

# A PRELIMINARY EVALUATION OF THE INFLUENCE OF TREATMENT OF SEEDS OF RICE ON PENETRATION OF THE ROOTS BY MELOIDOGYNE JAVANICA

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## INTRODUCTION

ISHIY & al. (1975) demonstrated that populations of **Aphelenchoides besseyi** in rice seeds, **Oryza sativa** L., could be reduced by treating seeds with a 0.25% solution of Thiabendazole, Tecto 40, for one hour. MARTINS & al. (1976) found that a seed treatment with Carbofuran, Furadan 75 PM, at 0.5% AI for one hour eradicated **A. besseyi**.

RAO & BISWAS (1973) demonstrated yield losses in rice due to the root-knot nematode, **Meloidogyne graminicola**. SIVAKUMAR & al. (1973) showed that Carbofuran seed treatment of okra could be effectively employed to reduce the severity of root-knot nematode infestation.

The objective of this work was to evaluate the influence of seed treatments used for the control of **A. besseyi** on colonization of rice roots by **M. javanica**, a frequent pest of dry land rice in Brazil.

## MATERIALS AND METHODS

A steam sterilized sandy soil was placed in plastic containers, 70 x 42 x 15 cm. One liter of soil and finely cut roots infested with **M. javanica** eggs and larvae was thoroughly mixed with the sterilized soil in each container. Rice seeds of variety IAC-435 were treated with solutions of Thiabendazole (0.25, 0.50, and 1.00% AI) and Carbofuran (0,50 and 1.00% AI) for one hour, air dried, and

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planted into the infested soil. Seeds soaked in water for one hour served as nontreated checks. Ten seedlings from each of five replications were collected 7, 14, and 28 days after germination of the seeds. Roots were stained with an acid fuchsin-ethanol-acetic acid solution (McBRYDE, 1936), destained with chloral hydrate and numbers of nematodes determined using a dissecting microscope.

**Table I** - Influence of seed treatments on penetration of rice seedlings by *Meloidogyne javanica*.

Treatment	Number of nematodes recovered per g of root		
	7 days after germination	14 days after germination	28 days after germination
Nontreated check	0	3	18
Thiabendazole 0.25% AI	0	36	364
Thiabendazole 0.50% AI	0	2	5
Thiabendazole 1.00% AI	0	4	5
Carbofuran 0.50% AI	0	1	10
Carbofuran 1.00% AI	0	0	8

## RESULTS

Seed treatment of rice did not appear to effectively reduce the number of *M. javanica* larvae penetrating the roots of rice seedlings (table I). Thiabendazole at 0.25%, the recommended treatment for control of *A. besseyi*, appeared to stimulate colonization of roots by *M. javanica* but no such phenomenon was observed at higher dosage rates.

Low concentrations of herbicides (TANG & al., 1970) and fungicides (TOKESHI, personal communications) have been shown to have stimulatory effects on the growth and reproduction of soil microflora. Low concentrations of systemic pesticides may influence nematode penetration of roots by effecting the virulence of the pathogen, altering plant defense mechanisms, modifying the composition and structure of host tissues and/or changing ecological balance of soil-borne organisms.

Only second stage larvae were recovered from the roots 28 days after germination. The activity of *M. javanica* larvae and their development after penetration were apparently retarded due to low temperatures, 3°C minimum and 20°C maximum, during the experimental period.

Studies on the influence of pesticides on the biological balance between target and non target microorganisms are needed before agro-ecological interrelationships can be fully understood.

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