3. SOIL AND LEAF SAMPLING PROCEDURE IN ARECANUT AND COCOA

Karthika,K.S. and Neenu, S.

Division of Crop Production

Central Plantation Crops Research Institute, Kasaragod – 671 124, Kerala.

Introduction

Soil is considered to be the soul of infinite life. Understanding our soils in a better way would help in improving the crop yields. A sound soil test report is essential to understand the nutritional status and physical properties of soil restricting crop growth. Nutritional management practices based on soil test reports would help to overcome non judicious application of fertilizers and in turn would improve soil health, crop health and the yield. Accuracy of soil test reports depends largely upon the method of sampling. A fair sampling will provide accurate test reports. Due to the variability in soils it is impossible to devise a single method of sampling. Sampling method should be chosen according to the need.

Time of Soil Sampling

Soil samples for analysis should be collected preferably during April-May. Sampling immediately after heavy rains should be avoided.

Materials required for sampling

Soil auger or Core sampler, Spade, Polythene sheets or polythene covers, Brown paper covers, marker pens, labels.

Equipment used for sampling should be rust free and also free from any adhered soil, fertilizer or chemicals.

Soil sampling in existing plantations

- Palms should be selected in crisscross manner in the field.
- Soil samples should be collected about 2 ft. (60 cm) away from the base of the tree from both directions of the same palm, from two depths 1 ft and 2ft respectively
- Soil from each depth should be collected separately.
- Remove big stones and undecomposed organic matter from the samples.
- After mixing, divide the sample to four equal parts
- Discard the opposite ones till sample quantity is half kilogram.

- Shade dry spreading on paper or plastic tray.
- Label the soil collected from different areas and depths.
- Samples should be brought to the concerned laboratory in polythene bags

Spade Method or V-cut method

In this method of soil sampling, a V cut is made with the help of a spade such that the spade penetrates at least 1 ft to 1.5 ft deep in the soil. A layer of soil is scraped along the V cut and the soil sample thus collected is used for analysis.

Soil sampling for new plantations

- Sampling should be done preferably from three different depths 1ft, 2ft and 3ft depths.
- Samples can be taken in crisscross manner (or randomly) depending on the size of holding.
- Generally for one acre holding 10-20 samples can be collected and 5-10 composite samples can be made by mixing soils of same depths together.

Notes

1. While sampling, care should be taken to avoid the immediate basin.
2. Weeds and litter should be removed with spade before inserting the soil auger.
3. Sampling in the borders, near to cow dung pits and fertilizer store houses should be strictly avoided.
4. The samples collected to prepare a composite sample should be from locations more or less of same topography, same soil colour, and texture and moisture regime.
5. If not, samples should be collected separately from each stretch of plots that show variations like, plots at different elevation, soil colour, under intercropping or under different moisture conditions.
6. Samples taken from different sites and different depths should be separately kept to avoid mixing.
7. More the number of samples collected from the field more will be the accuracy in the fertility status.
8. Soil samples should not be kept in direct sun.
9. Soil sampling should be repeated once in three to five years.

Collection of leaf for nutrient analysis

Leaf samples should be collected from palms/trees from basin of which soil samples were collected to arrive at precise recommendations.

- Fourth leaf from top should be collected in arecanut and third or fourth leaf of the last maturing flush in cocoa.
- Collected leaf samples should be placed in paper covers and handed over to the concerned lab on the same day.
- If it is not possible, leaf samples must be placed in clean perforated plastic bags or brown paper bags and kept in refrigerator but not in freezer.

Processing of Soil Samples (Surface soil for analysis of available nutrients)

Dry the collected sample under shade. Crush the soil clods lightly with wooden pestle and mortar. Sieve using a stainless steel 2 mm sieve and discard plant residues, gravel and other foreign matter retained on the sieve. The sieved soil has to be sub sampled for individual analysis.