Disease Control & Common Problems Unsolved Mysteries & New Varieties

Practical Turf Management II

Hong Kong

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Curvularia Blight

This disease is a problem when weather conditions are hot and wet with ideal temperatures between 27°-35° C.

There are two stages of the disease.
Mycelial Growth: During cool temperatures.
Spore Production: During hot/wet periods.

Curvularia Blight

Hosts: Zoysiagrass, Bermudagrass, Tall Fescue, Kentucky Bluegrass, Bentgrass

Visual Diagnoses: Spot, blighting, yellowing


Tanjong samples after overnight in my humidity chamber to take a look at foliar disease.
11G
Tanjong
15G
Tanjong
10G
Tanjong


Lots of activity here on the PG sample Serapong

Curvularia Blight
Recommended Treatments

- Keep plants healthy, well watered & well fertilized.
- Apply Iprodione with soluble fertilizer, if possible.
- Keep mowing heights above 3.5 mm.
- Keep high levels of Manganese & Copper in the plant.
- Treat throughout the season during stress. (especially following heavy rains)
- Do not irrigate after fungicide application.
- Apply fungicide prior to verticutting, aerification or other mechanical programs.

Pythium Root Disease

This disease becomes active when weather conditions are hot and humid with ideal temperatures above 35° C and humidity above 90%.

Excessive Nitrogen (N) fertility and Calcium (Ca) deficiency can increase severity and incidence.

Pythium Root Disease
Hosts: Most all warm season turfgrass

Visual Diagnoses:

- Circular, bluish to reddish brown patches 2.5-15 cm across that appear quickly and enlarge rapidly.
- Water-soaked, slimy leaves.
- Fluffy, grayish white, cottony fungal threads (mycelia) present in the early morning.
- Infected leaves become tan to brown, shrivel and mat when dry.


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2010/03/08 08:04

Pythium Root Disease
Cultural Management

- Irrigation is an important cultural practice to monitor.
- Provide good surface and subsurface drainage.
- Raise the mowing height.
- Thatch should be removed if greater than 0.6-1.2 cm.
- A balanced system of turfgrass nutrition is also key to controlling Pythium.
- Excessive fertility during hot months, particularly Nitrogen, can increase disease pressure.
- Levels of Nitrogen applied to turf should be monitored and monthly applications of 25 kg of Nitrogen / Ha (0.5 lbs/1000 sq. ft.).

Pythium Root Disease
Cultural Management

- Avoid Calcium deficiency and maintain a slightly acidic soil pH.
- Promote good air flow by pruning trees to promote light penetration and increase air movement.
- When mowing avoid areas of wet turf when the temperature is above 21°C. This will help minimize the spread of the pathogen.
- Alleviate soil compaction in order to improve turfgrass root growth.

Pythium Root Disease
Recommended Treatments

- Institute a preventative fungicide program in areas that have a history of Pythium.
- The repeated use of some Pythium fungicides, particularly Metalaxyl may select for resistant populations.
- Fungicides from different chemical groups should be altered or combined in a control program to limit development of resistant populations.
- Alternating between systemic and contact fungicides may delay resistance development.

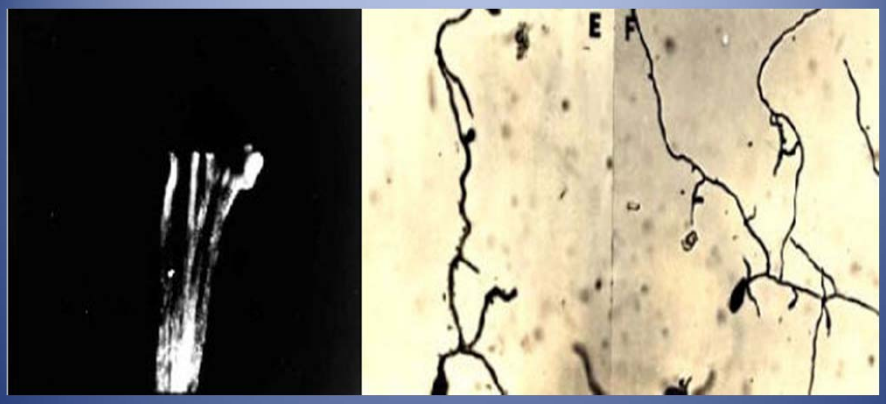
White deposits observed on bermudagrass leaf tips on the morning after nitrogen app.

From previous research
I know that those
white deposits are
pure L-glutamine,
an amino acid
produced by the plant

Why and How was the
L-Glutamine Produced?

L-Glutamine was produced within the plant as a result of its intake of Ammonium Ions, which can be toxic to the plant if in too high a concentration

Ammonium Ion + glutamic acid
=
L-Glutamine
which is removed from the plants
in guttation fluid



Left: L-Glutamine deposit on a leaf tip
Center: Fungal hypha development in pure water
Right: Fungal hypha development, forming many infection structures, in a weak solution of L-Glutamine

So now we have a potential link between a type of nitrogen fertilizer and increased pathogenicity of various fungi associated with turfgrasses-what should you do?

Do you eliminate the use of ammonium (or Urea) based sources of nitrogen

Absolutely NOT!

Ammonium (and Urea) based Nitrogen fertilizers are commonly used, without ill effects-
but,
If you begin to see a connection between disease outbreaks and nitrogen application, remember this possible link.

Is there a toxin being produced in your irrigation pond that can adversely affect turf quality?

The Toxin, Microcystin toxin, is produced by the blue-green algae (Cyano-bacterium) Microcystis

It is not only toxic to humans and animals, but has been proven to be toxic to plants.

Typical algal blooms

- The toxin is commonly found in golf course irrigation ponds-often at very low levels
- For unknown reasons, the algae capable of producing the toxin turn toxin production on and off.
- Keeping the algae from entering your irrigation pump induction point is the best solution.

Should you have concern for this toxin?

If you have a disease-like or disease outbreak that can not be controlled, and you have an obvious algal bloom in your irrigation pond- then testing for microcystin toxin should be considered.

Can you see the problem???

The greens on this course are 3 years old- and are SeaIsle Supreme Seashore Paspalum.

This is an extremely well maintained golf course, hosting two major tournaments per year

Only a turfgrass manager would see the “symptom”!

•The “symptom” is scattered throughout most of the greens, in various sizes and shapes.

•Is it the result of some sort of spot treatment?
•Is it the result of an off-type- possible contamination?

•Or is it some sort of disease?

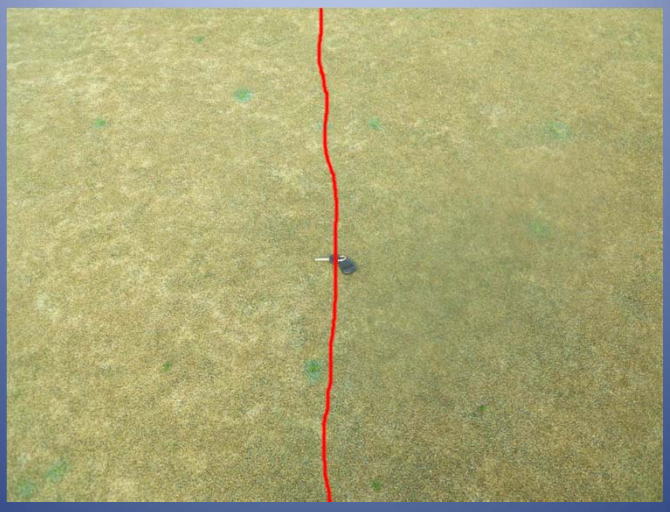
Spot treatment problem was immediately ruled out- Off-typing/contamination- very unlikely- but can be confirmed/rejected through genetic testing

Some sort of disease? Most likely
The course uses three different contact fungicides on a 1 week rotation schedule, but this problem could call for a systemic fungicide-one of the strobilurins.
So either by diagnosis, or spot application of strobilurin-to test disease hypothesis.

NON CHEMICAL CONTROL
OF A
DISEASE

POSSIBLE?

MiniRing on Tifeagle-fall disease
Most likely caused by a
Rhizoctonia



The nonchemical treatment-2 months

The nonchemical treatment at post 4 months

The treatment? An alfalfa-based compost- 620 gm/meter sq., spiked and then watered in.

- The green had to be closed for 3 days because of watering and other considerations-not practical
- Evaluating an every 2 month application at 95 gms per sq. meter
- Will begin evaluation of a "compost tea", liquid formulation later this year.

NEW VARIETIES!

FIRST,
THREE NEW BERMUDAGRASSES-
CELEBRATION
PATRIOT
TIFGRAND

CELEBRATION

- Developed in Australia
- Suitable- rough through tee
- Excellent divot recovery
- Excellent wear tolerance
- Extremely aggressive
- Blue-green color

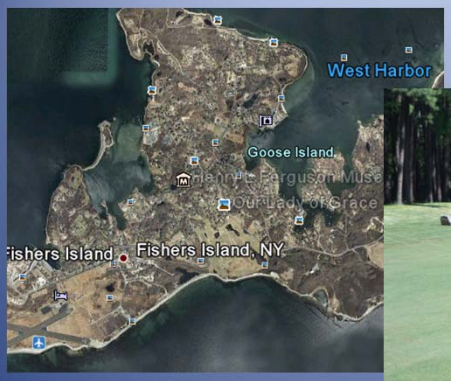
Has become very popular in Central and South Florida along with other parts of USA

PATRIOT

- Developed at Oklahoma State University
- Extremely cold tolerant
- Can be used on a rough through tee basis
- Being used on variety of sports field applications in transition zone-

PATRIOT

- Use zone where cool season grasses become too diseased in summer, but most warm season grasses are injured by cold winter weather



Used as far north at S. New York- Lat. 41 N

No till row conversion from ryegrass to Patriot-+ 10 weeks!

TIFGRAND

- Developed at U. of Georgia-Tifton
- Extremely shade tolerant
- Mowing height down to 6.5 mm
- One superintendent has taken mowing height down to 2.5mm, making a green (not advised)

Tifgrand used on a shaded tee box

Tifgrand (dark green strip)-verses GN-2 in shaded area

SEASHORE PASPALUM VARIETIES

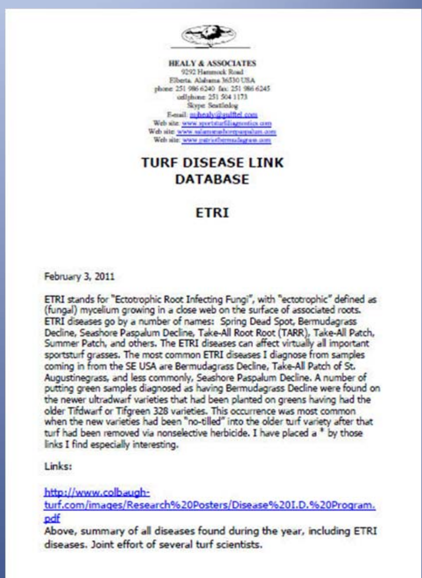
UGA 31- NOT YET RELEASED ALSO A NEW SEEDED VARIETY ? (DEVELOPER AND STATUS UNKNOWN)

MORE NEW VARIETY INFORMATION?

For varieties that have trade names, simply "Google" the trade name.
Also visit:
www.ntep.org

To all those attending this meeting. I have developed disease link summaries for what I believe are the 8 most important diseases.

Simply send me an e-mail (mjhealy@gulftel.com) and I will send you these summaries.
They are pdf files, and all links are "hot" links, click on any one and it will lead you to a specific web-based information source.



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TURF DISEASE LINK DATABASE

ETRI

February 3, 2011

ETRI stands for "Ectotrophic Root Infecting Fungi", with "ectotrophic" defined as (fungal) mycelium growing in a close web on the surface of associated roots. ETRI diseases go by a number of names: Spring Dead Spot, Bermudagrass Decline, Seashore Paspalum Decline, Take-All Root Root (TARR), Take-All Patch, Summer Patch, and others. The ETRI diseases can affect virtually all important sportsturf grasses. The most common ETRI diseases I diagnose from samples coming in from the SE USA are Bermudagrass Decline, Take-All Patch of St. Augustinegrass, and less commonly, Seashore Paspalum Decline. A number of putting green samples diagnosed as having Bermudagrass Decline were found on the newer ultradwarf varieties that had been planted on greens having had the older Tifdwarf or Tifgreen 328 varieties. This occurrence was most common when the new varieties had been "no-tilled" into the older turf variety after that turf had been removed via nonselective herbicide. I have placed a * by those links I find especially interesting.

Links:

http://www.colbaugh-turf.com/images/Research%20Posters/Disease%20I.D.%20Program.pdf
Above, summary of all diseases found during the year, including ETRI diseases. Joint effort of several turf scientists.

Above, an example of one of the link summaries-normally 2-3 pages in length.