Abstract

Detailed soil survey of Chittur Thathamangalam municipality (1471 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 paddy.

During detailed soil survey eleven soil series were identified in Chittur-Thathamangalam municipality. Out of these five soil series viz Ozhalapathy Attayampathy, Chamanampathy, Kozhinjampara and Perumkunnam are upland series and six soil series viz Nadukulam, Kavassery, Peruvemba, Vadavannur, Vannamada, and Polpully are lowland series. The upland soil series are mainly cultivated with coconut, banana and fruit trees.

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 municipality are classified as per the USDA Soil Taxonomic Classification System which enables information exchange and better understanding of soils.

Nearly a half of the samples collected from land parcels in the upland region were moderately acidic in reaction and nearly ten per cent of the samples were strongly acidic. The remaining samples showed a wide range in pH from slightly acidic to neutral. The strong to moderately acid 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, high in phosphorus and medium in potassium. In land parcels showing low content of nitrogen, phosphorous and potassium, these nutrients may be applied at 125 per cent of the recommended dosage. In land parcels with medium content of these nutrients, the dosage recommended may be applied in full (100 per cent of the specified dose) and in land parcels testing high for these nutrients 60 per cent of the specified dosage is recommended.

About ninety two per cent of the samples tested adequate for zinc and ninety nine per cent 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.

Most of the soils collected from lowlands were low in nitrogen, high in phosphorus and medium in potassium. All the land parcels in the lowlands with low available nitrogen, phosphorus and potassium need to be treated with 125 per cent of the recommended dose and only 60 per cent is required if the availability is high. In land parcels with medium availability recommended dose should be 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. Presoaking of seeds for 24 hours in 1% zinc sulphate solution and 0.25% copper sulphate solution @ 1 litre /kg of seeds before sowing is recommended.

Information on level of plant nutrients in each land parcel may be gathered from the soil fertility map and nutrients may be applied accordingly to the crop plants. It is necessary to adopt cultivation of green manure crops in paddy lands to increase the available nitrogen content. These green manure crops should be ploughed back into the soil at correct stages of growth to ensure maximum expected advantage. Farmyard manure or compost should be added regularly in the soils to enhance the organic carbon content of the soil.