Abstract

Detailed soil survey of Tharur panchayat (3427 ha) was undertaken as a part of the centrally sponsored scheme, Rashtriya Sam Vikas Yojana, to prepare an inventory of the soil and land resources of the panchayat and for assessing soil fertility to refine the current general fertilizer recommendations for enhancing the productivity of rice. The soil perspective and its role in improving agricultural production and productivity are given special stress during the survey.

Nine wet land soil series and 11 garden land series were identified during the course of survey. The major soil series of wetlands are Athippotta, Gayathri, Kavassery, Padoor, Tharur and Perumkunnam series in the valleys. Production potential studies of these soils revealed that they have high potential for paddy production. These soils have medium to high potential for growing other crops such as coconut, banana, tapioca and vegetables. 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.

The major soil series of garden land are Kanimangalam, Koduvalpara, Chimpukkad and Kozhinjampara. Soils of these series have high potential for cash crops such as coconut, arecanut, vegetables, banana and tapioca. 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 individual soil mapping units representing different phases of soil series 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. Nearly 1276 samples were analyzed for evaluating surface soil fertility. 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. All the land parcels with low nitrogen, phosphorous and potassium should be 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. Only the recommended doze of nutrients needs to be applied if the availability of nitrogen, phosphorous and potassium are medium.

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/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
volatilisation, 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 in the soil may be gathered from the soil fertility map and the nutrients may be applied to crops base on the nutrients available in the soil. 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.