

Evaluation of fenamiphos-alternatives for controlling nematodes in golf greens, 2009

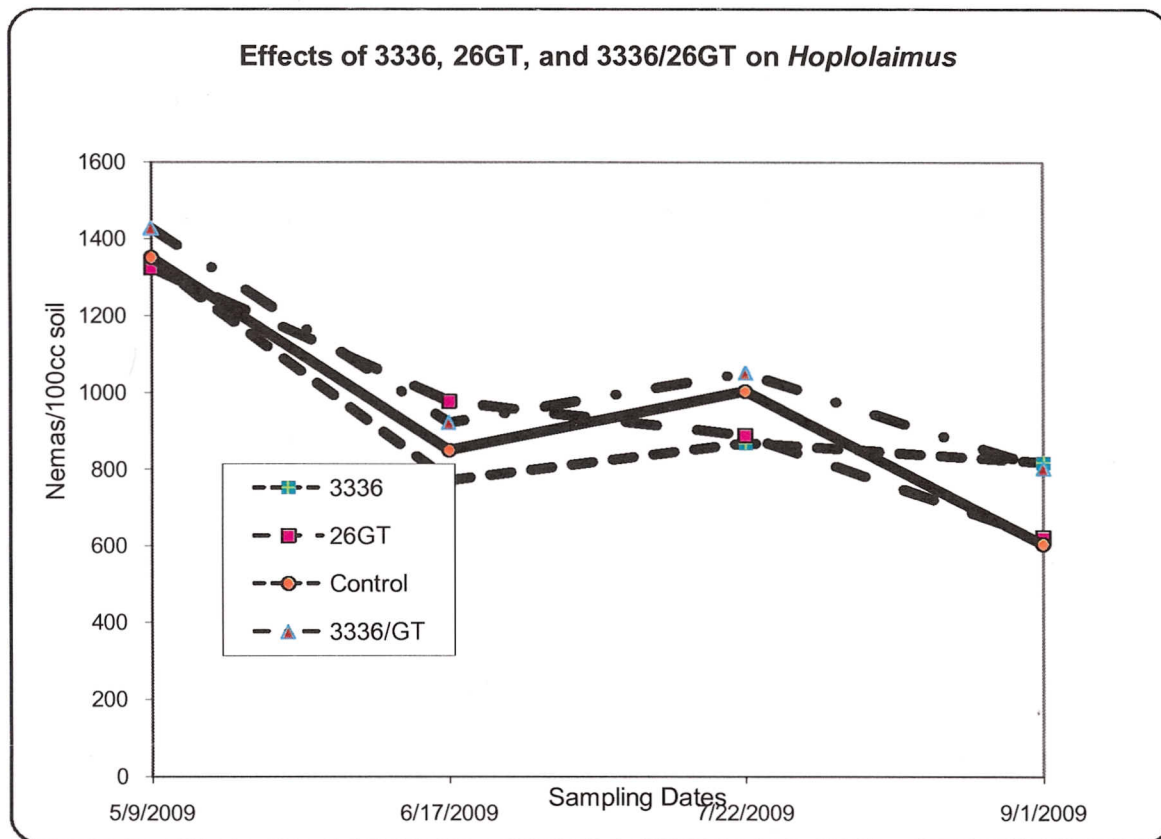
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Effect of thiophanate methyl and iprodione on plant parasitic nematodes

Methods

Benzimidazoles were first introduced into the market as nematicidal agents. Later they were developed into fungicides such as thiophanate methyl, the ingredient of Cleary 3336. On the other hand, iprodione was first introduced as a fungicide and has recently been registered as a nematicide in the United States. The company Devgen has formulated iprodione as a nematicide and is marketing it under the trade name of Enclosure. It will be registered for use in the United



States for nematodes in various field crops.

Thiophanate methyl and iprodione were tested separately and together at the highest labeled rate for turfgrasses. Six by six foot plots were established on a golf green in Westfield MA. The green consisted of a mixture of annual bluegrass and creeping bentgrass. This particular green had a history of a high population of lance nematodes. Treatments consisted of 6 fl oz/1,000 sq ft of Cleary 3336F, 8 fl oz/1,000 sq ft of 26 GTF, and a combination of the two at the same rates. The fungicides were applied in 2 gal water/36 sq ft plot (55 gal/1,000 sq ft). These were compared with an untreated control. There were 5 replications per treatment. Treatments were applied 4 times at three week intervals; the first application was on 16 May 2009. Nematodes were assayed on 9 May, 17 June, 7 July and 1 September.

Results and Discussion

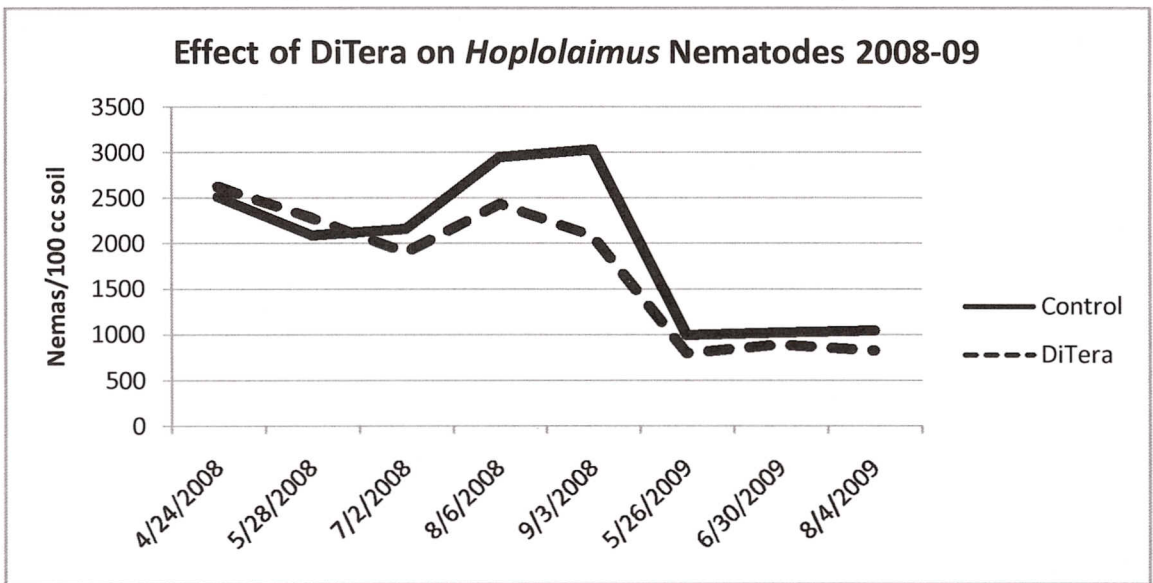
There were no significant differences between any of the treatments and the untreated control. It is possible that higher rates would have made a difference but there was no point in using a rate higher than the label allowed. Also, there were no rates available for the new Enclosure formulation of iprodione but it is not likely that they would have been significantly higher than 8 fl oz/1,000 sq ft. Enclosure will be tested when it becomes available.

Effect of DiTera on plant parasitic nematodes

DiTera is a commercially-available “nematicide” consisting of a freeze dried formulation of *Myrothecium verrucaria* strain AARC-0255. It had a registration for turf at one time but was bought out by a different company and is currently labeled for citrus, ornamentals, leafy vegetable and cole crops, pome some fruit and nut trees, grapes and pineapple. It currently does not have a label for turf. A golf green in Westfield, Massachusetts with a high population of lance nematodes was chosen to evaluate DiTera. The green consisted of a mixture of annual bluegrass and creeping bentgrass. The treatment and control were replicated six times each (plots were 6 ft x 6 ft) and completely randomized. DiTera was applied at the rate of 44.6 lb/A (16.3 oz/1,000 sq ft on 8 May, 3 June, 24 June and 15 July. For each treatment plot DiTera was suspended in 2 gal of water and distributed in the plot with a watering can. This was followed by an additional 2 gal of water per plot. This is equivalent to 108 gal/1,000 sq ft. or 0.18 inch of water. Populations of *Hoplolaimus* (lance) and *Tylenchorhynchus* (stunt) nematodes were assessed in each plot. This was a repeat of the same experiment carried out in 2008 on the same plots. In 2008 these plots also received 4 treatments.

Results and Discussion

In 2008 there were no significant differences in stunt populations on any of the sampling dates; although, there appeared to be a big difference for 6 August. Statistical differences were not seen for stunt due to high plot to plot variability for this nematode. Lance nematodes were statistically lower ($p=0.05$) with the DiTera treatment compared to the control only on 3 September. Since the last DiTera treatment was on 16 Jul, it is possible that the drop in Lance nematodes on the last sampling date was an artifact. However, the experiment was repeated in



2009 to see if additional nematicide and additional time would make a difference.

There were no significant differences in lance nematode populations in 2009. Stunt nematode populations were low and are not displayed on the graph. For this trial DiTera was applied at a higher rate than recommended because previous trials with DiTera on turfgrasses did not reduce plant parasitic nematodes. It is not likely that DiTera will provide adequate control of nematodes in golf greens.

Effect of 5-chloro-2-(3,4,4-trifluoro-but-3-ene-1-sulfonyl)-thiazole on plant parasitic nematodes

5-chloro-2-(3,4,4-trifluoro-but-3-ene-1-sulfonyl)-thiazole is a nematicide under development that has a relatively moderate LD₅₀ (between 500 and 1000). Due to possible phytotoxicity a full trial was not carried out on a working golf green. A nursery in Albany New York cut to golf green height was the site for this trial. The nursery was primarily bentgrass but also had some *Poa*. Two formulations of the material was applied at the highest recommend rate to two duplicate six by six foot plots. The material was watered in with 2 gal water/plot (55 gal/1,000 sq ft). Within 48 hrs, approximately 4 inches of rain fell. Because of the high probability that the material was washed down below the root zone, a second application was made one week after the first and at the same rate.

Results and discussion

Within one week significant phytotoxicity occurred. This material will be retested in 2010 with a range of application rates.