Abstract

Detailed soil survey of Kannambra panchayat 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. Assessment of the soil fertility to refine the current fertilizer recommendation for enhancing the productivity of paddy was also envisaged under the scheme.

During detailed soil survey seven soil series were identified in the panchayat of which Arumboorapathy, Karinganthodu, Kummankuzhi, and Oravumada series were the upland soils. These soils are cultivated to coconut, arecanut, pepper, rubber and cashew. The lowland soils identified are Kannambra, Paruvassery and Tolanur series and they are mostly under paddy. From the survey it is evident that nearly 70% of the land is good for cultivation of the crops and the rest is fairly good for cultivation. More than 65% of the area is suitable for irrigated agriculture.

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.
Nearly 40 per cent of the samples collected from land parcels in the upland region were strongly acid in reaction and nearly one fifth of the samples were very strongly acid and moderately acid. The remaining samples were extremely acid to neutral. The extremely acid to moderately acid soils require liming to neutralize acidity. The soil fertility map provides lime requirement for each parcel of land.

Nearly 70 per cent of the surface soil samples collected from uplands were medium in nitrogen and nearly 50 per cent of the samples were medium in potassium. Nearly 30 per cent was low in phosphorus and 36 per cent of the samples were low in potassium. 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 20 per cent of the samples tested deficient for zinc and 26 per cent of the samples tested deficient for copper.

Nearly 52 per cent of the samples collected from land parcels in the lowland region were strongly acid in reaction and nearly 24 per cent of the samples were moderately acid. The remaining samples showed pH ranging from extremely acid to neutral. The extremely acidic to moderately acidic soils require liming to neutralize acidity. The soil fertility map provides lime requirement for each parcel of land.

About 73 per cent of the surface soil samples collected from lowlands were medium in nitrogen and 20 per cent of the samples tested low for this nutrient. Nearly 60 per cent of the samples were medium in phosphorus and 20 per cent tested low for this nutrient. Available potassium was found to be medium in 50 per cent of the samples and nearly 30 per cent of the samples tested low for this nutrient. 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 16 per cent of the samples tested deficient for zinc and 27 per cent of the samples tested deficient 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 Daincha 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 dress, it may be mixed thoroughly with soil in the ratio 1:6 and kept for 24 hours before its application. 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.