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## President's Message

by Dave Meyer

February is here, and it is snowing — just a normal occurrence for Chicago. Not to disappoint us NORTHERNER's, it also snowed in California for our arrival to the GCSAA Conference and Show. The weather made it easier for attending the educational meetings and show. The topic covered by our own Oscar Miles on the "Mud Flat" Western Open, stressed the need for a plan of attack before setting the wheels in motion. The subject was well presented. The presentation by Dr. Randy Kane was hindered by the sound system which could have been improved. Despite the difficulty he was able to convey his message. It seems that the topics covered by the speakers concurrently make it difficult to decide which presentation to attend, especially the Friday sessions.

I hope anyone buying Bentgrass in the near future was able to hear Dr. Joe Duich tell of the bogus Pennncross being marketed. It can cause real problems when you try to cut it to putting green height. It dies and is usually blamed on the cultural practices of the Superintendent.

The Trade Show just continues to grow, making it difficult to see it all in one or two days. It was in four different halls in the convention complex. It took me two days to find the hall on the East end.

On Monday the Annual Meeting and elections were held. Congratulations to Dennis Lyon on his election to Presidency. Our voting delegates Len Berg and Bruce Williams did a fine job of interviewing the candidates asking for explanations about the financial responsibilities of the Association. My feeling being, if everyone will read the financial report mailed by the GCSAA prior to the convention they will have questions of their own concerning the operations of the GCSAA.

I hope to see you in March at Nordic Hills.

## "One More Time"

As the wind combs life into the Grass,  
And the warm Sun stimulates It's growth,  
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Stirs the imagination, with good reason,  
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We welcome March's springtime splendor,  
For We're All ready, to surrender.

**Kenneth R. Zanzig**



Dr. Randy T. Kane, Turfgrass Advisor (312) 954-2753  
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## Nematode Populations on Chicagoland Putting Greens

by R. T. Kane

U of I/CDGA Turfgrass Advisor

As you probably know by now, I have been monitoring nematode populations on Chicago area putting greens for the past two seasons (1987 and 1988). Interest in plant parasitic nematodes and possible damage to turf is increasing, and I have had many requests from superintendents for information, or to perform actual analysis of soil samples. Two reasons for the recent interest are: 1) increased awareness by today's superintendent of the health and activities of roots and the rootzone; and 2) a number of diagnoses of nematode incited turf loss made by the U of I plant clinic, other labs, and myself in 1986 and 1987.

The plant parasitic nematodes most commonly found in high numbers in central and northern Illinois are the stunt (*Tylenchorhynchus*), spiral (*Helicotylenchus*), and ring (*Criconeoides*), all of which are ectoparasites. Ectoparasites feed on the root surface by piercing digestive enzymes, and then sucking up the leaking nutrients. In some cases, the endoparasitic root-knot nematode (*Meloidogyne*) has been observed. Endoparasites physically penetrate and move through the root and feed on inner cell layers.

Below ground symptoms of heavy nematode feeding include stunted, thinned, or shallow roots, lack of root hairs, and in some cases root swellings or galls. Above ground symptoms include chronic yellowing and thinning, or rapid wilting of foliage when under water stress. Symptoms may be scattered and patchy or widespread and general on a green or area of a green.

Diagnosis of a nematode problem is difficult for several reasons. First, a representative soil/rootzone sample must be acquired, handled properly, and the nematodes extracted; then the nematodes must be accurately identified and counted. Second, we don't have well established "action thresholds" in the midwest, since most of the nematode research has been done in the south. Third, root decline is often caused by a complex interaction that may involve many factors including fungi, nematodes and other inhabitants of the rootzone. Also, management variables such as irrigation, fertility, aeration/soil compaction, etc. have to be factored into the disease equation.

In April of 1987, I began a survey of area putting greens to determine the prevalence of different genera of parasitic nematodes, in an attempt to relate populations to turf injury. Soil samples were taken from a total of 23 greens from eight

different golf courses in the Chicago area. Greens were sampled five times through the season (April-October) in both 1987 and 1988. Soil samples consisted of 3/4" cores taken randomly from each green, approximately 6 to 8 cores per green. Nematodes were extracted and counted from the soil mix (only to the depth of rooting) using the sugar flotation-centrifugation technique.

While conducting the survey, I identified several greens with high nematode populations, and these were subsequently treated with Nematicur to see what effects treatment would have on nematode counts and turf health. In June of 1987, an entire green was treated with Nematicur, and populations were monitored on that green for the rest of '87 and all of '88. Also, the front half of two other greens were treated with Nematicur in May of '88. Also, the front half of two other greens were treated with Nematicur in May of '88, and populations were then monitored for the remainder of 1988. The later study permitted direct comparisons of treated vs. untreated areas on the same green. I would like to specially thank Dennis Wilson, Superintendent at Sunset Ridge CC for cooperating in this part of the study.

Some general results of the survey are presented in **Table 1**. Of the 23 greens sampled, about 25% (6 greens) had elevated counts of one or more species. This meant stunt or spiral counts in the range of 500 to 1500 per 100cc soil, or ring counts in the 300+ range. **Table 2** shows the average counts for these selected greens. Since 3/4 or more of the greens had fairly low counts (less than 250), the overall averages in Table 1 are lower, in the 150-300 range. Note, however, that the **average counts** for the stunt nematode at all sampling dates in 1988 exceeded 300 per 100cc of soil. Up until now, a count of 300 for stunt has been considered an important threshold which could lead to turf damage. In Illinois, perhaps this threshold should be higher in the future.

Nematicur treatments were quite effective in reducing nematode populations in putting green rootzones (**Tables 3 and 4**). Note that the reduction in counts was fairly slow to occur, but the effect was long lived. Table 3 shows the residual effect of an '87 Nematicur treatment on the '88 populations, and also shows a possible "rebound" effect in the stunt population in September 1988.

The comparison of treated vs. untreated areas on the same green in Table 4 further shows the effect of Nematicur. Nematode counts were reduced by 85 to 90% by the end of the season. Visible improvements in heat stress tolerance and root depth were observed on treated areas during the rough weather in mid-August. The primary effect of Nematicur was on the color and vigor of *Poa annua*, which was greatly improved in areas that received the nematicide.

After seeing the results of these studies, I am even more convinced of the importance of nematodes in heat stress and decline of *Poa annua* on certain putting greens. Bentgrasses are also affected, but the deeper root system and greater heat tolerance of bents makes them more resistant to the effects of high nematode counts. What we need to know is — how high is high? What is an appropriate action threshold for stunt or other nematodes in Illinois? Hopefully we will be able to answer these and other questions with upcoming research at the U of I. Funding for a graduate student to look at some of these questions is being provided by the Illinois Turfgrass Foundation, the MAGCS, and the CDGA.

(cont'd. page 4)

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(Nematodes cont'd.)

**Table 1. Average counts at each date for all greens sampled in the survey. Numbers are counts of each species per 100 cc soil.**

	1987			1988		
	stunt	spiral	ring	stunt	spiral	ring
Apr.	160	62	91	339	110	86
May	148	132	111	323	134	105
June	210	183	252	332	85	129
Aug.	325	208	143	474	202	155
Sep.	515	301	328	582	372	194

**Table 2. Average counts for selected greens with abnormally high populations of one or more nematodes (count per 100cc soil).**

	1987			1988		
	stunt	spiral	ring	stunt	spiral	ring
Apr.	333	167	141	895	170	121
May	270	248	172	670	239	156
June	517	303	421	688	129	208
Aug.	809	345	207	945	344	233
Sep.	975	575	454	944	653	288

**Table 3. Effect of Nemacur treatment on nematode populations over two seasons (numbers are counts per 100cc soil).**

	1987*			1988		
	stunt	spiral	ring	stunt	spiral	ring
Apr.	180	320	30	85	25	10
May	300	910	96	52	10	42
June	150	510	90	172	15	60
Aug.	125	375	100	180	100	60
Sep.	30	304	90	340	60	50

\*one nemacur treatment applied to entire green following May '87 sampling; no treatment applied in '88.

**Table 4. Comparison of nemacur treated vs. untreated areas of two putting greens (counts per 100cc soil).**

	Untreated Half			Treated Half		
	stunt	spiral	ring	stunt	spiral	ring
Apr '88	975	200	30	414	110	158
May	721	86	104	113	95	200
June	825	100	220	112	17	114
Aug.	1150	107	179	172	8	47
Sep.	1160	655	225			

counts are average of 2 greens sampled; half of each green treated with Nemacur at the May sampling date.

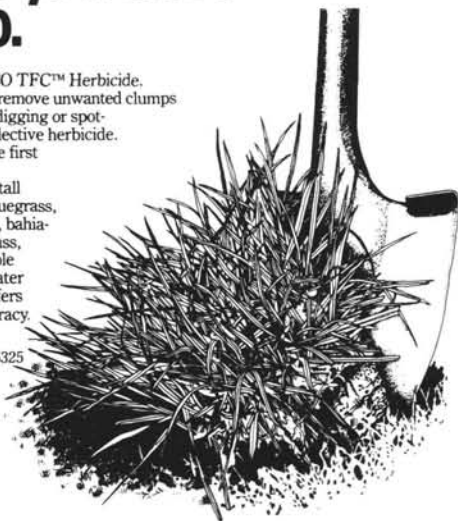
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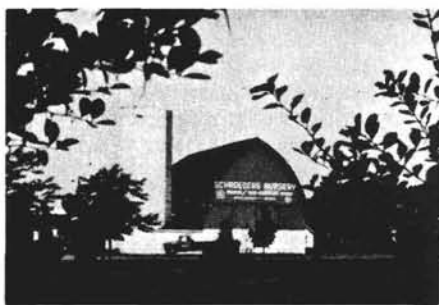
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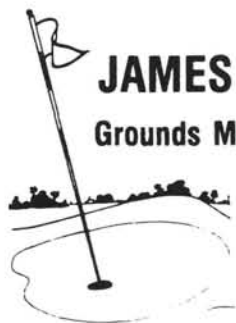
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## The Greening of Cantigny

by Tony Rzadzick, Ass't. Supt.

Cantigny Golf Club

One of the nice things about new golf course construction is being involved with it's creation from the start. I consider myself fortunate to be in such a position. Anyone who has experienced new construction may enjoy this article, others may learn something. Confrontations, mistakes, education, and eventually growth are all a part of the daily struggle to green 250 acres.

With the sudden explosion of golf course construction within and surrounding our Midwest Association, I thought that I might share some of my experiences of the past two years.

### Design and Construction.

One of the first things that Jesse Felix, assistant director of the Cantigny Gardens, told me was that "construction designs and plans are conceptions on paper." They are the best thoughts of an architect and his best efforts to convey these expressions in an understandable form.

One of the first things that Mike Nass, my boss, told me was that "this golf course was not designed to be easily maintained." Twenty seven holes of bent grass, 60 acres in rolling fairways alone. Square tees edged in flagstone, island tees surrounded by rock boulders, an island with a double green on it, acres of wildflower plantings, over 13 acres of annual beds, and over 100,000 feet of irrigation pipe and over 1500 sprinkler heads!

When we seeded those square tees I first thought, "What a maintenance nightmare! What is this architect trying to do? Why can't we make this easier Mike?" I soon found out that this 'concept' was to stay. After a season of mowing (yes it is time consuming to walk mow tees) I realized that both Mike and Jesse were right.

The point that I would like to make is that some courses are designed and the overall plan is sound. Changes though, are sometimes hard to appeal once a design is accepted. The end result is you. What are you willing to accept? What can you reasonably and feasibly best maintain? The time to do something about a design problem is before the construction in this area begins. Design ideas are not cut in stone.

Also to consider is that once the construction company pulls out you are left with their finished product. You may have a one year 'guarantee' on your site, but it is a lot easier to get the job done while they are there with their equipment and crew.

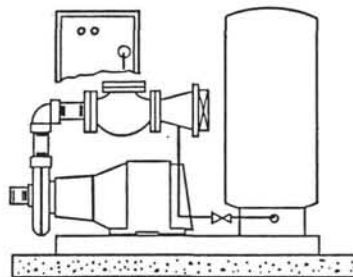
### Drainage.

As earth is moved and terrain changed, so is the watershed. Consideration to your neighbors I feel is a priority. While the construction goes on and mainlines, berms, and retention ponds are being built, look after your neighbors. The design may be good, but bordering or even across the border conditions may necessitate you to make a change. Water runs down hill. It really ran in August of 1987, along with five holes of newly seeded fairways, tees, and greens; right next door! It took us about a week to clean up all the silt that our neighbors collected from us. We also had to reseed and replace many ornamentals that the flood water suffocated.

Another funny thing that happens with drainage is how those bird baths turn up a week or two after seeding. There's a big beautiful spread of green fairway or tee — with nasty puddles here or there; what a mess, what a shame. You know that the

(cont'd. page 8)

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(Cantigny cont'd.)

construction crew did their best but there it is on your tee, green, or fairway; your own little rice patty.

Maybe it's time to tighten up the reins and slow down the transit crew. Often times this is a hard thing to do with deadlines, owners, and mother nature all fighting against you, but try to keep at a reasonable pace. It may pay off in the long run.

### Utilities

Utilities, one of my favorite words. With all new construction there will be new buildings also. A maintenance facility, clubhouse, washrooms, pumphouse, tennis and/or swimming pool, starter house, cart barn, and who knows what else. Some of these buildings will need some if not all of the following: gas line, phone cable, power supply, water pipe, sewer line, and you may even get to put in a closed circuit television cable too.

I had first had experience in installing all of the above utilities. Do yourself a favor. Make sure you dig your lines deep enough. Try to foresee possible locations of your buildings and roads, so if necessary you can sleeve conduit under your roadway or carpath before it's installed. Mark your trenches with cable tape, sand, or even flush mount in ground markers. Finally, watch the other contractors on the job site! You're bound to have outside contractors digging a light pole or putting in a parking lot. Believe me they dig first and ask questions later. Our phone line was cut at least four times. Our power line twice and television cable once. I had to cut a new carpath to get a phone and water line to a washroom, but I was able to push a sleeve under two cart paths without digging them up. Luckily, after all of this melee, no one was killed.

### Irrigation.

I think that this past summer taught all of us our faults in each of our irrigation systems. I'll bet some of us found a need for a few more key sprinkler placements, a deeper well, a couple of more quick couplers, or even considered an effluent water supply. Most of these wishes can easily come true, and at more reasonable cost, while the construction irrigation crew is on the site.

Other things to consider are your satellite placements. Are they safely out of sight of play? Are the controllers wired to your liking? Tee sprinklers together, greens together, fairways together, etc. in each zone. This makes field programming much easier and understandable. Also, before the irrigation crew leaves, check over the asbuilt that they leave you. Things sometimes change as the course develops, so will your irrigation needs.

The pump station, the heart of your operation, requires special attention. If your pumping system is a new design to you, get to learn as much as you can about it's operation. This may prevent you from having to blow your system out twice like we had to this past fall.

### Personnel.

In 1987 five other seasonal employees and myself worked at Cantigny. In 1988 we had over twenty employees and we still had not opened. We were due to open in August of 1988, but our clubhouse was still under construction.

The hardest part about managing all of these new employees is getting to know them and their individual talent. This seemed to be a daily experience as you send the men out and see

(cont'd. page 10)



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(Cantigny cont'd.)

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#### **Paper mulch, Straw mulch and Green covers.**

About the time our last greens and tees were being paper mulched, I heard the controversy of paper mulch vs. straw mulch vs. nothing begin.

After the 87 monsoon we straw mulched all of our rough areas. We had already lost five holes and we wanted to get our turf started and established especially on our hillsides as quickly as possible since fall was approaching. We did get a good catch of grass and extra expense was worth it.

One thing that inevitably will happen, even with straw mulch and drought conditions, are washouts. Even if it doesn't rain, when you irrigate a slope you will get rills or gully washers somewhere.

The silva-fiber paper mulch we used on our greens and tees did an adequate job, but not without problems. When we watered heavy for seed establishment or it rained like hell, sometimes the fibers would float and mass together. They would build up in a wave-like fashion as they moved to the lower areas of a tee or green. This would cause a layering and lining effect on the green surface as the seeds matured. After raking the fibers out, something you supposedly should not have to do, and several top dressings, we got back our smooth putting surface.

The funny thing about all of this is that we seeded sixty acres of fairways with no mulch at all and except for one fairway they all germinated surprisingly well. From all of this I believe that I would lean toward no paper mulching. I might straw mulch tees and greens just to get some protective insurance. Straw mulch is also a lot easier to rake out.

One thing every new course should invest in, if possible, is greens covers. I'm sure you've all heard about them, and for new seed establishment especially late fall or early spring the results are fantastic! It's not necessary (but it would be nice) to cover all of the greens. One of the problems with greens covers is anchoring them in sand based greens. I've heard that some people use sod staples over reinforcement rods to hold the covers down. We are developing our own device to do the same job.

#### **Sod nursery.**

On August 31 of 1987 we began construction of our first Penn-cross seaside sod nursery. Two weeks prior to this we had our record rainfall and we saw a future need for bent sod to repair our enormous washouts. Our foresight paid off. During the 1988 season we used up almost half of our one acre nursery.

In our haste, I should say dire need of sod for the coming season, we did not have time to irrigate our nursery. In hindsight I would make an irrigated nursery area a part of any new golf course construction. The initial cost to install and set aside an acre or two for a nursery may be expensive, but it will always be there when mother nature throws you a curve.

We have twenty five acres of farm land across the road from us. This season we plan to develop a two acre sod nursery as well as two more acres for a tree nursery. This time we are fully irrigating the nursery and plan to use quick couplers for the tree nursery.

(cont'd. page 14)



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