

THE IMPACT OF *BRADYRHIZOBIUM* INOCULATION ON NODULATION, BIOMASS PRODUCTION AND NITROGEN FIXATION IN *PUERARIA PHASEOLOIDES*

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The population of *Bradyrhizobium* which could nodulate *Pueraria phaseoloides* in acid soils was observed to be very low. The effectiveness of nodules produced by *P. phaseoloides* was also found to be low. Inoculation of *P. phaseoloides* seed with six selected bradyrhizobial isolates increased nodulation, biomass production, nitrogenase activity and spread of the cover crop. However, only two isolates showed prolonged effect. The total N in soils under cover crop inoculated with different bradyrhizobial isolates did not show any variation.

Key words : *Pueraria*, *Bradyrhizobium*, Biomass, Nitrogenase.

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INTRODUCTION

Bradyrhizobium sp., a cowpea group root nodulating bacterium, nodulates *Pueraria phaseoloides* Roxb. Benth, the most popular cover crop of rubber plantations in India. The poor establishment of *P. phaseoloides* frequently encountered in acid soils might be due to the absence of an optimum population of *Bradyrhizobium* in these soils (Lie 1969; Vincent 1974). This could be overcome by inoculation of a proven culture of the bacteria (Rubber Research Institute of Malaysia 1973). In this study, population of *Bradyrhizobium* in soil, their nodulation, nitrogenase activity and biomass production on inoculation to *P. phaseoloides* seeds were evaluated.

MATERIALS AND METHODS

Enumeration of bradyrhizobial population

Bradyrhizobial population in top 15 cm layer of soil from three locations was estimated by seedling infection count using *P. phaseoloides* partially enclosed in test tubes containing Jensen's seedling agar medium (Jensen, 1942). The population of *Bradyrhizobium* was calculated adopting most probable number (MPN) technique (Brockwell, 1963).

Testing effectiveness of nodules

Twenty locations each were selected in four estates and five *P. phaseoloides* (60 days old) plants were carefully uprooted