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# THE INFLUENCE OF CULTIVATING *ERAGROSTIS CURVULA* IN NEMATODE-INFESTED SOILS, ON THE SUBSEQUENT BUILD-UP OF POPULATIONS IN REPLANTED TEA

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The decline in soil population of the root-lesion nematode, *Pratylenchus loosi* was found to be significantly pronounced in soil planted to *Eragrostis curvula* when compared to those left fallow and the tea plants grown in soil pre-planted to the above grass showed significant improvement in growth. The results of the present investigation thus shows that, besides preventing soil erosion, this grass can also be used to reduce soil populations of root-lesion nematodes.

## INTRODUCTION

*Eragrostis curvula* (Weeping lovegrass), belonging to the family Graminae, was introduced into Sri Lanka in 1965 from East Africa. This grass is now widely grown on tea estates to prevent soil erosion, especially on the edge of banks and bunds as well as on the upper lip of lateral drains. Besides serving as a suitable grass to prevent soil erosion it also serves as an excellent thatch for use in tea fields.

As this grass is grown very widely in the up-country tea areas, the need arose to check its susceptibility to the root-lesion nematode of tea, *Pratylenchus loosi*. The present investigation was therefore undertaken to study the effects of cultivating this grass on the population levels of this species of nematode and assess build-up of the latter in replanted tea.

## MATERIALS & METHODS

Soil heavily infested with *P. loosi* was collected from the field, uniformly mixed and filled into cement pots, each measuring 30 × 30 × 30cm. The soil in half the number of pots were kept fallow, whilst the other half was planted to *Eragrostis curvula*. A pre-planting assessment of nematode count in soil in the respective pots was done prior to planting grass in half the number of pots. Soil samples were collected from these respective treatments once every 2 months for a period of 13 months and these were processed for nematode counts by the modified Baerman Funnel Technique (Sivapalan, 1967).

At the end of 13 months, all pots were planted with the nematode susceptible tea clone, TRI 2024. At the end of 9 months from planting the above clone, the plants were carefully removed from the respective pots and brought to the laboratory for determining the respective shoot and root weights and the roots from each plant was processed for nematode recovery, by the method described by Hutchinson, 1962.

## RESULTS

The results of post-planting nematode counts in the different pots at 2-month intervals are presented in Table 1.

TABLE 1 — *Mean post-planting soil counts of Pratylenchus loosi at 2-month intervals*

| *Time* | *Fallow* | *Planted with Eragrostis curvula* |
|---|---|---|
| 3 months | 29.33 ± 14.47 | 35.0 ± 16.12 |
| 5 months | 22.33 ± 13.29 | 14.83 ± 8.08 |
| 7 months | 8.66 ± 11.05 | 3.33 ± 7.24 |
| 9 months | 4.33 ± 2.45 | 1.0 ± 1.55 |
| 11 months | 2.12 ± 4.75 | 1.12 ± 1.84 |
| 13 months | Nil | Nil |

Assessments of nematode counts at 2 month intervals showed a linear decline in population with time, in both treatments. However, this decline seemed to be more pronounced (though not significant) in those planted with *Eragrostis curvula.*

The assessment of mean shoot and root weights as well as the build up of nematodes in tea plants harvested from the respective treatments at the end of 9 months from planting, is presented in Table 2.

TABLE 2 — *Mean shoot and root weights of tea clone TRI 2024 as well as the mean assessment of nematode infestation in roots of plants grown in soil left fallow as well as pre-planted to Eragrostis curvula*

| *Treatment* | *Shoot weight (g)* | *Root weight (g)* | *Nematode count per g. root* |
|---|---|---|---|
| Fallow | 118.94 ± 52.19 | 27.3 ± 8.05 | 1235.92 ± 1009.42 |
| Pre-planted with *Eragrostis curvula* | 194.06 ± 44.70 | 46.46 ± 11.84 | 66.66 ± 72.19 |

As seen from Table, the mean shoot and root weights of plants grown in soil pre-planted with *Eragrostis curvula* was found to be significantly higher than those grown in soil left fallow.

The nematode counts in roots of tea plants grown in soil preplanted with *Eragrostis curvula* also showed marked significant reduction when compared to those grown in soil left fallow.

## DISCUSSION

The weeping lovegrass, *Eragrostis curvula* is planted very widely in high grown tea areas where infestation with the root lesion nematode *Pratylenchus loosi* is commonly encountered. It is known that various species of green manure crops are likely to harbour and encourage build-up of this population of nematode which subsequently endangers the tea plants themselves. It is therefore essential to assess the nematode susceptibility of various species of cover crops reccommended for planting in tea lands.

The results of the present investigation has shown that *Eragrostis curvula* is a species of grass that seems to have a marked effect in reducing soil population of *P. loosi*. The reduction in this nematode population is so marked that the tea grown in soil pre-planted to this grass shows a significant improvement in growth. The findings of this investigation are therefore encouraging in that, besides serving the most useful purpose of preventing soil erosion, this grass is now found to have additional advantage of reducing nematode population.

Vacant areas in mature tea fields could be planted to this grass, the loppings of which could serve as a useful thatch. The tender shoots of this grass is also useful as a forage (Hoover, *et al*, 1948).

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