Abstract

Detailed soil survey of Koduvayur panchayath (2069 ha) of Chittoor taluk of Palakkad district was carried out during 2005-2006 under Rashtriya Sam Vikas Yojana in Palakkad district. 7 wetland and 5 garden land soil series were identified during the course of survey.

The wetland soils are Kavassery, Kuthanur, Padoor, Polpully, Plathura, Tolanur and Tharur series. These soils have high potential for growing rice. The garden land soils identified in the panchayath are Kanimangalam, Koduvalpara, Mangodu, Kozhinjampara and Padappanal. These soils have high potential for crops such as coconut, arecanut, tapioca etc.

The soil mapping units representing different phases of soil series 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 numbers was collected and tested for major plant nutrients. Nearly 1261 samples were analyzed for evaluating surface soil fertility. Of these 831 were from wetland and 430 from garden land. The samples collected from garden land soils showed wide variation in reaction from extremely acid to neutral, but 82 per cent of them were strongly acid to moderately acid. Wetland soils also varied in reaction from extremely acid to neutral, with 92 per cent samples coming under very strongly acid to moderately acid category. The soils are generally deficient in
nitrogen and potassium. Copper deficiency was rarely noted in all soils but zinc deficiency was shown by a number of samples.

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.