Abstract

Detailed soil survey of Thirumittakode panchayat (3230.6 ha) of Ottappalam taluk in Palakkad district was carried out during March-May 2006 under Rashtriya Sam Vikas Yojana in Palakkad district. 8 wetland and 11 garden land soil series were identified during the course of survey.

The major wetland soils are Palathura, Kuthannur, Kavassery, Kinassery, Periyarampatta, Tolanur, Thanikkunnu and Vadavannur series. Production potential studies of these soils revealed that Kuthannur, Kavassery, Kinassery, Tolanur and Vadavannur series have high production potential for paddy and coconut. These soils have medium to high potential for growing other crops such as banana, tapioca and vegetables.

The major garden land soils identified in the panchayat are Pookkottukavu, Chalavara, Karinganthode, Karadikkunnu, Idakkappara, Kallekkad, Pozhuthara, Ramanpalliyl, Mangode, Sreekrishnapuram and Thenampathy series. They have high potential for cash crops such as coconut, rubber, arecanut, vegetables, banana and tapioca.

The soil map units representing individual mapping units are identified. Systematic collection of surface samples were done from each land parcels and these samples were subjected to detailed analysis for macro and micro nutrients and other soil properties which directly affect the plant growth. The results were systematically arranged in this report and detailed descriptions of each management units are given with specific recommendations based on soil fertility analysis. Various interpretative maps are also prepared for easy understanding. The soils identified in the panchayat are classified as per the USDA Soil Taxonomic Classification System which enables information exchange and better understanding of soils.

Composite surface soil samples from every survey number was collected and tested for major plant nutrients. 3 per cent of the samples collected from the uplands were extremely acidic, 24 per cent very strongly acidic, 34 per
cent strongly acidic, 28 per cent moderately acidic, 9 per cent slightly acidic and 2 per cent neutral. 7 per cent of the samples collected from the lowlands were extremely acidic, 38 per cent very strongly acidic, 32 per cent strongly acidic, 16 per cent moderately acidic, 5 per cent slightly acidic and 2 per cent neutral.

Fertility details of each mapping unit are provided along with the mapping unit description. Adequate quantities of organic matter should be ensured. Nitrogen status of the soil can be enhanced by cultivation of leguminous green manure crops. In dry sown rice cowpea seeds may be sown at the rate of 12.5 kg/ha and incorporated into the soil at flowering stage. Green manure crops like Daincha may be sown after premonsoon showers and subsequently incorporated into the soil. This practice is widely prevalent in Palakkad district and needs to be encouraged by supplying seeds and planting material of green manure crops at subsidized rates. 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 @ 1 litre 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.