T.R.I. ADVISORY CIRCULAR No.PM 12

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UPROOTING, REHABILITATION AND REPLANTING OF NEMATODE INFESTED TEA LANDS

(This Advisory Circular supersedes Advisory Circular No. N 4 issued in August 1990)

1. Introduction

1.1 Mitigation of Nematode Infestations

Microscopic nematode pests once introduced and established in a tea land, it is difficult to eradicate. Direct damage and secondary effects by plant parasitic nematodes causes long-term and unrecoverable effects leading to instability in crop yields. Associations of other secondary disease complexes and physiological disorders along with inferior or poor crop and soil conditions further aggravate to minimize establishment, productivity and profitability of tea. Chemical control of nematodes is anyway not economic and practical in tea fields. Maintaining such areas would therefore be uneconomical as well as serve as nematode inoculums for rest of sections and or hitherto uninfested tea areas. Thus, all steps described below should be strictly adopted in all tea growing areas in view of mitigating the nematode incidence in tea.

1.2 Importance of Replanting Nematode Infested Areas in Integrated Nematode Management

Replanting is considered an important agronomic operation which replaces unproductive, old, nematode and other soil pathogen infested tea lands or sections as well as fields with stress factors limiting growth and productivity of tea. In this context, the aims of replanting are therefore to correct the limiting factors in the land for a sustainable, productive and cost effective newly established crop.

Proper soil sampling for nematode infestation should be carried out in unproductive immature or mature tea fields and prior to uprooting as per instructions given in the Advisory Circular PM 5. If nematode infestation has been ruled out as the main stress factor or leading to soil sickness in an area, the following steps should be rigidly followed during the replanting process. In the whole process of replanting, removal of plant and field limiting attributes, preparation of land, selection of appropriate sources of planting materials to suit to new planting should be given due consideration.

2. Rehabilitation of Nematode Infested Areas

2.1 Uprooting Procedure

All diseased and unproductive bushes should be uprooted manually or preferably with the aid of mechanical winches, if available. A single tea plant should not anyway be left in the area which may serve as a source of nematodes. The operation should be done from top to bottom in order to avoid subsequent nematode contaminations.

If nematode infested tea bushes of a patch of land or section are to be removed, tea plants in the concentric circle should also be uprooted in order to ensure complete removal of nematode sources.

Following uprooting, the area should be forked thoroughly to a depth of about 45 cm (18 inches) and all tea roots, above the thickness of a pencil to be removed.

Uprooted tea bushes should not be taken away and transported from place to place to avoid dissemination of nematode infestation. The roots removed from the ground should be collected and burnt *in situ*.

Soils should not anyway be collected for nursery purpose (Please refer the Advisory Circular PN 2 for sources of nursery soils).

2.2 Land Preparation

Any soil limiting stress factor such as hard pan, ill-drained, water logging or gravelly condition *etc.* should be corrected to facilitate proper establishment of new plants. Also, along with leveling and land preparation, complete all other field operations such as terracing and drains, shade tree planting *etc.* in order to minimize chances of subsequent nematode contaminations.

2.3 Rehabilitation of Lands Using Grasses

Rehabilitation of nematode infested tea fields and or the area / block identified for infilling process with a non host plant species is a pre requisite in all tea growing areas in view of imposing a long break for not allowing the nematode to survive and multiply further.

Improvement of soil biological, chemical and physical characters conducive for the new crop is also envisaged through acceleration of organic matter status, structure, neutralize allelopathic effects of long-term cultivation of tea, break down residues of agro chemicals, pesticides, fertilizers *etc.* Resultantly, development and multiplication of densities of inherent natural enemies of nematodes such as bacteria, fungi, micro arthropods, free living and saprophytic nematode species are favored.

The nematode infested area/s identified by the TRI be planted with Mana or Guatemala for an extended rehabilitation period as recommended by the TRI.

Mana is recommended to all tea growing areas. In areas where the tea has been found to be infested with the burrowing nematode, *Radopholus similis,* Guatemala grass is not recommended as it is a good host.

CO3 (Hybrid Napier grass - *Pennisetum perpureum* X *P. americarnum*) grass is recommended for lands with no nematode history and for a minimum of 12 months of rehabilitation as the biomass production is comparatively high (Please refer TRI Guideline 02/2018 issued in December 2018).

The grass rehabilitated areas should be maintained by regular lopping along with recommended inputs; fertilizers etc. (Please refer to Advisory Circular SP 6 for application rates).

The grass should be cut periodically before flowering and incorporated in to the land to improve the organic matter levels.

NOTES:

Patna areas and lands with Guinea grass (*Megathyrsus maximus)* are not considered as grass rehabilitated areas.

Soils from grass rehabilitated areas meant for replanting should never be taken for nursery purpose instead, a separate grass lands should be maintained.

Further, cut grass from rehabilitated areas meant for replanting should not be taken away for thatching purpose instead, a separate grass lands should be maintained.

3. Replanting

The rehabilitated land should be planted with uninfested, healthy and vigorous plants of nematode tolerant cultivars recommended to the region (Please refer to the Advisory Circular PN 1).

As an additional insurance against possible contamination of the young plants, it is vital to incorporate a nematicide in the planting as a prophylactic treatment (Please refer to the Advisory Circular PU 4 for recommended chemicals and rates).

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