TOPICS COVERED

DISEASE

Nitrogen and anthracnose

Dr. Wakar Uddin of Pennsylvania State University presented some interesting research on nitrogen fertilization and severity of anthracnose during the recent American Phytopathological Society meetings in Quebec.

Nitrogen was applied every 14 days. The nitrogen sources tested were:

- Urea
- Methylene urea
- IBDU

The rates of application tested for each nitrogen source were:

- 0.0 lb N/1000 sq ft
- 0.1 lb N/1000 sq ft
- 0.3 lb N/1000 sq ft
- 0.5 lb N/1000 sq ft

To guarantee an evenly distributed anthracnose epidemic, Uddin inoculated the plots with a suspension of anthracnose (Colletotrichum cereale) spores at 50,000 conida per milliliter of solution.

The bottom line? Uddin found a direct correlation between the amount of nitrogen in the plant tissue nitrogen and reduced severity of anthracnose. Specifically, he found that:

- The 0.5 lb N/1000 sq ft rate applied every 14 days provided the best reduction of anthracnose regardless of the nitrogen source used.
- The 0.3 lb N/1000 sq ft rate applied every 14 days provided intermediate reduction of anthracnose
- The 0.1 lb N/1000 sq ft rate applied every 14 days did not reduce anthracnose levels over the zero nitrogen check plots
- Overall, these findings are in line with anthracnose management recommendations that we have previously presented (See July 18, 2005 PACE Update “Anthracnose Rescue Program”). The 0.5 lb N/1000 sq ft rate of nitrogen application resulted in tissue nitrogen levels of higher than 5% N, which is within the range that we find in our PACE tissue surveys (the median N level in our surveys is 5.5%). However, take care not to overdo nitrogen applications, staying at or below the 0.2 lb N/week guideline.

Disease sample submission: avoid the “disease jumble”

This has been a brutal year for turf damage caused by disease or environmental stress beyond the tolerance of the grass. If you are one of the unlucky people who is thinking about sending a sample to a diagnostic lab, take some care in preparing the sample for shipping.

There are many ways to successfully ship samples, and even more to unsuccessfully ship them to a diagnostic lab. The most important rule to follow is to avoid the "disease jumble." Here are some guidelines for successful shipping of disease samples:

- Ship on the same day that you collect the sample
- Take a cup cutter sample that includes some damaged and some healthy looking turf. Sample deeply enough so that the entire root zone is included. Package the sample within 30 minutes of collecting it.
- Contain the soil by wrapping the root zone in aluminum foil or by placing it in a ziploc bag that is rolled down so that the surface of the sample is visible. Secure the bag or foil with a rubber band.

- Place the sample with the root zone sand wrapped with foil or plastic into another larger ziploc bag and zip the bag half way closed.
- Place the sample into a box and pack the box tightly with newspaper (see photo to left, below). The sample should not jiggle around when you shake the box

Correctly packaged

Incorrectly packaged, i.e. “disease jumble”

- If the box is not tightly packed, the samples will jiggle around, leading to that feared and dreaded condition, technically known as “disease jumble” (photo to right, above)

Gray leaf spot resistance to fungicides spreading

Gray leaf spot resistance to QoI fungicides (Heritage, Compass, Insignia) has been documented in several locations around the U.S., and on both ryegrass and kikuyugrass-active strains of the fungus. Resistance to these products means that they are no longer effective, and alternative control methods need to be employed

Until a few weeks ago, California’s ryegrass-active strains of gray leaf spot appeared to have escaped the scourge of QoI resistance (though it had already shown up in California kikuyugrass-active strains and in ryegrass-active strains in many other states). Genetic analysis of the ryegrass gray leaf spot isolates are underway to determine the cause of resistance.

How can you predict whether the QoIs will work for you? So far, the only locations where gray leaf spot resistance has been a problem are locations where either Heritage, Compass or Insignia have been repeatedly used for control of any disease. If you have never used these products for any reason, then they will most probably still be highly effective for you.

If you suspect gray leaf spot resistance to QoIs at your location, alternative products with good efficacy are listed below. However, keep in mind that there are new restrictions on rate, frequency of application and total amount used per season for both thiophanate-methyl and chlorothalonil. Always consult product labels to make sure that you are within recommended use patterns.

- Thiophanate-methyl (Cleary’s 3336, Fungo) at 4 - 6 oz/1000 sq ft PLUS chlorothalonil (e.g. Daconil Ultrex at 3.2 oz/1000 sq ft).
- Propiconazole (Banner, Propiconazole Pro) at 1 oz/1000 sq ft PLUS chlorothalonil (e.g. Daconil Ultrex at 3.2 oz/1000 sq ft)
- Triadimefon (Bayleton 50W) at 1 oz/1000 sq ft PLUS chlorothalonil (e.g. Daconil Ultrex at 3.2 oz/1000 sq ft)

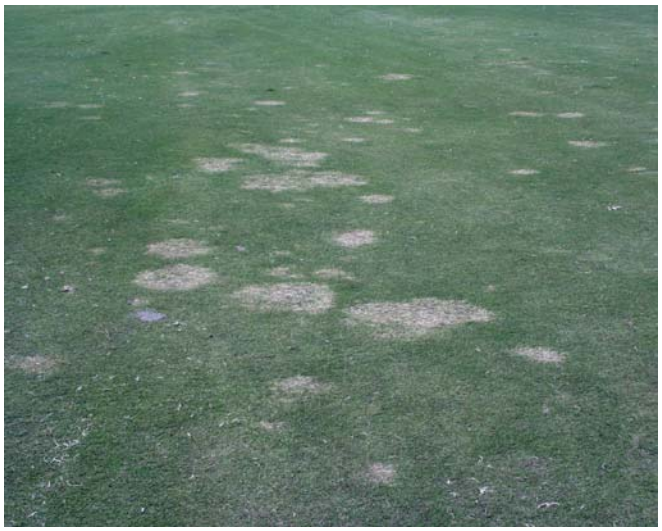
Time for spring dead spot prevention

The symptoms of spring dead spot may not appear until late winter or spring, but if you have had this disease in the past on bermudagrass fairways, tees or greens , it is time to begin planning for your preventive management program right now.

Spring dead spot on non-overseeded turf:

- Apply Rubigan AS (fenarimol) at 4 oz/1000 sq ft. Repeat the application 14 days later, for a total of two applications. Applications should be timed so that the last application is made just before bermuda goes dormant (dormancy starts to set in when the warm-season turf growth potential drops below 10%). You will therefore need to count backwards by 6 weeks from the date when you think bermuda dormancy will occur at your site.
- To predict when bermuda dormancy is likely to initiate at your location, click on the "Weather History" heading on your PACE Weather and Pest Update. Then, look over the weather history data from the late fall/early winter of last few years, and jot down the dates when warm-season growth potential values dipped below 10%.

Spring dead spot, Leptosphaeria korrea on Tifway II bermudagrass fairway. Winter, 2002, Southern California.



Spring dead spot on overseeded turf:

- If you intend to overseed and wish to control Poa annua as well as spring dead spot, make three applications of Rubigan AS at 4 oz/1000 sq ft or two applications at 6 oz/1000 sq ft. Applications should be spaced 14 days apart. The last application should be made at least 2 weeks prior to overseeding.
- Since Rubigan can yellow the turf, prepare your golfers for the possibility of off-color turf. If you have significant levels of Poa annua contamination of your bermuda, use caution because it may be rapidly removed by the Rubigan applications.

Bacterial wilt on poa greens

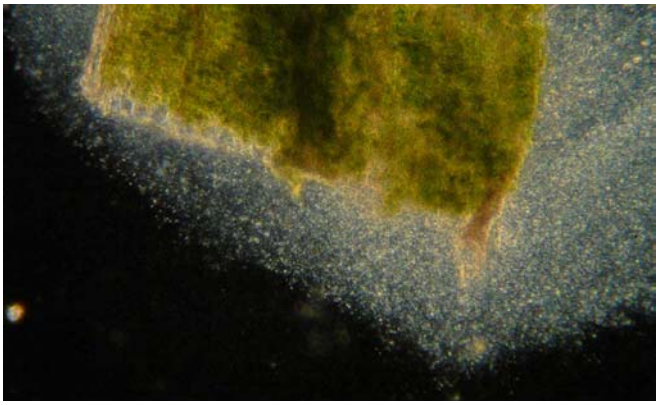
Bacterial wilt caused by Xanthomonas translucens showed up on poa greens in some locations this August. There are unfortunately no effective chemical controls available, but the following cultural practices can help stop the spread of the disease.

- Maintain adequate nitrogen nutrition (target 1/4 to 1/2 basket of clippings per 5,000 sq ft of green using a walk mower)
- Increase mowing height to the maximum tolerable
- Do not mow when any leaf moisture is present
- Do not mow the day after a leaching event
- Do not irrigate or syringe within 2 hours after a mowing event

- After mowing a green that has bacterial wilt, wash mower with water before moving on to the next green. This will remove clipping residues and prevent the disease from spreading. In additon to washing, consider dedicating oa mower for the diseased greens and use only on those.
- Maintain normal disease control programs for all other diseases of concern

Bacterial wilt on poa green caused by Xanthomonas translucens pv. poae. Soil nitrogen tests on this sample indicated that there was not an increase in nitrogen that would be associated with animal urine (animal urine causes similar symptoms). Photo submitted by Robert Hertzing, Valencia Country Club, Valencia, CA

Microscopic view bacteria streaming out of a cut leaf. This is the diagnostic used to confirm the presence of Xanthomonas translucens or bacterial wilt.



New restrictions on fungicides and herbicides

Several recent decisions by the EPA will have significant impact on many turf management programs. Some of the key decisions are listed below:

- PCNB: On August 2, 2006, the EPA announced that all uses of PCNB on turf were ineligible for reregistration. Although the product may be retained for a few agricultural uses, PCNB was deemed to present too many environmental risks with too few benefits in turf. There is a 60-day period for public comment, but unless these arguments are extremely compelling to EPA, their plan is to cancel all uses of PCNB on turf following the 60 day period (by October, 2006).
- MSMA and DSMA: The EPA announced in August, 2006 that organic arsenical herbicides (including MSMA and DSMA) present more risks than benefits and are therefore ineligible for reregistration. There is a 60-day period for public comment, but once again, unless these arguments are extremely compelling to EPA, their plan is to cancel all uses of these products following the 60 day period (by October, 2006).
- Thiophanate-methyl: Late in 2004, the EPA determined that thiophanate-methyl (i.e. Cleary's 3336) could continue to be used on golf course turf, but with several new restrictions that limit the maximum rate used per application, the maximum amount used per year and the minimum number of days (no less than 14 days) between applications. Restrictions are more severe in the state of Florida than elsewhere. Make sure that you are in compliance by carefully reading the label on your product. If the new mitigation label is on the product in your shop, then you must abide by these new restrictions.

Animal (coyote) urine damage on A4 bentgrass. Symptoms are similar to those for bacterial wilt (see above), but high soil nitrogen is associated with deposition of animal urine. Photo submitted by Reed Yenny, Hillcrest Country Club, CA.

SALINITY MANAGEMENT

Monitor soil salinity and leach BEFORE aeration

Over the past weeks, we have seen declines and death due to high soil salinity in almost every turfgrass including: Poa annua, Kentucky bluegrass, ryegrass, kikuyugrass, bermudagrass and paspalum. To avoid damage, monitor soil salinity using a soil EC meter. If salts are high, leach BEFORE aeration so that water flow through the soil profile will be uniform. If drainage is the cause of salt accumulation, the drainage problems will have to be corrected before salts can be leached from the soil. As a

rule of thumb, 6 inches of water needs to move through the soil profile to drain to drop the soil EC by 50%.

EC meter calibration

It happens every year. A sample of stressed turf arrives at a diagnostic laboratory, and tests show that high salts are the culprit. But when the superintendent is contacted, they are flummoxed by the diagnosis because their EC meter has been reading low — below 1.0 — all summer.

What gives? We have found that an EC meter that is broken will frequently show a value below 1.0 that looks like a valid reading. We suspect that the automatic temperature compensation causes small fluctuations in the reading to make the meter look like it is operating correctly when in fact the meter is dead.

The only way to avoid being deluded by a broken meter is to calibrate it regularly. The steps illustrated above have been provided to assist in calibration of the Spectrum Technologies Field Scout EC meter. We recommend this meter for its ease of use.

Things you need:

- Field Scout EC meter: Item 2265FS, available from Spectrum Technologies for $349.00 (www.specmeters.com)
- Standard solution (2.76 dS/m): Item 2254, available from Spectrum Technologies for $13.00. (www.specmeters.com)
- A small cup to hold the standard solution
- Five minutes of your time

Calibrating your EC meter	
1) Pour a small volume of calibration fluid into a small, clean cup. You will only need to use enough solution to easily submerge the sensors on the tip of the probe - not more than about 50 cc or 1.5 ounces.	
2) Remove the cap on the end of the meter to expose the batteries and the calibration buttons.	
3) The arrow illustrates where the calibration buttons are located. One button increases the reading and the second button decreases the meter reading. During calibration, you will press the appropriate button to adjust the meter to read 2.76	
4) Stir the solution to help stabilize the temperature of the solution and probe. Make sure that the sensor tip is fully submerged in the calibration solution. Once you press a calibration button, the meter will indicate that it is in calibration mode by displaying "CAL" on the meter.	
5) Press the button that adjusts the meter in the correct direction to reach 2.76 on the meter while holding the probe to prevent it from touching the edges or bottom of the container holding the calibration solution. When the meter reads 2.76, you are done.	
6) Replace the cap, discard the calibration solution, rinse the electrode and the meter is ready for use in the field. Re-test the meter periodically to be sure that it is operating properly. We like to see the meter read within 2.5% of the calibration solution If the meter reads between 2.7 and 2.8, it is within acceptable calibration.	

PACE Highlights features turf management information recently covered in PACE's weekly Updates. For more detailed information and electronic links to background materials, visit the PACE Member Edition website at **www.paceturf.org.**