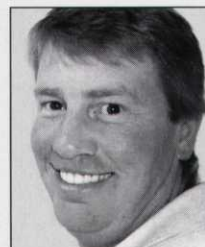


Head Scratcher Hits Minnesota

By PAUL DIEGNAU, CGCS
Keller Golf Course



Oh, what a year! Winter kicked us in the pants, spring was anything but cooperative and summer seems to have emanated from the jaws of hell! And just when you thought it couldn't get much worse, a pandora's box of disease became entrenched in the land of 10,000 lakes. Pythium, dollar spot and Rhizoctonia have had some good runs so far. But, a new player on the block has emerged this year. Its name is Take-All Patch (*Gaeumanomyces graminis*) and IT MEANS BUSINESS.

Take-All Patch (TAP) probably doesn't ring a bell for most of us in this state and there is a good reason for that. It is generally associated with new construction and is considered a disease of new bentgrass putting surfaces up to seven or eight years old. The "theory" is that new, sterile sand rootzones are lacking in a full complement of soil microbes, and the checks and balances system within the soil is temporarily out of balance, allowing this pathogen to flourish. I recently read a study on new sand-based greens and microbial populations. The author concluded that these biological organisms actually establish rather quickly in sand rootzones, debunking the "sterile environment" line of thinking. Whatever the case, TAP has now crossed the line into older, established sand-based greens and native soil greens with sand caps.

It was mid-to-late June when some superintendents in the southern half of the state started noticing abnormal yellow to lime green patches on some of their putting surfaces.



The disease progresses in stages, thinning affected areas and eventually killing the grass plants. It only attacks bentgrass, which excludes summer patch as a player in these outbreaks. Eventually, pathology labs from across the country were confirming TAP as the culprit throughout the state at large and small clubs, both private and public.

TAP is known in pathology circles as an ETRI or EctoTrophic Root Infecting fungi. Ectotrophic fungi are pathogenic fungi that grow over living plant roots as single hypha (a fungal thread) or as ropes of hyphae (runner hyphae). This group of

fungi also includes Summer Patch (*Magnaporthe poae*) and Necrotic Ring Spot (*Leptosphaeria korrae*).

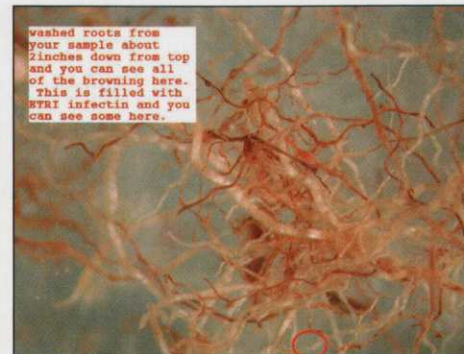
So, what caused TAP to appear with a



vengeance in places not normally seen? In my conversations with several turf pathologists, it appears that our spring weather played a key role in the proliferation of this pathogen. The cool, wet, overcast conditions we experienced in May were ideal for TAP to infect bentgrass roots. The symptoms do not show until plants experience stress. This year, our plants experienced winter injury, shallow root systems from constant spring rain, then drought and extended high heat and humidity. In addition, many courses had young, vulnerable bentgrass plants trying to establish and fill in winter-damaged areas. Beyond the weather factor, pathologists admit that knowledge of these pathogens is limited and more research is needed to answer such questions.

So how does one control this disease if it is present on your greens? Speaking from personal experience - good luck! Prevention is the key to avoiding this fungus. Apply DMI fungicides in the fall and spring when soil temperatures are between 40°- 60° F and the fungus is actively infecting roots. Remember to immediately wash the product off the leaf and into the root zone. DMI fungicides only move upward in the plant, so use a

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high spray volume followed by enough irrigation water to get the product to the action sites in the rootzone. This practice should eliminate the symptoms associated with ETRI fungi.

If you did not make preventative fungicide applications (like me) and find your putting surfaces expressing TAP symptoms, prepare for a long, drawn-out battle. TAP is very difficult to control, and often, suppression of the symptoms is all that can be expected until optimum growing conditions return. The following protocol for dealing with a TAP outbreak is provided by Dr. Phil Colbaugh of Texas A&M (www.colbaugh-turf.com):

Things you can do to reduce activity by this pathogen:

- 1) Be vigilant and look for small yellow patches on your greens.
- 2) Use the fungicide combination we are recommending but make sure you leach it down with post app. Irrigation.
- 3) Give your greens acid because this fungus operates at neutral to alkaline pH

values in the root zone. Some of the acid products are ammonium sulfate fertilizer, humic acid, sulfur, and ammonium sulfate can be used to lower soil pH. Your turfgrass agronomist may not agree with what I am saying here but for ETRI disease control shoot for a soil pH below pH 6.0.

4) Use a micronutrient pack that has lots of Fe and Mn as these micronutrients make turfgrass healthier (these elements are also available at acidic pH values)

5) Avoid coring and verticutting while this disease is active. Disease spread is enormous if you are pulling plugs, etc. If you are going to apply fungicide treatment however, one superintendent says he is doing pre-application aeration using star tines or 1/4 inch tines leaving the holes open. This helps to improve your fungicide penetration down into the root zone. Better yet use the Cushman (Textron) Enviroject for direct shot down into the root zone.

6) Increase mowing height to manufacture more plant food for root growth.

7) You may need to treat for this disease every month - two months if the rains keep stimulating ETRI root attack

activity.

8) Do not apply lime to your greens as this will raise pH values to the root attack range.

Dr. Colbaugh is recommending Clearys 3336 + Daconil WS or ZN (use 8oz + 4oz respectively) as the most effective chemistry for suppression and control. These products must be moved into the rootzone to maximize their effectiveness. Solid tine aerification prior to application may assist in this process.

In closing, as I write this column on July 25, I can tell you this from personal experience. I have never encountered a turfgrass disease as relentless as TAP in all my 23 years in the business. We have applied two fungicide drenches in addition to Mn and ammonium sulfate supplements. We needle-tined and bayonet-tined our putting surfaces prior to the fungicide applications. In an act of desperation, we even applied Banner Maxx at 4 oz./M on seven of our greens. The symptoms have not been suppressed and the disease continues to spread.

One word comes to mind...PREVENTION!

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