Abstract

Detailed soil survey of Perumatty panchayath (6079.39 ha) of Chittur taluk in Palakkad district was carried out during March-May 2006 under Rashtriya Sam Vikas Yojana in Palakkad district. 8 wet land and 21 garden land soil series were identified during the course of survey.

The wetland soils are Arumangod, Kuthannur, Nadukulam, Pallam, Perumatti, Pathampada, Pattancherry and Vadavannur series. The garden land soils identified in the panchayath are Annanagar, Attayampathy, Chamanampathy, Chappakkad, Idakkapara, Karadikunnu, Kinarpalam, K.K. Pathy, Kottapalam, Kozhinjampara, Mangodu, Nariparachalla, Nedumpara, Nilipara, Ozhalapathy, Perumachalla, Pudur, Thenampathy, Karadipara, Chimpukkad and Padappanal series.

Considerable area under paddy lands have been converted for growing garden land crops due to many reasons detailed elsewhere in the report. This tendency has to be discouraged by providing proper incentives and creating awareness among rice cultivators.

Crops such as coconut and vegetables are also showing a declining trend in production over the recent years. This aspect warrants an in-depth study of the crop-soil relation. The study may be taken up in collaboration with the Agricultural University, for proper identification of the cause of yield decline. Cultivation of the same crop over the years had resulted in the incidence of pests and diseases, especially in the case of coconut and Paddy. The coconut cultivation is thriving in this area due to the increased income generated by toddy tapping. Farmers are not getting the profits generated from this. This aspect needs attention from the industrialists, researchers and planners.

The soil mapping 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.

All the land parcels with low available nitrogen, available phosphorous and potassium should treated with 125 per cent of the recommended dose of these nutrients and 60 per cent of the nutrients need to be applied in land parcels having high available nitrogen, phosphorous and potassium. If the values for average NPK is medium only recommended doze of above nutrients are required for application.

Nearly 4 per cent of the samples collected from land parcels in the upland region were strongly acidic in reaction and nearly 1 per cent of the samples were very strongly acidic. The remaining samples showed pH ranging from moderately acidic (13 %) slightly acid (40 %) neutral (40 %) and slightly alkaline (2 %).

Nearly 2 per cent of the samples collected from land parcels in the lowland region were very strongly acidic in reaction, nearly 6 per cent of the samples were strongly acidic, 16 per cent of the samples were moderately acidic and 43 per cent of the samples were slightly acidic. Out of the remaining 32 per cent were neutral and 1 per cent slightly alkaline. The extremely acidic to moderately acidic soils require liming to neutralize acidity. The soil fertility map provides lime requirement for each parcel of land.

Majority of the surface soil samples collected from lowlands were low in nitrogen, and potassium, which is indicative of deficiency of primary mineral nutrients. Nearly 54 percent of the samples were low in nitrogen, 25 percent was low in phosphorus and 72 per cent of the samples were low in potassium. Nearly 45 % of the samples tested high to available phosphorous. 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. About 22 per cent of the samples tested deficiency for zinc and 5 percent of the samples tested deficiency for copper.

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 pre-monsoon 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 dressing, it may be mixed thoroughly with about six times the quantity of soil and kept for 24 hours before sowing. In order to reduce nitrification loss, fertilizers like urea may be mixed well with powdered neem cake at the ratio 1:5 and applied. Copper and zinc were 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. Dipping of seeds in these micronutrients is a cheaper alternative for foliar application. Dipping the seeds for 24 hours in 1 % zinc sulphate solution before sowing (@ 1litre of micronutrient solution /kg of seeds) for zinc and dipping the seeds for 24 hours in 0.25% Copper sulphate solution (@ 1 litre /kg of seeds) for copper recommended.