MAURITIUS SUGAR INDUSTRY RESEARCH INSTITUTE

Recommendation Sheet No. 41
(February 1987)

SOIL SAMPLING AND PREPARATION FOR ANALYSIS

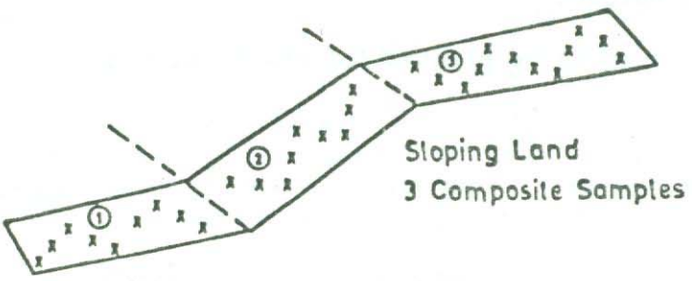
When carrying out soil testing, it is necessary to obtain a sample that represents the area to be tested, as fertilizer recommendations will be made from the results of analysis of the sample taken.

INSTRUCTIONS FOR TAKING SOIL SAMPLES

1. The sampling site should be divided into areas of about 2 to 4 ha. Fields uniform in appearance, production and past treatment may be as large as 6 ha. Fields that are not uniform should be separately sampled, even if smaller than 2 ha.

2. The diagram shows the proper method of locating the areas to be sampled on a sloping ground. A separate composite sample for each area is taken.

Figure 1



3. Avoid taking samples near road-sides where sand, lime, scums and fertilizer bags are generally stacked. Also avoid areas that vary too much from the rest of the field.

4. Avoid sampling during or immediately after rainfall, the soil will be too muddy for handling.

5. Gravels and stones must be removed and clods broken up before mixing and sampling. The samples are kept in plastic bags.

6. Label each sample. Keep a record of the field number, location and date on which the samples are taken.

FACTORS RELATED TO SOIL SAMPLING

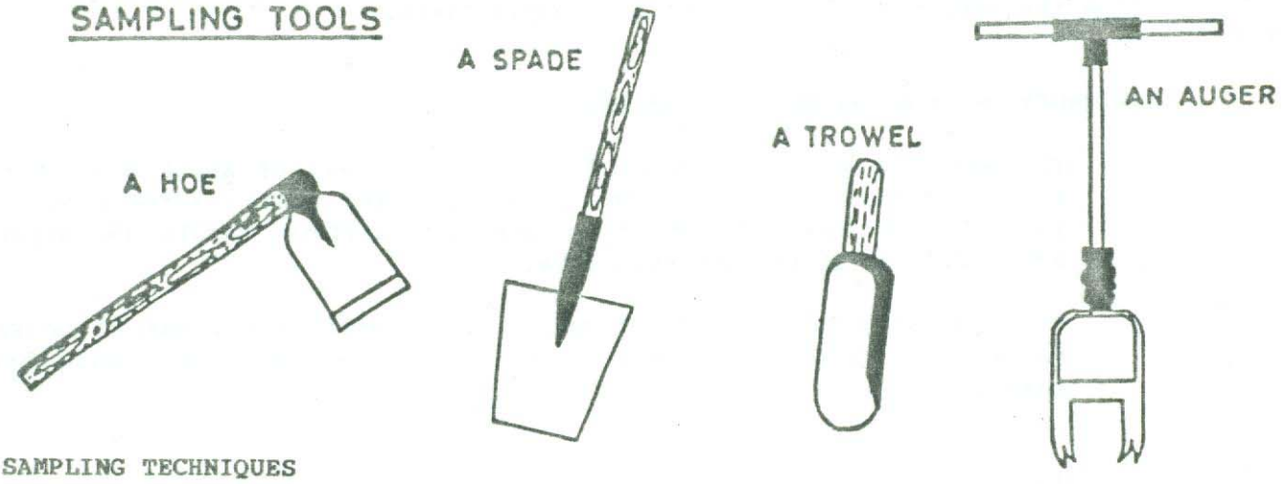
The following factors must be considered :

1. The area to sample and whether to subdivide the field.
2. The number of borings or trenches, their distribution and the relation to the size of the area to be sampled.
3. The sampling tools to be used.
4. The size of the final composite sample (one kilogram for a free soil and more for a gravelly soil).
5. The moisture status of the soil - it should not be too wet.

SAMPLING EQUIPMENT

The sampling tools include the hoe, the spade, the auger, the trowel, a plastic bucket and a plastic sheet (1 m^2).

Figure 2



SAMPLING TECHNIQUES

1. For a field to be planted for the first time

The auger is used, its diameter will depend upon the nature of the soil. The number of borings depends upon the size of the field (about 10 borings/ha); they are made at frequent intervals in the field to a depth sufficient to cover the A-horizon.

2. For a field already ploughed and furrowed

The operator walks across the field and uses a trowel to collect soil at frequent intervals from the bottom and sides of the furrows alternately.

3. For a field already cropped and not yet ploughed

For this purpose either the auger method or the trench method is used.

(a) The auger method

Borings are made at frequent intervals in the rows and between two adjacent rows alternately to cover the plough layer.

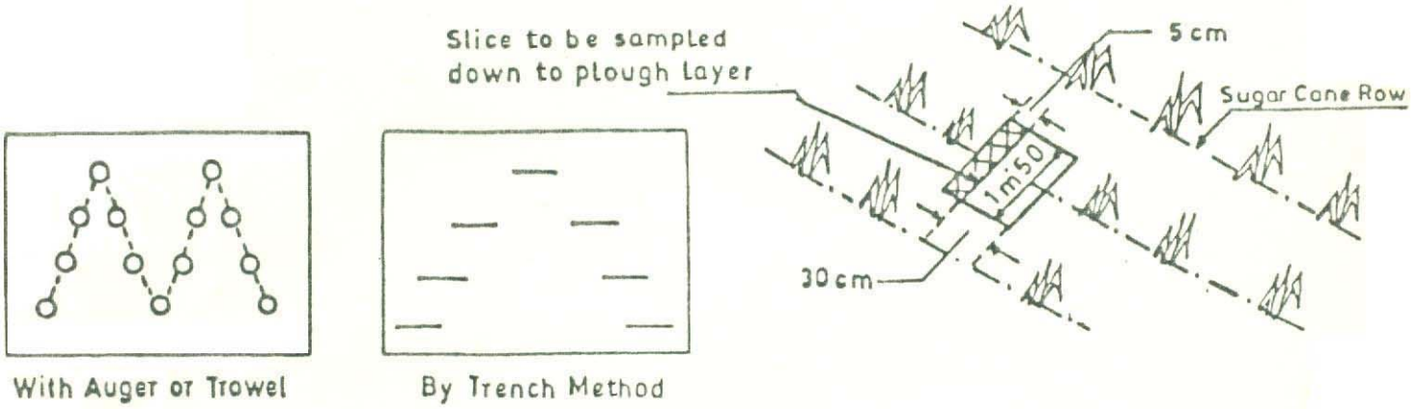
(b) The trench method

Trenches (at least 7/ha) are dug from the middle of one inter-row, across the row to the next inter-row, the dimensions being 150 cm cm long x 30 cm wide. The soil removed from the trench is placed along one side ,keeping the other clear. The depth of the trench should be that of the plough layer. The bottom should be thoroughly cleaned.

Using the spade, a slice 5 cm wide is cut along the clear side of the trench from the top, downwards, and the soil thus collected at the bottom is well mixed and placed into a plastic bucket.

The operation is illustrated in Fig. 3.

Figure 3



Note : For 1, 2 and 3, each sample consisting of approximately the same quantity of soil is put into a bucket which is emptied on a plastic sheet. The operation is repeat to cover the whole area and a composite sample is then taken.

SOIL SAMPLE PREPARATION

1. In the field

The sample collected on the plastic sheet is mixed, (all gravels and stones having been removed and the clods broken up) then spread out and divided into quarters with the idea that each quarter is representative of the original sample collected. After repeated quartering, a sub-sample of about one kilogram is collected in a plastic bag, labelled and sent for analysis.

2. In the laboratory

The soil is spread out to dry at room temperature on a clean sheet of paper in an appropriately labelled tray. After drying, the soil is passed through a 2 mm sieve. The retained soil is transferred on a clean, flat piece of wood and gently ground by means of a wooden roller and then sieved. This operation is repeated until most of the soil has passed through. The sieved soil is mixed and kept in a labelled plastic container for analysis.