

RESPONSE OF *PUERARIA PHASEOLOIDES* TO DIRECT AND RESIDUAL PHOSPHORUS FROM DIFFERENT SOURCES

The soils of the rubber growing tracts are highly weathered, laterite or lateritic type, acidic in pH and low in available phosphorus status. The phosphorus (P) use efficiency of water soluble P is very low in these acid soils due to P fixation. Ground phosphoric rocks like Mussoorie rock phosphate with agronomically suitable quality and reactivity have been used as alternatives (Karthikakuttyamma *et al.*, 1978).

Many of the indigenously mined and imported rock phosphates which markedly differ in the chemical composition and mineralogy are available in the market (Narayanawamy *et al.*, 1981). The present study aimed at evaluation of four indigenous and two imported sources of rock phosphate through their effect on dry matter production and uptake by the cover crop *Pueraria phaseoloides* grown in rubber plantations.

Indigenous phosphate rocks *viz.* Mussoorie (Uttar Pradesh), Maton (Rajasthan), Rajphos (Rajasthan) and Meghaphos (Madhya Pradesh) were used for the study along with two imported rock phos-

phates *viz.* Jordan rock phosphate (Jordan) and Gafsa (Tunisia). Sandy clay soil collected from the RRII farm, Kottayam, India was used for filling, at the rate of 35 kg per pot. The soil used for the pot culture study was acid ie in pH (5.0). The organic carbon status was low (0.54%), available P was in traces and available K was medium (5.5 mg/100 g soil). The pot culture study was in completely randomized design with seven treatments and four replications. The control pots received no phosphorus. The chemical composition of the different rock phosphate sources taken for the study is given in Table 1. Seeds of *Pueraria phaseoloides*, pretreated with hot water, were sown in the pots. Four weeks after sowing, seedlings were thinned out to five per pot. Rock phosphate as per treatment was applied to give 30 kg P_2O_5 per ha and a common dose of 30 kg K_2O per ha was also applied uniformly to all the treatments in two split doses, four and six weeks after sowing. The plants were uprooted at the end of 3 1/2 months, this being the period required for maximum accumulation of Nitrogen and dry matter (Mathew *et al.*,

Table 1. Chemical composition of different rock phosphates

Source	P_2O_5 (%)	C_aO (%)	MgO (%)	Al_2O_3 (%)	Fe_2O_3 (%)	Zn(ppm)	Cu(ppm)
Jordan	25.76	35.92	0.38	0.20	0.27	177	30
Gafsa	24.91	35.36	0.80	0.80	0.40	370	19
Mussoorie	17.47	38.50	5.00	0.83	5.64	150	50
Maton	19.61	33.50	0.09	1.40	1.41	720	18
Raj	20.47	38.00	3.50	1.02	0.79	106	28
Megha	21.18	12.00	2.45	1.12	1.28	108	29