Abstract

Detailed soil survey of Kollengode panchayat (4933 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. The soil perspective and its role in improving agricultural production and productivity are given special stress during the survey.

Thirteen soil series were identified in the panchayath, out of which nine series viz. Attayampathy, Chappakkad, Kinarpalam, Kozhinjampara, Nedumpara, Nilipara, Nariparachalla, Perumachalla and Vellamthara cover the uplands and the other four series occur in the lowlands. Coconut based cropping system is followed in the uplands. The footslopes of uplands and lowlands are cultivated with paddy.

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 soil samples were collected from each land parcel and analysed for soil acidity and major nutrients. Nearly eleven percentage of the samples collected from land parcels in the upland region were strongly acidic in reaction and nearly forty five percentage of the samples were moderately acidic and thirty percent were slightly acid. The strong to moderately acidic soils require liming to neutralize acidity. The soil fertility map provides lime requirement for each parcel of land.
Majority of the samples collected from uplands were low in Nitrogen which is indicative of deficiency of these primary nutrient. Nearly 56 percent of the samples were low in nitrogen, 64 percent was high in phosphorus and 46 percent of the samples were medium in potassium. In land parcels testing low for primary 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 to be applied. About seventy five percent of the samples tested adequate for Zinc and seventy three percent of the samples tested adequate for Copper. Since the land parcels are generally adequate in Zinc and Copper, external application of these micronutrients is not warranted.

In low lands forty six percent were moderately acid and thirty nine percent slightly acid in reaction. The rest was strongly acidic. Fifty nine percent of the samples were low in nitrogen and the rest medium. The available phosphorus content varies medium to high. The available potassium status is medium. 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 daincha 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.