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Response of Mungbean (Vigna Radiata) to Rhizobium Inoculation for effective Nodulation & Nitrogen Fixation under field conditions

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ABSTRACT

A field inculation experiment with mangbean (CV = M – 28) was conducted during summer 1984 to screen out 7 different Rhizobium strains for their relative nitrogen fixing efficiency under environmental conditions prevailing at Faisalabad. Rhizobium inoculation improved the nodulation response of mungbean and significantly increased the grain yield ha^{-1} of the crop from 5.3 to 23.9 percent, total biological yield ha^{-1} from 7.9 to 58.3 percent and grain protein ha^{-1} from 14.8 to 98.2 percent as compared to uninoculated plants in the control treatment. The nitrogenase activity (acetylene reduction assay) of the excised root nodules of mungbean due to Rhizobium inoculation with all the test strains varied from 7.3 to 32.5 μmole of C_2H_4 g^{-1} dry weight of nodule $hour^{-1}$ at 50% flowering stage and 4.8 to 13.8 μ mole of C_2H_4 g^{-1} dry weight of nodule $hour^{-1}$ at pod filling stage of crop growth. Rhizobium inoculum supplied by Niftal (Hawaii) USA and two of our local strains (M-17 and M-25) proved to be promising as far as grain yield, total biological yield andgrain protein was concerned. Mungbean crop failed to bear any nodule in the unincoculated (control) treatment, which indicates that indigenous Rhizobium associated with this crop were absent in the test soil.