

COMPARATIVE EFFICIENCY OF *MUCUNA BRACTEATA* D. C.
AND *PUERARIA PHASEOLOIDES* BENTH. ON SOIL NUTRIENT
ENRICHMENT, MICROBIAL POPULATION AND
GROWTH OF *HEVEA*

Establishment and maintenance of a ground cover in rubber plantations is an accepted agromanagement practice for rubber. Cover crops help in the improvement of soil structure and other physical properties (Soong & Yap, 1976). Studies conducted elsewhere have shown that leguminous ground cover helps in better growth of *Hevea* during immature phase and in attaining higher yield (Watson, 1961; Watson *et al.*, 1964; Pushparajah & Chellappah, 1969; Wycherley & Chandapillai, 1969). Leguminous cover also helps in the formation of large size aggregates and causes higher rate of infiltration (Krishnakumar, 1989).

The most widely used leguminous cover crop in India is *Pueraria phaseoloides*, though others like *Calopogonium mucunoides*, *Centrosema pubescens* and *Mimosa invisa* var. *inermis* are also grown on a limited scale (Potty *et al.*, 1980). An ideal cover crop should have such characters as fast growth, non-competition with rubber in any respect, shade tolerance, non-palatability to cattle, high nitrogen fixing capacity, drought tolerance and freedom from pests and diseases. One of the major constraints is the highly palatable nature of these cover crops, except *M. invisa* var. *inermis*, to cattle resulting in indiscriminate removal from the field. Hence efforts were made to identify a suitable ground cover and *Mucuna bracteata* a wild, fast growing legume introduced from the North Eastern States of India, was found to possess most of the desirable characters. The growth characters, nodulation

and nitrogen fixation of *M. bracteata* have been reported by Kothandaraman *et al.*, (1987). *Mucuna* sp. has been reported to reduce parasitic nematodes in soil (Anon, 1983). Thankamony *et al.*, (1989) found high resistance for *M. bracteata* against nematode infection.

This creeper has deep roots and shows luxuriant growth even during peak summer which has led to the apprehension that it would compete with rubber for moisture during summer months. The comparative efficiency of this cover crop over the most popularly grown *P. phaseoloides* in nutrient enrichment and other desirable characters were not established. Hence, a study has been taken up for comparing the efficiency of *M. bracteata* and *P. phaseoloides* in soil nutrient enrichment, building up of microbial population, improving soil moisture status, suppression of weeds and influence on growth of *Hevea* during immature phase.

A field experiment was conducted at Chithalvetty near Punalur in an area planted with polybag plants of clone RRH 105 at a spacing of 5 x 5 m. There were 14 plots, seven each under *M. bracteata* and *P. phaseoloides*. Each plot consisted of 49 rubber plants. Soil samples were collected at 0-15 and 15-30 cm depths before starting the experiment and analysed for various nutrients following Jackson (1973) and the values were compared with those after three years. Shoot, root and litter were also analysed for plant nutrients. To study the nodulation characters, the percentage of