POTATO CULTIVATION AND THE ROOT-LESION NEMATODE OF TEA

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A significantly smaller number of eelworms (*Pratylenchus loosi* Loof) was found to be present within the roots of young tea plants, grown in areas that had a crop of potatoes preceding the rehabilitation period, than in areas rehabilitated with Guatemala Grass alone. Potato roots appear to attract the eelworms from old infested tea roots left in the soil, thus decreasing the 'infestation potential' of these old infested roots and consequently reducing the chances of rapid infestation of the replanted tea.

Introduction

An experiment was designed originally to determine the effect of growing potatoes (*Solanum tuberosum* L.) during the rehabilitation period, on the number of *Pratylenchus loosi* Loof, in the *soil.* The two treatments included, 1) one crop of potatoes preceding rehabilitation with Guatemala Grass (*Tripsacum laxum* Nash) and 2) rehabilitation with Guatemala Grass alone. Though the potato plants were found to be susceptible to *P. loosi* (Kerr 1964), no significant difference in the rate of reduction of the soil population was observed between the treatments (Kerr 1965). The object of the present investigation was to compare the degree of infestation of the replanted young tea with respect to the two treatments, and to see whether the potatoes had an influence on the 'infestation potential'.

Methods

Eight plots, each measuring 40 ft × 25 ft, were laid out in an infested field where the tea had been uprooted. Potatoes were planted in four of these plots while the remaining plots were planted with Guatemala Grass. The plots were all completely randomized. When the potatoes were harvested, after about 3½ months, care was taken to see that all the hulms and feeder roots were removed from the site. The area was then levelled and planted with Guatemala Grass. At the end of the two-year rehabilitation period (approximately 20 months in the case of plots that had a crop of potatoes), the grass was removed and the plots were all replanted with an eelworm-susceptible tea clone, TRI 2024.

At the end of 18 months, the requisite number of tea plants (ten) were removed from each of these plots and the eelworm build-up within the roots was assessed, in addition to assessing shoot and root growth of the plants.

Results and discussion

The results obtained are Summarized in Table 1.

TABLE 1—*The effect of one crop of potatoes, prior to rehabilitation, on the growth of the replanted young tea and the subsequent build up of* P. loosi *within tea roots*

Treatment prior to planting tea	Mean number of *P.loosi* per g root (log n+1 transformed)	Mean shoot weight	Mean root weight
Guatemala Grass alone	2.074	239.3	74.1
Potatoes followed by Guatemala Grass	1.686	241.3	69.6
LSD ($P = 0.05$)	0.372	n.s	n.s

As seen from Table 1, no significant difference was observed between treatments, in respect to shoot and root growth of tea. However, a significantly smaller number of eelworms was found in the roots of the plants grown in plots that had an earlier crop of potatoes, than in those grown in plots rehabilitated with Guatemala Grass alone.

Guatemala Grass is known to be an unsuitable host to *P.loosi* (Visser & Vythilingam 1959) and its root system does not attract the eelworms from the old infested tea roots left in the soil. Hence, during the cultivation of this grass during the rehabilitation period, it is only the soil population that is reduced and this reduction in soil population could be attributed to the death of worms from starvation, as well as to re-entry of worms into old tea roots with adequate food reserves.

Potatoes being a suitable host to the eelworms, attract them from the old infested tea roots into its own feeder root system, in addition to attracting the residual soil population. When the potatoes are harvested and when sufficient care is taken to see that all the hulms and feeder roots are removed from the site, the discrete loci of eelworm population that had concentrated into the potato root zones, get removed from the site. In other words, the potato plants serve as 'traps' for the eelworms, both in the soil as well as within the old tea roots.

The practice of cultivating one crop of potatoes during the rehabilitation period, therefore, appears to be beneficial in that the rate of build-up of eelworms within the roots of the replanted tea is kept under check, at least during the initial stages of establishment in the field.

References

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