Burgeoning Biofungicides

Some products could prove to be valuable preventives

BY ANTHONY PIOPPI
Contributing Editor

The superintendents' arsenal in the ongoing war against turf fungus continues to shrink because of federal regulations of synthetic pesticides. But a new generation of biofungicides could supply reinforcements.

Companies have been seeking research from a number of universities for at least five years to show biofungicides are a formidable opponent to a variety of turf diseases.

University researchers report that biofungicides are an effective way to reduce synthetic fungicide use in some cases, but some have proven impotent against existing diseases.

Bruce Clarke, director of turfgrass science at Rutgers University, said he and others in his department have been testing biofungicides for a number of years on diseases of cool-season grasses, including brown patch. He said research shows they are ineffective on their own or in a curative role. But when used preventively, they show the ability to hold off fungus when tank mixed with the most popular synthetic fungicides and slightly less effective when used in rotation with synthetic fungicide applications. He said when biofungicides are used as part of a program and sprayed preventively, synthetic fungicide use can be reduced anywhere from 25 to 50 percent.

"As a group they would allow people to use reduced rates of synthetic fertilizers and still get control. It has to be applied prior to disease outbreak," Clarke said. "Yes, they can reduce disease pressure alone, but under high pressure, the best use is when tank mixed. They are not effective on a curable basis."

Lane Tredway, an assistant professor of plant pathology and an extension specialist in the department of plant pathology at North Carolina State University, conducted studies testing the effectiveness of a biofungicide in holding off dollar spot on SR 1119 creeping bentgrass.

"It's not something we're comfortable recommending yet (to treat dollar spot)," he said.

However, some turf managers have found biofungicides helpful.

"I know many superintendents chose to incorporate them into their programs, and some feel like they work," Tredway said. But he added they might not be "consistent enough to meet the demands of golf course superintendents. I think the jury is still out."

The results of the trials do not mean Tredway is dismissing biofungicides. In fact, a new

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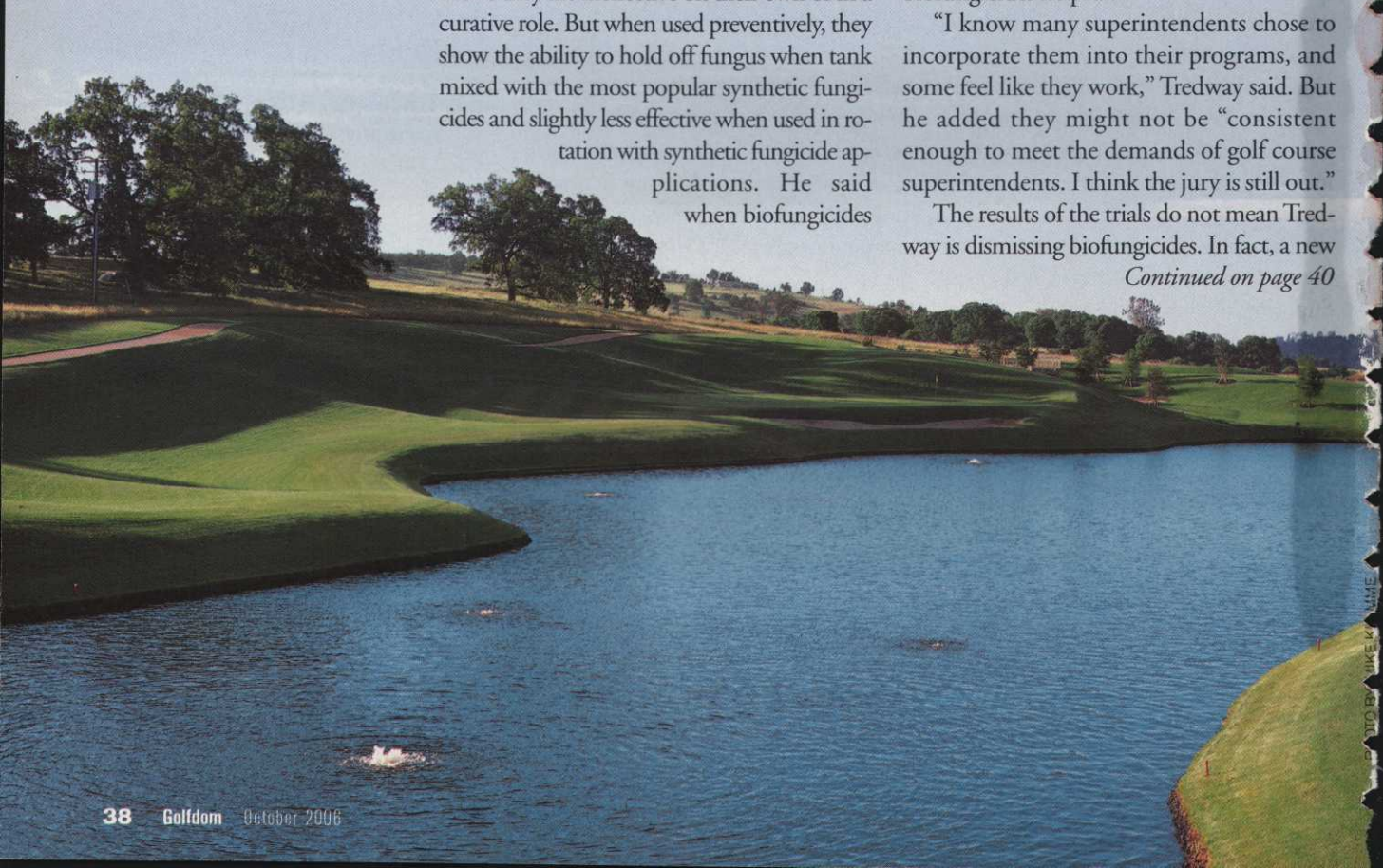

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round of tests are being conducted after it was found that although it didn't hold off dollar spot, AgraQuest's Rhapsody biofungicide appeared to increase the overall health of the turf.

"I do believe there is a place for these products," Tredway said.

At Mississippi State University, Maria Tomaso-Peterson, assistant research professor in the plant pathology department, has been testing a number of nonsynthetic-based pesticides, including EcoGuard, a bacterium; ZeroTol, a fungicide/bactericide/viricide; and Turf Shield, a biological.

"What we see is they are best used preventively," echoes Tomaso-Peterson. "Once disease pressure gets high, they are not as effective."

Even with nonsynthetic-based products showing promise, Tomaso-Peterson said many superintendents are understandably hesitant to try them because of a history of biological products that failed.

"Biologicals have so many snake oil connotations to them," she said.

That is why Tomaso-Person said getting the information out to superintendents and making sure they know how to properly use the legitimate products are vital steps to the success of biologicals.

"We have to educate the users on how to incorporate them into conventional spray programs," she said. "The biggest thing is they have to be used properly."

Biofungicide use would reduce rates of synthetic fungicide.

BRUCE CLARKE, RUTGERS UNIVERSITY

Smashing stereotypes

AgraQuest, the maker of Rhapsody, was founded in 1995 with the specific goal of creating nonsynthetic pesticides. ROOTS Plant Care Group, an offshoot of Novozymes Biologicals, is the maker of EcoGuard. Novozymes was a well-established "white" biotech company that produced microbial-based formulas for the septic and cleaning industries. It also produced the microbial formula that was used to degrade and breakup the Exxon Valdez oil spill.

The company hired Dave Drahos, who had worked developing Roundup for Monsanto, to spearhead its biofungicide research.

Representatives from both companies said the turf indus-

try reaction to their products has given them enough optimism to invest in more research and development.

"We see that as a major growth area," said John Sedivy, director of business development for ROOTS. "This is not our last biofungicide by any means."

David Warman, business manager of turf and ornamentals for AgraQuest, said his company is developing a fungicide to combat pythium, which should be available at the end of 2007, as well as a natural insecticide he hopes will be on the market by 2008.

Sedivy echoed the view of Tomaso-Peterson that because of failures of companies that came before the present group, superintendents might not take the new products seriously.

He called many of the predecessors "unscrupulous," and said many superintendents are wary about new products.

Superintendent Jeff Carlson has no choice but to use biologicals because his Vineyard Golf Club is forbidden to use synthetic fungicides. Located on the Massachusetts island of Martha's Vineyard, regulators closely monitor the chemical use of the four-year-old course. He uses EcoGuard in his battle with dollar spot on the A-1 greens. Carlson even set up his own trials to test the product and said it appears to lessen dollar spot severity.

"We saw a difference," said Carlson, who is not formally affiliated with any of the products he uses. "It has real fungicidal properties that I don't see in other biological products out there."

He still gets dollar spot every year, but his goal is to prevent the pitting that can occur when it's at its worst. He said his program is working better than some other areas where he is also experimenting with biologicals.

"I don't lay around in the wintertime wondering what I'm going to do next year," he said of his dollar spot problem. "I do that with weeds and bugs."

Carlson pays a little more than $12 per gallon for EcoGuard, and a greens application runs about $250. He sprays about every 10 days during the course of a season. Carlson does not spray tees, which are L-93, or fairways, which are 70-percent fescue/30-percent colonial bent.

Tomaso-Peterson said she found good results when she applied EcoGuard every seven days in combination with a pound of organic fertilizer.

She foresees cost-conscious golf courses as the first to embrace the new biologicals because it can mitigate the use and ultimately the expense of synthetic-based pesticides.

"I think you can do a lot of control for a lot of diseases," she said. "For the low-budget golf courses, what a wonderful thing."

Pioppi is a contributing editor for Golfdom. ■