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EFFECTS OF LIMING ON NUTRIENT UPTAKE, BIOMASS PRODUCTION AND NODULATION IN *PUERARIA PHASEOLOIDES*

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Potculture experiments were conducted to study the effects of liming on the growth of *Pueraria phaseoloides* and on the changes in soil chemical properties. Liming significantly increased the dry matter production and nodulation of *P. phaseoloides*. The availability of P, K, Ca and Mg in soil increased significantly by lime application. Liming showed a positive effect on the uptake of N, P, Ca and Mg but had negative effect on the uptake of K.

Key Words : Lime requirement, Dry matter production, Nodulation, Cover crop, *Rhizobium*, *P. Phaseoloides*

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INTRODUCTION

Establishment of leguminous cover crops in the immature phase is one of the important agronomic practices followed in rubber plantations. These cover crops contribute much to the nitrogen requirement of rubber plants (Shorrocks, 1965) through the fixation of atmospheric nitrogen in the root nodules by symbiotic nitrogen fixing bacteria. These bacteria are reported to be sensitive to soil acidity and prefer a neutral pH (Alexander, 1967). In India rubber is mainly grown in acidic soil and liming will have a beneficial effect on bacterial population. Also liming is one of the management practices through which the productivity of the acid soils can be enhanced by overcoming the unfavourable soil characters. Earlier reports also show that legumes usually make better use of atmospheric nitrogen in limed soils (Watson, 1957). According to Chongkew (1983), liming improved the shoot growth and nodulation in peanut and cowpea. The present experiment was undertakn to study the effect of liming and consequent changes in soil pH on the availability of nutrients and on the nodulation and biomass production of the cover crop *P. phaseoloides*.

MATERIALS AND METHODS

Experiment 1

A pot culture experiment in completely randomised block design with six replications was conducted to study the effect of liming on nodulation of the leguminous cover crop *Pueraria phaseoloides* using the soil collected from the experiment station of the Rubber Institute of India, Kottayam. The pH of the soil was 4.8. The lime requirement (LR) of the soil was estimated as per the procedure given by Bear (1964) and found to be 1275 kg per ha.