

PRELIMINARY STUDIES ON NODULATION AND
NITROGEN FIXATION OF
GRAIN LEGUMES

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The effect of Molybdenum on nodulation, nitrogen fixation, growth and yield of green gram was investigated. The experiment was carried out in pots with soil collected from Mahaweli system - 'C' (Girandurukotte) where green legumes are extensively cultivated. Addition of 4 ppm Mo to the soil increase the nitrogenase activity by 40% and the nitrogen content by 95% respectively than the control plants. However, the nodule number and their dry weight did not increase significantly. Although highest plant dry weight was registered under 6 ppm Mo, maximum grain yield was obtained under 4 ppm Mo. possibly indicating that increase in Mo beyond 4 ppm stimulates vegetative growth of the plant.

The infectivity of single strains and the mixed rhizobial strains against green gram, black gram, and cow pea were studied using serology. In all experiments the inoculation increased nitrogenase activity and the nitrogen content over the uninoculated controls. Both these parameters were significantly lower under mixed strain inoculation than under single strain inoculation. Nodule smears treated with FITC conjugated antigens for the inoculated strains were examined under UV microscope. The results showed that 60-70% infection was achieved though single strain inoculation, where as the mixed strain inoculation produced only 15-20%. The competition among the productive strains in a mixed inoculant possibly resulted in less infectivity in the plants compared to single inoculation.