Abstract

Detailed soil survey of Elavancherry panchayath (3218 ha) in Chittur taluk of Palakkad district was undertaken under Rashtriya Sam Vikas Yojana during 2005-2006. During the course of Survey 6 garden land and 6 wetland soil series were identified.

The wetland soils are Kuthannur, Kavassery, Tharur, Padoor, Tolanur and Vadavannur 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 Arumboorapathy, Chathamangalam, Kanimangalam, Koduvalpara, Oravumada, and Vittanassery series. Koduvalpara and Oravumada series are located mainly in southern hilly areas of the panchayath. Coconut is the main crop in the garden land soils. Vittanassery series is occurring on river banks.

With the adoption of all scientific cultivation practices based on soil analytical data can improve the production potential of the area to the maximum. 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 are 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 1014 samples were analyzed for evaluating surface soil fertility. Of these 698 were wetland soils and 316 were garden land soils. The samples collected from wetland soils showed wide variation in reaction from extremely acid to neutral while 60% of garden land
soils were strongly acid to moderately acid. About 88% of wetland soils were deficient in nitrogen. They were also mostly deficient in potassium (72%). About 10% of wetland samples were deficient in zinc while copper deficiency was noted in 39% wetland samples. Among garden land soils, 90 per cent samples from Oravumada series were low in nitrogen. Majority of samples from other soils were nitrogen deficient. Other major nutrients showed high variability in availability. Zinc deficiency was noted in 13% samples and copper deficiency in 33% samples.

In land parcels testing low for primary mineral nutrients it is desirable to apply these nutrients at 125 % of the recommended dosage. In areas testing medium, the full recommended dosage is to be applied and in areas testing high only 60 % of the recommended dosage need be applied.

Adequate quantities of organic matter should also 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 12.5kg/hectare and incorporated into the soil at flowering stage. Green manure crops like Dhaincha 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. 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 about six times the quantity of soil 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 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.