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Soil nutrient status of pepper growing soils in Kegalle

P R Idamekorala[1*], W D L Gunaratne[2] and H D A K Gunaratne[1]
[1] *Research Station, Department of Export Agriculture, Matale*
[2] *Department of Export Agriculture, Peradeniya*

Pepper is the most widely used spice all over the world. In Sri Lanka, pepper is cultivated over an area of 31300 ha and Kegalle is one of the major pepper growing districts in the island with a pepper extent around 3878 ha.

National productivity of pepper is about 300 kg/ha/year but the potential yield would be over 1000 kg/ha/year. The major reason for low yields is the negligence of soil fertility management. The objective of this study was to determine the soil nutrient status of some selected pepper growing areas in Kegalle district in order to recommend a site specific fertilizer. The locations were selected based on the extent of pepper cultivation of the three agro ecological zones namely, WL2b WM2b and WL1a. Ten soil samples were randomly collected at the depth of 0- 20cm from each site.

The soil samples were analysed for pH, organic matter, total N, available P, exchangeable K, and Mg. The soil pH of WL2b (5.63) and WM2b (5.83) are favorable for black pepper. But it is very low in WL1a (4.26). It can be expected that basic cations leach down due to high rainfall and increase the soil acidity. Application of dolomite is suggested to adjust the pH to required level in WL1a.

In WL2b, exchangeable Mg content is sufficient for pepper cultivation and exchangeable K content is moderately sufficient. But in WM2b and WL1a both exchangeable Mg and K contents are not adequate for pepper cultivation. Therefore, farmers are encouraged to apply inorganic fertilizer based on the soil analysis. Organic matter content in both WM2b and WL2b is not sufficient for pepper. Therefore, the nutrient and moisture retention is low in this soil. To correct this situation, application of green manure is recommended. However organic carbon in WL1a is found to be favorable. This is due to high rainfall and low environmental temperature that cause reduction of microbial activity which leads to accumulation of organic matter. Due to high organic carbon in WL1a, average total N content has increased (0.29%). In the other two sites, it is only 0.21%. Inadequate P content is a common factor for the entire district. Therefore, application of inorganic P fertilizer is recommended.

* prasadri@yahoo.com Tel: 066-2231249