

## PACE Web Highlights

by Wendy Gelernter, Ph.D. and Larry J. Stowell, Ph.D.

**Bottom line: Highlights of recent PACE Updates (also available online to members at [www.paceturf.org](http://www.paceturf.org)) have been expanded to provide additional information on managing some of summer's more challenging disease problems.**

The summer solstice will occur in the Northern hemisphere on 6/21/2005, when the longest day of the year is recorded. We now enter the most difficult time of the year for most golf courses, a time when long days and short nights result in heat stress, more time for golfers to inflict traffic damage, and less time for turf to recover. This is a time for caution and a time to implement management changes carefully and in small doses. Once the autumnal equinox (when day and night are equal in length) finally arrives on 9/22/2005, even hot days cause less damage because the nights are longer and cooler, allowing more down-time for turf recovery.

### Warm weather diseases

Though we all tend to focus more on greens, especially during the summertime, fairways also suffer this time of year from a variety of diseases ranging from brown patch to dollar spot to bipolaris leaf spot. Bipolaris leaf spot appears to be an increasing problem throughout the country. Patrick O'Brien, USGA Southeastern Regional Agronomist, reports that bipolaris caused serious problems on fairways that were stressed by shade or cool weather. Unfortunately, bipolaris symptoms and brown patch symptoms can be easily confused, and the two pathogens may sometimes even occur together (see photos below). For this reason, it is always a good idea to have a diagnostician look at your samples. On the bright side, both diseases are controlled by many of the same fungicides. Products that have shown very good efficacy on both diseases include:

Active ingredient	Product name(s)	Rate/ 1000 sq ft
Azoxystrobin	Heritage	0.2 oz
Chlorothalonil	Daconil Ultrex, Concorde 82.5, Echo, Manicure	3.2 oz*
Iprodione	Chipco 26GT, Iprodione Pro, Top Pro Iprodione	4 oz

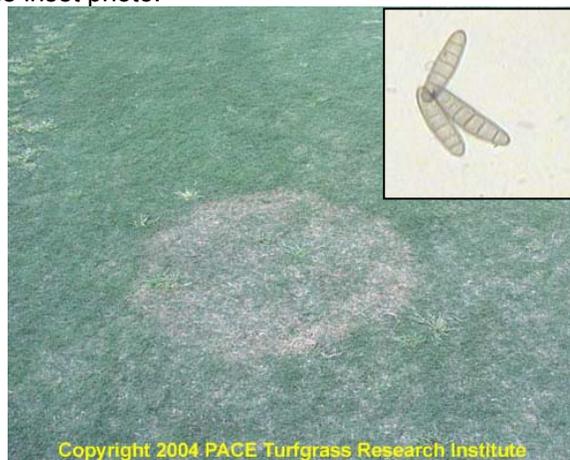
\*This rate applies only for products formulated with 82.5% chlorothalonil

These products should be applied in 1 – 2 gallons water/1000 sq ft and should not be watered in. A total of 2 -3 applications, spaced 14 days apart, may be necessary for full control.

**Figure 1. Brown patch** (*Rhizoctonia* spp.) on a bermudagrass fairway.



**Figure 2. Bipolaris leaf spot plus Brown patch** on a bermudagrass fairway. Both pathogens were found on the damaged turf. Bipolaris spores are pictured on the inset photo.



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### Localized dry spot

During the spring and summer, cases of localized dry spot (LDS) become more frequent. Localized dry spot refers to a specialized condition caused by hydrophobic (water-repellent) soils that develop 1 - 6 inches underneath the turf surface.

#### Managing LDS:

- maintain thatch thickness below 1/2" by regular verticutting, aerification and topdressing
- use wetting agents (such as Aqueduct, Brilliance, Cascade Plus, Hydro-Wet, LescoFlo, Primer, Respond or TriCure), to alleviate symptoms of LDS
- use fungicides such as **Prostar** (flutolanil) 70 WP (4.5 oz/1000 sq ft), **Heritage** (azoxystrobin) (0.4 oz/1000 sq ft) or **Insignia** (pyraclostrobin) (0.9

oz/1000 sq ft) if fairy ring fungi are causing the LDS symptoms. Addition of one of the wetting agents above to the spray tank will usually improve the control of symptoms. Products should be lightly watered in. Two or three monthly follow-up applications are usually necessary.

- implement a spring cultivation program (based on core aeration, topdressing and deep tine aeration) to reduce compaction, break up hydrophobic soil aggregations and improve turf health.
- re-wet hydrophobic soils via hand watering, or through the use of a water fork (see Figure 3)

**Figure 3.** Spot treatments with a water fork can aid in masking the symptoms of fairy ring and LDS by forcing water into the water repellent soil profile.



## Algae Management

Algae (cyanobacteria) are commonly viewed merely as the symptom of larger problems such as poor drainage, shade and wet spots. But algae can also act to directly kill turf on bentgrass, bermudagrass and poa greens. The characteristic pattern of yellow spots and streaks that results on bentgrass greens can be seen in Figure 4. If left untreated, the yellowed turf will gradually die.

**Timing of algae infestations:** Algae cause their worst damage when it is relatively warm. We have identified a **threat temperature** of 68F for algae, which means that monitoring activities should be initiated as you approach this threshold. To determine what the current threat temperature is at your location, see your site-specific **Weather Update**.

**Management:** The best way to manage cyanobacteria, if you have persistent algae problems, is to begin a routine chlorothalonil (Concorde, Daconil, Echo, Concorde, Manicure, etc.) program on a 14 day interval until symptoms disappear. At least three applications are usually necessary to clear this problem up. The product should not be watered in. Though tempting, you should avoid using the highest labeled rate, since this will rapidly put you above the EPA's annual application restrictions. You are better

off making multiple applications at a mid-level rate than you are in making only one or two applications at the high rate.

Avoiding organic fertilizers may also help to clear up algae problems.

**Figure 4.** Algae damage on A-4 bentgrass green.



**Detecting algae:** Do you think you have an algae problem? One easy way to tell is to take a cup cutter sample of the affected turf, place it in a ziplok plastic bag, and put the bag in the dark for 24 - 48 hours. During that time, the algae will glide upwards on the leaves in search of light, and you will see the leaf tips coated with an inky black, slimy layer of concentrated cyanobacteria cells, as in Figures 5 and 6.

**Figure 5.** Close-up of Poa leaves that have been colonized by algae.



**Figure 6.** Bermudagrass cup cutter sample infested with algae.



## Turf diagnostic lab listing

If you are in any doubt about the identity or cause of a turf problem, we highly recommend the use of a qualified turf diagnostician. Fortunately, there are several good labs around the U.S. who provide this service. Check with your local land grant university and/or county extension agent for information on regional diagnostic laboratories. If none are available, the following labs provide nationwide services for reasonable fees. Labs should be contacted prior to sample shipment for specific preparation and shipping instructions.

### Dr. Frank Wong

University of California  
Plant Pathology Department, 202 Fawcett Lab  
Riverside, CA 92521  
PHONE: 951-315-0101  
**Service offered: ID of turf diseases**  
Website: <http://ucrturf.ucr.edu/>

### Jenny McMorrow

Turf Diagnostics, Inc.  
1858 Pleasantville Rd. #168  
Briarcliff Manor, NY 10510  
Phone: 914-762-2645  
Email: [j.a.mcmorrow@att.net](mailto:j.a.mcmorrow@att.net)

### Dr. William Crow

Dept of Entomology and Nematology  
Univ. of Florida  
PO Box 110620 Gainesville FL 32611-0620  
PHONE: 352-392-1901 x 138  
**Service offered: ID of plant parasitic nematodes**  
Website: <http://edis.ifas.ufl.edu/sr011>

### Dr. Lane Tredway

North Carolina State University  
Plant Pathogen Identification Lab  
Box 7211 1104 Williams Hall 100 Derieux Pl.  
Raleigh, NC 27695  
PHONE: 919-515-3619  
**Service offered: ID of insect and disease pests**  
Website: [www.ces.ncsu.edu/depts/ent/ppil/lab.html](http://www.ces.ncsu.edu/depts/ent/ppil/lab.html)

### Dr. Phil Colbaugh

Texas Agricultural Experiment Station  
17360 Coit Road  
Dallas, TX 75252  
PHONE: 972-952-9630  
**Service offered: ID of turf diseases**  
Website: [www.colbaugh-turf.com/](http://www.colbaugh-turf.com/)

### Dr. Joe Vargas and Ron Detweiler

Michigan State University 102 CIPS  
East Lansing, MI 48824-1311  
PHONE: 517-353-9082  
**Service offered: ID of turf diseases**  
[www.msu.edu/user/karcherd/Turfpals.html#Turfgrass\\_Pathology\\_Lab](http://www.msu.edu/user/karcherd/Turfpals.html#Turfgrass_Pathology_Lab)

### Dr. Bruce Clarke and Richard Buckley

Rutgers Cooperative Extension  
Plant Diagnostic Laboratory  
P.O. Box 550  
Milltown, NJ 08850-0550  
PHONE: 732-932-9140  
**Service offered: ID of turf diseases**  
[www.rce.rutgers.edu/plantdiagnosticlab/default.asp](http://www.rce.rutgers.edu/plantdiagnosticlab/default.asp)

### Dr. Michael J. Healy

Healy & Associates  
9292 Hammock Rd.  
Elberta, AL 36530  
phone: 251 986 6240  
fax: 251 986 6245  
e-mail: [mjhealy@gulftel.com](mailto:mjhealy@gulftel.com)

## Staying ahead of pests with threat temperatures

When will fairy ring become active this year, and will it be the same time as last year's infestation? If spring temperatures are warmer than normal, should gray leaf spot preventive programs be initiated earlier or not? To answer these and other pest timing and control questions more precisely, we have developed the concept of **threat temperatures**.

Threat temperatures are rough guidelines that we have proposed to try to predict when pests are likely to first begin causing damage on golf course turf. Once the threat temperature is reached for a pest that is of concern to you, you will need to take one of the actions suggested in Table 1. For curatively controlled pests, the action is usually monitoring, while for preventively controlled pests, a preventive pesticide or cultural practice is usually called for.

We calculate the Forecasted Threat Temperature that appears on your Weather Update (available to PACE Members at [www.paceturf.org](http://www.paceturf.org)) by averaging the forecasted average air temperatures (which we obtain from Meteorologix) for the next five days at your location. This forecasted threat temperature is recalculated several times a day to incorporate any changes in the weather forecast.

To find out what your forecasted threat temperatures are, login to the PACE Member Edition website, and click on "Weather Update" (on the right-hand side of the webpage.) Scan about half-way down the Weather Update page to find your Forecasted Threat Temperature.

Have you lost your username or password? No problem. There are two easy ways to retrieve this information:

1. Go to the PACE website ([www.paceturf.org](http://www.paceturf.org)) and click on Member Edition. Follow the instructions under the "**Lost password?**" query, and your information will be emailed to you.
2. Give us a call!

**Table 1.** Threat temperatures diseases that historically cause significant damage at your site. Once the threat temperature is reached, the suggested actions should be initiated. NOTE: preventive pesticide applications are warranted only if you have had confirmed incidence of this pest in the past; if there is no past history, then monitoring and detection of the pest is advisable before initiating treatment

Disease	Threat temp F (C)	Suggested Actions
Anthracnose	>65 (18)	Initiate preventive fungicides
Bacterial wilt	>60 (16)	Initiate monitoring
Bipolaris leaf spot	>70 (21)	Initiate monitoring
Brown patch/yellow patch	>60 (16)	Initiate preventive fungicides OR monitoring
Curvularia blight	>70 (21)	Initiate monitoring
Cyanobacteria (algae)	>68 (20)	Initiate monitoring
Decline (Gaeumannomyces)	>75 (24)	Initiate preventive fungicides
Dollar spot	>65 (18)	Initiate monitoring OR preventive fungicides
Fairy ring	>70 (21)	Initiate monitoring
Gray leaf spot	>68 (20)	Initiate preventive fungicides
Pythium blight	>70 (21)	Initiate preventive fungicides
Rapid blight	>55 (13)	Initiate preventive fungicides
Red thread	>65 (18)	Initiate monitoring
Southern blight	>70 (21)	Initiate monitoring
Spring dead spot	>65 (18)	Initiate preventive fungicides
Summer patch	>70 (21)	Initiate preventive fungicides
Take-all patch	>65 (18)	Initiate preventive fungicides

## PACE Web Watch

To help you make the most of the many resources available on the newly upgraded PACE website, we will periodically highlight new and/or seasonally useful sections of the site. This month, we will take a look at your personalized **Weather Updates** and the **Growth Potential** Information presented on them.

**What is the Weather Update?** Your site-specific [Weather Update](#) contains a lot more information than just the continuously updated weather forecasts at the top of your report. The forecasted **threat temperatures** that are specific to your location are described above. Also, pay special attention to the turf growth potential (GP), a value that can assist you in a variety of ways, as described below. To find the GP values for your location, click on "Weather Update" on the right-hand side of the PACE Member Edition website, and scroll down the page about half way. The cool-season and warm-season GPs that you see are calculated specifically for your location based on the forecasted weather for the next 5 days.

**How to use it:** We developed the growth potential model to explain myriad of ways in which weather impacts turf growth. We consider turf growth to be good when the GP is between 50% and 100% (the

best growth occurs at a GP of 100%). However, when weather conditions are either too hot or too cold, the GP falls below 50%, and turf becomes progressively more stressed. When the GP falls to 10% or lower, growth is extremely slow. A few of the many uses of growth potentials are listed below.

- Timing application for chemical transition accelerators (Kerb, Revolver, Monument, Manor, Blade, TranXit): Warm-season turf GP should be 50% or higher at the time of application to ensure that sufficient warm-season turf cover is present.
- Scheduling aggressive management practices (aerification) or stressful events (tournaments): Turf growth potential should be as high as possible (greater than 50%) and on the rise when stressful events are scheduled. This allows for the greatest recovery potential of the turf.
- Predicting nitrogen demand: The **absolutely maximum** amount of nitrogen that your turf will require in the next five days appears right below the GP values on your Weather Update. You are probably using considerably less than this amount (A4 and similar bentgrass varieties may use only a quarter of this amount). We provide the maximum N values to help avoid the application of too much nitrogen.