Abstract

Detailed soil survey of Cherpulassery panchayat (2760 ha) was undertaken as a part of the centrally sponsored scheme, RSVY to prepare an inventory of the soil, land and water 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.

 Eleven soil series were identified in the panchayat during the soil survey of the panchayat. Out of these, three soil series namely Periyarampatta, Thanikunnu and Ramanpalliyl are the series in low lying lands which are mainly under paddy cultivation. The rest eight soil series namely Kinasseri, Pookottukavu, Arumangod, Kinarpalam, Oruvumada, Chalavara, Veettikkadand Veettikadmal are identified in uplands which are mainly cultivated with rubber, coconut, banana and vegetables.

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. In general this report gives a complete account of soils and land resources of the panchayat.

Laboratory analysis of up land soils showed that 12 per cent are low 80 per cent are medium and 8 per cent are high in nitrogen status; 13 per cent are low, 29 per cent are medium and 58 per cent are high in phosphorous status
and 17 per cent are low, 71 per cent are medium and 12 per cent are high in potassium pertaining to the major nutrient and 92 per cent adequate and 8 per cent deficit in copper and 94 per cent adequate and 6 per cent deficit in zinc relating to micro nutrients. Soil reaction studies revealed that 6 per cent are very strongly acid, 14 per cent are strongly acid, 52 per cent are moderately acid, 19 per cent are slightly acid, 7 per cent are neutral and 2 per cent are slightly alkaline.

Analysis of low land soils showed that 13 per cent are low 81 per cent are medium and 6 per cent are high in nitrogen status; 16 per cent are low, 28 per cent are medium and 56 per cent are high in phosphorous status and 26 per cent are low, 67 per cent are medium and 7 per cent are high in potassium pertaining to the major nutrients. 97 per cent of the samples are adequate and 3 per cent deficit in copper and 88 per cent adequate and 12 per cent deficit in zinc relating to micro nutrients. Soil reaction studies revealed that 1 per cent are extremely acid, 10 per cent are very strongly acid, 21 per cent are strongly acid, 46 per cent are moderately acid, 15 per cent are slightly acid, 6 per cent are neutral and 1 per cent are slightly alkaline.

Samples show pH ranging from extremely acid to slightly alkaline. The extremely acid to moderately acid soils require liming to neutralize acidity. The soil fertility map provides lime requirement for each parcel of land.

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