Anthracnose Management on Greens

Anthracnose Basal Rot (ABR)

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Basal rot anthracnose, *Colletotrichum cereale*, formerly called *C. graminicola*, may be a serious problem on *Poa annua* (annual bluegrass) and at times on creeping bentgrass putting greens. This is often considered one of the most difficult diseases on greens to deal with by a superintendent especially once the disease progresses to the basal rot stage and the turfgrass shows signs of thinning. This is especially true when *Poa annua* develops the disease in early spring or summer.

Disease Preventative Procedures

Preventative management strategies. Where concerns exist about this disease; such as a history of the problem, the presents of highly susceptible grass, frequent weather patterns conducive for development of the disease, and or aggressive maintenance of greens to meet golfer expectations - it is recommended to implement a modified turfgrass health management strategy and a preventive fungicide program. Begin fungicide applications two to four weeks prior to the expected onset of the disease. Since disease outbreaks can occur at different times of the year, even within a small geographical area, keep records of when and under what conditions the disease occurs, use information as a guide for application timing. Since this disease often can NOT be managed merely with a fungicide program, implement Best Management Practices (BMP's) and Integrated Turfgrass Health Management (ITHM) to optimize the vigor and health of the turfgrass.

One long-term control strategy to avoid chronic basal rot anthracnose is to encourage bentgrass on the putting surface which is much more tolerant of this disease than many of the annual bluegrass biotypes. Provide adequate drainage (surface and subsurface), reducing thatch and soil compaction, core aeration, deep tine cultivate, topdress, verticut, etc. to maintain maximum turfgrass health.

Post-Disease Procedures

Post-disease management recommendations for active BRA. To alleviate basal rot anthracnose it is wise to first evaluate all aspects of the mowing operations. Modify mowing to minimize damage. Avoid mowing when greens are excessively wet and spongy. Mowing soft greens will often result in a lower mowing height and increase mechanical damage which can intensify the disease. Switch from grooved to solid rollers. Increase the height of cut and use walk-behind greens mowers. Divert traffic away from affected areas by moving cups frequently. Apply light rates of soluble fertilizers to improve plant health. A moderate application of nitrogen from ammonium sulfate or urea (0.1 to 0.125 lb. per 1,000 sq. ft.) is suggested every 7-14 days. When the disease is active, avoid aggressive topdressing, brushing, vertical mowing and other practices that would reduce turfgrass health.

In the autumn, after symptoms have dissipated, core aerate and overseed to increase the amount of bentgrass in the greens. Avoid excessive irrigation at all times and avoid wilt and moisture stress. Both extremes in watering increase the disease. Poor surface drainage and/or poor internal root zone profile drainage aggravate the disease problem. The winter and spring symptoms of basal rot anthracnose may be different

from anthracnose foliar blight symptoms that are traditionally experienced in the summer. In most cases *Poa annua* or creeping bentgrass is affected, but not both grasses at the same time.

Successful fungicide programs for active BRA. Placement of the fungicide(s) is very important to manage this disease once the stems and crowns of plants are infected. Since the pathogen is located inside the crown, lower stems and base of the plants and since most fungicides are only systemic upward or local penetrants in the turfgrass plant tissue, the fungicides must be placed at the base of plant. To accomplish this a volume of 4 -5 gallons of water per 1000 sq ft is recommended. If a sprayer is calibrated for 2 gals/1000 sq ft often the superintendent will only add one half the recommended amount of fungicide to the spray tank and then treat the area two times so that 4 gals/1000 sq ft of water is delivered and a full rate of fungicide. By using the high volume of water the fungicide(s) are placed in the crown area and have optimal placement to protect uninfected plants and have the best placement to reduce damage of infected plants. Remember most of today's fungicides do not eradicate the pathogen and successful fungicide programs must be made prior to significant infection by the pathogen.

Thiophanate-methyl (Cleary 3336 or Fungo 50), azoxystrobin (Heritage), pyraclostrobin (Insignia), fluoxastrobin (Disarm), propiconazole (Banner MAXX), triadimefon (Bayleton), myclobutanil (Eagle), fenarimol (Rubigan), triticonazole (Trinity) & (Chipco Triton), metconazole (Tourney), tebuconazole (Torque), polyoxin D (Endorse), penthiopyrad (Velista) or fosetyl-Aluminum (Signature) are products that can be considered for the management of this disease. It would be recommended to review state or regional fungicide recommendations for the most appropriate product(s). Resistances to products have been report. It may be necessary to schedule repeat fungicide applications on a 7-10 day intervals to arrest basal rot, particularly in annual bluegrass. Not all of these are equal or have the same impact on the disease/pathogen and none will eradicate basal rot anthracnose form the infected plant after the disease is active. These fungicides work best preventively. Check label instructions for timing intervals and details for the most effective use of the product. Also refer to the "Fungicides Labeled for Anthracnose on Turfgrass" chart on the last page for more information. It is also recommended to include foliar nitrogen fertilizer in fungicide applications. Stop the use of plant growth regulators, and avoid any other chemical or mechanical damage.

In curative situations always include an application of the high labeled rate of chlorothalonil. Since chlorothalonil is a contact fungicide, a maximum volume of 2 gallons of water per 1000 sq ft should be used. High volumes (4 -5 gallons of water per 1000 sq ft) used to place systemic produces at the crown and base of the plants will greatly dilute contact fungicides and reduce efficacy. A separate application is recommended for the contact fungicides.

In some chronically infected annual bluegrass greens, especially when managed at mowing heights of less than 1/8 (0.125 inches) of an inch for maximum green speeds, basal rot may NOT be controlled with fungicides. In these cases, chronically infected greens that consist mostly of annual bluegrass may have to be renovated and regrassed with an appropriate creeping bentgrass cultivar. There are several options including resodding, fumigation and reseeding, and complete reconstruction of the diseased greens. Since *Poa annua* is often the primary susceptible turfgrass consider what can be done to convert and maintain greens to creeping bentgrass.

Another common denominator seen on greens with this disease in the spring is that these courses experienced significant loss of *Poa annua* (annual bluegrass) the previous year. Basal rot anthracnose may be more of a problem on greens that have experienced a significant loss of grass in recent history. In addition, low mowing heights of 1/8 of an inch or less, along with the associated mowing stress, contribute to the initiation and difficulty in controlling this disease.

MAINTENANCE: TO MAXIMIZE TURFGRASS HEALTH ON GREENS

Mowing issues - *this may be the #1 factor that initiates the onset of anthracnose*:

- ✓ Minimize ALL mowing stress –avoid scalping or cutting too low, this is often the factor that leads to anthracnose problems.
- ✓ Do not mow when greens are wet (soft and/or spongy) since this leads to scalping or cutting too low.
- ✓ Use solid rollers, grooved rollers usually lead to a lower cut and stressed plants and anthracnose.
- ✓ Raising mowing heights. Research has shown that a 0.015 inch increase in mowing height can result in an improvement of turf health and reduced anthracnose (i.e.: from 0.125 to 0.141inch).
- ✓ Roll greens to smooth the surface and improve mowing quality, may reduce the mowing frequency and possible increase the height of cut.
- ✓ Use walk-behind mowers and reduce mowing frequency (floating head mowers preferred).

Fertility programs – *Research has shown this to be a key to maintain healthy turf and manage ABR*:

- ✓ Maintain greens with a sound fertility program for healthy turfgrass. (Minimal of 3 lb. N + / 1000 ft^2 / year). Do not under fertilize the greens to achieve speed but fertilize for turf health.
- ✓ Apply 0.1 to 0.125-lb. N/M sq. ft. from ammonium sulfate or urea every 7-14 days. Tank-mix with fungicide applications. Maintain growth but avoid excessive or surges of growth. Research is being done to determine best nitrogen and nutrient forms to use.
- ✓ Soil and tissue test to insure that adequate essential elements are available and in the plants.

Water management – *irrigation, surface drainage & subsurface drainage*:

- ✓ Avoid over watering and excessive wet soils and conditions of continuously wet thatch.
- ✓ Syringe to prevent wilt. Avoid extremes in soil moisture. The goal is healthy turfgrass.
- ✓ Improve and/or provide proper drainage to maximize turfgrass health and vigor.
- ✓ Install drainage systems or rebuild greens to correct poor drainage problems.
- ✓ Address compaction problems, excessive thatch, root zone layering, and green design problems.

Grooming, PGR's & Pest Management - *factors that limit turfgrass growth and health*:

- ✓ Avoid aggressive grooming operations in hot wet weather that may severely damage the turfgrass.
- ✓ Light to moderate topdressing can be beneficial to protect the crowns and improve growth & health**.**
- ✓ When grooming operations cannot be avoided, apply fungicides tank-mixed with soluble fertilizers prior to grooming, even if anthracnose is not active.
- ✓ PGRs can be used as an effective tool to maximize health and part of an Integrated Turfgrass Health Management Program. The key point is, do not stop growth but manage healthy growth.
- ✓ Monitor for other problems such as parasitic nematodes, other diseases, insect pests, etc.

FUNGICIDES LABELED FOR ANTHRACNOSE ON TURFGASS

Normally do not use a fungicide from the same chemical class in succession, rotate whenever possible. As temperatures increase keep in mind the growth regulating side effects of sterol-inhibiting fungicides.
If the disease is active; select the high label rate, shortest timing interval, apply in the proper amount of water to place the fungicide where the disease is active and to protect the host. It is usually recommended to rotate penetrant fungicides from the different classes shown: i.e. Thiophanate (CL 3336 or Fungo 50) in the first 7-10 days; followed by a strobilurin (Compass, Heritage, Disarm or Insignia in the second **7**-10 days; followed by a sterol-inhibitor (Banner, Bayleton, Eagle, Trinity, Tourney, Chipco Triton, Torque or Rubigan in the third 7-10 days period. Consider including Chipco Signature in this rotation at least once per month. Endorse is an additional penetrant to consider however works best as a preventative fungicide. Contact fungicides are most effective if applied to completely cover the leaf tissue with minimal run-off.
NOTES:
Spray volume recommendations: - systemics (most are upward moving only) 4 – 5 gal/ 1000 sq ft,
- contacts and local penetrants 1.5 - 2 gal/ 1000 sq ft.
Strobilurin and thiophanate-methyl resistant biotypes of anthracnose have been reported. Select products that are known to work and monitor for fungicide resistance. If possible leave untreated areas as check plots to observe results.

PRODUCT:	**RATE:*** (oz/1000 sq ft)	**FAMILY:**	**MOBILITY:**
-Chlorothalonil	3.25 - 5.0 oz**	Nitrile	Contact
- Medallion	0.25 - 0.5 oz	Phenylpyrolle	Contact
- Secure	0.5 oz.	Pyridinamine	Contact
- CL 3336	4.0 - 6.0 oz	Benzimidazole	Systemic (upward)
- Endorse	4.0 oz	Polyoxin	Local Penetrant
- Heritage	0.2 - 0.4 oz	Strobilurin	Systemic (upward)
- Compass	0.25 oz	Strobilurin	Local Penetrant
- Insignia	0.5 - 0.9 oz	Strobilurin	Local Penetrant
- Disarm	0.18-0.36 oz	Strobilurin	Systemic (upward)
- Banner MAXX	1.0 - 2.0 oz	SI / DMI	Systemic (upward)
- Bayleton 50W	0.5 - 1.0 oz	SI / DMI	Systemic (upward)
- Eagle 20EW	0.2 oz	SI / DMI	Systemic (upward)
- Trinity	0.5 - 1.0 oz	SI / DMI	Systemic (upward)
- Tourney	0.28 - 0.37 oz	SI / DMI	Systemic (upward)
- Chipco Triton	0.15 - 0.3 oz	SI / DMI	Systemic (upward)
- Torque	0.6 oz	SI / DMI	Systemic (upward)
- Chipco Signature ***	4.0 oz	Phosphite	Systemic (upward & down)
- Velista	0.3 – 0.5oz	Carboxamide /SDHI	Systemic (upward)

***** The rates are general guidelines, **ALWAYS FOLLOW LABEL RECOMMENDATIONS**.
** Dry weight in ounces, there are also liquid / flowable formulations so **READ & FOLLOW the LABEL**.
******* Other phosphite products have shown reduced anthracnose in some studies.