Parathion Controls Leaf Nematode Disease of Chrysanthemums

By

A. W. Dimock and C. H. Ford*

Gratifying as it would be to be able to claim that all of our information on diseases and disease control came from the fertile brains and able hands of the plant pathologists, the truth is that we have to thank Lady Luck for some of our most spectacular developments -- particularly in the field of sprays for disease control. Even the all-time champion Bordeaux Mixture was accidentally discovered when a French grape grower put a mixture of bluestone and lime on grapes near the road to make passersby think they were covered with poisonous Paris Green and hence discourage thievery. Those grapes did not have mildew but the rest did -- and Bordeaux Mixture was born. The ability to observe and capitalize on chance happenings is an important qualification of a good pathologist.

In the present instance an experiment was planned on the leaf nematode disease in the summer of 1947 and infection was intentionally being built up on plants in the greenhouse. The nematodes were thriving, but so were red spiders, so with the counsel of Dr. Blauvelt a series of parathion aerosol treatments was started. The red spiders were excellently controlled, but for some reason our nematodes quit spreading and, in spite of repeated efforts to get them going again, the planned experiment went out on the dump because the nemas just wouldn't cooperate. The most surprising thing was that we could not find any living nematodes in the old lesions which usually yield them in abundance. So while one experiment died, a new one came into being.

Preliminary tests during 1948 were discouraging both because we could not get nematodes going well enough in the checks and because nematodes stubbornly refused to die even when placed in drops of water containing wettable parathion. The idea was not abandoned, however, and this spring field tests were set up at Ithaca and at Farmingdale in which DDT, nicotine, chlordane, TEPP and benzene hexachloride were employed in addition to parathion both in the emulsion and wettable powder forms.

Before these tests had progressed far enough for any results, Jack Fjeldallen, entomologist with the Norwegian government, told us of some chance observations made in the course of testing a number of the newer insecticides for insect control on chrysanthemums in Norway. Leaf nematode damage was severe in all cases except the parathion plots -- and in these there was no nematode injury. The results were reported to German workers who subsequently confirmed the findings. We have just learned that similar results have been obtained in Holland. Furthermore, at the start of the current season one of our cooperating growers in the south noticed severe nematode infection starting in his clothhouses, and on the basis of what was then a hunch we suggested parathion sprays. He has reported that the nematodes were completely stopped in their tracks in spite of weather conditions admirably suited to their development.

So the results of our tests at Ithaca and Farmingdale, which have just been taken, came as an anticlimax -- though a very happy one. None of the materials tested gave appreciable control except parathion, which gave almost perfect results. At Farmingdale, only 1 leaf lesion was found on all of the plants in the parathion plots. At Ithaca, no infection was found in the wettable powder parathion plots, and only a trace of infection in the emulsion parathion plots. All in all, there seems to be no question now but that parathion, applied in the spray form as for insect control, will almost perfectly control leaf nemas. Nothing else that we have ever tried has even come close enough to be encouraging.

Up to the present time we have seen no evidence which would indicate that parathion could not be used satisfactorily in mixture with the Fermate or Karbam Black sprays used for Septoria leafspot control. However, there is evidence indicating interference with the activity of Parzate where the latter is being used for ray blight control. It would therefore be best to use Parzate alone for ray blight sprays.

Growers must remember that parathion is an exceedingly poisonous material. A respirator should always be worn when mixing up the sprays and preferably also when making applications. All precautions indicated on the labels should be carefully studied and followed in detail.

* * * *

* Dr. Dimock, Professor of Plant Pathology, Cornell University, Ithaca, N. Y. Mr. C. H. Ford, Fellow of New York Florist Club at Cornell University, Ithaca, N.Y.

Your Editor,

Kenneth Post