

Evaluation of Post-Curfew Nematicides to Prevent or Reduce Sting and Lance Nematode Reproduction

(S.A., Martin, 2020)

Crop/Hybrid	Hybrid Bermudagrass (<i>Cynodon dactylon</i>)
Application Details	<p>General Fertility: Adequate</p> <p>Soil Type: USGA specifications</p> <p>Plot Size: 6'X10'</p> <p>Replications: 4 - Randomized Complete Block</p> <p>Application Method: CO₂ powered boom sprayer with 3 Flat fan nozzles at 40 p.s.i.</p>
Pest Pressure	<p>Pest 1 Lance: Below threshold; Soil fumigant (Curfew®) applied early May</p> <p>Pest 2 Sting: Below threshold; Soil fumigant (Curfew) applied early May</p>
Treatments*	<p>Treatment 1 - 14 days Neo-Tec® S.O. 3.5 fl oz/1000 ft² (M) <i>Applied Jun 2, Jun 16, Jun 30, Jul 14, Jul 28, Aug 11</i></p> <p>Treatment 2 - 14 days Neo-Tec S.O. 3.5 fl oz/1000 ft² (M) <i>Applied Jun 2, Jun 16</i></p> <p>Neo-Tec S.O. 1.5 fl oz/1000 ft² (M) <i>Applied Jun 30, Jul 14, Jul 28, Aug 11</i></p> <p>Treatment 3 - 21 days Indemnify® 0.39 fl oz/1000 ft² (M) <i>Applied Jun 2, Jun 23, Jul 14, Aug 4</i></p> <p>Treatment 4 - 21 days Divanem® 1.22 fl oz/1000 ft² (M) <i>Applied Jun 2, Jun 23, Jul 14, Aug 4</i></p> <p><small>*All treatments were watered into the upper root-zone with a handheld hose immediately after application. Approximate post treatment irrigation rate was about 0.25 inches and should have carried nematicides at least three (3) inches into the root-zone profile.</small></p>

Purpose

BRANDT offers premium and advanced fertilizer technology, in addition to a complete portfolio of crop protectants. In this trial, we evaluated various nematicides, including Neo-Tec S.O., to determine if any would delay the reproduction of surviving nematodes after Curfew soil fumigant application to control sting (*Belonolaimus longicaudatus*) and lance (*Hoplolaimus galeatus*) nematodes. The work was conducted on a golf course putting green with a history of high nematode counts. The Neo-Tec S.O. program(s), offering a biological nematicide (active ingredient derived from sesame oil), featured six (6) applications made 14-days apart during the late spring and summer.

Summary

All nematicides, including Neo-Tec S.O., provided consistent results throughout the entire trial and kept sting and to a lesser degree lance nematode reproduction under control. Of the two (2) Neo-Tec S.O. treatments, the one that maintained the 3.5 fl oz/M rate performed better than when subsequent treatments were reduced to 1.5 fl oz/M. For this preventative type application, NeoTec S.O. appears to be a viable candidate for golf course superintendents wanting to limit nematode rebound after a Curfew application.

Results and Recommendations

Notes

- Counts of sting and lance nematodes were relatively slow in coming back and by the end of the trial had not recovered - even the check plots - to pre-Curfew levels
- Lance nematode rebounded at a higher rate and counts than sting nematodes. This is not surprising since lance is an endoparasitic species, while sting is ectoparasitic in nature
- Other than Curfew fumigant, no commercially available nematicide has satisfactorily controlled lance nematode curatively
- In this trial, essentially a preventative approach, lance was suppressed to a degree
- No visual treatment differences among plots were observed
- It was likely that overt damage from sting nematode was avoided because they tend to move to lower soil depths during the hottest, summer, months
- High variability occurred with respect to nematode counts which accounts for why, even though trends showed a logical conclusion of efficacy, only on some dates were the differences statistically significant

Results

- Treatments did show at least initial efficacy and gave evidence of nematode suppression, thus improved root growth was achieved (Figure 1)
- Neo-Tec S.O. (treatment 2) produced significantly better root growth than all other treatments (Figure 1). Neo-Tec S.O. treatments, particularly treatment 2, performed as well as any of the nematicides tested for sting suppression after Curfew application (Figure 2)
- The higher rates of NeoTec S.O. produced better results, specifically for sting nematode (Figure 2)
- All nematicide treatments suppressed lance to a degree but counts went up quickly and were much higher than sting counts (Figure 3)
- It may be that the improved root growth from sting suppression and relative difficulty in lance control allowed lance to reproduce better on the improved root system

Summary and Recommendations

- As a preventative program and after fumigation, apply Neo-Tec S.O. at 3.5 fl oz/M every 14 days to maintain or reduce sting and/or lance nematode counts
- Apply nematicide in conjunction with ample foliar nutrition to maintain turfgrass vigor during environmental stress and increased nematode pressure
- Neo-Tec S.O. appears to be a very viable option for golf course superintendents to modify nematode populations after Curfew application

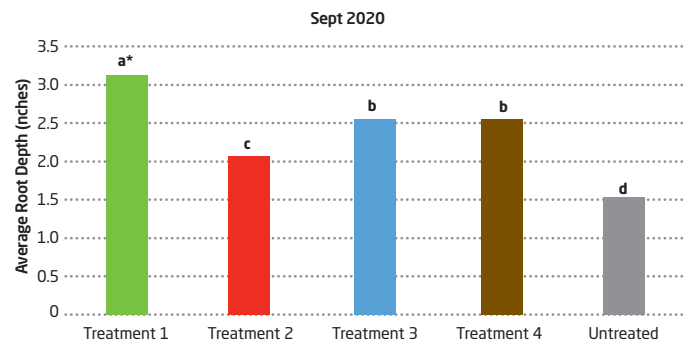


Fig. 1 Impact of BRANDT's nematicide program using NeoTec S.O. applied every 14 days 6X during the summer 2020 and other nematicides on root growth/depth.

* Means followed by a different letter are significantly different (P=0.10).

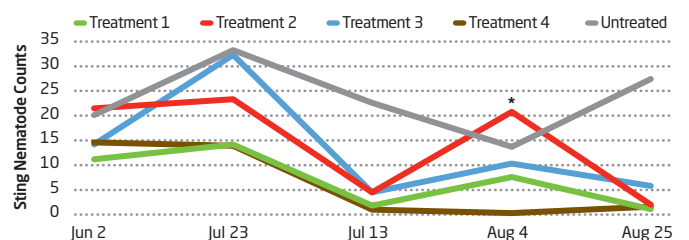


Fig. 2 Impact of BRANDT's nematicide program using NeoTec S.O. applied every 14 days 6X during the summer 2020 and other nematicides on sting nematode counts.

*Statistical treatment separation (P=0.10).

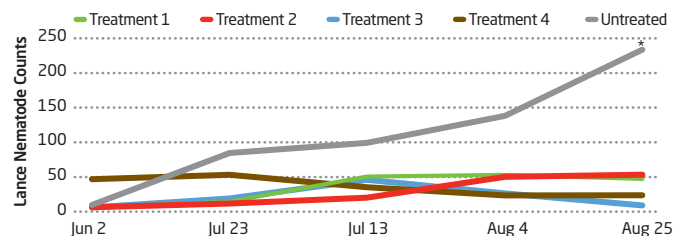


Fig. 3 Impact of BRANDT's nematicide program using NeoTec S.O. applied every 14 days 6X during the summer 2020 and other nematicides on lance nematode counts.

*Statistical treatment separation (P=0.10).

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