

Laboratorio di Nematologia agraria del C.N.R.  
70126 Bari, Italia

## STUDIES ON THE SYSTEMIC ACTION OF SOME CHEMICALS IN THE CONTROL OF ROOT-KNOT NEMATODES

by

N. VOVLAS and F. LAMBERTI

Several systematically translocated nematicides are now available for commercial usage. The experiments reported here explored some aspects of the systemic mode of action of three carbamates and one organophosphorus compounds.

The root systems of one month old tomato « Roma » seedlings were split to a height of 2 cm above the crown and planted one part in steam sterilized soil to which one of the chemicals had been incorporated two days earlier, and the other in soil heavily infested with *Meloidogyne incognita* (Kofoid *et* White) Chitw. (Fig. 1).

The granular formulation of aldicarb, carbofuran, oxamyl or thionazin were applied to groups of 40 plants each, at the rate corresponding to 10 kg active ingredient/ha. The plants were kept for the duration of the experiment in a glass-house maintained at a temperature of 24-26°C and 65-70% RH; the pots were distributed at random on a bench under natural light.

At intervals, after transplanting, the pots containing untreated soil were taken from each treatment and examined for the presence of nematodes and root galls to determine the translocation of the chemicals and to estimate the persistence of nematicidal activity.

At 17 days after transplanting, untreated control plants were heavily galled and young females were already present (Fig. 2). Among the chemical treatments, only the carbofuran pots were in-

fested with second stage juveniles starting the process of swelling (spike stage). Other chemical treatments were completely uninfested. The next sampling of roots at 30 days after transplanting revealed the presence of mature egg-laying females in the control pots, young females in the carbofuran treatments, spike juveniles in the aldicarb and thionazin treatments, but only vermiform second stage juveniles

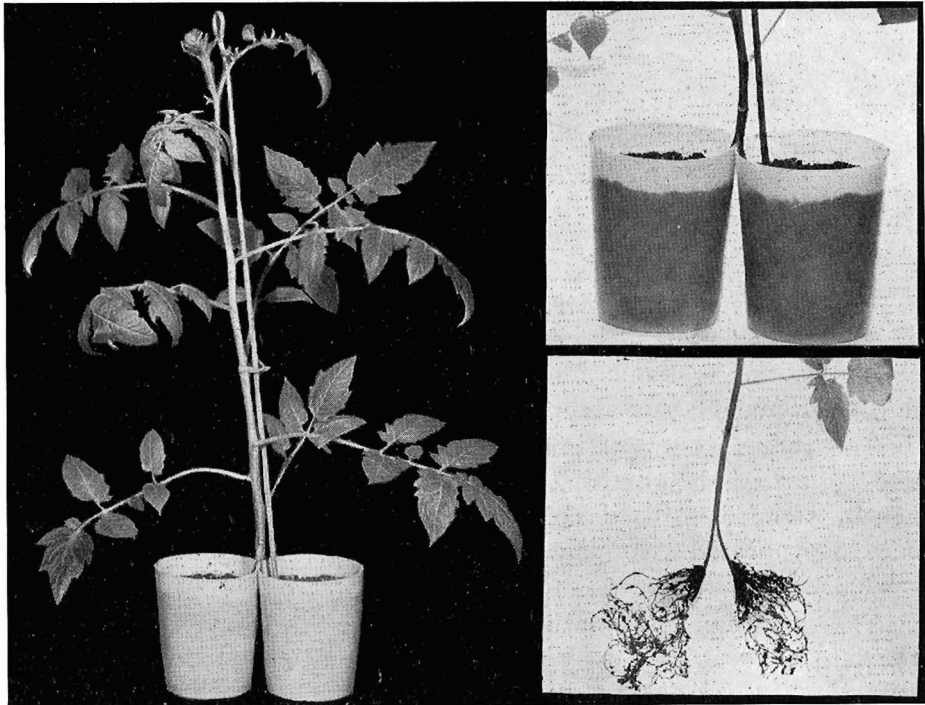


Fig. 1 - Tomato plant with the root system split and transplanted in two different pots, one containing sterile soil plus nematicide, and the other soil with root-knot nematodes.

in the oxamyl treatments. At 45 days after transplanting, all the stages of the nematode were present in all of the treatments.

The results demonstrate that each of the chemicals was systematically translocated. The extent of galling of the roots that had developed in the differently treated soils by the end of the experi-

ment, 60 days after transplanting, provided an indication of the persistence of the chemical applied (Fig. 2).

Observations at intervals after transplanting showed that oxamyl prevented nematode invasion of the roots for about 25 days, aldicarb and thionazin for 18-20 days, and carbofuran for only about 12 days.

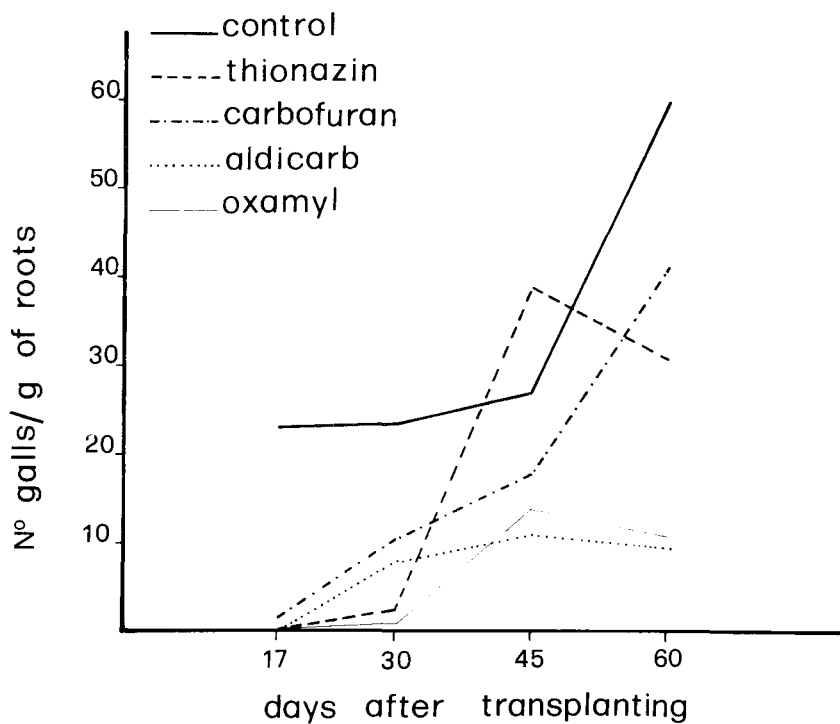


Fig. 2 - Mean number of galls present on the roots of the plants at different intervals after transplanting (F significant per  $P = 0.01$ ).