

EFFECT OF *PUERARIA PHASEOLOIDES* AND *MUCUNA BRACTEATA* ON THE PHYSICO-CHEMICAL PROPERTIES OF SOILS OF IMMATURE RUBBER PLANTATIONS

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Cultivation of the cover crops *Pueraria phaseoloides* and *Mucuna bracteata* was found to improve the soil physical properties in immature rubber (*Hevea brasiliensis*) plantations when compared to adjacent bare land. The bulk density of the soil was lower and porosity higher in the cover crop established field from the second year. The soil moisture retention was improved. The establishment of cover crops improved the soil nutrient availability and cation exchange capacity.

Key words: Cover crop, *Hevea brasiliensis*, *Mucuna bracteata*, *Pueraria phaseoloides*, Soil property.

Establishment of a leguminous cover crop in the immature phase of rubber (*Hevea brasiliensis*) plantation is an accepted agromanagement practice. Leguminous cover crops fix atmospheric nitrogen, enrich soil with organic matter, improve soil fertility, reduce soil erosion and suppress weed growth. Cover crops also help in the improvement of soil structure and other physical properties (Soong and Yap, 1976) resulting in a more favourable soil environment for root growth and proliferation. Legume covers help in enhancing the growth of rubber during the immature phase and reduce the immaturity period (Watson, 1961; Watson *et al.*, 1964; Mathew *et al.*, 1989; Punnoose *et al.*, 1994).

Pueraria phaseoloides and *Mucuna bracteata* are the two common cover crops grown in the rubber plantations in India. The comparative efficiency of these two crops

on improvement of soil nutrient and moisture status as well as microbial population after three years of growth has been reported (Kothandaraman *et al.*, 1989). However, the effect of growing these cover crops on the soil physico-chemical properties has not been studied in detail. Hence a field study was conducted to evaluate the effect of establishment of *P. phaseoloides* and *M. bracteata* on physico-chemical properties of rubber growing soils.

Immature (1-5 years) rubber plantations with *P. phaseoloides* and *M. bracteata* as cover crops were identified in the Travancore Rubber and Tea Estate, Mundakayam, in Idukki District of Kerala State. Eight micro plots each 1x1 m size were demarcated at random in the respective areas with either of the cover crops within each age group. Three soil samples (0-10 cm, 10-30 cm and 30-60 cm) were collected from each micro plot.