

CREEPING BENTGRASS (*Agrostis palustris* ‘A-1’/‘A-4’)

- Sting nematode; *Belonolaimus*
- Stunt nematode; *Tylenchorhynchus*
- Spiral nematode; *Scutellonema*
- Stubby root nematode; *Trichodorus*
- Sheath nematode; *Hemicycliophora*

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Control of plant parasitic nematodes in creeping bentgrass with Curfew Soil Fumigant, 2005.

Curfew Soil Fumigant, a formulation of 1,3-dichloropropene for turfgrasses, was evaluated for control of root parasitic nematodes in creeping bentgrass putting greens. This trial was conducted on Greens 3, 8, and 16 at the Country Club of Landfall in Wilmington, NC on ‘A-1’/‘A-4’ creeping bentgrass greens that were constructed in 2001 and maintained under standard putting green conditions. Plots were 6 ft wide and ran the length or width of each putting green. Treatments were arranged in a randomized complete block with four replications. Curfew was applied on 26 Apr at 5 gal per acre by soil injection by International Turf Applicators (Lakeland, FL). Treated areas were rolled immediately with a lightweight greens roller to seal the injection slits, then 0.25 in. of irrigation was applied. Pre-treatment nematode samples (4 in. deep) were collected from each plot on 25 Apr, and post-treatment samples were collected from each plot on 17 May. Nematode samples were processed and analyzed by the North Carolina Department of Agriculture’s Agronomic Division. Root depth was assessed on 5 Jul by removing 10 cores from each plot with a 0.5 in. soil probe and measuring the depth of intact roots to the nearest millimeter. Turfgrass quality was evaluated on 9 Jun and 5 Jul, using a 1 to 9 scale (9=best, 5=acceptable) based on color, density, and uniformity. All data were subjected to analysis of variance and means separation by Waller-Duncan k-ratio t test (k=100).

Application of Curfew Soil Fumigant to established creeping bentgrass resulted in a mild chlorosis of the turf surrounding the injection slits for approximately 3 weeks. In addition, many small spots of dead turf approximately 0.5 in. in diameter were observed along certain injection slits, likely due to a leak in the injection tubes. Based on the pre-treatment nematode assays, no significant differences in nematode populations were present at the time of treatment application (data not shown). On 17 May, Curfew applications resulted in a numerical reduction of all nematode species in each green. Statistically significant suppression was detected for sting nematodes in Greens 3 and 8 and for sheath nematodes in Greens 8 and 16. Curfew applications significantly increased root depth on 5 Jul in all three locations. No above-ground symptoms of nematode injury were observed in untreated plots during the study, and Curfew applications did not increase turfgrass quality on 9 Jun or 5 Jul. Curfew Soil Fumigant is a viable option for nematode control in established creeping bentgrass turf, however, steps must be taken to avoid leaking of injection tubes and subsequent death of foliage that is contacted with the formulated product.

Table 1. Results from #3 Green at The Country Club of Landfall in Wilmington, NC.

Treatment and rate / acre	Nematodes / 500 cc soil (17 May)					Root Depth (mm)		Turfgrass quality ^z	
	Stunt	Spiral	Stubby Root	Sting	Sheath	5 Jul	9 Jun	5 Jul	
Curfew (5 gal).....	10 a ^y	10 a	0 a	58 b	10 a	84 a	8.5 a	8.5 a	
Untreated.....	60 a	20 a	3 a	355 a	140 a	37 b	8.3 a	8.3 a	

^zTurfgrass quality on a 1 to 9 scale, where 9=best and 5=acceptable.

^yValues are means of four replicates. Means within columns followed by the same letter are not significantly different according to Waller-Duncan k-ratio t-test (k=100).

Table 2. Results from #8 Green at The Country Club of Landfall in Wilmington, NC.

Treatment and rate / acre	Nematodes / 500 cc soil (17 May)					Root Depth (mm)		Turfgrass quality ^z	
	Stunt	Spiral	Stubby Root	Sting	Sheath	5 Jul	9 Jun	5 Jul	
Curfew (5 gal).....	0 a ^y	0 a	0 a	3 b	5 b	68 a	8.3 a	8.3 a	
Untreated.....	0 a	40 a	15 a	176 a	258 a	45 b	8.3 a	8.0 a	

^zTurfgrass quality on a 1 to 9 scale, where 9=best and 5=acceptable.

^yValues are means of four replicates. Means within columns followed by the same letter are not significantly different according to Waller-Duncan k-ratio t-test (k=100).

Table 3. Results from #16 Green at The Country Club of Landfall in Wilmington, NC.

Treatment and rate / acre	Nematodes / 500 cc soil (17 May)					Root Depth (mm)	Turfgrass quality ^z	
	Stunt	Spiral	Stubby Root	Sting	Sheath	5 Jul	9 Jun	5 Jul
Curfew (5 gal).....	30 a	30 a	13 a	0 a	5 b	77 a	7.8 a	7.8 a
Untreated.....	170 a	180 a	23 a	30 a	48 a	55 b	8.5 a	8.3 a

^zTurfgrass quality on a 1 to 9 scale, where 9=best and 5=acceptable.

^yValues are means of four replicates. Means within columns followed by the same letter are not significantly different according to Waller-Duncan k-ratio t-test (k=100).