

agement] companies pursuing business, our first allegiance is to protect our members' jobs. We're looking at the profession as a whole second."

She hastens to add that GCSAA is not heavily marketing and promoting that idea, nor has any management company pursued that strategy to her knowledge.

Heck says most management companies have been good about listening to GCSAA's concerns and trying to implement its suggestions. She says the organization hasn't talked about sanctions, but the career development committee will discuss ethics in employment the next time it meets.

She also says the GCSAA revisits the issue from time to time with its lawyers to see if there's any sanction take against companies that violate the ethics' code that won't run afoul of current trade laws.

A house divided?

The question of management companies has strong partisans on both sides, but that doesn't mean the two will never be reconciled.

"I'm still an honorary director with my local chapter," Dillinger says. "I don't want to break any ethical alliance, but business is business. If we're contacted, we'll go check it out. I would urge superintendents not to judge all management companies as if they are the same."

Bowden says he doesn't hold anything against superintendents who've gone over the line to join management companies.

"When it gets down to it, they're still superintendents, and it's still a brotherhood," Bowden says. "We still have one of the most ethical professions around."

Nickerson, for one, will be glad to hear that.

"If superintendents do their own research on these companies with an open mind, it would change a lot of minds in the industry," Nickerson says. "That might help the overall relationship in the future." ■

You can reach Andorka, the author of this article, at fandorka@advanstar.com.

Editor's Note: *Golfdom* contacted American Golf Corp. several times to participate in this story, but company representatives declined to be interviewed.

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SOLUTIONS, IDEAS & OPINIONS

Peter McDonough

**The Keswick Club, Keswick, Va.
Past President of the Virginia GCSA and Old Dominion GCSA**

Peter McDonough has a phrase that motivates the way he lives his life, "Many hands doing a little so the whole body can accomplish a lot." That is the guiding principle that led him to spearhead coordination of Virginia's five superintendents associations' chapters into one group affiliated with the GCSAA.



McDonough was president of Old Dominion GCSA when the national organization ruled that superintendents' local chapters must be GCSAA affiliates. He immediately went on the road and sold the idea to the state's other four chapters, all of which were struggling. In the process, he was elected president of the Virginia GCSA in 1999, serving in that post for four years while the association doubled its membership to 600.

"The goal was not only GCSAA affiliation," McDonough says. "We don't have as many stringent regulations as Florida and other states, but it's a matter of time [before we do]. If we don't speak as a group or a team, we will not get our message heard."

John Gurke

**Certified Superintendent, Aurora CC, Wheaton, Ill.
Contributing Editor to *On Course* magazine**

When members of the Midwest Association of Golf Course Superintendents (MAGCS) need to relieve some stress, they can sit down with their latest issue of *On Course* magazine and read "Zen and the Art of Equipment Maintenance" about a year in the Twilight Zone without a mechanic, or "If You Are a Golf Course Dog, Read This."



It is the latest knee-slapping column from long-time editor and now contributing editor John Gurke.

"I try to make it as funny as I can," Gurke says. "I get a rush out of sitting down and being creative with the keyboard!"

Gurke, who ran through the seats of the Chicagoland GCSA, serving as its president in 1997-98, also served awhile on the Midwest AGCS board, but left it after finding that his talents are best suited to editorial work.

About his devotion to volunteer work for the industry, the 1984 graduate of the University of Illinois says: "The stock answer is that I wanted to make a difference. Truthfully, I wanted to see what a little guy like me could do with a bigger group of people. As far as the editing and writing, that evolved."

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TURFGRASS TRENDS

DISEASE MANAGEMENT

Aggressive Dollar Spot Raises Important Questions

By J. M. Vargas, Jr.

Dollar spot seems to be emerging as more of a problem than it used to be. There is no research to explain the sudden occurrence of what appears to be a more aggressive strain of dollar spot. We can only speculate on why this is happening.

The fungus that causes dollar spot, *Rutstroemia floccosum* (formerly called *Sclerotinia homoeocarpa*), is a fungus that doesn't produce any spores. This has made identifying this pathogen difficult because most fungi are classified or identified based on the spores they produce.

Now that reliable molecular techniques are available, the fungus that causes dollar spot has been better classified through the use of DNA techniques.

We have seen a shift in populations from strains that were sensitive to various classes of chemistries to strains that are resistant.

Vegetative compatibility

R. floccosum is composed of many different strains called vegetative compatibility groups (VCGs). Compatibility group identification is determined based on whether the hyphae of two different fungal strains can grow together or not. When the hyphae of two strains of *R. floccosum* come in contact with each other, if they fuse, they are considered to be "compatible," and they belong to the same VCG. If, on the other hand, they are antagonistic to each other, causing the hyphae to die where the two

strains meet, they are considered to be from different VCGs.

We have identified nine different VCGs of *R. floccosum* in Michigan. In Florida, they have identified 54 VCGs on St. Augustinegrass. The main point here is that, although we call the species *R. floccosum*, it is made up of many subgroups called VCGs that can vary in their pathogenicity, epidemiology and other characteristics.

Over time, these compatible VCGs can exchange genetic material and have the potential to develop into more aggressive strains of *R. floccosum*.

Resistant strains

Through the continued use of the systemic fungicides like the benzimidazoles, dicarboximides and the DMI fungicides, we have seen a shift in *R. floccosum* populations from strains that were sensitive to these various classes of chemistries to strains that are resistant.

The possibility exists that as the *R. floccosum* population has shifted from sensitive to resistant, some of these resistant strains are more aggressive than the sensitive ones they

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replaced. Also, resistance is only noticed after fungicide failure.

Some of what has been reported to be a more aggressive strain of dollar spot may simply be fungicide failure due to *R. floccosum* becoming resistant to the fungicide. Similarly, resistance to the DMI chemistry is initially expressed as a shortening of the interval of control. Some may think dollar spot is becoming more aggressive because the DMI fungicides no longer provide the same length of control as they had previously.

IPM programs

Many superintendents have gone from preventive spray programs to more curative-type programs in an effort to be more environmentally friendly. This is often referred to as an IPM approach to managing diseases. It allows the dollar spot fungus to build large populations in the soil and thatch. Then, when ideal environmental conditions occur, the disease explodes because there is so much inoculum present.

Preventive fungicide programs keep the the pathogen in the soils or thatch at low levels, preventing a massive outbreak of the disease even under ideal environmental conditions.

We have some preliminary data that suggest that applying dollar spot fungicide as early as two weeks after the initial mowing greatly reduces the amount of dollar spot that occurs later in the year. This also supports the idea of the dollar spot fungus building up large numbers in the soil and thatch prior to severe outbreaks.

Folk lore

When these severe outbreaks of dollar spot do occur, the wrong approach to control them is often employed. Much of what is done in turfgrass management is still based on folk lore, which says that following an outbreak of a disease, you should first apply a contact fungicide.

Contact fungicides are also called protectant fungicides and, as the name implies, should be

applied before the disease is present to protect the plant from infection. They do nothing to stop the disease already inside the plant.

Once the disease is present, a systemic fungicide should be used to stop the pathogen that is inside the plant from advancing further.

What some superintendents have called aggressive or uncontrollable dollar spot may only be the fungus continuing to cause disease from inside the infected tissue because a contact fungicide was used.

There are also data that show, in some instances, the Qo I fungicides make dollar spot more severe. This is not universally true everywhere the fungicides have been used, but it has happened in some cases.

Agronomic factors

Another factor leading to the development of a more aggressive dollar spot pathogen could be management practices. I have a saying, "The grass is never going to do it your way." By this I mean that you need to follow good agronomic principles to have fungicides work properly.

Low levels of nitrogen are pretty much standard in managing golf course turfs today because of the belief that nitrogen encourages annual bluegrass. Lower nitrogen inputs into greens also help superintendents meet the demand for fast greens. Dollar spot controls work the best when the fungicides are applied to plants that have received adequate levels of nitrogen.

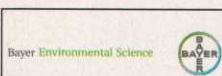
Spoon-feeding fertility programs tend to alleviate the above-mentioned concerns while increasing the efficacy of the fungicides.

We truly do not know the reasons for what appears to be the development of a more aggressive strain of dollar spot. Hopefully, some of the above mentioned causes and solutions will help you better manage the disease.

J. M. Vargas, Jr. is a professor in the Department of Plant Pathology at Michigan State University, East Lansing, Mich. He can be reached at vargas@msu.edu.

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QUICK TIP

Help your bermudagrass remain healthy by removal of perennial ryegrass or *Poa trivialis* during spring transition. Sulfonylurea herbicides, like Bayer's new Revolver™, are the right tool for the job. Revolver provides an ideal transition back to bermudagrass at a cost that won't break your budget.

Sulfonylureas Control Weeds on Bermudagrass

By Wendy Gelernter and Larry Stowell

The quest for uniform, high-quality fairways and roughs on a year-round basis is beset by problems from all sides — by questions about the risks and benefits of overseeding, decisions about turf variety performance and the unpredictable role of weather. But overshadowing all of these problems is the even more frustrating challenge of weed control on warm-season fairways.

Weeds are a constant problem, whether you overseed, select hybrid bermudagrass or an alternative as your warm-season base, experience winter kill or summer heat or suffer with droughts or floods. Controlling them without hurting the desirable turf and without exceeding legal and environmental limits is a strain on budgets, not to mention superintendents' sanity.

The problem

Herbicides such as pronamide (Kerb), simazine (Princep, Simazine) and glyphosate (Roundup) are currently the most common methods for weed removal, but these products have their drawbacks. For example, to avoid damage to warm-season turf, their application must be accurately timed. Because they move relatively easily in soil (especially after irrigation or rain), their application can result in damage to nearby bentgrass or other susceptible turf types.

The interval between application and overseeding can be three months or more, resulting in a loss of flexibility in situations where overseeding is called for.

Finally, uncontrollable variables such as high soil organic matter (the PACE database of soils from more than 200 fairways indicates that more than 50 percent of the fairways surveyed had organic matter content that would be considered high, or above 4 percent) can interfere with performance (Table 1).

What are sulfonylurea herbicides?

Sulfonylurea herbicides have been available in agricultural markets since the 1980s, but have



*Figure 1. This photo illustrates the problem in a nutshell. Difficult-to-remove clumps of *Poa annua* and perennial ryegrass reduce turf quality and playability on warm-season fairways.*

only recently been introduced into the turf market. Compared with older herbicides which have broad spectrums of weed control, the sulfonylureas are much more specific. For example, products such as halosulfuron (Manage) provide excellent control of purple and yellow nutsedge — and not much else. Other sulfonylureas, such as Corsair, Manor, Monument, Revolver and TranXit, control specific cool-season grasses, as well as some broadleaf weeds. But luckily they have little or no toxicity to bermudagrass, whether it is dormant, greening up or actively growing.

Sulfonylurea herbicides used in turf are usually applied after weeds have emerged (post-emergence) and are taken up by the foliage and in some cases by roots as well. These herbicides, which are generally less toxic to mammals and other nontarget organisms than older, broad-spectrum products, work by deactivating an enzyme known as acetolactate synthase (ALS). Without ALS, the plant's chloroplasts can no longer produce the proteins it needs for day-to-day functioning.

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TABLE 1

Options for removal of perennial ryegrass and other weeds on bermudagrass fairways

Always check the registration status and recommendations for use of these products in your state prior to use.

Product (Active Ingredient)	Company	Target weeds	Overseed interval	Movement in soil	Comments
Corsair (chlorsulfuron)	Riverdale	Perennial rye, tall fescue, some broadleaf weeds	More than 60 days	Moderate	Inconsistent performance in high organic matter soils*; mediocre control of perennial rye clumps
Kerb (pronamide)	Dow	Perennial rye, <i>Poa annua</i>	90 days	high	Inconsistent performance in high organic matter soils*; damage to bermuda if applied before 50% green-up
Manor (metsulfuron)	Riverdale	Perennial rye; bahiagrass, foxtail, broadleaf weeds	60 days	moderate	Movement in soil increases at pHs greater than 6
Monument (trifloxysulfuron)	Syngenta	Perennial rye, <i>Poa trivialis</i> , <i>Poa annua</i> , sedges, kyllinga,	Less than 30 days	Moderate	Registration expected 2003
Princep, Simazine (simazine)	Agrilience, Drexel, Syngenta, UAP	<i>Poa annua</i> , crabgrass, broadleaves	4 – 6 months	High	Best on dormant bermudagrass; resistance a possibility with repeated use
Revolver (foramsulfuron)	Bayer	Perennial rye, <i>Poa annua</i> , <i>Poa trivialis</i> , goosegrass	10 – 14 days	Moderate	Registered February, 2003
Roundup (glyphosate)	Monsanto DuPont	Annual and perennial weeds, including ryegrass	10 – 14 days	Almost none	Removes clumps of rye & <i>poa</i> on non-overseeded fairways; Bermuda must be dormant to avoid damage
TranXit (rimsulfuron)	Griffin	Perennial rye, <i>Poa trivialis</i> , <i>Poa annua</i>	10 – 14 days	Moderate	

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Once treated, the plant also has difficulty producing energy through photosynthesis, its hormones become unbalanced and DNA synthesis and cell growth are disrupted.

The sulfonylureas work fast — plant growth

is inhibited just a few hours after application. However, injury is usually not apparent until one or more weeks later, at which point the affected plants become yellowed, stunted and eventually die. Death of perennial ryegrass and

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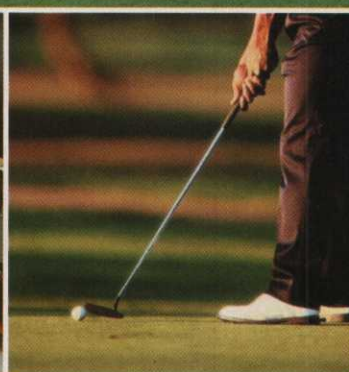
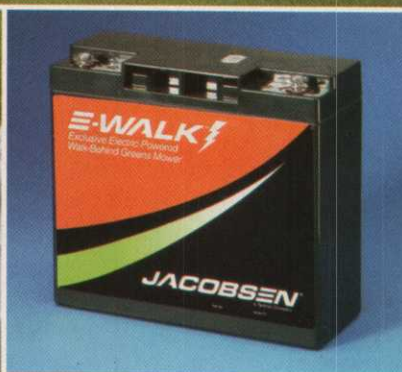


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Figure 2. Superintendents can achieve improved springtime transition with sulfonylurea herbicides. One application of the experimental herbicide Revolver on May 7, 2001, resulted in accelerated transition to bermudagrass five weeks later (on June 15, 2001), in the plot on the left. In contrast, the plot on the right was not treated with any herbicides and displayed a splotchy, mixed stand of turf and bare ground. Other sulfonylurea herbicides such as Manor, Monument and TranXit produce similar results (trial and photo courtesy of Chris Olsen, Bayer Environmental Science)

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Poa trivialis occurs rapidly (one to two weeks) when temperatures are warm, but can occur much more slowly (three to six weeks) when springtime temperatures remain under 75 degrees F.

The relative safety of these products to bermudagrass, their ability to control perennial ryegrass, *Poa annua*, *Poa trivialis* and other weeds, and the short overseed intervals (Table 1) make these products attractive as weed-management tools on both overseeded and nonoverseeded bermudagrass fairways.

Use on fairways

The clumps of ryegrass and *Poa annua* that mar the uniformity of nonoverseeded fairways (Figure 1) are well controlled by many of the sulfonylurea products. With so many of these products suddenly available, selecting the most appropriate herbicide can be daunting. The distinctive host range of each product can help make selection easier (Table 1).

For example, if you are plagued with kyllinga or sedges as well as rye or *Poa*, the soon-to-be registered product Monument can serve several purposes at the same time. If hard to kill clumps of rye and *Poa* are your predominant concern, then Revolver or TranXit

are good choices.

Unless weather conditions are perfect, springtime transitions on overseeded fairways can be slow and unattractive, resulting in patchy mixtures of turf, depletion of bermudagrass stands and areas of bare ground ripe for colonization by weeds. Several sulfonylurea herbicides have potential for improving springtime transitions through rapid removal of overseeded turf, which allows the bermudagrass to recover and recolonize fairways more rapidly, as illustrated in Figs. 2 and 3.

When the additional benefits of *Poa annua*, *Poa trivialis* and other weed control are considered, products such as Manor, Monument, Revolver and TranXit appear to have a bright future for use on overseeded bermudagrass fairways.

Can something be too good?

But wait. There are always a few caveats, especially with new products whose subtleties we are just beginning to understand.

Probably the most important concern with respect to overseeded fairways comes, strangely enough, because the sulfonylureas are too effective at what they do. In situations where there is too much ryegrass present at the time of application or where the bermudagrass base is weak, severe yellowing and/or bare ground may be present for six weeks or more after application (Fig. 4).

Although the bermudagrass transition may actually be improved under these conditions, the cost is high. Under these circumstances, benefits may not be obvious for several months or even until the following year, when the bermudagrass stand may be substantially improved due to rye removal the previous year. We will test this hypothesis during the 2002-2003 season.

Timing applications later in the spring or using multiple applications at lower rates may also address some of these problems.

Safety on other warm-season grasses

While the sulfonylureas appear to be quite safe for both hybrid and common bermudagrass cultivars, they can cause unacceptable damage to seashore paspalum and kikuyugrass. Safety for other turf types, such as zoysiagrass and St.

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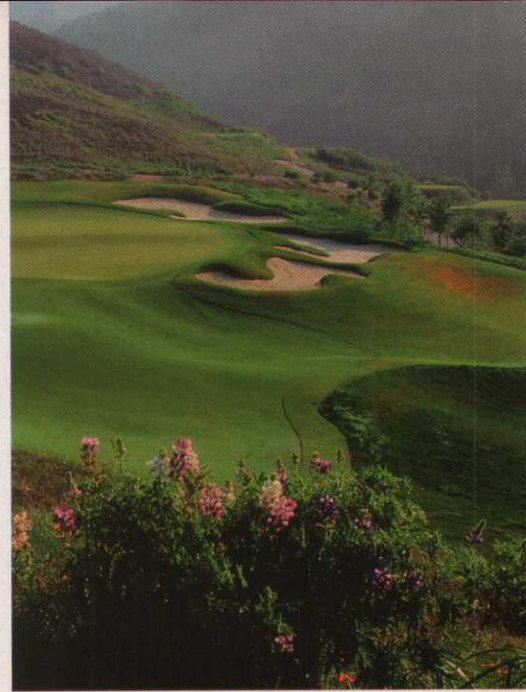
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Product	Stock Number	Carrier	Active Ingredient	Comments
Fungicide VII	AGC8573	DG Pro	Triadimefon	Prevents/controls brown patch; dollar spot, anthracnose and rust
Fungicide V	AGC87135	Cob	Chloroneb	Prevents/controls Pythium blight and gray snow mold
5% Daconil Fungicide	ATDC2.1	Cob	Chlorothalonil	Controls brown patch; dollar spot; copper spot; stem rust in bluegrasses
Fungicide IX	AGC8549	Cob	Chloroneb and Thiophanate Methyl	Prevents/controls gray snow mold; Pythium blight; dollar spot; brown patch, copper spot and pink snow mold
Fungicide X	AGC8510-1	Pulp	Iprodione	Prevents/controls brown patch; red leaf spot; pink and gray snow mold
Systemic Fungicide	AGC8539	DGPro	Thiophanate-Methyl	Prevents/controls brown patch; dollar spot and copper spot
Golden Eagle	PT8583	Pulp	Myclobutanil	Prevents/controls brown patch; dollar spot; anthracnose and other diseases. Prevents summer patch and necrotic ring spot
Pythium Control	AGC8560-1	DG Pro	Metalaxyl	Prevents/controls Pythium blight and damping off



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- Ease of use. You can spread with a broadcast spreader with fewer equipment hassles. This provides better worker safety.
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Look to the Andersons Advantage when using granular fungicides. Better carriers, expert formulations and years of experience all add up to dependable products you expect from The Andersons.

Article contributed by Tom Wentz, Technical Service Manager.



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Figure 4. These photos show the risk of being too effective. When more than 20 percent of the turf is perennial ryegrass and/or the bermudagrass base is weak, application of sulfonyleureas may cause undesirable results. In the photo to the left, 35 days after treatment with a sulfonyleurea herbicide, the perennial rye is completely dead in treated plots (2), leaving bare ground in areas formerly occupied by ryegrass. The untreated plot (1) has 15 percent bermuda and 85 percent rye, while the treated plot (2) has 25 percent bermuda and no rye. Despite the undesirable appearance of the turf at 35 days after treatment, a full and uniform stand of bermudagrass was present in treated plots by 11 weeks after treatment (photo on right).

FIGURE 3

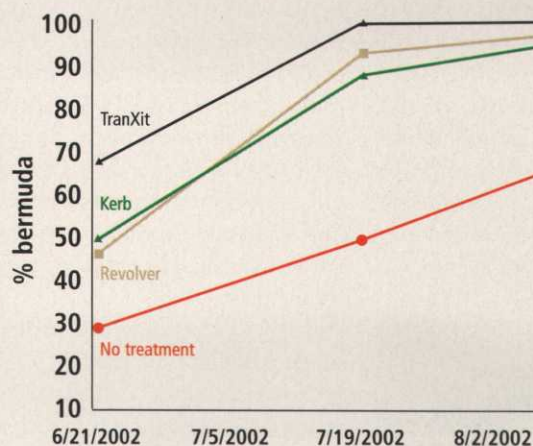


Figure 3. These herbicides improve springtime transitions through the removal of perennial ryegrass. When compared to areas that were not treated with herbicides, areas treated with Kerb, TranXit or Revolver all had higher and more rapid establishment of bermudagrass that was accomplished by removing perennial ryegrass and thus reducing competition. Products were applied on May 21, 2002 at Morgan Run Golf Resort in San Diego, where Dale Hahn is superintendent.

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Augustinegrass, is still being determined for many of these products. Always read product labels carefully to ensure that damage to desirable turf does not occur.

Bottom line

Sulfonyleurea herbicides are effective new tools for removal of annual and perennial weeds from both overseeded and nonoverseeded bermudagrass fairways. Replicated field trials show that a single application of products such as Manor, Monument, Revolver and TranXit provides rapid and complete kill of perennial ryegrass, as well as good to excellent control of *Poa annua*, *Poa trivialis* and several other weeds.

Removal of difficult-to-control ryegrass and *Poa* clumps can be accomplished from nonoverseeded areas without causing damage to bermudagrass. On overseeded fairways and roughs, decreased competition from perennial ryegrass in the springtime can give bermudagrass a significant edge during the springtime transition, particularly after several annual treatments. However, to avoid long periods with yellowing turf, applications should be planned for times and locations where bermudagrass cover is more than 30 percent and average air temperatures are 65 degrees F or higher.

Gelernter and Stowell are research directors at PACE Turfgrass Research Institute in San Diego.