(Continued from page 39)
after the ice melts from the greens in the late winter or early spring — the time when the turf has very little tolerance to cold temperatures.

WHAT TO DO OR NOT TO DO

First, determine whether injury to turf has already occurred by chipping through the ice and removing a small plug of turf from a low lying area of the green. Grow out the plug in a warm, sunny location (a greenhouse would be ideal) to document the health of the turf. Monitor the turf every few weeks until spring.

More importantly, remove snow and as much ice as possible from greens during or just prior to the first significant spring thaw. The turf will have little tolerance to cold temperatures and be very susceptible to crown hydration at this time. Provide every opportunity for the water from melting ice and snow to move off the putting surfaces. Some superintendents apply a dark material (Milorganite, dark sand, etc.) to ice on greens during late winter to accelerate the melting process. Dark materials, though, are only effective on relatively thin ice covers of no more than an inch or two thick. The key to success is to prevent water from pooling in low lying portions of the greens during the day and then freezing at night. Again, most of the injury to turf that is blamed on ice cover probably occurs just after the ice melts, especially when cold nights follow the initial thaw.

THE RISK OF ICE REMOVAL

The ice and snow cover on your course may be a blessing in disguise considering the amount of severe desiccation that occurred on exposed turf last winter at many courses in western Minnesota, Nebraska, and the Dakotas. Desiccation affects bentgrass and *Poa* alike, and several relatively new courses experienced significant losses of bentgrass on exposed putting surfaces that later required extensive overseeding, plugging, and sodding last spring. Consistent ice and snow cover would have prevented these losses of turf.

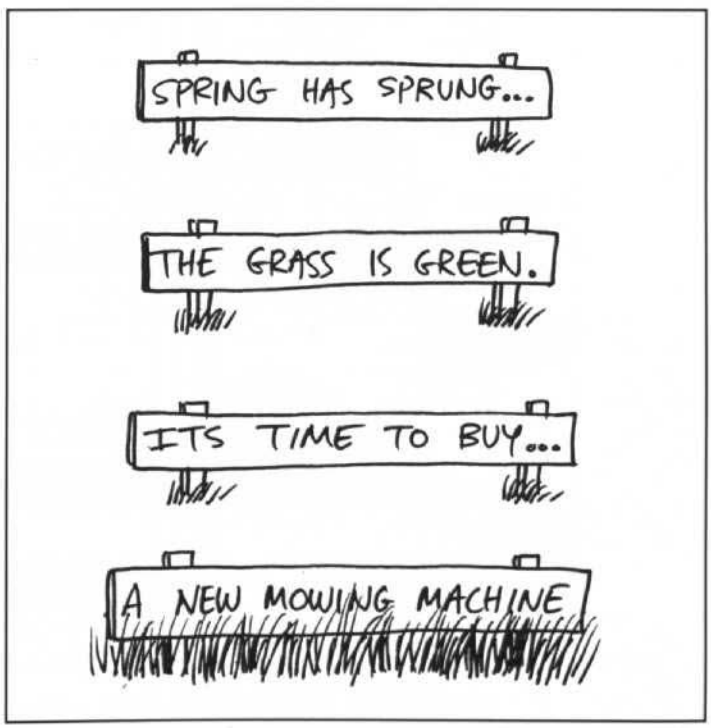
Furthermore, removing ice from greens during midwinter is almost an impossible task unless the greens are covered with a geotextile fabric that provides a barrier between the ice and the turf. The risk of disrupting the playing surface or removing part of the turf along with the ice is great when solid ice cover is chipped away using solid tine aerators, Verti-Drain units, or spikers—not to mention the damage this process can do to the maintenance equipment. Even if it were possible to safely remove ice from an uncovered green, the turf would be exposed to the wind and cold temperatures unless snow were blown back onto the greens. In my opinion, the questionable benefits of midwinter ice removal is not worth the effort.

There may be isolated courses where ice removal is beneficial and where the removal of ice will not create a risk of surface disruption...but as a general recommendation, the time spent removing ice would be better spent during the early spring— when the potential for winterkill is greater.

Regardless of what course of action is taken at your course, monitor the condition of the turf frequently and keep the golfers well informed as to the possibility of finding less than ideal playing conditions next spring. The USGA's Turf Advisory Service will be available from early spring throughout the season should turf related problems occur.

Good luck and feel free to contact the USGA Green Section Office in Elm Grove, Wisconsin, for further information regarding this and other agronomic questions.

Sincerely,
Robert C. Vavrek, Agronomist
USGA Green Section (414) 797-8743



Pathogen Personalities

By Steve Millett
Department of Plant Pathology
University of Wisconsin-Madison

Turfgrass pathogens have personalities. If you can imagine pathogens as people with personalities, it could help you to address them when they rear their ugly heads. Pathogens, whether they are fungi, bacteria, viruses or nematodes, have unique personalities. Pathogens are a lot like unwelcome guests that mess up your house, eat all your food and give you a headache. Understanding pathogen personalities will help you politely nudge the unwelcome guest out of your world. Knowing what makes your guest uncomfortable will make managing them easier. This 'personification of pathogens' technique can be used as a mnemonic device or may just give you a different tactical perspective.

First, we should ask the question, "Why do we have turf diseases anyway?" One answer could be that Mother Nature is just trying to have her way. Some say we should just let Mother Nature take her course, let turf diseases happen, let the fittest survive and the weak be taken out of the gene pool. I don't think many of you would have jobs with that attitude. Since there would be no need for turf pathologists, I am not in favor of that either. We can get a better understanding of diseases by pretending to be a pathogen.

Have you ever wondered what it would be like being a fungal pathogen? Your main goal in life is to perpetuate your DNA by creating offspring. Every function, structure and chemical reaction that takes place in you fulfills some function which has survival value. It is in that sense that everything you do has a purpose.

You could move around either by air or water, or you could be one of those soil-borne pathogens that spends most of its life essentially swimming in the root zone.

Personality is defined as the totality of distinctive traits of an individual (3). As a pathogen you have a unique personality that others recognize in your environment. Your personality describes who, when, where and how you eat turfgrass plants. This latter part of pathogen personality is the most important aspect for turfgrass managers. Recognizing your enemy and understanding the pathogen personalities will aid in managing these unwelcome guests.

Table 1 illustrates common turfgrass pathogens of Wisconsin golf courses. The pathogens can be grouped according to what type of

TABLE 1. Turfgrass pathogen personalities while visiting Wisconsin golf courses.

Ecological Group[1]	Fungus	Disease	Plant Part	Taxonomic Group[2]	Wisconsin Severity[3]	Ranking[4]
Obligate Parasites	nematodes	nemas	roots	animals	W-M	NR
Facultative Parasites	*Lanzia/ Moellerodiscus*	Dollar spot	foliage	Ascomycete	S	# 1
primary colonists (poor competitors)	*Pythium*	Pyth. Blight	tissue non-specific	Oomycete	S	# 5
	Rhizoctonia	Brown Patch	tissue non-specific	Basidiomycete	S	# 3
	Typhula	Snow Mold	tissue non-specific	Basidiomycete	S	# 2
secondary colonists (good competitors)	*Bipolaris*	Leaf Spot	tissue non-specific	Ascomycete	M	# 5
	Exserohilum	Leaf Spot	tissue non-specific	Ascomycete	M	# 5
	Colletotrichum	Anthracnose	tissue non-specific	Ascomycete	W-S	# 4
	Microdochium	Pink snowmold	tissue non-specific	Ascomycete	M-S	# 4
Facultative Saprophytes	*Gaeumannomyces*	Take-all	roots/crowns	Ascomycete	S	# 4
	Leptosphaeria	Necrotic Ring Spot	roots/crowns	Ascomycete	S	# 4
	Magnaporthe	Summer Patch	roots	Ascomycete	M	# 6
	Drechslera	Leaf Spot	tissue non-specific	Ascomycete	M	# 5
Obligate Saprophytes	*Agaricus* *Coprinus* etc.	Fairy Rings	thatch, roots foliage	Basidiomycete	W-M	NR

1 Ecological Groups: obligate parasites=do not grow or multiply when not in contact with host; facultative parasite(fp)=lives primarily as saprophyte but can be pathogenic (opportunistic), fp-primary colonists=can move through soil and litter, rapid movement of cytoplasm, poor competitors, fp-secondary colonists=good competitors, restricted movement through soil and litter, quickly sporulates between food bases; facultative saprophyte=best equipped to be pathogens, decline rapidly when host not present, mostly pathogenic but can be saprophytic; obligate saprophyte=decomposer.

2 Taxonomic group: Nematodes are animals and the fungi are either oomycetes (egg or water fungi), ascomycetes (sac fungi) or basidiomycetes (mushroom fungi).

3 Wisconsin severity: W=weak; M=moderate; S=strong. 4 Ranking: relative importance (1, 2), #1=most important to NR=not ranked.

food they prefer to eat. The ecological groups are obligate parasites (OP), facultative parasites (FP), facultative saprophytes (FS) and obligate saprophytes (OS).

An OP is defined as an organism that can survive only on or in living tissues. The OPs have evolved a complex relationship with their hosts. These parasites don't want to kill their host because that would mean the end of the free lunch. OPs are kind of like the college graduate who moves back home with his parents, promising to pay rent when he is back on his feet. He eats a lot of carbohydrates and it is hard to get rid of him.

The facultative groups can best be remembered if you substitute "can be" for facultative. A facultative parasite is an organism that is usually a saprophyte but "can be" a parasite. I have separated the FPs into either primary or secondary colonists. The primary FPs are poor competitors and are thus probably more affected by biological control methods. These primary colonists are loud mouths among friends and shy in crowds because they dislike competition. The secondary FPs are good competitors and multiply like rabbits. These secondary colonists produce many spores and move from food source to food source quickly. The secondary colonists are the all-around jocks who love competition, have lots of sex and therefore produce lots of offspring.

A facultative saprophyte is an organism that usually is a parasite but "can be" a saprophyte. These FS vegetarians prefer fresh, crisp greens and not the old decaying stuff. Most of the listed FS pathogens are root pathogens that are very difficult to control. These FS pathogens can experience a decline such as the "take-all decline" phenomenon. Lastly, the obligate saprophytes are those organisms that are solely decomposers.

The fungi are grouped into taxonomic groups based on their sex lives. The Oomycetes like to do it in the water (hydrophiles). The ascomycetes produce a sac-like sexual structure and the basidiomycetes produce a mushroom-like sexual structure. The tissues that these pathogens attack, the Wisconsin severity and the relative rankings complete the personalities illustrated in Table 1.

The pathogens not only have a culinary preference but they also have a particular time of year that they invite themselves into your turf world. I have created a "Wisconsin Bratwurst Turfgrass Disease Calendar" to show when these pathogens are most active (Figure 1). This calendar idea is not new but I have tried to adjust it for Wisconsin. The activity windows will be different throughout the state of Wisconsin and the window for anthracnose basal rot is not well understood. The host specificity for the pathogens is also presented.

Yes, turfgrass pathogens have personalities. Pathogens, whether they are fungi, bacteria, viruses or nematodes, have unique personalities. Understanding pathogen personalities of these unwelcome guests will help you make them uncomfortable in your turf world. Utilizing the psychology of phytopathogens is an important part turfgrass disease management.

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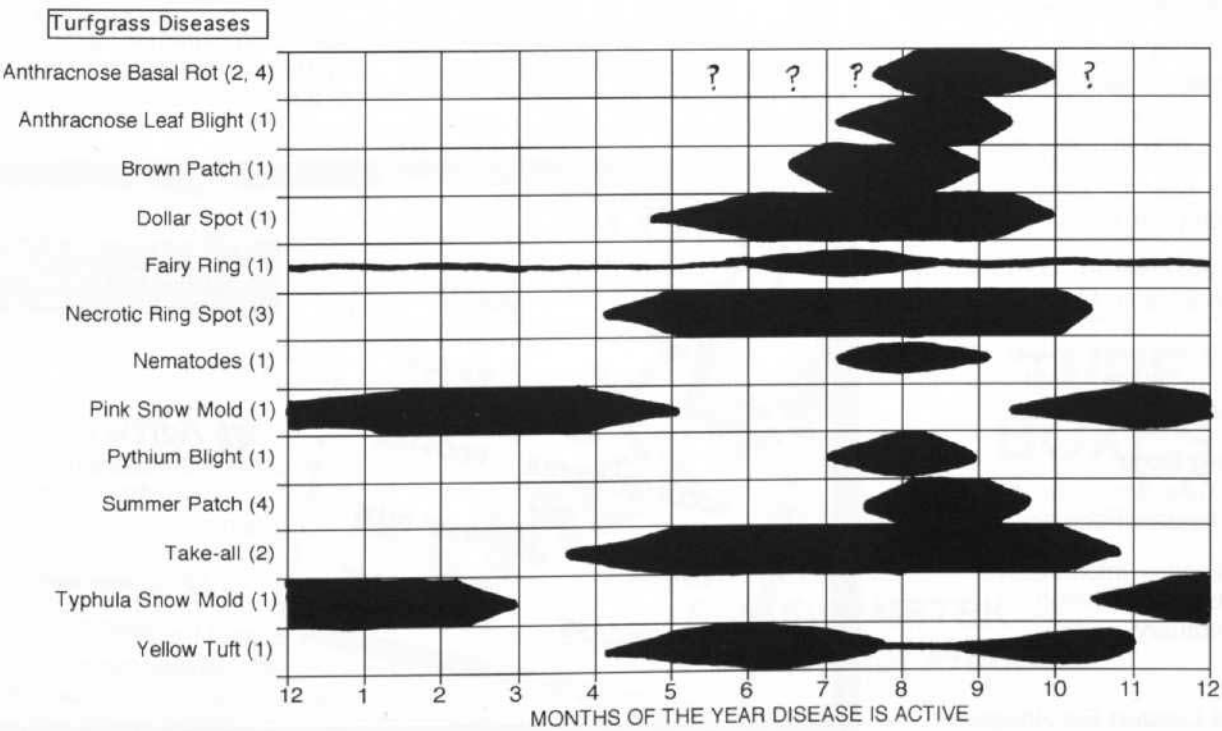
FIGURE 1. Turgrass disease calendar for golf courses based in Madison, Wisconsin. Turfgrass hosts: (1) Bentgrass, Kentucky Bluegrass, (2) Bentgrass, (3) Kentucky Bluegrass, (4) Annual Bluegrass



THE GRASS ROOTS Article Index - 1996

Compiled by Larry Lennert

(Continued on page 46)

(Continued from page 45)

A GOOD RETIREMENT

By Monroe S. Miller

"Let us pray: Heavenly Father, we ask you to bless the golf course superintendents who have gathered here tonight to honor their colleague and my dear brother, Jack Whittier, at his retirement. He, like them, is a survivor in a truly challenging profession. Working for 300 people who honestly believe they know more about growing grass than he does takes a stalwart and patient person; we thank you, Father, for that patience and strength.

"Golf course superintendents must deal successfully with club members ranging from the overbearing affluent to the unreasonable nouveau rich. We thank you, Dear Lord, that most golf players are not at these extremes.

"Bless you for giving them the sense to appreciate a beautiful sunrise as much as a paycheck, for the love of land and plants, and for their worship of you.

"Pour forth upon them, O Lord, your wisdom to guide them; more of your patience to retain their sanity during the golf season; your humility to help them keep their sense of humor.

"Make them cheerful in the awareness that they are not God; more importantly, neither are those whom they serve.

"Give them, O Lord, a mind to know you. Make their lives pleasing to you and may they persevere in their trust as they await you. Amen."

We repeated "amen" after Pastor Bill Whittier and sat down at our tables in the dining room at the Pheasant Branch Country Club.

The clubhouse was packed; it was the place to be that night if you were a golf course superintendent in Wisconsin. The dean of our association was retiring and we were about the last group to extend our honor and respect and celebrate this time of his life.

I looked around the dining room and was impressed. It was a stag group, but out of deeply held respect for our honoree, everyone was dressed in a coat and tie. You would never guess this was the same group that would be rolling dice, playing cards and sipping Gordon's after a summer golf meeting.

Bogey Calhoun pulled at the top button of his dress shirt, obviously in discomfort and hoping to stretch the collar a little for some relief. But he resisted loosening his necktie.

"I'm telling you guys, we should have held this at The Machine Shed Restaurant; we could have dressed for comfort," Bogey whined as he looked around for some agreement.

"Or you could lose twenty pounds so your clothes would fit," retorted Tom Morris with some irritation in his voice.

"You complain enough for six people, Calhoun," Tom said.

Jack Whittier was a classic golf course superintendent, a profession he was proud to have been active in for over 40 years. At a time when few did, he started his career in the 1950s with a degree in Soil Science from the University of Wisconsin in Madison.

He spent summers on Madison area golf courses, and when he graduated he was immediately hired by the Caves Hollow Golf Club west of Madison about 50 miles. His summers' experiences held him in good steed, as did his superb education from the university. He had an immediate and positive impact on the Caves Hollow golf course.

Students graduating these days, even those with a four year degree, are dumbfounded; they cannot believe someone was a superintendent at a quality golf course at the age of 22. Nowadays, a B.S. degree and three or four summers on a golf course staff gets a new graduate an

interview for a second assistant position, spray technician or foreman. As Jack always says, "times have really changed."

When questioned, he always gives them some sense of relief and lots of encouragement. "Remember," he'd say, "when I started at Caves Hollow we had a Ford 8N tractor, a Ford 640 Workmaster tractor, and an IH 240 front end loader. Pull frame gang mowers were used to cut fairways at an inch and a quarter three times a week, Worthington airfield blitzers were all we cut roughs with, and there wasn't such a thing as a triplex greensmower.

"We cut greens at a quarter of an inch, tees at three quarters of an inch and we raked bunkers once a week by hand. One of the most important jobs was watering—it was done manually with hoses and roller base sprinklers for greens and tees, and quick couplers were used for fairway irrigation. I was lucky we even had watered fairways—most courses in the state when I started were unwatered.

"Clover was a bigger problem than any disease, and we never had a total operating budget over $50,000 during the years I worked for the wonderful people at Caves Hollow."

He stayed at Caves Hollow for five years, and like everyone else his age in those times he was drafted into the Army during the early stages of the Vietnam War. His duty station was an outpost some 40 miles west of Da Nang. There weren't many GIs in the country at that time, and he crossed the Pacific on a troop carrier ship. It was several years later when soldiers were shuttled there and home by aircraft.

Jack learned lots about sacrifice and duty and honor while he was in southeast Asia. He returned home a hero, though few knew of it. Not many outside of his family knew he came home with a Purple Heart, either. And he told no one. "I only did what I was expected to do," he explained to me once.

Although his career had been interrupted by military service, he wasn't home long before he was hired to manage the golf course at Pheasant Branch Country Club.

"I have always known a good thing when I see it, and I knew that Pheasant Branch was going to be a great place to spend some time," Jack said. "I guess I didn't think I'd spend this much time, however!"

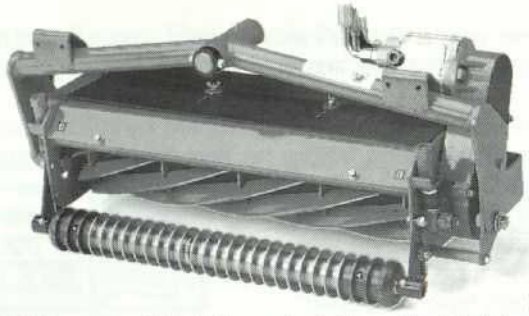
Pheasant Branch was one of Wisconsin's venerable old line country clubs. Although far from the wealthiest, it was unarguably the best run. Jack was a part, a big part, of the team that accounted for its efficient operation.

"Don't kid yourself," we've all heard him say, "and think that in the 35 years I have been here I have always seen eye to eye with all the club presidents. Remember, the term here is one year, so I have dealt with some difficult men and women who have held the presidency. But the club has a stable committee chair system and all eight of the green committee chairs have been truly wonderful."

The staff at Pheasant Branch worked quietly and served us an excellent meal, one fit for a group of Wisconsin golf course superintendents. There wasn't any fish or chicken to be seen, only beef! The vegetables were well cooked and the baked potatoes were so large we knew they came from the central sands potato country.

We had the club to ourselves. Since the PBCC had already had a reception and dinner to honor the Whittiers, they felt it appropriate to let Jack "be himself" with his longtime colleagues and friends.

(Continued on page 51)



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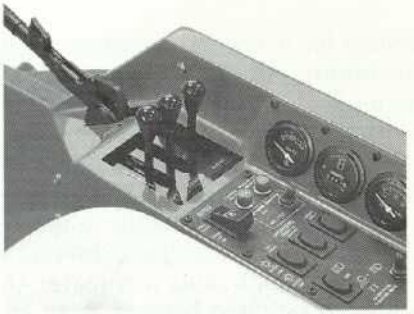

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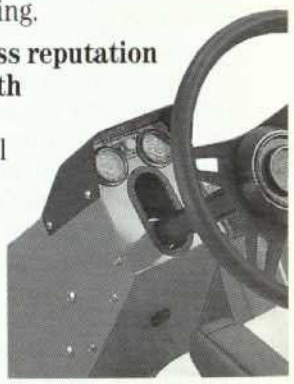

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