



# Look-alike Kentucky Bluegrass Diseases

By Steve Abler and Dr. Geunhwa Jung, Turfgrass Diagnostic Lab, Department of Plant Pathology, University of Wisconsin-Madison

It is common occurrence to see circular or arc-like patches of blighted Kentucky bluegrass in the late spring and summer months. Using these symptoms alone, it is not possible to give a positive identification of the causal agent of the patches. This is due to the fact that there are three diseases of Kentucky bluegrass that produce patches during the same months of the year that are virtually indistinguishable from each other. Once the turf samples are collected and examined in the lab, the job does not get much easier. But before I get ahead of myself, let's backtrack forty-five years to when the first of these diseases was first being noticed.

In 1959, the first reports were made of a patch-like decline of Kentucky bluegrass in Pennsylvania. In the following years, the disease was found to be widespread in the Eastern United States and was found causing damage to creeping bentgrass and creeping red fescue as well. The cause of the declining turfgrasses was determined to be the pathogenic fungi *Fusarium culmorum* and *Fusarium poae* (Couch and Bedford, 1966). Because of the genus of the pathogens and the symptoms of the decline, the disease they cause was named Fusarium blight.

Later, in the 1970's, Kentucky bluegrass lawns and golf course fairways in Wisconsin were afflicted by a disease that looked very similar to Fusarium blight, however, pathogenic species of *Fusarium* could not always be found in these patches. Upon closer examination by Dr. Gayle Worf of the Plant Pathology Department at the University of

Wisconsin-Madison, the crowns and roots of affected plants were found to be colonized by a fungus that was identified as *Leptosphaeria korrae* (later changed to *Ophiosphaerella korrae*). Based on the patch symptoms, Dr. Worf named this new disease necrotic ring spot (Worf, et al., 1986).

At the same time that Dr. Worf was working on necrotic ring spot, researchers in New York and Rhode Island were looking into a third fungus that was associated with Kentucky bluegrass showing symptoms similar to Fusarium blight. The pathogen causing this "Fusarium blight syndrome" was determined to be the previously undescribed fungus *Magnaporthe poae* (Landschoot and Jackson, 1989). Because the symptoms caused by *M. poae* were usually noticed during warmest months of the year, the disease was named summer patch.

Due to the similarities in symptoms among Fusarium blight, necrotic ring spot, and summer patch and the fact that symptoms manifest themselves at the same time of the year, a detailed knowledge of all of the characteristics of each disease is required for accu-

rate diagnosis of the problem.

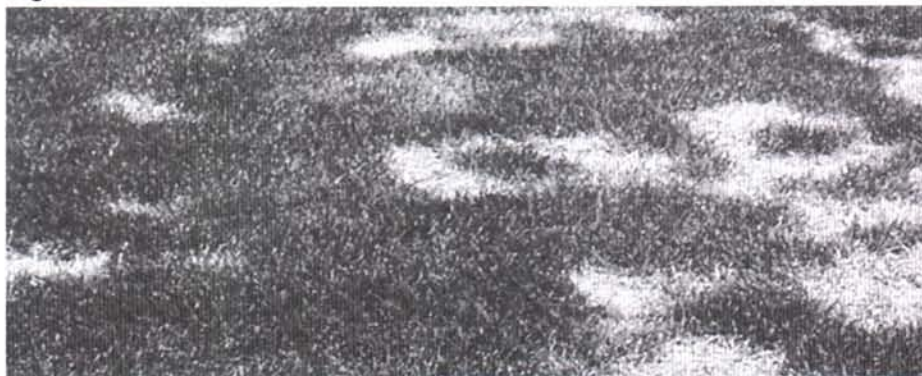
## Fusarium Blight

Most cool-season turfgrasses are hosts of the Fusarium blight pathogens; however, Kentucky bluegrass, annual bluegrass, and creeping bentgrass are the most commonly damaged species. Outbreaks of Fusarium blight are favored by dry conditions in which the daytime air temperatures are above 80°F and nighttime air temperatures are above 70°F. Consequently, symptoms of Fusarium blight are initially seen drier in areas such as southern exposures, tops of slopes, and turfgrasses near cart paths or drive-ways. The severity of disease is also increased by high nitrogen fertility, calcium deficiency, and excessive thatch.

Symptoms on Kentucky bluegrass maintained at fairway or rough height are circular or arc-like patches of straw-colored grasses about six inches to a few feet in diameter. The outside edges of the patches are often reddish-brown in color while the centers of larger patches often have a tuft of green, seemingly unaffected grasses (frog-eye pattern); see figure 1.

Upon close inspection, the leaf blades at the outside margin of the

Figure 1



patches often have non-distinctive reddish or tan lesions. The sheath, crown, and roots of colonized plants are a brownish-red in color from dry rot. On closely mown bentgrasses and annual bluegrasses of putting greens, symptoms of *Fusarium* blight are irregular patches of reddish brown or orange grasses a few inches to a few feet in width (Figure 2).

Spores of the *Fusarium* blight pathogens are readily visible when colonized plants are microscopically examined. Unfortunately, the presence of *Fusarium* spores alone is not enough to render a positive diagnosis because there are several species of *Fusarium* that grow in thatch and soil that are not pathogenic to turfgrasses.

The severity of *Fusarium* blight can be reduced by maintaining adequate soil moisture for plant growth, managing thatch depth, and by avoiding excessive nitrogen fertilization during warm, dry weather. Fungicides proven to be efficacious in the control of *Fusarium* blight include triadimefon, fenarimol, myclobutanil, thiophanate-methyl, iprodione, and mancozeb.

### Necrotic Ring Spot

Necrotic ring spot is mainly a disease problem of Kentucky bluegrass, annual bluegrass, and fine-leaved fescues. Weather conditions that are conducive for colonization of roots and crowns of host plants include periods of cool, wet weather that are common in the spring and fall of the year.

Symptoms of necrotic ring spot are usually not visible until the warm, dry weather of the late spring and early summer causes the plants to wilt due to the dysfunctional root system. At this point, the pathogen has gone dormant, and curative fungicide applications will not be effective.

Symptoms on Kentucky bluegrass maintained at fairway or rough height are depressed, circular or arc-like patches of straw-



Figure 2.



Figure 3.

colored grasses about six inches to a few feet in diameter. Individual plants on the outside edge of the patches are often purplish in color while the centers of larger patches often have a tuft of green, seemingly unaffected grasses (frog-eye pattern); see figure 3.

There are not leaf lesions associated with necrotic ring spot; however, the crown and roots of diseased plants are dark brown to black in color. Microscopic examination of the roots and crown area reveals dark brown runner hyphae of the pathogen. The severity of necrotic ring spot can be reduced by avoiding early spring (before May 15th) applications of nitrogen containing fertilizer.

Practices that promote healthy root growth such as core aeration, and proper irrigation will also make the host plants more tolerant to colonization by the pathogen.

To be effective, fungicide applications for the control of necrotic ring spot must be applied preventatively. Fungicide applications should be initiated when the soil temperature (3-inch depth) reaches 60°F and should be reapplied every 28 days as long as conditions remain cool and wet. Fungicides labeled for the control of necrotic ring spot include azoxystrobin, fenarimol, iprodione, myclobutanil, propiconazole, and thiophanate-methyl.

### Summer Patch

Summer patch is primarily a disease problem of annual bluegrass, Kentucky bluegrass, and fine-leaved fescues. There have also been recent reports of *M. poae* causing damage to creeping bentgrass in the Southern United States.

Weather conditions that are conducive for colonization of roots and



Figure 4.

crowns of host plants include periods of hot, wet weather. Summer patch is often a problem soon after heavy rainfall events in the mid-summer when the soil is saturated. Symptoms on Kentucky bluegrass maintained at fairway or rough height are depressed, circular or arc-like patches of straw-colored grasses about six inches to a few feet in diameter. The centers of larger patches often have a tuft of green, seemingly unaffected grasses (frog-eye pattern); see figure 4.

On closely mown annual bluegrasses found on golf course putting greens, symptoms of summer patch are roughly circular patches of yellow to reddish-brown annual bluegrass grasses a few inches up to a foot in diameter. The more resistant creeping bentgrass usually fills in the center of patches produced by the summer patch pathogen.

Closer inspection of the affected plants does not reveal any leaf lesions associated with summer patch, however, straw colored

bands may appear on the leaves as the initial plant symptom of heat and drought stress. The crown and roots of diseased plants are dark brown to black in color. Microscopic examination of the roots and crown area reveals dark brown runner hyphae of the pathogen as well as discolored vascular tissue.

Practices that promote healthy root growth will make the host plants more tolerant to colonization by the pathogen. Since the development of summer patch is enhanced by alkaline conditions, the use of acidifying fertilizers such as ammonium sulfate and sulfur-coated urea reduces disease severity.

To be effective, fungicide applications for the control of summer patch must be applied preventatively. Preventive fungicide applications should be initiated when soil temperature (3-inch depth) reaches 65°F and should be reapplied every 28 days as long as conditions remain hot. Multiple fungicides are labeled for the control of summer patch and include: azoxystrobin, fenarimol,

fludioxonil, myclobutanil, propiconazole, pyraclostrobin, thiophanate-methyl, triadimefon, trifloxystrobin, and vinclozolin.

Because of the difficulties encountered when attempting to diagnose these problems, it is very important to take every effort available to prevent disease outbreaks. Sound cultural practices including proper irrigation, fertilization, and aerification, as well as preventative fungicide applications can greatly diminish the chances that you will encounter these diseases.

Additionally, the turfgrass pathology group at the University of Wisconsin-Madison has evaluated 100 cultivars of Kentucky bluegrass for their susceptibility to necrotic ring spot (Abler et al. 2003). Future plans are to update this work by evaluating 100 current Kentucky bluegrass cultivars for their susceptibility to necrotic ring spot and summer patch.

As always, if you are having difficulty with these troublesome diseases, or any other turfgrass problems, do not hesitate to contact the Turfgrass Diagnostic Lab at 608-845-2535.

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# "BRUTE" -IFUL APRIL MEETING

By **Randy DuPont**, Golf Course Superintendent, North Hills County Club

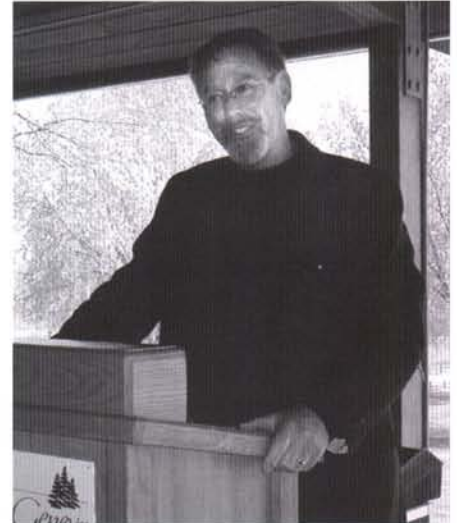
The Wisconsin Golf Course Superintendents Association's April meeting was held at the Links at Grand Lake Geneva. Nearly 90 participants had the pleasure of playing the "Brute" which, as its name suggests, provided quite a challenge.

Mr. Peter Leuzinger from Audubon International got things started with his talk on "selling your environmental programs to your club and the public". Peter mentioned that superintendents have a moral obligation to protect the environment. At the very least, we should all be recycling our containers. Little things like recycling

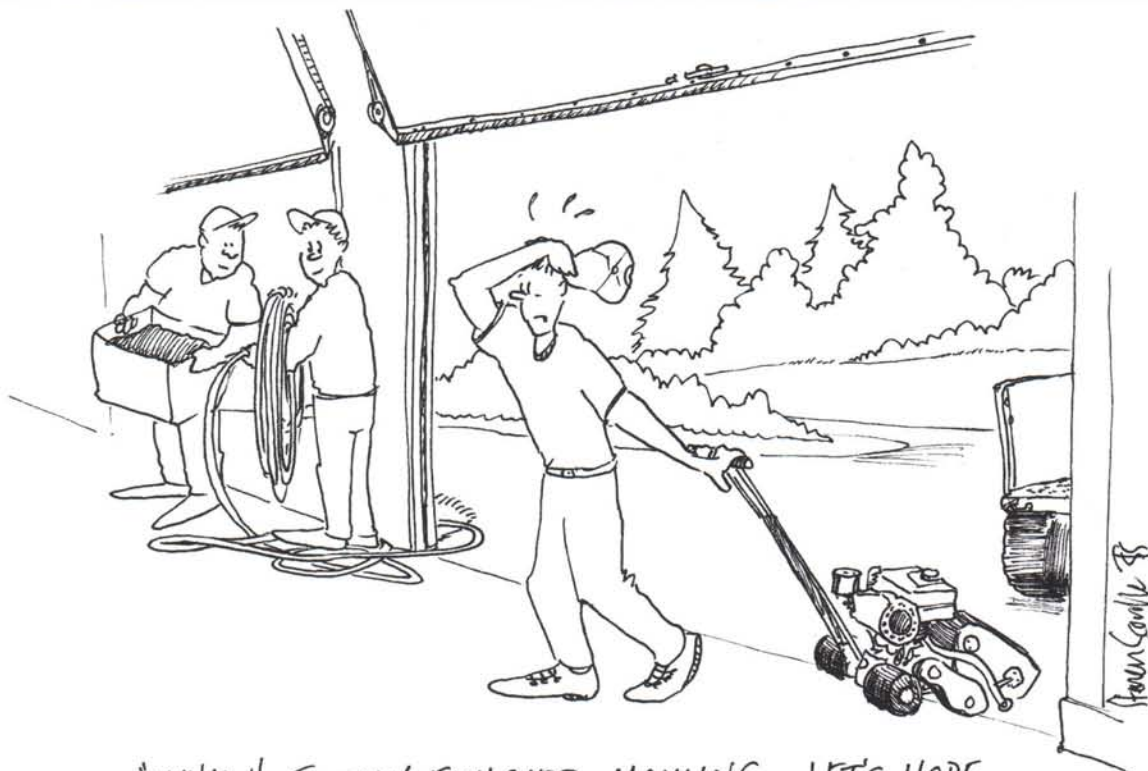
can add up to a better environment.

The preservation of green space is the main reason for becoming involved with Audubon International. Peter pointed out that a good way to get the program started at your course is to create a color brochure highlighting the environmental aspects of your course. In it, talk about public involvement such as school tours, use environmental catch phrases, and include a mission statement. It is also beneficial to reach out to the local media and tell them your story.

In closing, Peter discussed two important components to a successful environmental program:



Guest speaker Pete Leuzinger.



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commitment and delegation. Implementing environmental programs at your course takes commitment. It cannot be a part-time program. It requires a year-round commitment to the environment to be successful. Selling and implementing your programs can be time consuming. Form an environmental committee and don't be afraid to delegate duties to each member.

If anyone would like information on how to get started with an environmental program at your course, you can e-mail Peter at [pv\\_leuzinger@yahoo.com](mailto:pv_leuzinger@yahoo.com).

After lunch everyone headed out to test their skills against the Brute. Having never stepped foot on the property before, I was truly impressed with the many elevation changes and spectacular vistas the course provided. Probably the best way to describe the golf course is "huge". Huge bunkers, huge greens, and huge length (462 yd par 4, 603 yd par 5), made for quite a challenge. A heartfelt thanks goes out to host superintendent Jim Crothers and his staff for providing us with a wonderful venue.

The event for the day was one bestball per foursome, both net and gross divisions. Winning the net division with a score of 61 was the group of: Dan Shaw, Gordie Waddington, Peter Leuzinger, and Randy DuPont. Second place with a score of 63 was the group of: Jake Renner, Dave Hills, Travis Krauklis, and Mike Schmieden. The winners of the gross event with a score of 68 were Mike Werth, Todd Fregien, John Hegge, and Joe Knudtson. Five flag events were awarded. The winner for long drive was Ed Witkowski. (There will be steroid testing before the next meeting!) Closest to the pin winners were Dave Smith, Tim Christiens, Ken Robers, and our host Jim Crothers. Jim's shot, by the way, looked like it almost went in the hole. Congratulations to all!



Lunch time at Grand Geneva.

In closing, I would like to thank Scott Lindbloom for his help in organizing this event. Thanks also to Dave Hallenbeck and the staff at Grand Geneva for their hospitality and efficiency in running the event. It was a good turnout, and I hope to see many of you who par-

ticipated in April's meeting, along with some new faces, at the June meeting at Green Bay County Club. Just a reminder, the June meeting will be hosting the People vs. Pro event for superintendents; however all WGCSA members are welcome and encouraged to participate. ♻️

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# “There’s Not Much Sit Time.”

By Lori Ward Bocher

This may be the shortest Personality Profile in history. It’s not that Ed Witkowski, owner of Pendelton Turf Supply, isn’t an interesting guy. It’s just that he’s a man of few words when it comes to talking about himself. His answers are polite, but concise. During the telephone interview I sense that he has places to go, people to see, miles to make.

“You sound like a guy who’s on the go all the time. Is that right?” I ask toward the end of the interview.

“Yeah, absolutely,” he answers.

“You don’t like to sit for very long, right?”

“No, there’s not much sit time,” he replies.

“What else should we know about you?” I question.

“I’m not too exciting, really,” he says.

“What makes you tick? What drives you?”

“Competition, strictly,” he admits. “Whether it be sports or work, when my back’s to the wall I really concentrate hard and figure out a solution right away.”

## Early start...

Ed was born in Milwaukee and raised in the suburb of Greendale. His career in the golf industry began at a young age. “I started out caddying at Tuckaway Country Club at age 14,” he recalls. “By 15 or 16, I started working full time on the grounds crew. I worked for Ray Knapp, the superintendent at the time. He took me under his wing. I worked there through my years in high school and college.”

“Why did you choose to work on a golf course for your first job?” I ask.

“I love working outdoors. And I don’t mind getting my hands dirty,” he succinctly replies. When Ed worked at Tuckaway it was still hosting the Greater Milwaukee Open. “I first started as extra help. I did a lot of working in sand traps, edging, learning how to rope off the golf course, and doing all the hand raking of the bunkers during the tournament time. I also was kind of like a crew chief, watching over the other kids that were part-timers.”

“At that young age, was it exciting working at a tournament?” I ask.

“Very much so, yeah,” he replies. “Long hours. It was over the 4th of July weekend. We started at 4:30 in the morning and worked until 8 or 9 at night.”

Ed graduated from Milwaukee Thomas More High School in 1978, and then attended the UW-Whitewater where he earned a BS in political science and business. While in college he gained some sales experience by working at a men’s clothing store in a

Milwaukee shopping mall.

“After I graduated from college I was still working at Tuckaway Country Club full time,” he explains. “Then LESCO was hiring in the area and I accepted the position. I drove the Lesco truck for five years in the south-eastern quadrant of Wisconsin and in northern Illinois. That was from 1983 to 1988.”

“Why did you take the LESCO job?” I ask.

“Because I had so much golf course experience - being a spray technician, setting cups, doing all the daily tasks on a golf course,” he replies. “I also had some sales experience. So I combined the two and was hired by Lesco.” As a LESCO route man, Ed sold the company’s line of tee/green fertilizers and pesticides to golf courses.

“I learned a lot of business skills on this job,” Ed says. “The people who hired me were excellent teachers and they had a great work ethic - like what I was used to at Tuckaway with Ray. The job really enhanced my knowledge of sales.”

## Starts his own company...

But Ed didn’t see much potential for promotion with LESCO, so in 1989 he started his own business, Pendelton Turf Supply. “I started very small, a one-man organization,” he explains. “I started my own little store on wheels.



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I bought a pick-up truck and a Wells Cargo trailer, put some shelving in the trailer, and basically did route sales - just like I did with LESCO. The business grew as I picked up more and better products." He now carries a full line of seed, fertilizers, and pesticides for tees and greens.

Many of his customers were once his LESCO customers. "During my five-year span with LESCO I had built up a lot of loyalty with my customers," Ed relates. "I had met a lot of great superintendents who became more than customers; they became friends. I got to know their wives, their children, their birthdays, and special events in their families. I wasn't just a route salesman - I was involved with their personal lives."

Ed believes the service he offers with sales is what sets his business apart from others. "I'm accessible," he says. "Every single superintendent can have my personal phone number. They can call me round the clock at home. I've had customers call me at 5:30 in the morning on a Sunday. And we go out of our way. If there's something we don't provide or don't have a contract for, we go out and try to find how we can solve that customer's problems."

The company now includes five full-time workers and one seasonal helper. In the past five years Ed has hired two former golf course superintendents to work in sales - Mike Kozlowski and Todd Fregien. "Our sales have almost tripled since hiring them," Ed says. "Working on my own was becoming too much of a burden. I couldn't handle it all - sales, inventory, purchasing, all the necessary government regulations. I needed some help, I needed to hire some people, and business grew."

**Less time on the road...**

Ed still conducts some sales on the road, but only about 10 percent of what he originally did. The company's territory runs from Appleton, over to Stevens Point, and down to three counties in northern Illinois (Winnebago, McHenry and Lake). "I spend more time trouble shooting from the office, solving customer problems," Ed points out.

"Are you happy with that change?" I ask knowing some sales people prefer being out on the road.

"Absolutely, I do love it," comes his concise answer.

In addition to the two salesmen, Ed's wife, Mary, works full time as the office manager. "She handles the book-keeping, receivables, payroll, all the internal office work," Ed says. The fifth full-time employee is a delivery person; Ed was in the process of hiring a new one at the time of the interview.

With spring in full force, I ask Ed, "Any messages for the golf course superintendents who are reading this?"

"I hope everybody can keep their chins up in these hard times," he answers. "We've had a lot of grass die over the winter. It was devastating. The older golf courses really took a beating this year."

**Family time...**

Ed has always been a member of the WGCSA, the GCSAA and the WTA. "Just a member. I'm not too involved because of my family commitments," he points out. "The three kids are active in at least two sports per season. We're just up to our eyeballs in kids' athletics. We spend a lot of family time on weekends, traveling around for sporting events. One of the unexpected things I found in life - I didn't realize that kids could get involved in so many different tournament activities that require a lot of expense and travel. My 15-year-old travels with what's called regional soccer - he travels somewhere in the Midwest every weekend."

The Witkowskis have three children: Karli, 17; Matthew, 15; and Kristin, 11. "I love coaching my kids," Ed says. "I coach tournament baseball and tournament basketball. I love doing my own yard work. And I do enjoy playing golf once in a while. I get in about 25 to 30 18-hole rounds in a year. Most of that golf comes between August and October."

No, there's not much sit time for Ed Witkowski. ♣

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# Continuing Education

By Monroe S. Miller, Golf Course Superintendent, Blackhawk Country Club

"If anyone is looking for me, I'm at the Center for Continuing Education," I said to Dave as I headed out the shop door. "Professor Calhoun is lecturing today."

With a wink and a nod, Dave smiled and gave a wave with the wrench he had in his hand.

He knew that the Center for Continuing Education was an euphemism for Stinky's Bar and Grill, and Professor Calhoun was none other than the infamous golf course superintendent Bogey Calhoun. Not everyone would cast a favorable eye on lunch at a tavern, so we skirted the issue this way. Dave also understood that when I went to the Turfgrass Institute of Technology, I was going for lunch at the Long Drive Bar with my colleagues from the area.

Some more curious members have asked Dave occasionally over the years just exactly where these institutions were. Usually an answer like "around here

somewhere" was sufficient and I have never been pressed by anyone to give details.

We have always liked Stinky's because of the friendly staff. Although Stinky himself can be a little grumpy at times, he is usually at the grill cooking burgers and brats. His wife Phoebe is a sweetheart and puts him in his place when he starts grouching and complaining. We all love their resident big orange cat, too. He is part of the ambience, purring like a well-tuned diesel engine when given even a brief scratch on his head. Everyone likes his self-confidence - despite being neutered he acts like he owns the joint and could kick the puddin' out of anyone he wants to. You have to love the beast.

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