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EFFECT OF ALTITUDE ON THE ESTABLISHMENT OF TWO COVER CROPS IN MEGHALAYA

The genus *Rhizobium* infects the roots of legume plants, thereby forming nodular structures. This is probably the best known symbiotic relationship associated with nitrogen fixation. *Pueraria phaseoloides* and *Mucuna bracteata* are two such leguminous crops having specific *Rhizobium* strains and forming nodules. Establishment of these plants as cover crops during the initial stages of growth of rubber in the fields is a widely accepted agromanagement practice. Besides fixing the atmospheric nitrogen, the cover crops also play an important role in soil conservation and suppression of weed growth. It also helps in preserving soil fertility (Kothandaraman *et al.*, 1984). Sharma and Purohit (1978) have carried out a study at different altitudes to assess the effect of altitude on nodule formation in a leguminous crop. For the present study, seeds of *M. bracteata* and *P. phaseoloides* were collected and their suitability for establishment as cover crops in rubber plantations under Garo Hills (Meghalaya) conditions were studied.

The two sites were located at the experiment farms of the Regional Research Station, Meghalaya at Ganolgre (600 m above MSL) and Darechikgre (1200 m above MSL) in the West Garo Hills of Meghalaya. Both the locations fall within the latitude of 25°-26° N and longitude of 90°-91°E.

Seeds of *Pueraria phaseoloides* and *Mucuna bracteata* were sown separately in polybags and at two leaf stage they were thinned to four seedlings per bag. Many replicates of these sets were maintained at the two altitudes (600 m and 1200 m above MSL). Plants from six bags each of *Pueraria* and *Mucuna* were randomly harvested at monthly intervals from each site for recording nodulation and other growth parameters. The total number of nodules were counted after washing thoroughly in running tap water. The height of plants as well as the total biomass were also recorded. The plant parts were dried at 80°C in a hot air oven for 48 h for recording total dry matter.

Monthly mean weather at the two locations are persented in Table 1. Both the locations had similar rainfall distribution during the experimental period. Mean maximum and minimum temperature recorded at the higher altitude was lower by about 4°C and 3°C respectively than the lower altitude. Relative humidity recorded at botn the locations was more or less same.

P. phaseoloides showed similar growth pattern at both the elevations. Nodule formation was early and significantly higher number of nodules was observed at the higher elevations (Table 5), whereas nodulation was delayed by 30 days at the lower elevation. In *M. bracteata* also the formation of nodules was delayed by 30 days at lower elevation but the number of nodules produced at both the elevations was not significantly different. Thereafter, the number of nodules increased with increase in age. Sharma and Purohit (1978) while studying the effect of different altitudes on nodulation of *Glycine soja*, observed that the growth and nodulation was more at an altitude of 4500 ft when compared to