

EFFECT OF *TYLENCHORHYNCHUS INDICUS* ON SEEDLING GROWTH OF SIRIS (*ALBIZIA LEBBEK*) AND ITS CONTROL WITH PHORATE

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Tylenchorhynchus spp. are frequently associated with poor growth of trees and shrubs in the initial years of their cultivation in nurseries (Ruehle, 1967; Rössner, 1969). Siris (*Albizia lebbek* L.) Benth., a tree of mixed deciduous forests, is grown in agroforestry and silvi-pastoral systems in India. Near root soil of seedlings and trees in nurseries and fields were found to harbour large population of *T. indicus* Siddiqi, 1961. Young seedlings of siris show symptoms of yellowing, browning and root decay in association with 1 000 to 5 000 *T. indicus* per 500 ml soil and some fungi. This paper reports the effect of nematode *T. indicus* on growth of siris seedlings and the effect of a systemic organic phosphate nematicide, phorate (Thimet 10 G, Cyanamid Company) on the growth and development of siris inoculated with *T. indicus* and grown in greenhouse conditions.

Materials and methods

Siris were sown in plastic containers containing 500 ml of steam sterilised sieved field soil (75 % clay and 25 % sand at 20 % moisture). One g NPK (4 : 1 : 1) was added per kg of soil and mixed in. Each container was

sown with four surface sterilised (with 1 % mercuric chloride solution) seeds. After germination seedlings were thinned to one plant per container. The nematode (*T. indicus*) used in this experiment were cultured on siris in pots, and extracted from the soil by modified Baermann technique. Streptomycine sulphate (0.1 % solution) was used to surface sterilise the nematodes. Containers were inoculated when the seedlings were 4 week old (bearing 0.06 g fresh root).

Five containers each were inoculated with 0, 10, 100, 1 000 and 10 000 nematodes per 500 ml of soil. Phorate was applied at 0.025, 0.05, 0.1 and 0.15 g a.i. per dm³ of soil, four weeks after inoculation. Before phorate treatments plants were inoculated with 10 000 nematodes per 500 ml of soil.

Experiments were laid out in a complete randomised block with five replications and maintained for 100 days from the date of inoculation. Plant length and shoot and root dry weights were recorded. For counting nematodes were extracted from the roots by modified Baermann technique (only a few nematodes were recovered from the roots) and from soil by centrifugal flotation (Jenkins, 1964) using a sucrose solution of specific gravity 1.18.

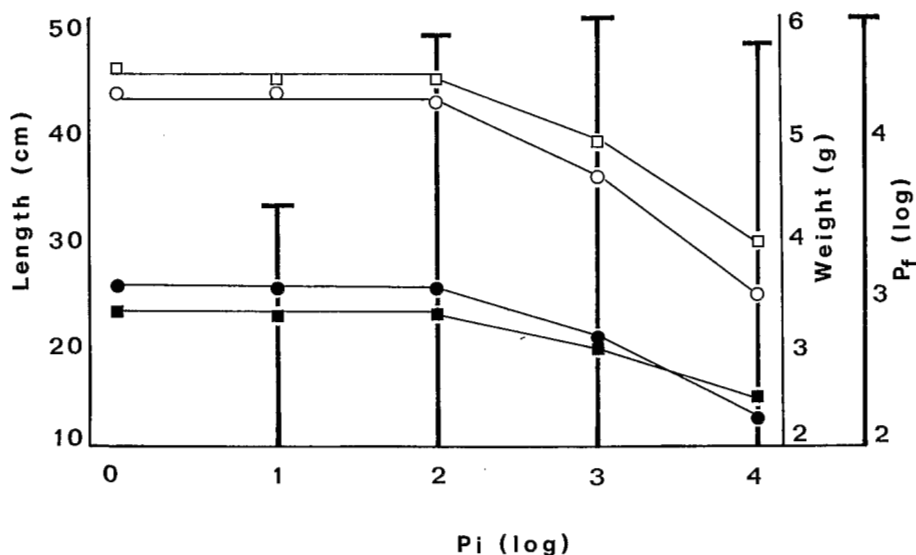


Fig. 1. Effect of different inoculum densities of *T. indicus* on siris seedling growth and nematode multiplication after 100 days (mean of five replicates); Pi : nematode inoculum at planting; Pf : final population of the nematode per container, log. : log transformed values. Legend : □ : shoots length; ■ : roots length; ○ : shoots weight; ● : roots weight. Data are significant at 5 % level.

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Results and discussions

INOCULUM EXPERIMENT

The length and dry weight of shoot and root of siris decreased as the inoculum density of *T. indicus* increased (Fig. 1). Reduction in growth occurred with 1 000 nematodes per 500 ml of soil and plants were stunted.

In 100 days, 100 *T. indicus* per 500 ml soil increased to 40 000 and 10 000 nematodes per 500 ml of soil mixture increased to 30 000 (Fig. 1).

PHORATE SOIL TREATMENTS

The length and dry weight of shoot and root of siris increased where phorate was added at 0.10 and 0.15 g a.i. per litre of soil mixture. At 0.025 and 0.05 g a.i. per

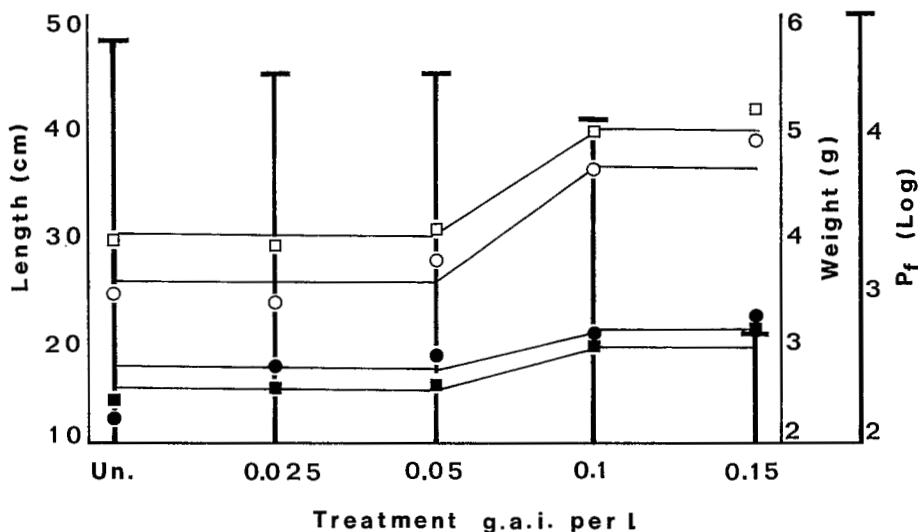


Fig. 2. Effect of phorate soil treatment on siris seedling growth and *T. indicus* multiplication rate (mean of five replicates). Pf : final nematode population per container. Legend : see Fig. 1. Data are significant at 5 % level.

litre of soil mixture, phorate was ineffective. When the experiment ended the nematode populations had declined in inverse proportion of the amount of phorate applied (Fig. 2).

It is concluded that *T. indicus* is pathogenic to siris and causes stunting as observed in inoculum experiment. It is controlled by phorate applied to soil.

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