T.R.I. ADVISORY CIRCULAR No.PM 4

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PROTECTION OF YOUNG TEA FROM NEMATODES

(This replaces the Advisory Circular PM 4 Serial No. 5/02 of November 2002)

1. Introduction

Tea Nematodes are microscopic organisms, which inhabit the tea root system and the soil around. Besides parasitizing and weakening the host root system, they interfere with the smooth uptake of water and nutrients, leading to severe nutrient imbalance and physiological stress in the plant.

The economically important nematode pests of tea are,

a. *Pratylenchus loosi* Loof - "root-lesion nematode" or "meadow eelworm"
b. *Radopholus similis* (Cobb) Thorne - "burrowing nematode"
c. *Meloidogyne brevicauda* Loof - "root-knot nematode"

2. Symptoms of damage

The typical symptoms of nematodes are slow decline in growth with the leaves turning a pale-yellow colour, premature flowering and fruiting and stunted growth of the plant. Similar symptoms could also be observed due to other stress factors such as drought, water deficit, water logging and ill-drained conditions and nutrient imbalances *etc.*

3. Integrated management of nematodes in young tea

Parasitic nematodes could be disseminated through plants, soil, water and agricultural implement *etc.* In the presence of a susceptible root system of a good host, the residual nematode populations may get developed. Hence, nematodes once introduced to fields, they cannot be eradicated.

Further, all tea growing areas are declared as nematode active and / or prone areas due to evidences on presence of either of above three species. Therefore, every attempt should be taken for integrated management of nematodes by adhering to the following measures in young tea.

a. Rehabilitation of lands for a minimum period of 18 months, with (i) Mana (*Cymbopogan confertiflorus)* for all tea growing areas, or (ii) Guatemala *(Tripsacum laxum)* in areas where *Radopholus similis* is not encountered.
b. Use of nematode free and healthy plants for field planting (please refer to Advisory Circular PN 2 on Good Nursery Management Practices).
c. Adopt all Good Agricultural Practices (GAPs) recommended by TRI to ascertain a healthy and vigorous plant growth.

4. Prophylactic measures at planting

Nematode control through chemical treatments is not economical due to hidden nature of damage by nematodes. Therefore, chemical application is restricted to the time of planting in the Integrated Management of Nematodes. As a protective measure to minimize any residual populations of parasitic nematodes, it is compulsory to incorporate a nematicide into soil in the planting hole at planting. The recommended nematicides at correct dosages should be used as described in the Advisory Circular PU 4.

Alternatively, 100 g of ground or powdered neem oil cake (neem poonac) could be mixed with soils in the planting hole.

5. Nematode management in infested young tea

When premature flowering and fruiting and / or any symptoms of debilitation have been observed, the affected areas must be checked for the presence of nematodes. Sampling should be done as per the method described in Advisory Circular PM 5. If the cause for such symptoms has been confirmed as nematodes, the following measures should be carried out over a period of 1 - 2 years until the affected field has been recovered.

a. An 'Infestation-specific' nematode management recommendation considering the field and crop conditions should be adopted in consultation with the TRI.
b. When nematode infested fields are replanted, the recommendations given in Advisory Circular PM 12 should be strictly implemented.
c. When nematode affected patches or blocks with heavy infestations have been identified block infilling should be planned. The affected tea in patches should be uprooted; roots up to pencil thickness should be removed and rehabilitated with Mana grass for a minimum period of 18 months.
d. Under a very light nematode infestation where nematode tolerant tea cultivar/s is/ are planted, planting of nematode suppressive plant species such as Mana and Wild Sunflower (*Tithonia diversiflora*) between raws could be recommended. Planting of Marigold *(Tagetes* sp.) against *Pratylenchus loosi* and *Radopholus similis* and Vetiver *(Vetivaria zizanoides)* against *Pratylenchus loosi* could also be done.
e. Soil organic amendments such as compost and well-decomposed tea waste (at the rate of 2 kg per plant), neem oil cake (at the rate of 500 g per plant in two splits) and green manure could be incorporated into the soil depending on availability.
f. By adopting all Good Agricultural Practices (GAPs) recommended by TRI, all possible factors leading to stress in the plant such as ill - drained and dry soil conditions, gravelness, poor and imbalanced fertilization *etc.* should be rectified.

Tea Research Institute of Sri Lanka
Talawakelle