter production (oven dried 80°C for 3 days). Then, after grinding, they were mineralized by conc. HCl and analysed for P by Olsen method.

A significant increase in root/shoot in dry matter production and root/shoot P content of maize was measured as a response to inoculation with the two phosphate solubilizing microorganisms in the presence or absence of peat. Addition of peat to the culture medium increased dry matter production and P uptake in all treatments. This showed that peat contained a substantial amount of available P. Rock phosphate mixed with peat, significantly increased the P uptake and dry matter production than the control. This is an indication of the solubilizing effect of peat on rock phosphate. The highest increase of total dry matter production and total P uptake was obtained when the plant was inoculated with phosphate solubilizing microorganisms in the presence of rock phosphate and peat.