

**FIGURE 1**

## Combination Material Teams Up on Turf Diseases

By Richard Latin and John F. Smith

**R**esearch on a new combination material shows promise against two important diseases of creeping bentgrass: dollar spot and brown patch.

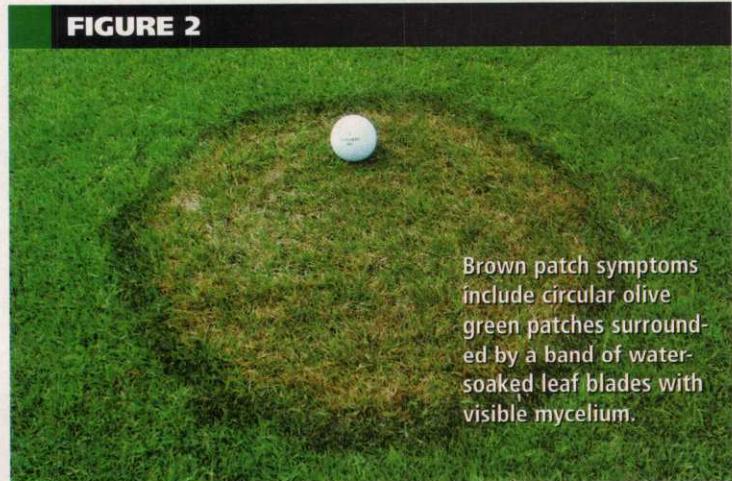
Tartan combines two active ingredients (triadimefon and trifloxystrobin) to provide effective control of many important turfgrass diseases. The triadimefon component (manufactured separately as Bayleton) is effective against foliar diseases, such as dollar spot and brown patch, and can be used to suppress damage caused by root diseases, such as summer patch and take all patch. The trifloxystrobin component (manufactured separately as Compass) provides excellent brown patch control and is effective against anthracnose and gray leaf spot.

Dollar spot is one of the most common and readily identifiable diseases on golf course turf. It is caused by a fungal pathogen (*Sclerotinia homoeocarpa*) that blights leaf tissues but does not affect turfgrass roots or crowns. The disease is a major concern on golf course turf, especially creeping bentgrass and annual bluegrass greens, tees and fairways, where it can affect playability as well as appearance. Characteristic symptoms on creeping bentgrass greens include small (up to 1 inch in diameter), round white- to tan-colored spots (Fig. 1). The spots often occur in clusters and can cause considerable damage to playing surfaces

if not appropriately managed.

Brown patch is caused by a fungal pathogen (*Rhizoctonia solani*) that affects all cool-season turfgrass species. Moderate to severe outbreaks on high-maintenance creeping bentgrass and annual bluegrass can result in thin, poor quality turf that may be predisposed to algae and moss infestation. Even mild brown patch outbreaks can spoil the appearance of golf greens and tees. Taller mowed turfgrasses for athletic fields and professional landscapes (especially tall fescue and perennial ryegrass) also may sustain damage from brown patch infection. Under favorable environmental conditions

*Continued on page 72*

**FIGURE 2**

*Continued from page 71*

(e.g. hot, humid weather) brown patch symptoms may develop overnight.

On creeping bentgrass and annual bluegrass greens, tees and fairways, brown patch results in circular olive green stains, ranging from 4 inches to more than 12 inches in diameter. Similarly, large, round patches of blighted turf can also occur on perennial ryegrass collars and fairways. Leaf blades within the patch become water-soaked and turn brown soon after infection. After warm and humid evenings, a dark gray to light gray band (quarter-inch to one inch wide) is normally evident at the perimeter of active patches (Fig. 2). The band (often called a smoke ring) is a sign of the advancing fungal mycelium and water-soaked infected leaves.

### Trials in 2005

The dollar spot trial was conducted at the Daniel Turfgrass Research and Diagnostic Center on the campus of Purdue University in West Lafayette, Ind. Efficacy of Tartan for dollar spot control was evaluated on creeping bentgrass (cultivar L-93) maintained at a fairway mowing height of approximately one-half inch.

Plots were sprayed with Tartan, manufactured by Bayer Environmental Science, at rates

equivalent to 1.0 fluid ounces per 1,000 square feet and 2.0 fluid ounces per 1,000 square feet at 21-day intervals beginning on May 25, when no disease symptoms were apparent in any of the replicated plots. Visual evaluations of disease severity were recorded at regular intervals throughout the summer.

The brown patch evaluations were conducted at the Rutgers Turf Research Farm in North Brunswick, N.J. Fungicide treatments were evaluated on replicated plots of fairway height (3/8-inch) colonial bentgrass (cultivar SR 7100), a species that is especially prone to brown patch infection. Both rates (1.0 and 2.0 fluid ounces per 1,000 square feet) of Tartan were applied at three-week intervals, beginning on June 16, before the first outbreak of disease. Brown patch severity was evaluated periodically through the summer.

### Dollar spot results

Throughout Indiana and the lower Midwest, the 2005 growing season was marked by a warm, dry spring and unusually high temperatures through summer.

Although dollar spot pressure was rather moderate, fungicide sprays were still warranted on area greens, tees and fairways; and disease lev-

*Continued on page 74*

**TABLE 1**

**Dollar spot severity (percentage of plot area with symptoms) for plots treated with Tartan**

Treatment and rate per 1,000 square feet	spray interval	27-Jun DA*	5-Jul DA	10-Jul DA	17-Jul DA	25-Jul DA	1-Aug DA	8-Aug DA	15-Aug DA
No fungicide		0.67	1.95	3.06	15.31	10.45	4.30	7.40	15.21
Tartan 1.0 fl oz	21 days	0.32	12	0.81	20	0.32	4	0.32	4
Tartan 2.0 fl oz	21 days	0.00	12	0.00	20	0.00	4	0.19	4

\*DA = Days after the previous spray for each evaluation date.

**TABLE 2**

**Turf quality evaluations associated with Tartan applied to creeping bentgrass for control of dollar spot.**

Treatment and rate per 1,000 square feet	spray interval	5-Jul DA*	17-Jul DA	1-Aug DA	15-Aug DA
No fungicide		6.25	4.75	5.25	3.25
Tartan 1.0 fl oz	21 days	7.75	20	7.00	4
Tartan 2.0 fl oz	21 days	7.50	20	7.25	4

\*DA = Days after the previous spray for each evaluation date.

Turf quality was assessed visually based on a 0-9 index, where 9 = excellent quality. Values below 6.0 indicate unacceptable turf quality.

**TABLE 3**

Brown patch severity (percentage of plot area with symptoms) for plots treated with Tartan

Treatment and rate per 1,000 square feet	spray interval	Disease severity (%)						turf quality **	
		30-Jun DA*	12-Jul DA	22-Jul DA	5-Aug DA	15-Aug DA	21-Sep DA		
No fungicide		28.8	60.0	69.0	36.3	56.3		4.3	
Tartan 1.0 fl oz	21 days	5.0	14	1.3	12	2.8	1	7.5	15
Tartan 2.0 fl oz	21 days	2.5	14	0.0	12	0.0	1	1.3	15
								10.0	25

\*DA = Days after the previous spray for each evaluation date.

\*\* Turf quality was assessed visually based on a 0-9 index, where 9 = excellent quality. Values below 6.0 indicate unacceptable turf quality.

Continued from page 72

els in unsprayed research plots in West Lafayette far exceeded tolerable levels for creeping bentgrass fairways. Application of both rates of Tartan at 21-day intervals resulted in excellent control of dollar spot as illustrated in Table 1.

Dollar spot symptom expression was significantly less than in the unsprayed plots and remained at or below tolerable thresholds until the end of the application interval. In addition, plots treated with both rates of Tartan maintained high turf quality throughout the season (Table 2).

### Brown patch results

Weather during the summer of 2005 was extremely favorable for brown patch development in New Jersey as well as the entire northeastern quadrant for the United States. Except for a brief cool period in late July, high nighttime temperatures and long dew periods prevailed from late June through early September.

Brown patch severity in untreated plots remained very high throughout the experimental period, indicating that the environmental conditions provided a vigorous challenge to fungicide performance (Table 3).

Both rates of Tartan resulted in significantly less disease than the untreated plots at all evaluation dates. Also, plots treated at the 2.0-ounce rate gave superior brown patch control and excellent turf quality under high disease pressure for the duration of the experiment.

The formulation of the two components into one product offers the advantage of using one product at prescribed dosages to protect against damage associated with a range of infectious diseases. It includes the same StressGard technology found in Chipco Signature.



#### QUICK TIP

When acquiring new or used equipment for your golf course, be open-minded about the opportunities presented through leasing. Leasing can provide flexibility, enhance cash flow and reduce down time. An industry resource like John Deere Credit can provide the flexible financial solutions you require at your course.

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