

Industry is getting results fighting patch

BY LORI FORD

In the past, fighting summer patch diseases in turf was a little like aiming a shotgun at a target that called for a rifle. That's because people were trying to prevent the problem without really knowing exactly what caused it.

Until a few years ago, summer patch diseases were believed to be the result of a Fusarium pathogen that seemed to be present whenever the disease was analyzed. However, according to University of Rhode Island turf pathology specialist Dr. Noel Jackson, recent studies have shown there are really five separate patch diseases: necrotic ring spot, summer patch, spring dead spot, take-all patch (a disease of bentgrass turf) and Fusarium blight.

These and other turf diseases don't just show up overnight, Jackson says. Like any infectious agent, the pathogens require a susceptible host and favorable environment to live and grow. Unfortunately, most varieties of turfgrass can play host to any number of diseases and the environmental conditions favoring them vary by disease, he says.

Some turf management practices can actually contribute to the development of fungal diseases, Jackson says. For example, close mowing, heavy fertilization and intense irrigation can encourage disease in turfgrass. Add to this the stress created by constant divoting and heavy traffic and it's no surprise that golf courses are typically more susceptible to fungal diseases than other turfgrasses.

Because of this tendency, golf course superintendents like Jim Richter of Crestwicke Country Club in Bloomington, Ill., have learned to keep a sharp eye out for disease symptoms. Turf disease problems at this private, 18-hole facility began in 1976

when Fusarium blight attacked certain areas of the course, planted at the time in Delta and Newport common Kentucky bluegrass. Nevertheless, Richter was able to bring this disease problem under control using applications of fungicides such as Tersan 1991 and Bayleton.

"Today, the course is still common Kentucky bluegrass, but we've been able to keep most diseases in check with the new technology and chemicals available, and by using improved varieties of bluegrass overseeded with ryegrass," Richter says.

His disease control program doesn't stop there, however. In fact, he has a relatively extensive preventive program involving the use of Subdue, Banol, Chipco 26019, Aliette and Rugigan. More specifically, he uses Subdue, Banol and Aliette to control pythium blight; Chipco 26019 for brown patch, leaf spot and dollar spot control; and Rugigan for patch disease control. In all, his fungicide budget is between \$25,000 and \$30,000 a year.

"This past year, we treated all our fairways with Rugigan, using it in a split application, with 3.75 fluid ounces per 1,000 square feet applied April 15 and the same rate applied May 15 for season-long control of patch diseases," Richter says, noting that he used the higher rate listed on the label because the treated areas had a previous history of patch disease infestation. As a result, he obtained excellent control of patch diseases, despite the hot, humid weather and late summer rains the area received last year.

Ordinarily, patch disease symptoms show up in Richter's region of the country near the end of July or the beginning of August. At this time, the textbook "frog-eye" pattern can appear. This is characterized by seemingly healthy grass in the center of a full or partial ring of dead or dying grass,

surrounded by more healthy grass. As the disease progresses, the rings run together until the area is mottled looking.

Many turfgrass pathologists insist that by the time patch disease symptoms appear in mid- to late summer, it is too late for curative control. As a result, they advise that control measures be applied early and preventively. In essence, the fungicide must be applied in early spring, before the disease has a chance to become established.

Cultural methods of prevention

In addition to implementing a fungicide program, Elanco recommends the following cultural practices to help prevent patch disease development:

- Minimize environmental stress to warm- and cool-season turf.
- Aerify warm- and cool-season turf to reduce thatch and encourage root growth.
- Lower nitrogen levels in warm-season turf in late summer.
- Maintain medium to high soil levels of potassium in warm-season turf.
- Maintain soil moisture in early spring while bermudagrass is greening up.
- Raise mowing height in warm-season turf.
- Fertilize warm-season turf with one pound of nitrogen per 1,000 square feet each month to encourage fill-in of infected areas.
- Irrigate cool-season turf with one-half pound of nitrogen per 1,000 square feet per month to encourage fill-in of infected areas.
- Re-seed cool-season turf to fill in previously damaged areas.

Because the pathogens can remain inactive for long periods, any cultural practices that promote good plant health can aid in quicker recovery.

"We try to watch the amount of irrigation we do on the course by only providing what's

Testing turf for patch disease

The following field test can be used to determine if patch diseases are present in the turf:

1. Remove five to ten dying plants.
2. Place them in water to remove soil from the roots.
3. Place the washed plants in a container of water and spread the roots apart.
4. Observe the roots with a hand lens. The infected roots will show a few dark strands of fungal mycelia growing along the surface of the roots, crowns and stems.

If a field test indicates that patch disease is present, you can then send the sample to a state or university extension plant pathologist for a precise lab identification.

absolutely needed - Without overwatering," Richter says, noting also that he aerifies the fairways; verticuts; overseeds with perennial ryegrass; fertilizes with a pound of nitrogen per 1,000 square feet in May, July, September and November; and applies supplemental potash.

Although field tests can be used to determine if turf is infected by a patch disease (see accompanying sidebar on testing turf for patch disease) a laboratory analysis is required to determine which patch disease is attacking the turf.

Because the symptoms of various diseases are often quite similar, laboratory diagnosis is essential to pinpoint the exact culprit. Diagnosis is also vital in helping you choose a fungicide that is effective against the specific disease you want to control. There is an alternative, however.

A fungicide such as Rubigan A.S. provides effective preventive control wherever patch disease has been identified. Moreover, it is effective in suppressing all five patch diseases, as well as other fungal diseases in turf, including anthracnose, powdery mildew, dollar spot, snow mold, copper spot, red thread and stripe smut. This makes Rubigan especially valuable when a golf course superintendent is unsure about which species or how many diseases are present.

Summer patch prevention

Charlie Gaige, superintendent at Lakeland Country Club in Brighton, Mich., began using Rubigan last year to control summer patch on this 18-hole course, built in the 1920s. Pointing out that he applied the product in split applications in April and May and got season-long control, Gaige says he's been so pleased with the results — 90-percent control on problem areas in just one season — that he plans to use Rubigan again this year to control patch diseases.

"The first symptoms of summer patch appeared a couple of years ago when some areas began turning yellow and the classic frog-eye pattern developed," Gaige says. "So, we took some turf samples to Michigan State University, which is only about 45 minutes away. A plant pathologist there diagnosed the problem as summer patch and we began a preventive treatment program last year."

Gaige adds that summer patch has been one of the most difficult diseases to control thus far - even more so than dollar spot, brown patch, Pythium blight or anthracnose.

Typically, turfgrasses susceptible to summer patch include Kentucky and annual bluegrass, fescue, ryegrass, bermudagrass,

Continued from page 11

Location	Course Name	Type	Holes	Address	Architect/Contact
Richmond	Richmond CC	D	18	Switch & Grassy Ponds Road	Cornish & Silva
South Carolina					
Alken	Woodside Plantation	N/A	18	1361 Silver Bluff Road	Robert Cupp
Charleston	Golf International	D	72	John's Island	N/A
Charleston	Parker Island GC	P	18	N/A	Bradford Benz
Conway	Palmetto Golf & CC	D	18	N/A	DeVictor Langham, Inc.
Gaffney	Thundergust	P	18	Post Office Box 1717	Robert Cupp
Kiawah Island	Kiawah Island Resort Golf Court	D	18	N/A	Pete Dye
Myrtle Beach	TBD	P	27	N/A	Arnold Palmer Aid Scay
Pinehurst	Pinehurst Golf & Polo	P	18	N/A	Gary Player
South Dakota					
Garretson	Garretson GC	D	9	N/A	N/A
Dakota Dunes	Dakota Dunes	P	18	N/A	Arnold Palmer/Ed Scay
Tennessee					
Franklin	Carnton CC	P	9	Post Office Box 576	N/A
Lechannon	TBD	D	36	N/A	Lee Trevino
Nashville	GC of Tennessee	P	18	2100 West End Avenue, Str.8	Thomas Lazio
Pickwick Dam	Shiloh Falls CC	P	18	Post Office Box 395	Kevin Tucker
Texas					
Baytown	TBD	D	18	North Main & Farm Road	N/A
El Paso	El Paso North GC	N/A	18	N/A	Finger-Dye-Spann, Inc.
Houston	Harris County Public GC	M	18	FM 1942 & North Main	N/A
Rockwall	Buffalo Creek CC	N/A	18	100 CC Drive	J. Morrish & T. Weiskopf
Round Rock	Round Rock Ranch	M	18	County Road 122	Richard M. Phelps
Sugar Land	Sweetwater CC	P	9	400 Palm Royale Blvd.	Roger B. Packard
Utah					
Sandy	Dimple Dell GC	M	M	18	N/A Gerald Anderson*
Sandy	Old Mill Valley	M	18	N/A	Gerald Anderson*
Sandy	Riverton	M	18	N/A	Gerald Anderson*
Vermont					
East Burke	Burke Mountain	D	18	Box 247, Mountain Road	Cornish & Silva
St. Johnsbury	St. Johnsbury CC	P	9	Route 5 Memorial Drive	Cornish & Silva
Stratton Mountain	Sun Bowl GC	N/A	18	N/A	Denis Griffiths & Assoc.
Virginia					
Amherst	TBD	D	9	US#60	N/A
Charlottesville	Pen Park Municipal GC	M	9	Parks & Roe Dept. Box 911	N/A
Chester	The Highlands GC	N/A	36	N/A	Steve Smyers
Fredericksburg	Fawn Lake	P	18	N/A	Arnold Palmer/Ed Scay
Landsdowne	TBD	P	18	N/A	N/A
Landsdowne	TBD	P	18	N/A	N/A
Leesburg	Round Hill	N	18	N/A	Lindsay Ervin & Assoc.
Reston	Cascades	P	18	Route 7	Thomas Fazio
Roanoke	Blue Hills CC	M	27	City of Roanoke	Russell F. Breaden
Smith Mountain Lake	The Wild Doose	D	18	N/A	Russell F. Breaden
Suffolk	River Plantation	D	18	Route 10 & Hill Points Road	N/A
Vinton	Mountain View	D	18	N/A	Russell F. Breaden
Washington					
Brush Prairie	The Cedar GC	D	18	15001 NE 181st Street	Robert Muir Graves
Burlington	Avalon GC	D	18	Interstate 5	Robert Muir Graves
Lynnwood	Lynnwood Municipal GC	M	18	N/A	John R. Steidel
Malta	The Falls GC	D	18	N/A	N/A
Wisconsin					
Lake Geneva	Geneva National GC	D	18	N/A	Arnold Palmer/Ed Scay
Lake Geneva	Geneva National GC	D	18	N/A	Gary Player
Lake Geneva	Geneva National GC	D	18	N/A	Lee Trevino
Mayville	Mayville Country Club	P	9	N/A	Robert M. Lohmann
Spring Green	Spring Green	D	9	N/A	Roger B. Packard
Superior	Nenadji GC	M	9	58th Street & Hill Avenue	E. Lawrence Packard

Much of the information in this list is supplied courtesy of the National Golf Foundation.

zoysiagrass and centipedegrass.

In addition, depending on the region of the country, it is most active in warm weather from June through September, occurring when one to two weeks of hot weather follow a heavy rainfall. Early symptoms of summer patch show wilted turf in infected areas. Later development, however, shows scattered circular patches of dead grass with healthy grass in the center. These patches may be several feet in diameter, plus the disease can become more severe with excessive irrigation during hot weather. Heavy thatch, low mowing in midsummer, improper amounts of nitrogen, soil compaction, exposure to heat, steep slopes and using inappropriate cultivars are some of the factors that encourage disease development.

To boost his patch disease prevention program, Gage plans to increase the amount of nitrogen used on the course from April through September and will try to decrease the amount of irrigation.

"Normally, we use about one-quarter pound nitrogen per 1,000 square feet each month," he says. "But turf experts from Michigan State advised us to increase the amount to one-half pound per 1,000 square feet during these months."

Meanwhile, summer patch has been equally annoying for Bruce Dodenhoff, superintendent at Brandywine Country Club in Maumee, Ohio. During his first five years at the course, he experienced only minor bouts with fungal diseases. However, when unsightly yellow patches and dead areas began appearing on some of his bentgrass greens three years ago, he immediately sought a solution.

"There were four greens that really had a problem," he says, noting that the malady was later diagnosed as summer patch. "One of the worst troubles was on the last hole, which didn't settle too well with golfers because nobody likes to play on diseased greens—much less a diseased 18th green," Dodenhoff insists.

To combat summer patch and other fungus diseases at Brandywine Country Club, Dodenhoff has set up a disease prevention program for his bentgrass greens and tees based on the following rotation schedule and target diseases:

- April 15—Apply two ounces of Rubigan A.S. per 1,000 square feet to control summer patch.
- May 2—Apply six ounces of Tersan 1991 per 1,000 square feet to control stripe smut.
- May 15—Apply two ounces of Rubigan A.S. per 1,000 square feet for summer patch control.
- June 6—Apply four ounces of Daconil 2787 per 1,000 square feet for dollar spot and red leaf spot. This is tank mixed with one ounce of Tersan 1991 per 1,000 square feet.
- July 3—Apply two ounces of Bayleton per 1,000 square feet for anthracnose.
- July 11—Apply six ounces of Daconil 2787 per 1,000 square feet to control Curvularia leaf spot.
- Aug. 4—Apply one and one-half ounces of Rubigan A.S. per 1,000 square feet to prevent late summer occurrences of anthracnose and dollar spot.
- Aug. 25—Make another application of four ounces of Daconil 2787 mixed with Tersan 1991 per 1,000 square feet.
- Sept. 5—Apply one and one-half ounces of Rubigan A.S. per 1,000 square feet for summer disease control.
- Oct. 10—Apply another application of Daconil 2787 and Tersan 1991.
- Oct. 21—Apply four ounces of Bayleton per 1,000 square feet for stripe smut control.
- Nov 16—Apply PMAS to greens.

- Dec. 1—Apply Scotts ProTurf FFII to control snow mold.

Dodenhoff also sprays Subdue on greens three times a year for Pythium blight control.

Dodenhoff's program has resulted in season-long control of summer patch, as well as other diseases, and a 90-percent turnaround in favor of the bentgrass in areas where summer patch had been a problem. In addition, Rubigan has helped Dodenhoff control dollar spot and anthracnose.

In conjunction with this fungicide program, Dodenhoff uses several cultural methods to reduce the chance of disease development on greens and tees. Practices include aerifying in the spring and fall, verticutting once every two to three weeks during the season, applying a light topdressing of sand every two to three weeks,

avoiding overwatering, and overseeding in the fall.

"We've seen our disease program change during the last few years," Dodenhoff says, adding that it's become more preventive. "The development of new chemicals has really changed the outlook for us as far as keeping down the chance of disease—especially summer patch. Before Rubigan was available, there wasn't anything we could use to combat that disease.

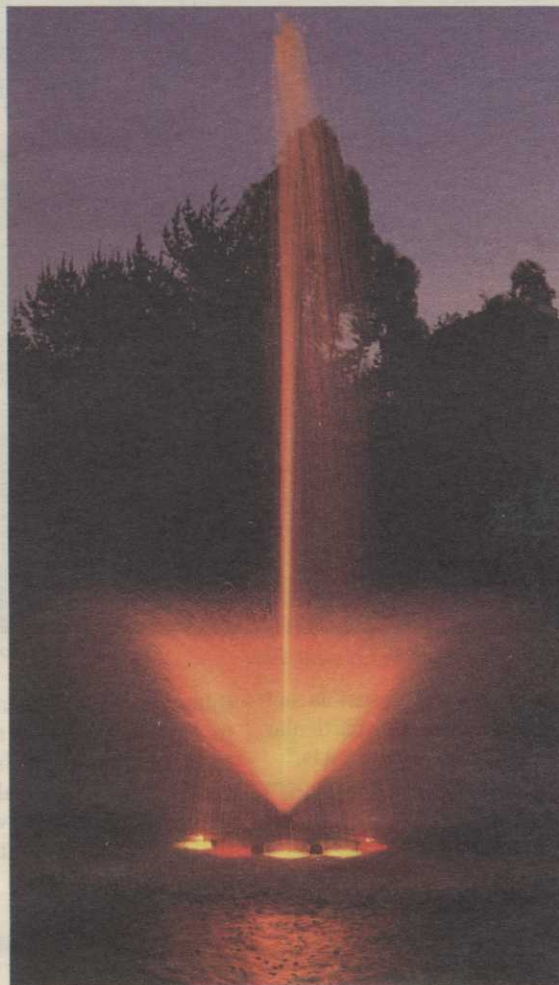
"At times, it seems like some of the cultural practices we're using to try to help the turf can actually end up working against us by helping promote disease in some instances," Dodenhoff says. "Therefore, it's important to find and maintain the right balance between cultural practices and control methods."

Product list

- Tersan 1991 (benomyl, DuPont)
- Bayleton (triadimefon, Mobay)
- Subdue (metalaxyl, Ciba-Geigy)
- Banol (propamocarb Hydrochloride, Nor-Am)
- Chipco 26019 (iprodione, Phone-Poulenc)
- Aliette (aluminum tris, Rhone-Poulenc)
- Rubigan (Elanco)
- Daconil 2787 (chlorothalonil, Fermenta)
- PMAS (PMA, W.A. Cleary)
- Scotts ProTurf (PCNBV, O.M. Scott & Sons)

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