

Acknowledgements

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Control of *Meloidogyne incognita* on cucumber by small quantities of systemic nematicides applied at seedling stage

(Keywords: *Meloidogyne incognita*, cucumber, isazophos, aldicarb)

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Low quantities of isazophos (C₉H₁₇CN₃O₃PS) and aldicarb (C₇H₁₄N₂O₂S) applied at seedling stage protected egg plant for a period of seven weeks against *Meloidogyne incognita*. In fruits of plants treated with 14 mg of aldicarb, no residues of this compound could be demonstrated (Mateille and Netscher, 1985). To verify whether it is possible to apply this technique under field conditions, a trial with vegetables was made using cucumber as a test plant.

Seeds of cucumber cv. Poinsett were individually sown in 600 cm³ plastic bags filled with sterile soil. Treatments consisted in watering each plant with 20 cm³ of a solution of 14 mg of either isazophos or aldicarb in water, controls receiving water only. One week after treatment, seedlings were transplanted to a field infected by *M. incognita*. The experiment was set out as a randomized blocks design with six replications. Each plot consisted of six rows of 6 m, 50 cm apart. Spacing of transplants within rows was 75 cm. To determine the number of *Meloidogyne* juveniles at the moment of transplanting, a soil sample of at least 20 subsamples was taken from each plot and 250 cm³ soil processed by elutriation (Seinhorst, 1956). To extract *Meloidogyne* juveniles from egg masses which had precipitated with heavy soil particles and which escape detection by elutriation, the fraction of coarse soil which normally is discarded, was placed for two weeks in a mist chamber (Seinhorst, 1950) to extract juveniles which had hatched. Plots were highly infested, but the distribution of *Meloidogyne* was very heterogenous (mean infestation = 6548 juveniles, dispersion = 6419). Harvesting started eight weeks after transplanting and continued for five weeks, the number of missing plants was regularly scored.

At the end of the harvest, cucumber plants were removed, roots carefully washed free of soil and the degree of galling estimated using the following scale: 0 = no galls; 1 = 1-5 galls; 2 = 5-20 galls; 3 = > 20 galls or/and coalescing galls; 4 = entire root system consisting of large coalescing galls, 5 = root system heavily galled and partially or completely decomposed.

Although both nematicides significantly increased yields, aldicarb was definitely superior compared to isazophos applied at the same dose. Nematicide treatment did not

prevent cucumber plants being parasitized by *Meloidogyne*, but galling was significantly lower in treated plants than in controls. Mortality of plants treated with aldicarb was significantly lower than controls or plants treated with isazophos (Table 1).

Table 1. Yield, death rate and gall index of cucumber plants

Treatment	Yield†	Gall index	Death rate‡
Control	4.3a§	2.2a¶	53.78a¶
Isazophos	6.9a	1.7b	46.97b
Aldicarb	14.3b	1.5c	24.24c

† kg per m².

‡ Percentage of dead plants.

§ Newman Keuls test, $P < 5\%$.

¶ Mann Whitney U test, $P < 1\%$.

It has been demonstrated that in egg plants treated at seedling stage with minute doses of isazophos or aldicarb and subsequently inoculated with juveniles of *M. incognita*, only small numbers of *Meloidogyne* females were present in roots during the first seven weeks after inoculation (Mateille and Netscher, 1985). The same effect probably has been the cause of a delay of massive penetration of *Meloidogyne* juveniles immediately after transplanting of treated plants, resulting in a better development and production than controls.

The results of this trial, indicate that the application of systemic nematicides at seedling stage may help to control root-knot nematodes in a cheap and easy way.

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