Thanks to his efforts, the grass is always greener

By Lori Ward Bocher

Some people dream that the grass will be greener on the retirement side of life. But the grass will be the same color for Dr. Robert Newman because he plans to make green grass an integral part of his retirement, just as it has been an important part of his 30-year career with the University of Wisconsin.

"I have a lot of respect for the grass plant," he said. "I don't like to tear it up. That's one of the reasons I don't golf."

That respect for the grass plant will keep Bob active in the turfgrass industry even though he officially retired from the UW-Madison horticulture department in August of 1991.

"I really don't have any plans for retirement," he admitted. "I'll stay involved in turf. I would like to make some slide sets in turf identification of plants. If the sod growers or somebody else has some project, I might volunteer to help them out."

In addition, he is teaching the turf management course at the UW until his replacement is hired. And he spends few days each week at the O.J. Noer Turfgrass Research and Education Facility.

He mentioned photography as a hobby he'd like to spend more time with now that he's retired. But then he admitted that most of his picture taking revolves around plants and plant problems.

So it shouldn't be surprising to learn how he and his wife, Diane, might use the travel vouchers given to them as a retirement gift by the WTA and the WGCSA. "We've been thinking of going to the Pacific Northwest and then driving down to northern California," he explained. "I've been invited several times to go out to Oregon and Washington where the bulk of the grass seed is grown. It would be kind of interesting to see that."

Born in 1928, Bob's interest in crops began on the family farm near Kenosha. "It was mainly a dairy farm, but we also grew sugar beets, strawberries, raspberries," he recalled. After graduating from Kenosha High School in 1946, he worked as a foreman on a large truck farm near Kenosha.

Bob Newman at his retirement party.

"Then the Korean War started and I was drafted into the Army, went to Korea, and got shot at for a year," he continued. "It gave me a million dollars worth of experience, but I wouldn't have paid a penny for one million more."

His service duty ended in 1952, and he was married in 1953. Then he made his first move to Madison—to study agricultural education at the UW where he received his B.S. degree in 1957.

"I was introduced to the world of turfgrass when I went to work for Northrup King in northern Illinois," he recalled. After three years with Northrup King, in 1960 he took a job with the UW on the Ashland Agricultural Research Station. While there, he did some research in turf weed control. "I had to have a masters degree for the job at Ashland, so I went back to school.

"Then I did the stupidest thing I've ever done in my life," Bob continued. "They told me I could work a full-time job in the horticulture department and go to graduate school at the same time, which I did. Eventually, I got a Ph.D.. in agronomy."

Even though his degree was in agronomy, Bob was hired by the horticulture department specifically to work with tobacco. "But I couldn't figure out how I could work full time in tobacco, so I started doing turfgrass work because it needed to be done," he explained.

Through the years, he found lots of work that need to be done. He taught a turfgrass management course on campus. He helped organize the Wisconsin turfgrass conferences. "And for the last dozen years or so I was the permanent chairman of the turfgrass conference committee," he pointed out.

"When federal and state laws started requiring certification for pesticide applicators, all the training was done by Extension and I was the chairman of that committee," he continued.

"And I taught Short Course," he added. "At first I taught during the regular Short Course session, but then I changed it to a one-week turfgrass course between semesters, when no one's around campus. That way I could attract people working in turf."

For many years, Bob was chairman of the horticulture department's experimental farm committee. As such, he was responsible for the department's 160-acre research plot, 12 greenhouses and complete line of machinery at the Arlington Agricultural Research Station. "Everything that went wrong up there was somehow my fault," he joked. "It was kind of a committee. But it was very enjoyable. I did most of my turf work at the experimental station, so I was up there a lot.

"And I was always interested in taxonomy," he continued. "It got to the point where I was identifying plants from all the junk that people sent to the department. If nobody else wanted to do it, I would figure out what it was."

Bob's work in the turfgrass industry did not center around golf courses. "The main area I work in is weed control, and golf courses don't have major problems there," he said, adding that golf course problems revolve around diseases. "I worked quite a lot with sod growers. They used to have some pretty severe weed problems.

"I also spent a fair amount of time with the City of Madison school system to try to keep their high school football fields in shape," he continued.

(Continued on page 13)

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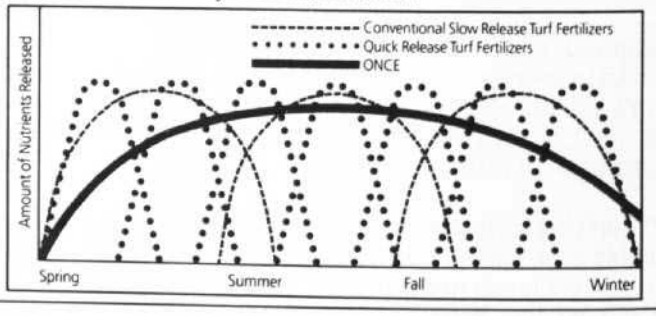

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(Continued from page 11)

Even though he didn't spend a lot of time on golf courses, he appreciates their beauty. "I'm not much of a golfer," he admitted. "But I enjoy the beauty that is created by a golf course in the midst of streets and noise. You get onto a golf course and it's peaceful, quiet and enjoyable.

"Wisconsin is one of the premiere places to build golf courses," he believes. "The state has so much beauty in it—so much water, so many lakes and rivers, wooded areas with conifers as well as broadleaf trees. And, with our rolling topography, you don't have to move as much earth."

But there's one thing he doesn't like about golf courses. "It bothers me that the grass is being cut so exceedingly short that it puts it under a great deal of stress," he pointed out. "And this stress shows up especially in the form of various diseases. Then it requires a fair amount of pesticide application. The superintendent has his hands tied because, at the moment, everybody wants fast golf greens. I would like to see golf played on turf that is cut a little bit higher so there isn't as much stress on the grass."

As a member of the UW golf course committee, Bob was closely involved with the planning of the University Ridge Golf Course. "I think Bobby Jones did a remarkable job," he said. "I hope that someday they can build the unique driving range, shaped like a terraced bowl, that has been designed." He also hopes that they'll be able to build the "executive nine" course, a second 18-hole course and a more substantial club house.

When asked if he had any final message to pass on to Wisconsin's golf course superintendents through this *Personality Profile* column, Bob Newman replied: "Don't be ashamed of *Poa annua* bluegrass." He explained how Wisconsin superintendents who attend national meetings are embarrassed to admit they have it on their courses. He doesn't believe in all the schemes and chemicals that have claimed to get rid of it. And he doesn't think *Poa annua* is so bad in the first place.

"Arnold Palmer once said something to the effect that "there's no better lie for a golf ball than a good, tight *Poa annua* fairway," Bob said. "And besides, 999 golfers out of a thousand have no idea what they're standing on as long as it looks nice."

Bob's wife, Diane, is also known to those in the turf industry. "She has helped a great deal with the turf conferences—has kept up the mailing list for years," Bob pointed out. "And she has put together information for sod growers."

Diane is retired from her job as a technical typist and secretary at the UW Medical School. The Newmans have three sons: Karl, a doctor in Cincinnati; William, who works for McDonnel-Douglas in St. Louis; and Walter, who works with a Lutheran home for the elderly in St. Paul.

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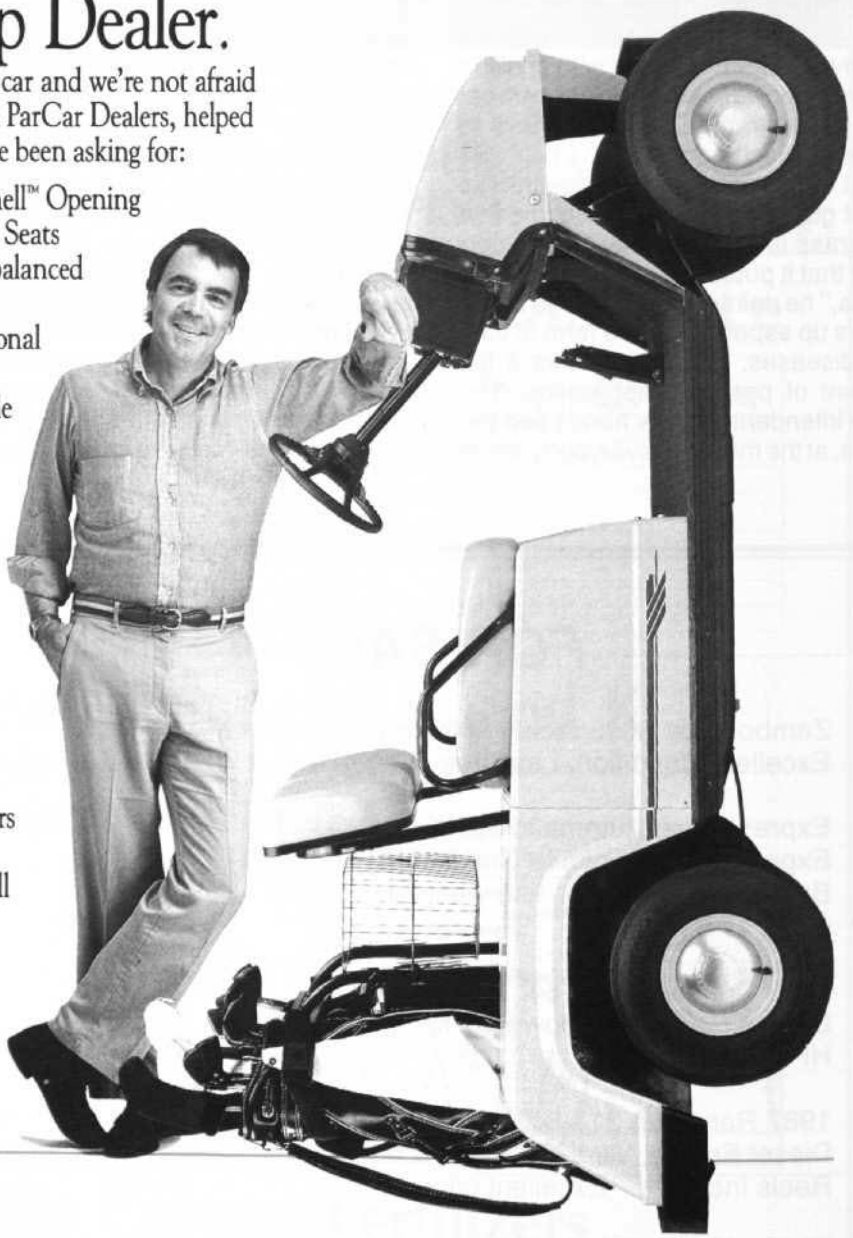

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Three Cheers for...

By Monroe S. Miller

Too often, as we hustle along the path of daily life, we fail miserably in the acknowledgment of good works done by folks all around us.

In an effort to overcome the short shrift given them, I am going to offer up thanks to some of those people who contribute mightily to our profession.

Terry Ward and Al Nees

Without the yeoman efforts by these new generation staff people at Milorganite, there either wouldn't be a Wisconsin Golf Turf Symposium or it would be a shadow of what it is now. Terry and Al work hard, they work smart and the work conscientiously on this important Wisconsin event.

Result? A continuation of the great traditions of the Symposium.

MMSD-Milorganite Division

This organization is deserving of our deepest gratitude for its generous support of Symposium. I doubt many know just how generous that support is; I don't.

And frankly, I don't want to know. It would probably make me nervous.

I strongly suspect that MMSD makes the Symposium affordable to everyone who attends. That is greatly appreciated.

What I respect most, however, is their strong commitment to the turf sciences through the Noer Foundation. To this day they show deep respect for the memory of O.J. Noer. Mr. Noer would, I am certain, be very proud of them.

Wayne Kussow

It's a pleasure to see this man work, quietly and unassumingly, in our industry.

Suddenly, it seems, his program at the university is very significant. He's got nearly 25 undergraduates and will soon have another graduate student in turfgrass management.

More and more he is in demand as a speaker. His writing is getting attention across the country. And yet, he's still carrying a major teaching load in his department.

Without his tireless effort this past year, the Noer facility wouldn't be where it is.

The thing that you notice most, in the midst of his busy and hectic schedule, is his modesty.

Quick to give credit to others, he still is the driving force representing us at our land grant college.

For these things, plus his chronic good mood, his popularity among student and his great intellect, three LOUD cheers!

USGA Green Section Staff, Great Lakes Region

These people never get enough praise. After another very busy golf season, which for them runs about nine months because of the southern and western reaches of their region, you'd think that Jim and Lois and Bob could relax a bit.

Sorry. Speaking engagements, writing obligations and rapidly approaching national and regional conferences keep them running. Even during their "slow" season.

Hurrah for these unsung heroes of our business!

Gayle Worf, Larry Binning and Craig Grau

Everyone in Wisconsin's grass business knows Dr. Worf. Professors Binning and Grau are chairmen of the Department of Horticulture and the Department of Plant Pathology, respectively. Binning, by the way, was in graduate school at Michigan State University with GCSAA director Gary Grigg.

These are very difficult times in the University of Wisconsin system. Downsizing is taking place everywhere, and one of the easiest ways to accomplish that is by not filling positions vacated by retirements.

Gulp. Newman and Worf just retired from their departments.

Because of the work by these three men, the turf industry will see the open positions in Horticulture and Plant Pathology filled.

There will be some rearrangements and accommodations and sharing, but we will continue to be well served by the university.

And I've been told, throughout this trying process, that our chances of maintaining the positions were greatly enhanced by the presence of the Noer facility.

Can you imagine trying to function as a golf course superintendent in Wisconsin without a plant pathologist?

Scary. NINE cheers for these three professors!

The Wisconsin Turfgrass Association Officers and Directors

Now that the Noer facility is completed, except for a few niggling details, the board has moved quickly to deal with problems our industry is facing and to help with the times we are living in.

Meeting in the conference room at the Noer facility on December 5th, they reaffirmed the WTA commitment to education by adding two undergraduate scholarships. The recessionary times we face, along with the significant increase in the numbers of turfgrass students at Wisconsin, made this a wise decision.

To address the need for research, the board agreed to fund a research assistantship starting in the fall of 1992. Not only will it assist the research program there, it may well be an aid in the hiring of a quality person to fill the vacant positions in Horticulture and Plant Pathology.

The board deliberated for hours over matters of research and demonstration work to start with the spring season, with an eye at least cast on the 1992 field day.

These guys really care and display exceptional dedication to the turfgrass industry in Wisconsin.

So, there you have it; appreciation owed for this issue. The more I think about it, the more I am convinced this could and should be a regular feature.

We'll see.

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An Assessment of Water Pressure Injection Cultivation in Treatment of Fairy Ring Fungi

By Robert Schmidt

EDITOR'S NOTE: Robert Schmidt is a senior in the University of Wisconsin Turf and Grounds Management Program. For the past two years he has been employed at the Maple Bluff Country Club. He will graduate in December with honors. He is president of the Badger Turf and Grounds Club.

Introduction

This research project was conducted to assess the effectiveness of water pressure injection (WPI) cultivation in treatment of soil fungi that cause fairy ring in turfgrass. Cultural preparation of the affected area is essential before chemical treatments due to properties of the fungi that strongly inhibit soil saturation. The hypothesis behind this project is WPI may provide a means more effective than core aerification in circumventing the extreme hydrophobic nature of fairy ring fungi (FRF) by direct water penetration and physical movement of soil in the zone of mycelial development. Subsequent fungicide drenches will then be greatly enhanced in their ability to saturate the mycelial mass and suppress or possibly eradicate the fungal organism.

Background Information

Fairy ring symptoms in turfgrass occur world wide and are caused by numerous genera of soil inhabiting Basidiomycete fungi. FRF become established in a turf soil by transported mycelial fragments and/or basidiospores (Mallet and Harrison, 1987). Once established, mycelia move outward in a circular fashion at a rate of 3 to 24 inches annually, depending on soil type and environmental conditions.

FRF do not usually directly infect turfgrass plants, but cause indirect symptom development. Symptoms are typically described by three classifications. These are:

Type I: Death or severe browning of the turf occurs.

Type II: Turf growth is stimulated and very dark green, but shows no harmful effects.

Turf III: No visual effect on the turfgrass.

Type I rings are characterized by three distinct zones. An inner zone of turf stimulation, a middle zone where the grass is dead, and an outer stimulated zone (Smith, 1978). Zones of stimulation are caused by fungal breakdown of soil organic matter into ammonical compounds that are oxidized by microorganisms to nitrate and assimilated into the plants (Vargas, 1981).

The middle zone of brown turf is caused by several interacting factors that initiate turfgrass death. The dominant causal agent is the extreme hydrophobic nature of FRF mycelia; turf dies primarily from lack of water. Parasitic activity of the fungus (Bayliss and Filer, from Smith, 1980) and hydrogen cyanide released by fungal mycelia (Lebeau and Hawn, 1963) may also be factors.

Environment is a key factor as to the type of ring symptoms that develop. During cooler, wetter periods of Spring and Fall, established rings often display the less severe symptoms of Type II or even Type III rings. In Summer, higher soil temperatures stimulate FRF activity. This greatly reduces available water in the root zone. The combination of increased FRF activity and reduced root zones of Summer turf lead to rapid Type I symptom development.

The final factor in the severity of symptoms is the type of turf. Grasses such as bentgrass or Kentucky bluegrass, with relatively deep rooting and the ability to spread into bare spots, generally display less severe symptoms than a grass like *Poa annua* which is typically very stressed with minimal root system during Summer heat.

Various methods of control and/or management of FRF have been attempted. The most effective controls against FRF are also the most expensive and site disruptive. These methods require physical removal of affected soil and/or fumigation with volatile soil sterilants such as Vapam or methyl bromide. Biological control utilizing the self-antagonistic qualities of FRF is possible. When a soil heavily infested with FRF was thoroughly mixed, then replaced in the site it was taken from and re-seeded, fairy rings did not redevelop (Smith, 1978). To date, there have been no practical applications of such biological control.

Several chemicals have been studied for their effectiveness against FRF. These include crysilic acid, oxycarboxin (Baldwin, 1989), and benadonil (Heimes and Loecher, 1980). The effectiveness of these compounds generally relates to duration of symptom suppression. Variability in results tends to center on how thoroughly the affected soil can be saturated with the chemical.

Research Site

This research was conducted at Maple Bluff Country Club, Madison, Wisconsin. The fairy ring problem is not severe, yet it is persistent and predictable. Fairway turf is most affected by fairy rings. Fairways are an approximately equal mixture

of creeping bentgrass and *Poa annua*, mowed at one-half inch. Fairy ring on fairways displays no more than Type II severity until regular, hot, dry periods occur, typically around mid-July. Then Type I symptoms often develop very rapidly. Soil in areas of fairy ring activity is often extremely dry even though directly adjacent to the fairy ring there is adequate moisture and healthy turf is present. Even soaking rains do little to wet areas with active FRF. Symptoms last into October when cooler, wetter weather occurs and the dead areas fill back in with *Poa annua*. Some fairy ring also occurs in rough areas populated by Kentucky bluegrass and *Poa annua*. Only Type II symptoms occur in areas where Kentucky bluegrass dominates. Where the rough is largely *Poa annua*, Type I symptoms occur regularly. Putting greens show limited fairy ring activity, and never greater than Type II severity. No fairy ring occurs on tees.

During the Summers of 1989 and 1990, fairy ring areas were drenched with flutolanil fungicide (FL) at a rate of 8 ounces/1000 square feet. (Flutolanil trade name is ProStar, chemical name is N-[3-1-methylethoxy)phenyl]-2-(trifluoromethyl) benzamide.) This was done about every two weeks from late July through August. No soil cultivation was done before these treatments. These actions accomplished no more than minor, short term reduction in fairy ring symptoms.

Procedures

Fairy ring sites used in the study are outlined in Table 1. Selection of sites was based on the perennial presence of obvious severe fairy ring symptoms. Three plots (A,B,C) were set up to do a direct comparison between WPI and hollow tine (HT) cultivation. A control section of two foot width was placed between the treatment areas. Figure 2 shows the general setup used in plots A, B and C. The treatment area varied slightly in each plot due to inherent differences in ring size. Sites D through O were treated using WPI and FL only, with no control section.

Table 1.

Fairy Ring Site Description

Site	Location	Prominent Turf	Treatment
A	Rough	Kentucky Bluegrass	WPI/FL, HT/FL, Control
B	Fairway	Bentgrass/Poa annua	WPI/FL, HT/FL, Control
C	Fairway	Bentgrass/Poa annua	WPI/FL, HT/FL, Control
D-O	Fairway	Bentgrass/Poa annua	WPI/FL

WPI: Water pressure injection cultivation
HT: Hollow tine cultivation
FL: Flutatonial fungicide

All sites were treated during the period July 21 to July 24, 1991. During this time, temperatures reached into the low 90's with high humidity. Soil conditions were very moist during cultivation due to substantial rainfall in the preceding 24 hours.

One section of sites A through C was cultivated with a Toro Hydroject set at minimal spacing, and two passes were made over each area. The hole spacing was 1 inch by 3 inches which was reduced further on the second pass. Depth of holes varied between 3 and 8 inches, with most in the 4 to 5 inch range. Hole diameter averaged about 1/8th of an inch at the surface. The other section of sites A to C was core aerified using a Toro Greens Aerator with 1/2 inch tines. One pass was made providing a hole spacing of about 3 inches to 2 inches. Depth of holes was about 3.5 inches. Plugs were removed and no top dressing applied. ProStar was mixed with water at the highest label rate of 8 ounces/1000 square feet. Wetting agent was added to the mixture. The fungicide was applied as a drench by way of a garden type sprinkling can. One half of the mixture used per plot was distributed evenly over the entire area. The remaining half was then applied evenly over the turf area showing fairy ring symptoms, and 12 inches outward from the active symptom area. Fungicide was applied within 3 hours of cultivation to these sites.

Table 2.

Fairy ring responses to an application of 'ProStar' fungicide following water pressure injection or hollow tine cultivation.

	Fairy Ring Symptoms		
SITE	INITIAL	1 MONTH	2 MONTHS
Water Pressure Injection Cultivation			
A	Type II	None	None
B	Type I Severe	None	None
C	Type I Severe	None	Type II Slight
Hollow Tine Cultivation			
A	Type II	None	None
B	Type I Severe	None	None
C	Type I Severe	None	Type II Severe
Control Section			
A	Type II	Type II	None
B	Type I Severe	Type I Severe	Type II
C	Type I Severe	Type I Severe	Type I Severe

Results

Qualitative evaluation of the success of these tests is based upon the degree of visible symptoms expressed and how they changed over time. Symptoms were evaluated at 1 and 2 months post treatment.

Site A: The WPI/FL and HT/FL sections initially showed symptom reduction not seen in the control section (Table 2). However, the overall dissipation of symptoms, including the control section, before the 2 month observations, make an evaluation of treatments inconclusive at this site.

Site B: Both WPI/FL and HT/FL areas showed complete symptom remission over the 2 month period (Table 2). A quicker re-establishment of turf was seen in the WPI/FL section. The control section showed continuous symptoms throughout the test period.

Site C: Complete symptom suppression was observed in the WPI/FL and HT/FL areas at 1 month post treatment (Table 2). At 2 months, the HT/FL section showed a redeveloped fairy ring that displayed Type II symptoms and migration of Type I symptoms a few inches inward from the control section. The WPI/FL area also showed some Type II symptoms, but they occurred in small, spotty areas unlike the cohesive semi-circle in the HT/FL section. The control section showed vigorous Type I symptoms throughout the test period. This site displayed symptoms of greater severity, when initially treated, than any fairy ring area on the golf course. The fact that the WPI area showed better long-term

symptom suppression than the HT area give indication that WPI either provided a more homogeneous fungicide saturation of the affected soil, and/or physical alterations of soil structure provided an environment less favorable to fairy ring development.

Sites D-O: Complete remission of Type I symptoms was observed over the 2 month period (Table 3). Thirty-three percent of these areas showed no further symptom expression. The remaining areas showed Type II symptoms of reduced size and severity.

Table 3.
Fairy Ring responses to an application of 'ProStar' fungicide following water pressure injection cultivation.

Fairy Ring Symptoms

SITE	INITIAL	1 MONTH	2 MONTHS
D-F	Type II, Some Areas Type I	No Type I, 50% less Type II	Very Reduced Type II
G-I	Type II, Minimal Type I Spots	No Symptoms	No Symptoms
J, K	Type I/Type II	No Type I 40% Less Type II	Very Reduced Type II
L	Type I/Type II	No Type I 40% Less Type II	Very Reduced Type II
M, N	Type I/Type II	No Type I 40% Less Type II	Very Reduced Type II
O	Type II	No Symptoms	No Symptoms

Discussion

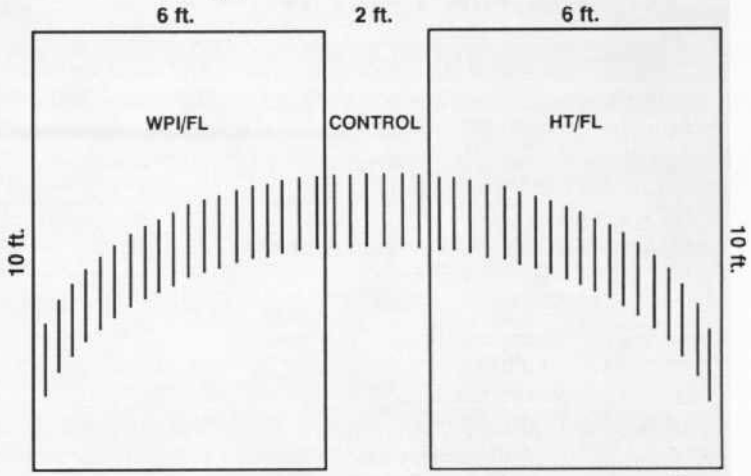
Based on test observations, WPI appeared to be very effective in suppressing Type I fairy ring development. When compared to the HT areas, WPI showed some advantages. With HT cultivation, there was slower recolonization of turf in dead areas, and, as seen in site C, reformation of an active fairy ring and migration of symptoms from the control section into the treated area.

The fungicide ProStar showed positive action in the suppression of fairy ring activity. No harm to turfgrass was seen using this product at its highest label rate.

To attain the clearest possible results, these tests were run primarily on fairy ring areas that showed severe Type I symptoms. However, in the treated areas with only Type II severity greater dissipation of symptoms occurred. This suggests that early treatment, before Type I symptoms develop, will result in more effective control.

The observations made in this study involved only visual symptom expression. Thus, there is no way of knowing whether eradication of FRF occurred or just suppression for the current season. Regardless, the treatments were effective. Untreated fairy rings elsewhere on the golf course did not display reductions in symptoms similar to treated areas. These areas showed vigorous symptoms through August into early September.

Figure 1. General Configuration of Plots A, B, C.
|||| Initial Position of Fairy Ring.



Recommendations

For golf courses plagued with fairy rings, water pressure injection cultivation followed by a fungicidal drench is worth a try. Treat fairy rings before Type I symptom development when possible. Also, avoid WPI cultivation when soils are very wet. The Toro Hydroject, when operated on wet soils, was seen to press closed many of the openings it created at the surface. While no apparent variance in results was seen in the treated areas where this occurred, common sense says that open holes such as those observed in dryer soil, are more effective in getting fungicide into the primary zone of mycelial growth. Should it become possible in the future, the direct injection of fungicide with the Hydroject should be explored.

References Cited

Baldwin, N.A., 1989. Effect of cresylic acid on Marasmius oreades fairy rings in amenity turf. Tests of Agrochemicals and Cultivars 10, supplement to Annals of Applied Biology. April 1989, p 40-41.

Heimes, R. and F. Loecher, 1980. The Possibility of controlling Fairy Rings and Rust Diseases in Lawns with Benodanil. Proceedings of the 3rd International Turfgrass Research Conference. Munich, West Germany. 1977, p 283-288.

Lebeau, J.B. and E.J. Hawn, 1963. Formation of hydrogen cyanide by the mycelial stage of a fairy ring fungus. Phytopathology 53, p 1395-1396.

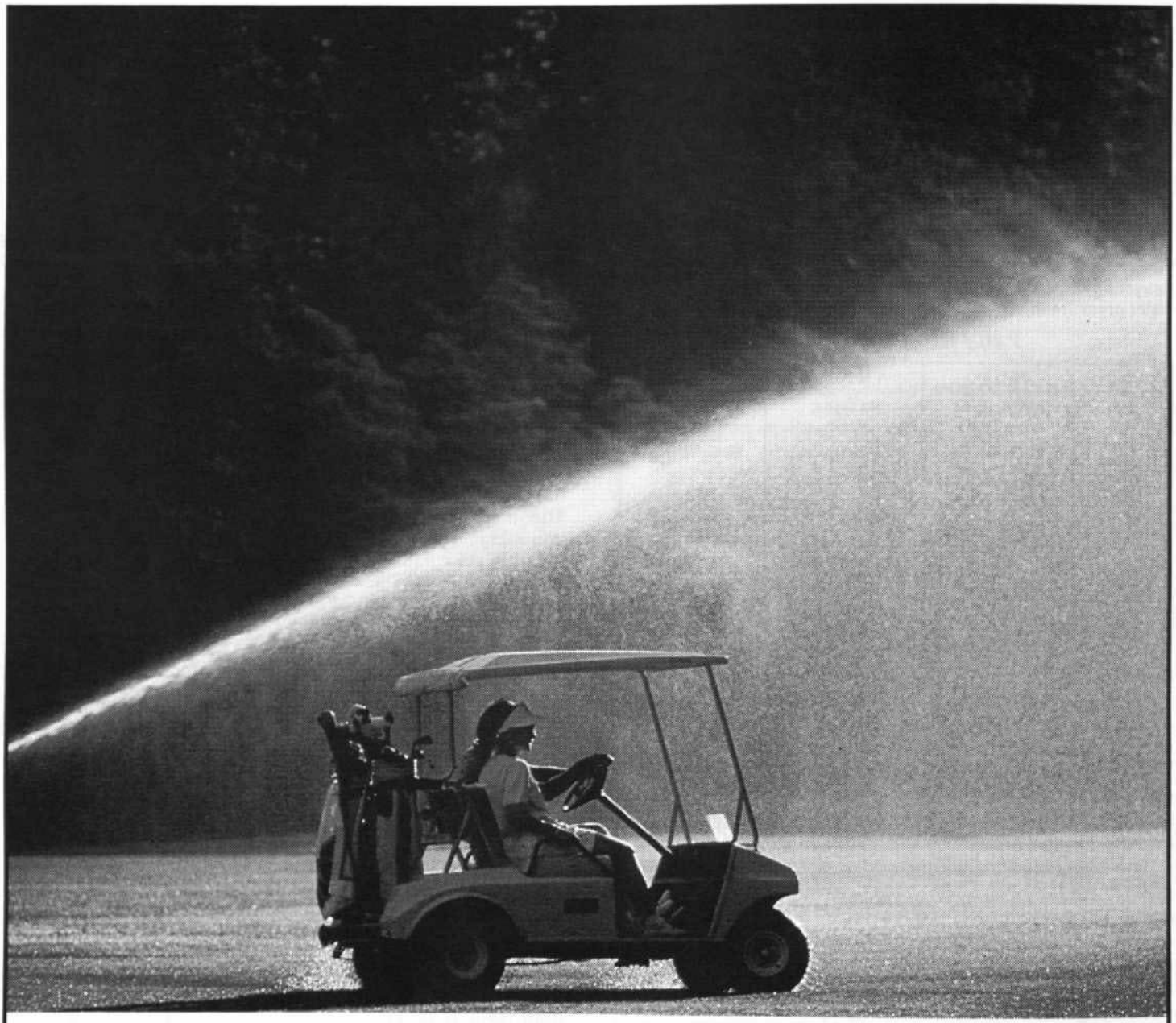
Mallett, K.I. and L.M. Harrison, 1987. The mating system of the fairy ring fungus Marasmius oreades and the genetic relationship of fairy rings. Canadian Journal of Botany 66, p 1111-1116.

Smith, J.D. and Rupps, R., 1978. Antagonism and Marasmius oreades fairy rings. Journal of Sports Turf Research Institute 54, p 97-105.

Smith, J.D., 1978. Control of Marasmius oreades fairy rings: a review of methods and new approaches to their elimination. Journal of the Sports Turf Research Institute 54, p 106-114.

Smith, J.D., 1980. Is Biological control of Marasmius oreades fairy rings possible. Plant Disease 64, p 348-354.

Vargas, J.M., 1981. Management Turfgrass Diseases. Burgess Publishing Company, Minneapolis, MN, 204 pp.



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