Issued in: July 2003 **Serial No: 8/03**

SAMPLING FOR NEMATODE ANALYSIS

(This Advisory Circular replaces Circular No. N 1, Serial No. 2/85, issued in March 1985)

1. Introduction

Tea Nematodes are microscopic organisms, some species of which inhabit the tea plant and the soil around. Besides parasitizing their hosts, and weakening them, they interfere with the smooth uptake of water and soil nutrients, leading to severe nutrient imbalance.

The economically important nematode pests of tea are the following:

Pratylenchus loosi Loof – "root-lesion nematode" or "meadow eelworm",
Radopholus similis (Cobb) Thorne – "burrowing nematode", and
Meloidogyne brevicauda Loof – "root-knot nematode" (young and mature tea).

The distribution and preponderance of these species vary from location to location. In certain locations (such as in Uva, Mid country and in Deniyaya), the first two species may be found together, whilst in others (like *P. loosi* in Up country) they may exist singly. *M brevicauda* is now confined to one location, Kabaragala Estate in Padiyapelella, and may be found singly or in combination with *P loosi.*

2. Symptoms of damage

The typical symptoms are a slow decline in growth with the leaves turning a pale-yellow colour, and afterwards leading to premature flowering and fruiting of the bush.

3. Sampling for Diagnostic Purposes

Early detection helps to check the spread of nematode infestation. It could also curtail the extent of damage by enabling the adoption of appropriate and timely corrective measures. Such vigilance is most essential amongst newly planted young tea fields. Infestation can only be confirmed by microscopic examination of soil and root samples.

Soil and root sampling in the nursery/field should be assigned to a responsible person and be carried out under close supervision. An analytical report would only be as good as the sample submitted.

The procedure adopted at sampling in a mature tea field is different from that adopted in a new clearing and that adopted for nursery plants.

4. Time of Sampling

Soil samples in the field should be taken when the soil is neither too wet nor too dry. Sampling should be avoided during dry periods (December-April in the south-west quarter and May-September in the north-east quarter).

4.1. Sampling in the Nursery: Sampling should commence about six months after the planting of cuttings, or seed, in the nursery, as it is at this time that adequate roots would have developed. A minimum of 10 g of root material would be needed per sample and the method adopted for sampling is as follows:

- Take at least 5 plants at random from each bed of 1,000 plants
- Pool the plants from 5 maximum of adjacent beds of the same clone and same age,
- Cut off the feeder roots, after removing the plants from the bags, and transfer the feeder roots to a clean polythene bag,
- Cover the root sample with some moist soil to avoid drying,
- Label each bag with Estate name, Division, Clone, Bed No. and Age.

4.2. Sampling in New Clearings: Only root material is used for detecting the presence of nematodes in new clearings and the method adopted is as follows:

- Divide the field into blocks of 2 ha each, using natural boundaries such as footpaths etc. wherever possible.
- Collect 25-30 samples at random points from each such 2 ha block,
- Collect about 5g feeder roots from each sampling point. Pool all the samples about 50 g of feeder roots and place in a clean polythene bag.
- Cover the root sample with a small quantity of moist soil to avoid drying, and
- Label each bag with Estate name, Division, Field No., Clone, Block No. and Age.

4.3. Sampling in Mature Fields: Soil samples are used for detecting the presence of nematodes in mature tea fields and the method adopted is as follows:

- Divide the field into blocks of 2 ha each using natural boundaries such as footpaths etc. wherever possible.
- Collect 25-30 samples at random points from each such 2 ha block,
- Collect about 50 g soil from each sampling point. The samples should be taken 15 cm (6") away from the base of the bush and at a depth of 15-25 cm (6-10") with an Augar or ordinary crow bar ("Alavangoe") making sure that root fragments from the sampling site are also collected.
- Pool all the samples and take about 500 g (1 lb) of the soil containing root fragments in a clean polythene bag and seal the bag properly.
- Label each bag with Estate name, Division, Field No., Clone, Block No. and Age.

5. Dispatch of Samples to TRI

Please ensure that the samples are kept away from direct sunlight, or any other condition that may promote heat, to avoid overheating.

Dispatch the samples to the TRI within 24 hours of sampling. Undue delay could lead to dehydration and death of nematodes, thereby resulting in erroneous estimate of nematode count.

The field history data sheet must accompany the samples, to facilitate interpretation of the results of analysis in order to give appropriate recommendations.

5.1. Where to Dispatch Samples: Analytical service is available at the TRI Stations in Talawakelle, Hantane and Kottawa.

For arranging a date for dispatch of samples to the TRI, please address all correspondence to Head, Entomology Division (in case of Talawakelle) or to Officer in Charge of the nearest of the Regional Stations (in case of Hantana and Kottawa). The Institute will not receive more than 10 samples from an estate on any day. Samples should be sent only on pre-arranged dates.

6. General

Please note that the Institute does not accept the following for nematode estimation:

- **Water Samples:** There is little sense in sending water samples to the TRI for estimating the presence of nematodes. If an estate is known to have nematode infested fields, one should assume that the water courses running through the fields are contaminated. For further details on preventing contamination, please refer the circular in this series titled "Contamination of Nursery Plants with Nematodes through Irrigation Water".
- **Soil for Filling Nursery Bags:** The institute does not undertake the analysis of soil meant for tea nursery work. It is mandatory that such soils be fumigated in the nematode active areas (above 200 m of sea level). Alternatively, use other proven methods of soil sterilizing or even soil substitutes.