

SOME EFFECTS OF ALDICARB ON THE LIFE CYCLE AND
PATHOGENICITY OF *MELOIDOGYNE INCOGNITA* IN POTATO
ROOTS

by

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Several systemic nematicides are now commonly used in commercial practice. Their efficiency in controlling plant parasitic nematodes have been investigated in many countries and on a wide range of crops. There are, however, relatively few observations on the way in which these nematicides, mainly carbamates, affect the biological processes of the nematodes. Some aspects of the effect of Aldicarb on the life cycle of *Meloidogyne incognita* (Kofoid *et* White) Chitw. and on the pathological activity of the nematode in the roots of treated potato plants were investigated in the experiment reported here.

Sprouting eyes from tubers of the potato cultivar « Alpha A » were sown in 15 cm diameter pots filled with a clay loam soil and each pot inoculated with approximately 1,000 larvae of *M. incognita*. Aldicarb granules (10% ai in a commercial formulation) were then added at the rate of 0.10 g/pot to a third of the pots at the time the soil was inoculated with the nematodes. Another third of the pots were similarly treated with Aldicarb five days after inoculation, and the remaining were left untreated with nematicide. The pots were kept in a glasshouse at approximately (30 ÷ 5°C) and watered as required.

Five days after inoculation and then at 48 hr intervals four plants of each treatment were removed from the pots and root pieces with galls were stained in lactophenol acid fuchsin and examined by means of a stereoscopic microscope for the presence of

the different life stages of the nematode. Histological changes in the root tissues induced by the parasite were investigated by fixing portions of the roots in FAA, embedding in paraffin wax and staining longitudinal and transverse sections cut at 15 μm with safranin and fast green.

In the untreated roots second stage larvae were detected about four days after inoculation and adult females were present about 14 days later. None of the nematode stages was present in the roots of the treatments receiving Aldicarb at the time of inoculation. On the other hand, in pots treated with Aldicarb five days after inoculating with nematodes roots became infested with second stage larvae after four days and the adult female stage was reached after a further 16 days. However, egg laying did not occur and only moderate galling without giant cell formation was induced at the feeding sites (Fig. 1).

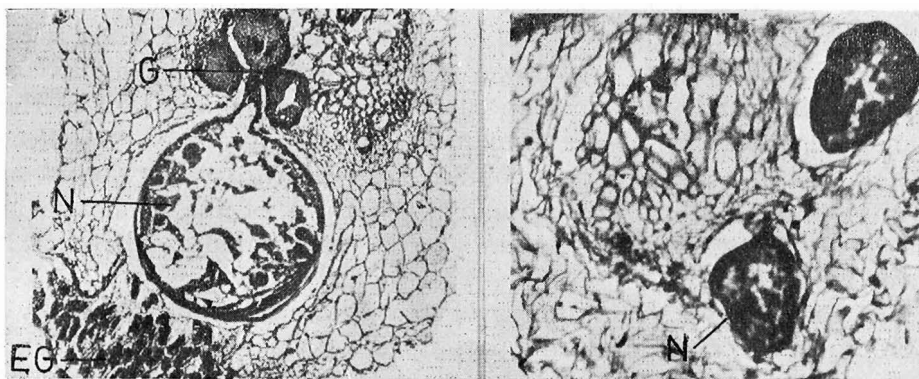


Fig. 1 - (left) Section of mature female (N) and egg mass (EG) in association with giant cell (G) in an untreated potato root; (right) nematode in root treated with Aldicarb, showing absence of egg laying and giant cells.

The experiment shows that the pressure of Aldicarb, either in the soil or in the plant, can prevent invasion of the roots by second stage larvae of *M. incognita*. Also, nematodes already present in the roots can become affected by systemic action of the nematicide within the plant when it is applied to the soil as a post-emergence treatment. The failure of the nematodes to induce giant cell formation may be due to a reduction in phenols in treated plants (Hafiz, 1972).

L I T E R A T U R E C I T E D

- HAFIZ S. L., 1972 - Phenolic content of host plants in relation to infection by the reniform nematode, *Rotylenchulus reniformis*. M. Sc. Thesis, Fac. Agric., Univ. Cairo.

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