

# Research Round-up: CDGA's 2004 Results

*Over the years, the CDGA staff have been involved in a number of turf research projects, especially in cooperation with University of Illinois faculty. Our primary interest (working with Dr. Hank Wilkinson) is investigation of pathogenic organisms, and the techniques to prevent or alleviate disease symptoms. We have also worked on a number of other projects involving weed (and moss and algae) control, soil surfactants and wetting agents for localized dry spots, various aspects of using plant growth regulators, and investigation of new turf cultivars.*

Since our move to Midwest Golf House, we have also become more involved in cultivation of native and ornamental grasses, and have established test areas to try to find better grasses and management techniques to maintain unmowed, yet playable, primary rough areas. These "tall grass" projects are under the direction of Dr. Tom Voigt from UIUC (see "The Grassy Knoll" article in *On Course*, November 2002).

In this report, we are going to summarize some observations from our 2004 field tests, including the ongoing examination of PGRs for springtime *Poa annua* seedhead suppression, and control of fungicide-tolerant "Sclerotinia" dollar spot disease with the new generation of fungicides.

## **Poa annua Seedhead Suppression with PGRs**

We have completed our fourth year of testing products for springtime suppression of seedhead formation by *Poa annua*. For an overview of the topic and previous

results, see our articles published in the *USGA Green Section Record* (Volume 41, Number 4, July-August 2003, pages 21-26), and USGA Turfgrass and Environmental Research Online (<http://turf.lib.msu.edu/tero/v02/n07.pdf>). In past studies, we have confirmed some seed-head suppression with wetting agents (such as Aqua-Gro L), while the PGRs mefluidide (Embark) and ethephon (Proxy) have often given high levels of seedhead suppression. However, Embark treatments may result in unwanted phytotoxicity of greens-height turf, so recent studies have focused on Proxy, alone and in tank mixes with trinexepac-ethyl (Primo). In 2004, we looked primarily at timing and rates of Proxy (ethephon) + Primo Maxx tank mixes on putting green-height turf, including a reduced 3 oz./1,000 sq. ft. rate of Proxy.

Tests took place at Aurora C.C. (thanks to John Gurke, CGCS and Keith Krause for their assistance) under intensive putting green management conditions. In fact,

*(continued on page 13)*

**Table 1: Results of Proxy + Primo treatments on the second green at Aurora C.C.**

PRODUCT	RATE/1,000 SQ. FT.	DATE OF 1ST APP.	DATE OF 2ND APP.	DATE OF 3RD APP.	PERCENT OF <i>POA ANNUA</i> WITH SEEDHEADS, AVERAGE OF 3 REPS, BY DATE							
					APR 20	APR 30	MAY 6	MAY 18	MAY 27	JUN 3	JUN 9	JUN 22
1. Untreated Control	—	—	—	—	3.4	11.5	5.4	14.9	19.2	15.9	16.7	3.3
2. Proxy + Primo Maxx	3 oz. + 1/8 oz.	Apr 5	Apr 20	—	1.3	2.3	0.3	3.3	4.3	4.0	5.0	0.3
3. Proxy + Primo Maxx	3 oz. + 1/8 oz.	Apr 5	Apr 26	May 18	1.7	2.3	1.7	2.7	1.7	2.3	3.0	1.0
4. Proxy + Primo Maxx	3 oz. + 1/8 oz.	Apr 15	May 3	—	1.7	5.0	1.7	1.7	2.0	3.0	3.3	1.0
5. Proxy + Primo Maxx	3 oz. + 1/8 oz.	Apr 15	May 6	May 27	2.0	3.7	1.3	2.0	3.3	3.7	3.3	0.7
6. Proxy + Primo Maxx	5 oz. + 1/8 oz.	Apr 5	Apr 26	—	0.3	3.7	1.0	0.7	1.7	1.0	2.3	1.0
7. Proxy + Primo Maxx	5 oz. + 1/8 oz.	Apr 5	May 3	—	0.0	2.3	1.0	1.7	2.0	1.7	5.0	0.7
8. Proxy + Primo Maxx	5 oz. + 1/8 oz.	Apr 15	May 6	—	0.3	3.0	1.7	1.7	2.0	2.3	2.0	0.3
9. Proxy + Primo Maxx	5 oz. + 1/8 oz.	Apr 15	May 18	—	0.7	2.7	1.0	3.7	1.7	1.0	1.0	1.7
				LSD	NS	3.9	2.5	4.0	3.6	3.6	3.7	NS

*Note: There were no noticeable differences in turf color or quality among any of the treatments on any rating date.*

the site in '04 was the no. 2 green at ACC, which was under normal playing conditions during the study. The green consists of 50-60% *Poa annua*, with the remaining turf comprised of various types of creeping bentgrass. Mowing height for this green was approximately 0.12" during the study, and it received standard fertilization and irrigation. Test applications were made beginning April 5 or April 15, with follow-up applications on a two- to four-week schedule (see Table 1). We noted the first seedheads on the site on the April 20 rating day. Application rates, timing and results are presented in Table 1. *Poa annua* seedhead production was rated visually as percent of *Poa* plants with visible flowering, not percent of total plot area with visible flowering. Since the green was mowed daily, seedheads were constantly being removed, which limited the total percentage of seedheads visible at any one rating date.

Peak seedhead production at Aurora C.C. occurred around May 27, then lingered through most of June. Treatments with Proxy + Primo tank mixes resulted in 80%-plus seedhead suppression when compared to untreated controls, most notably during the May 18 to June 9 rating period, when check plots were seeding more heavily. There were no strongly significant differences among application rates or different timing of applications in this study. However, some evidence materialized that the early, low-rate Proxy treatment (treatment #2 in Table 1) was starting to

fade by June 9, compared to the higher (5 + 1/8) rate applications made on April 15 and May 18 (treatment #9). A probable protocol for Proxy + Primo Maxx tank mixes on greens-height turf will be the lower 3 oz. + 1/8 oz. application rates applied on a three-week interval (treatments #2 - 5). Please note: depending on application rates, timing and biotypes of *Poa annua* present on your course, YOUR RESULTS MAY VARY!

### Control of Fungicide-Resistant and Sensitive Dollar Spot Strains

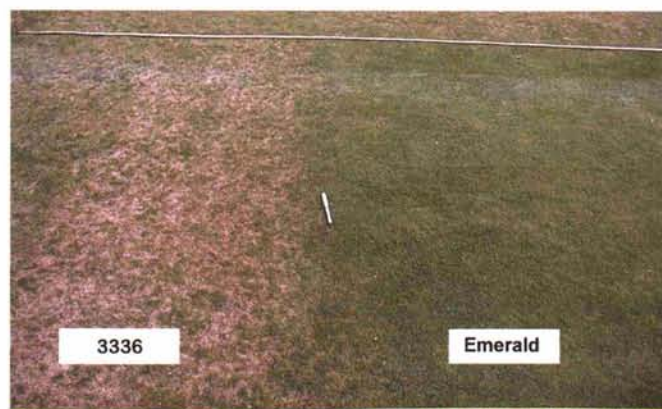
As most of you noticed firsthand, 2004 was a banner year for dollar spot. In most areas, the disease started early (May 10 here at Golf House) and stayed late, with outbreaks reported well into the first week of November. The extraordinarily mild summer (only three days reaching 90°), the warmer-than-normal fall, and heavy dews were the main environmental factors that led to such severe and long-lasting outbreaks. If there was one bright side, these conditions REALLY put the fungicides in our trials to the test, and showed which ones could withstand the most intense dollar spot pressure.

We conducted our fungicide trials at two sites: a bent/*Poa* fairway with known fungicide-resistant strains of dollar spot (Ridgemoor C.C.—thanks to Pete Hahn and staff for their assistance) and a newer, pure bentgrass fairway with known relatively sensitive strains (Midwest Golf

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House research facility). The plots were mowed at half an inch or less and were kept on a low fertility level of less than a pound of N applied throughout the season—a point that we will harp on later. Fungicides representing most of the major chemical classes were applied in our tests, including Bayleton and Banner (demethylase inhibitors), Curalan and

*(continued on page 14)*



Picture 1: October 22, 2004—Emerald controlling dollar spot in late fall, a full 38 days after last application. 3336 had very little effectiveness for much of the trial at the Golf House test site.



Picture 2: October 22, 2004—Like Emerald, 26 GT also controlled disease late into the fall on the Golf House plot. However, the last application was also made two weeks later than the last application of Emerald (September 27).

26 GT (dicarboximides), and Compass and Insignia (QoI strobilurins). We also included the new product Emerald, as well as a new biological product called Ecoguard. Fungicides were applied consecutively on 14- to 21-day intervals, except for one Ecoguard treatment that was applied every seven days.

For brevity's sake, **Figure 1** presents results from a selection of the more than 30 treatments. No treatment held dollar spot completely in check throughout the season on either plot; in fact, most plots rated over 10% infection throughout the

height of the disease pressure (late July – August). Emerald applied at the 0.13 oz./M rate was consistently the best-rated treatment over both sites, especially when applied preventatively. Chipco 26 GT and a mixture of propiconazole and Insignia were good-to-excellent performers in the study. Ecoguard did not provide adequate control when applied by itself, even on seven-day intervals. Many treatments, especially those at Golf House, worked well at the beginning of the season but gradually faded in effectiveness as the season wore on. This was most noted in the Cleary

3336 treatment at Golf House and our DMI treatments of Banner or Bayleton applied at the low rate and at a longer control interval.

Two things are of particular note on these plots: First, what the heck was going on at Golf House? Before the study began, a few isolates of dollar spot were tested and showed no resistance problems to any of the major classes of fungicides, including benzimidazole resistance, which is widespread throughout Chicago and much of the country. Therefore, one would think that control problems would have only occurred at the Ridgemoor site, and at Golf House everything should work like a charm. But that was simply not the case. One thing that could have happened is that the routine application of the same fungicide over and over at Golf House could have brought out the resistant strains of the pathogen (being tested in the lab right now). More than likely, however, it was probably our management of the Golf House plot that caused the discrepancy. Other than half a pound of N on April 14, that plot received no other fertilizer. Dollar spot, a low-N disease, simply took advantage of an underfertilized plant during a ripe environment. Conversely, the Ridgemoor plot had more fertilizer applied in the spring, and was fertilized and aerified again in late August to early September. The bottom line is that in order to realize the full benefit of a dollar spot fungicide, especially a true systemic, the plant must also receive adequate N.

Another notable result of the trial was the length of control into the fall of some of the products tested. On the Golf House plot, the Emerald plots were still obviously suppressing disease better than other treatments on October 22, even though the last application was made on September 13 (see **picture 1**)! During the same rating date, 26 GT was also suppressing disease although the last application was made later on September 27 (see **picture 2**). This result may give a clue on how to use these fungicides most effectively and stay away from the late fall outbreaks that many experienced this year.

Other dollar spot trials are currently underway or in the planning

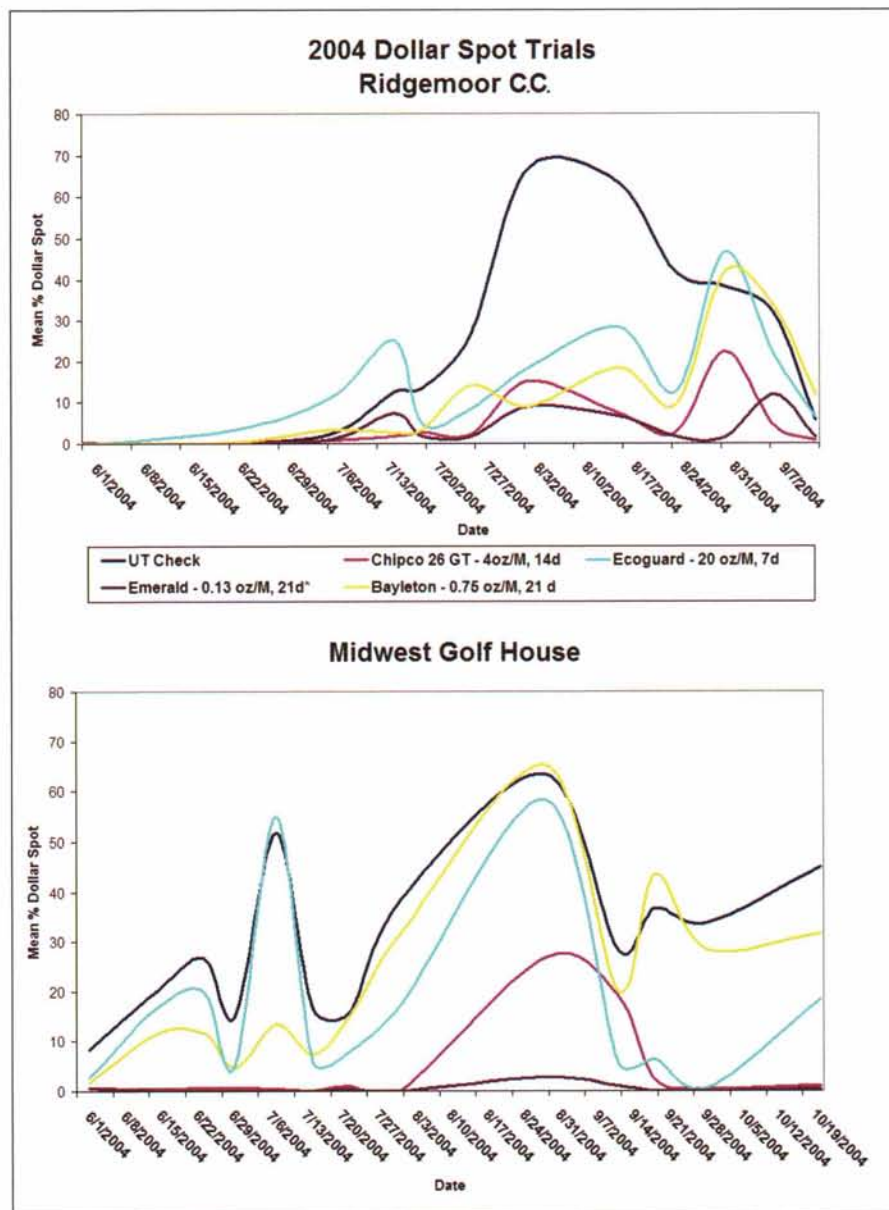


Figure 1: Dollar spot ratings for select treatments of the 2004 CDGA fungicide trials. \*Note: Application intervals for Emerald varied as some treatments were skipped.

stages at the CDGA. Preliminary investigation of the early spring and late fall fungicide-programming techniques for dollar spot control was started this year, but it is too early to give any solid results. Also, we are doing lab assays to determine levels of fungicide resistance throughout the area and get a feel for just how big a problem it is. Results from the resistance survey will be presented at this year's Illinois Professional Turf Conference during the USGA/CDGA workshop on the afternoon of December 1.

### Other Field Trial Notes

In 2003, Midwest Golf House received approval as a site for National Turfgrass Evaluation Program (NTEP) varietal and species tests. One of our trials is the 2003 National Bentgrass (Fairway/Tee) Test, which takes up about 2,400 square feet just to the west of the third green on the CDGA Sunshine Course. This trial consists of 28 bentgrasses, including seven colonial bents and several of the newest creeping bents, such as Alpha, Declaration,


Independence, LS-44 and Penneagle II. The remainder of the creepers are mostly numbered experimental lines. After one full growing season, entries with the best quality ratings include 'T-1' (Jacklin), '235050' (Lesco), '9200' (ProSeeds) and '23R' (Mountain View Seeds). There is also a great deal of variation to dollar spot and brown patch diseases, with the colonials showing the most dollar spot resistance and the least brown patch resistance (as expected).

Most *On Course* readers are probably aware of a new herbicide that is being tested for selective control of *Poa annua* in creeping bentgrass swards, namely Velocity (bispyribac-sodium). In cooperation with Dr Bruce Branham, we established a small Velocity trial on the second fairway of the Sunshine Course as a demonstration for the September 16th U of I Field Day. Velocity should be applied at very low rates (15 – 30 grams AI per acre) on bentgrass fairway-height turf, with repeat applications in mid-to-late summer giving the best results so far. Some yellowing or chlorosis is noted


on bentgrass, but it generally recovers within a few days (the *Poa* does not!). Plots that were treated in August and September were still showing suppression of *Poa* in early November (at this writing); treatments of 15 g AI/acre applied four times on a seven-day interval gave the best results in our Field Day demonstration trial.

We also conducted a small study of another experimental herbicide with a common name of 'mesotrione' (Callisto), which may be able to selectively remove creeping bentgrass from Kentucky bluegrass. We will probably investigate this material further in 2005, since we have lots of bent contaminating our low-mow Kentucky bluegrass fairway on the third hole. Stay tuned!








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