Helpful hints

Recommendations for making fall and/or early spring fungicides to help manage dollar spot

- **Know what fungicide(s) work against dollar spot on your golf course.**
- **Apply an effective dollar spot fungicide after the second mowing in the early spring. Leave an adequate number of check plots so you can gage the impact of the application.**
- **Consider applying an effective dollar spot fungicide application in mid- to late-fall, about six weeks prior to when mean daily low temperatures range from 20 to 30 degrees F for one week.**

Maxx from Syngenta per 1,000 square feet and 2.0 ounces of Banner Maxx per 1,000 square feet), chlorothalonil (3.2 ounces of Daconil Ultrex from Syngenta per 1,000 square feet), thiophanatemethyl (2.0 ounces of 3336 F from Cleary per 1,000 square feet), iprodione (4.0 ounces of 26GT from Bayer per 1,000 square feet) and an experiment compound (0.2 of an ounce of BASF 505 from BASF per 1,000 square feet).

In addition to these single applications, preventive applications of each fungicide were made every 14 or 28 days according to label recommendations starting May 22, 2002. All fungicide treatments were applied with a hand-held, CO_2-powered boom sprayer using 6503 TeeJet nozzles at a pressure of 40 psi, (water equivalent to 2.0 gallons of water per 1,000 square feet). A nontreated control was also included.

Dollar spot symptoms first were observed in the nontreated control plots at the OSU Turfgrass Facility May 23, 2002. Dollar spot severity was rated every two weeks by counting the number of dollar spot infection centers per plot between May 23 and July 23, 2002. Differences in disease severity among treatments were assessed via analysis of variance using PROC GLM of SAS (SAS 9.1; SAS Institute in Cary, N.C.). Differences among treatment means were determined using Fisher's protected least significance difference at P equals 0.05. Although differences existed at multiple rating dates, only results from the June 24, 2002 rating date are highlighted in the update (Table 1).

Dollar spot severity was significantly greater at the OTF Turfgrass Facility compared to either golf course. In general, the greater the disease severity, the more dramatic the results, visually and statistically. As anticipated, dollar spot was significantly less severe in plots receiving preventive applications of the fungicides on a regular interval (i.e., treatments four, seven, 10, 13, 16 and 19). At the OSU Turfgrass Facility, where the dollar spot is sensitive to all fungicides, all treatments, except the single fall applications of chlorothalonil and thiophanatemethyl, effectively reduced dollar spot the following

Impact on the business

Research might cause change in timing, number of fungicide applications BY JOHN WALSH

It's no secret superintendents are a hard bunch to convince. Keith Kresina, golf course superintendent at The Golf Club in New Albany, Ohio, and Carl Wittenauer, CGCS, at Brookside Golf & Country Club in Columbus, Ohio, are no exceptions.

The two superintendent, among others, are working with Mike Boehm, Ph.D., of the Ohio State University's plant pathology department on dollar spot research. Boehm is trying to pinpoint a certain time in the fall when superintendents should apply fungicides to suppress dollar spot the following season. Although Kresina and Wittenauer haven't changed their fungicide application programs much based on Boehm's research so far, they think he's on to something.

Kresina and Wittenauer hadn't heard of spraying for dollar spot in the fall before working with Boehm.

"I was doing the opposite of what Mike was suggesting," Kresina says. "The thought was there was no reason to put something down until signs of dollar spot appeared, which wasn't until the spring. But by October, it was very difficult to control. The fact that it was lasting that long was crazy. It wasn't making sense. When I talked to Mike, I wasn't sure where he was going, but it seemed logical."

Wittenauer had suspicions.

"I'm a PCNB user for snow mold, and I've always questioned whether there was some benefit to that fall spray in the following spring," he says. "There seemed to be some correlation."

Kresina says superintendents in the Cleveland area spray for snow mold, and if they're using a fungicide that's effective for dollar spot control and they hit a certain window, they probably didn't see dollar spot in the spring. However, they didn't know they were suppressing dollar spot with the fungicide application for snow mold.

FIELD ASSESSMENT

At The Golf Club, Boehm's research is being done on the tee end of a fairway. Kresina leaves one-third of the fairway untreated and two-thirds treated, which he marked.

"When you take a study and put it on a golf course, then it becomes real world," he says. "Mike didn't give me any restrictions except putting down fungicides (in a certain area). It's interesting to see results from not applying fungicides, one application, two applications, three applications and four applications."

Kresina says the most difficult part of the research is pinpointing exactly when the fall applications should be applied.

"I can't spray all through the fall and spring because we'll go broke," he says. "We need to pinpoint two times in the fall for effectiveness in the spring."

But temperatures have impacted the results of the study negatively.

"In the fall of '03, Mike nailed it, but the following years, the weather was different, and the results weren't consistent," Kresina says.

Kresina says there are things in the fall – such as wet weather, which causes muddy turf conditions, and aerification – that can make it difficult to apply fungicides. And adding fungicide applications in the

season. On average, the reduction of dollar spot severity was about 50 percent – better in some cases. Although significant from a scientific standpoint, this level of disease suppression wouldn't likely be considered commercially acceptable to most golf course superintendents. One month later, on July 22, treatments three through seven, 10, 12, 13, 16, 17 and 19 continued to have significantly less dollar spot than the nontreated controls. (Data not shown.)

The results from the study clearly revealed single fall and early spring preventive applications of fungicides significantly reduced dollar spot severity the following season.

FALL 2003 TO SUMMER 2004

In September 2003, Amy Niver, a master's degree student, and Mike Boehm, Ph.D., designed two follow-up studies as a continuation of the study conducted by Young-Ki Jo. Latin joined at this time. There were 18 treatments in the first 2003/2004 study. A detailed list of the treatments used in the experiment is listed in Table 2.

The first six treatments weren't treated with any fungicide in fall 2003. The second six treatments received three applications of a combination or tank mix of chlorothalonil (3.2 ounces of Daconil Ultrex per 1,000 square feet) and propiconazole (1.0 ounce of Banner Maxx per 1,000 square feet) on Sept. 26, Oct. 17 and Nov. 7, 2003, respectively. The last six treatments received a single application of the chlorothalonil/propiconazole combination Sept. 26, 2003.

The thinking behind this approach was to have the turfgrass going into winter with different levels of pathogen activity, not necessarily disease. Specifically, the hypothesized dollar spot fungus would be the least active in the plots sprayed with the three applications of fungicide, active in the nontreated plots and somewhere in between in plots receiving only one application of fungicide. Latin confirmed suspicions by having a mild dollar spot epidemic late in fall 2003 and was able to document (data not shown) that disease pressure was moderate in the nontreated plots and absent in all plots that received any type of fall fungicide application.

On May 6, 2004, a single application of Banner Maxx, Daconil Ultrex or a combination of the two as described above was applied to half the plots. The goal was to overlay the treatments imposed in fall 2003 with an early spring preventive application. Another such application was intended to be made on the other half of the plots later in May, however, central Ohio and much of the Midwest and East was hit with a serve dollar spot epidemic about May 8. Because the intent of the study was to evaluate the impact of preventive fungicide applications on dollar spot, it was decided not to make these late May applications.

Each treatment was replicated four times per location. The experiment was performed simultaneously at three locations – the OSU Turfgrass Facility, Brookside and the Purdue University Turfgrass Research and Education Center in West Lafayette, Ind. (Data not shown.)

The results of this study supported early findings in that fall and spring applications of fungicides significantly reduced disease

spring is difficult because one has to fight the wind and rain, which can prevent fungicides from being applied to the target effectively.

"The way you deliver the fungicide to turf is important," he says. "I'm now using more water – 2 gallons per thousand square feet – and a tapered, flat fan nozzle. Using more water seems to be effective. Guys were cutting back on the amount of water used to stay ahead of play."

Kresina says applying fungicides in the fall might be easier than in the spring because springtime is when many superintendents are finishing winter projects and applying herbicides and insecticides.

Among the plots at Brookside, some were clear of dollar spot through June with the fall applications. For Wittenauer, the fall fungicide application for dollar spot would add another application or two to his program. He says his average fairway application is between $3,500 to $5,000.

"Mike had good results with two and three applications," he says. "He has real impressive plots – clean into July compared to the check plots that were covered with dollar spot. However, the idea is to eliminate some sprays in the spring, but that depends on the facility, budget and management."

Wittenauer, who runs a strict preventive program, hasn't changed it yet because of Boehm's research.

"I'm always a proponent of getting after it early before you see it," he says. "Get ahead of it early in the spring if you can't make the application in the fall."

Wittenauer says the spray season is longer than it used to be. Ten to 15 years ago, he wouldn't spray before May 15. Now he's starting to spray at the end of April, and the dollar spot season has extended to mid- or late October, spraying every two weeks. He says he's spraying earlier in the spring, but not in the fall because of his budget.

"Mike still has a lot of timing questions that need to be answered," he says. "I'm looking for more definitive research. But in the meantime, I'll still go through mid-October with fungicide applications for dollar spot, but I'm not fighting it as much in summer from a curative standpoint."

Kresina suggests superintendent conduct research on their own.

"If you really want to see this work, you need to have some areas where you don't spray fungicides," he says. "Leave an area unsprayed and tell membership you're making sure fungicides work, that's why we have dead grass."

FUTURE OPPORTUNITIES

But the magical question remains: Is it worth it to spray and spend the extra money?

"I don't know if I'm looking to save money, but I'm looking for a better use of the product and a better fairway," Kresina says. "I don't know if the results of the study will reduce the need for applications in the spring, but hopefully Mike nails this down, and we treat dollar spot like crabgrass," he adds.

"I don't see a huge difference in spraying in the fall as opposed to spraying early in the spring," Wittenauer says. "Right now, there are too many variables to convince me of the extra spray in the fall. As superintendents, we're looking to save money and be environmentally conscious, and still meet members expectations. This is a new area of dollar spot control, and time will tell. If we can apply fungicides in the fall and not see dollar spot until June or July, everyone will do it." GCI