

Plant pathology and health
report

Client:	X Golf Course	Date received:	2012	Tested by:	WJB
Turf type:	Agrostis	Job number:	TC/12/21	Checked by:	
Sample ID:	TC/11/20	Project:	Disease identification	Date of report:	2012

Test parameters:	Test carried out (Y/N)
Microscopic evidence of pathogen	Y
Pathogen grow-out	N
Plant tissue / root health	N
Field observations	Y

Microscopic analysis

Tested elements:	Result
Are mycelium present?	N
Is there evidence of any pathogen present?	Y (runner hyphae)
Are either of the above active?	Y



Figure 1. Symptom of *Gaeumannomyces graminis* sp. Runner hyphae present throughout observed *Agrostis* sp. leaf tissue.

Laboratory grow-out

Sample No.	Presence of pathogen (Y/N)	Identification of pathogen found
Sample 1	NA	-
Sample 2	NA	-
Sample 3	NA	-

Summary of microscopic analysis:

Random samples of plant tissue were removed from the 15th green along with samples of the rootzone material from the area immediately around the plant roots (to assess whether the pathogen was present within the plant tissue or soil-borne). All samples were observed under a dissection microscope at x40 magnification in the SSDM Turf Clinic and an assessment made to determine the dominant pathogen present.

Two significant pathogens were observed through microscopic analysis: 1. *Gaeumannomyces graminis* sp. 2. *Colletotrichum cereal* sp.

No Laboratory grow-out was required for this analysis report.

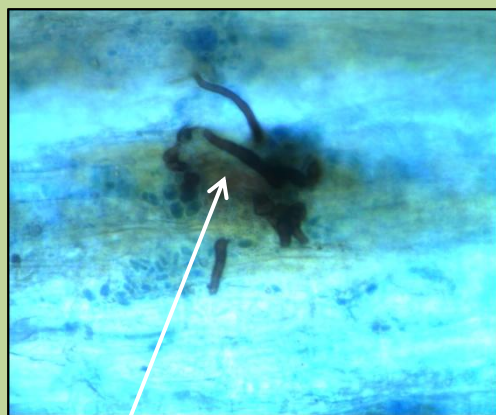


Figure 2. *Colletotrichum cereal*. Fruiting bodies (acervulii) with black setae

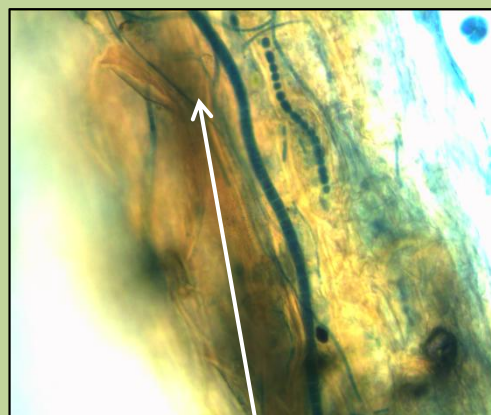


Figure 3. Collection of hyphae (including runner hyphae) typical of *Gaeumannomyces graminis* sp. infection



Plant tissue / root health

Leaf tissue / root observations	Result (Y/N)	Reasons for symptoms observed	Interpretation
Signs of lesions	N	This symptom is not synonymous with either the <i>Gaeumannomyces graminis</i> sp. or <i>Colletotrichum cereal</i> sp. pathogens.	Environmental factors of: Increased humidity and day time temperatures soon after an above average rainfall for the previous two weeks. In addition associated low mowing heights and cultural practices of grooming and verti-cutting the turf will encourage the invasion of <i>Colletotrichum cereal</i> sp.
Signs of tissue stress	Y	Die-back and withering of turfgrass leaves.	As above.
Evidence of tissue damage at mowing point	N	-	-
General root health	Y	Observed root health was generally very good, however where die-back of the turfgrass leaf was most widespread a darkening and die-back of the root system was observed (this is synonymous with <i>Gaeumannomyces graminis</i> sp.	Cultural practices are benefiting the general health of the root systems throughout the plant, with the exception of those plants specifically infected by the <i>Gaeumannomyces graminis</i> sp. pathogen.

Field observations

Field characteristics	Observations	Interpretation
Turfgrass density	Good	A good level of turf density was observed
Evenness of cut	Not assessed	-
Drought	Not assessed	-
Saturation	Not assessed	-
Evidence of pest/disease	Visual evidence of: <i>Gaeumannomyces graminis</i> sp. and <i>Colletotrichum cereal</i> sp.  Figure 4. Surface symptoms of random turf loss and die-back of <i>Agrostis</i> sp. <i>Poa annua</i> being relatively unaffected.	The presence of these turfgrass pathogens is synonymous with the time of year and stresses being placed upon the plant in terms of environmental stress (increased humidity and temperature) coupled with the requirement of the turfgrass to be mown low and managed in accordance of player's demands.

Summary of plant tissue / root health:

- The overall visual appearance of the green was good. The areas in question were observed as random patches ranging from +/- 60mm to >150 mm in diameter. Some coalescing of the patches was observed. Representative plant tissue samples were observed at x60 magnification with a significant presence of *Gaeumannomyces graminis* sp. and *Colletotrichum cereal* sp. being observed.

Root health

- General root health of the turfgrass plants that were observed was good.
- Some observed die-back and darkening of the fine root hairs on infected plant roots was observed under the macro scope.



Recommendations:

- **Chemical recommendations:**
- Application of the following fungicide: Headway MAXX (or an approved equivalent) azoxystrobin and propiconazole. Application rate: 9 L/ ha or for spot spraying: 90 mL / 100 m².

Cultural recommendations:

- Use of ammonium sulphate or Iron sulphate at appropriate rates to acidify the surface of the worst affected greens (Confirm that the pH levels of the affected greens are below pH 6 – SSDM Laboratory can test this).
- Ensure that sufficient levels of N are being applied for recovery (particularly with regards to *Colletotrichum cereal* sp.)
- **Management strategy for localised areas of disease:**
 1. Pre- irrigate areas to ensure a consistent front of water throughout the top 150 mm of rootzone
 2. Needle tine the affected area
 3. Apply fungicide (as recommended above)
 4. Post-irrigate (to optimise fungicide contact with the base of the plant and rootzone)
- On-going localised spiking and syringing of affected areas.

Summary of plant pathology and health report:

Recommended application of fungicide as soon as possible at the recommended rate above. Repeat with a second application at the same rate after 28 days. It is imperative to treat *Gaeumannomyces graminis* sp. as soon as possible in order to halt the further development of this soil-borne pathogen.

Signed by: _____

Date: 20-01-2012

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