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Efficiency of rock phosphates on growth and yield performances of pepper

A P Heenkende[1*] and W D L Gunaratne[2]
1 Research Station, Dept. of Export Agriculture, Matale
2 Department of Export Agriculture, Peradeniya

Effect of commercially available Eppawela rock phosphate (ERP) and Imported Rock Phosphate (IRP) as a source of phosphorus (P) for pepper (*Piper nigrum L.)* was studied under field conditions at Wasanagama in mid country intermediate zone (IM1a) of Sri Lanka in Immature Brown Loam (IBL) soils.

Experiment consisted of two levels of P_2O_5, 200 and 250 kg/ha/year, as ERP and IRP with no P (control). Experiment was done in a Randomized Complete Block Design with three replicates having six plants per plot spaced at 2.5 m X 2.5 m. In addition to P all the plots received 330 kg N, 330 kg K_2O and 47 kg MgO ha/year as a uniform dose and fertilizer were applied in two split applications.

Highest vine length of 251.41 cm at 24 months after planting (MAP) was recorded with 250 kg P_2O_5/ha/year where source of P was ERP, which was significantly different from the control. No significant ($p<0.05$) differences were observed in number of orthotropic and plagiotropic branches at 24 MAP. Yield data recorded at 36 and 48 MAP showed a positive response for added P. Although highest pepper yield of 1719 kg/ha/year recorded with the application of 200 kg P_2O_5 ha/year as ERP at 36 MAP, highest yield of 3436 kg/ha/year was recorded with the same rate of P_2O_5 as IRP at 48 MAP. However, the application of ERP at rate of 200 kg P_2O_5 is sufficient, based on the cumulative yield of two years. Highest soil P content of 22 ppm was found with 250 kg P_2O_5 given as IRP, which was significantly different from the control. Highest leaf P percentage of 0.103 was found with 200 P_2O_5 given as IRP followed by 0.0967% with 250 P_2O_5 given as ERP, which are significantly different from the control. Based on growth, yield and changes of P content of pepper leaves, application of ERP at the rate of 250 kg P_2O_5/ha/year can be substituted to IRP at the same rate.

*sadrmt@sltnet.lk Tel: 066 2222822