Abstract

Detailed soil survey of Melarcode panchayath (2552 ha) in Alathur taluk of Palakkad district was undertaken under Rashtriya Sam Vikas Yojana during the year 2006. During the course of Survey four garden land and five wet land soil series were identified.

The wetland soils are Kavassery, Tharur, Padur, Tolanur and Vallangi series. These soils are extensively cultivated with paddy. Production potential of these soils can be maximized by assuring timely irrigation and integrated nutrient supply. The garden land soils identified in the panchayath are Kanimangalam, Koduvalpara, Oravumada, and Vittanassery series. Koduvalpara and Oravumada series are located in northern and southern hilly areas of the panchayath and are mainly cultivated with rubber. Coconut is the main crop in the rest of garden land soils. Vittanassery series is occurring on river banks.

The various phases of soil representing individual mapping units were identified. Surface samples from each land parcel was collected and subjected to detailed analysis for macro and micro nutrients and other soil properties that affect plant growth. The results are systematically arranged in the report and detailed description of each management unit is given with specific recommendations based on soil fertility analysis. The soils identified in the panchayat are classified as per USDA. Soil Taxonomic Classification System, which enables information exchange and better understanding of soils various interpretative maps are also appended with this report for easy understanding.

Composite surface soil samples from every survey numbers was collected and tested for major plant nutrients. 1667 samples were analyzed for evaluating surface soil fertility. Of these 608 were wetland soils. The samples collected from garden land soils showed wide variation in reaction from extremely acid to neutral while 60 per cent of wetland soils were strongly acid to moderately acid. About 90 per cent of wetland soils were deficient in nitrogen. They were
also mostly deficient in other fertilizer nutrients i.e. phosphorus and potassium. It is necessary to add 125 per cent of the recommended dose of nitrogen in all land parcels having low nitrogen availability. About 25 per cent of wetland samples were deficient in zinc. Copper deficiency was rarely noted in any of the soil. Among garden land soils, majority of the samples from Oravumada series were low in nitrogen. Samples from other soils also showed nitrogen deficiency. Other major nutrients showed high variability in availability. Zinc deficiency was noted in a number of samples varying from 2 per cent in Arumboorapathy to 20 per cent in Koduvalpara, 23 per cent each in Oravumada and Pezhumpara, 24 per cent in Kanimangalam and 26 per cent in Vittanassery. Soil fertility map which provide the analytical result in each survey number is appended with the report.

All the land parcels with low available nitrogen, phosphorus and potassium should be treated with 125 per cent of the recommended dose of the nutrients and 60 per cent of the nutrients need to be applied in land parcels having high available nitrogen, phosphorus and potassium. Only the recommended dose of nutrients need to be applied if the availability of nutrients are medium.

Methods may be adopted to improve fertilizer use efficiency. Methods to reduce loss of nitrogen through volatalisation, leaching and nitrification may be popularized. To reduce loss of nitrogen, it may be incorporated well with soil in basal dose application. To reduce leaching loss of nitrogen from fertilizers like urea during top dress, it may be mixed thoroughly with soil in the ratio 1:6 and kept for 24 hours before sowing. To reduce nitrification loss, fertilizers like urea may be mixed well with powdered neem cake in the ratio 1:5 and applied. Copper and zinc was found to be adequate in most samples hence external input of these nutrients is not necessary. However in land parcels showing deficit values for these nutrients, foliar application of these nutrients is recommended. As a cheaper alternative for foliar application, seed dip of these micronutrients is recommended. The recommendation for zinc is dipping of seeds for 24 hours before sowing in 1% zinc sulphate solution @ 1litre of
micronutrient solution/kg of seeds and that for copper is dipping the seeds for 24 hours in 0.25% Copper sulphate solution @ 1 litre/kg of seeds.

Information on the level of plant nutrients may be gathered from the soil fertility map and the nutrients may be applied to crops. The organic matter status of the soil may be enhanced by return of crop residues to the soil, raising green manure crops and ploughing them in and regularly adding farmyard manure and or compost.