Best Management Practices for Anthracnose Control on Annual Bluegrass Putting Green Turf – 2015 Update

Nitrogen

- Nitrogen should be applied to maintain vigor of the putting green turf without overfertilizing. Annual "summer" soluble-N rates of approximately 2.4 to 3.6 lb N 1000 ft^{-2} (117 to 176 kg N ha^{-1}) should be applied to reduce anthracnose incidence and severity. A rate at the higher end of the range will be needed if N rates have been low historically.
- Beginning soluble-N programs earlier (April or May) in the year at 0.4 to 0.8 lb of N per 1000 ft^2 (20 to 39 kg N ha^{-1}) per month can build up nitrogen in the turf heading into summer, which can result in decreased anthracnose severity.
- Any granular-N fertilization should be emphasized in the "spring" at rates of 1 to 3 lb per 1000 ft^2 (49 to 146 kg N ha^{-1}) to reduce disease severity. A rate at the higher end of the range will be needed if N rates have been low historically.

Potassium

- Potassium should be applied to maintain moderate to high levels of soil K (> 100 lb ac^{-1} Mehlich III; > 50 ppm). Soluble-K applications should be made at 1:1 or 2:1 N:K molar adjusted-ratio every 14-d to reduce anthracnose severity

Mowing and Rolling

- Mowing below 0.125-in (3.2-mm) should be avoided when using fixed head mowers – probably a slightly lower bench setting is okay for flex units. If feasible, raise the cutting height as high as 0.140-in (3.6-mm) for greater suppression of anthracnose. Slight increases in mowing height can significantly reduce the severity of this disease. Thus, use of solid rollers versus grooved rollers, at the same bench height setting, may also be helpful.
- Roll and/or increase mowing frequency to maintain ball roll distances at higher mowing heights. Rolling and double-cutting increase ball roll, but will not enhance disease severity.
- Rolling every other day can result in slightly decreased anthracnose severity, regardless of roller type.
- *Soil pH*: Annually test the turfgrass root zone to ensure that soil pH does not become too acidic.
- If limestone is required, base the quantity of limestone to be applied on a target pH of 6.0 and the buffering capacity of the soil (lime requirement index).

Plant Growth Regulators

- Routine trinexapac-ethyl (Primo MAXX) use even at high rates and short intervals will not increase and may reduce anthracnose severity by improving turf tolerance to low mowing and enhancing plant health.
- Mefluidide (Embark) and ethephon (Proxy) can be used to suppress seedhead formation in ABG turf without increasing anthracnose.

- Mefluidide or ethephon applied in March or April at label rates with subsequent applications of trinexapac-ethyl at 0.1 to 0.2 fl oz/1,000 ft^2 (0.32 to 0.64 L ha^{-1}) every 7- to 14-d will provide the best turf quality and may reduce anthracnose.

Irrigation

- Increased anthracnose can result when ABG is consistently subjected to wilt stress or excessively wet conditions.
- Irrigating to replace 60 – 80% of potential evapotranspiration and hand watering as needed to avoid wilt stress will provide a quality playing surface and reduce conditions favorable for anthracnose.

Topdressing

- Bi-weekly sand topdressing in the "summer" with up to 100 lb per 1,000 ft^2 (4.88 tonnes ha^{-1}) provides a protective layer of sand around the crown, which slightly raises the effective height of cut thus reducing anthracnose.
- Topdressing in the spring at 400 to 800 lb per 1,000-ft^2 (19.5 to 39.1 tonnes ha^{-1}) is more effective than fall applications in reducing anthracnose severity. Note these rates do not include the quantity of sand needed to fill coring holes; more sand will be needed if coring is done at the same time as topdressing. The amount of sand needed will depend on the diameter and spacing of coring holes.
- Anthracnose does not appear to be affected by different sand incorporation techniques, so methods which best incorporate sand should be selected to minimize turf injury and wear on mowing equipment.
- Foot traffic (similar to rolling) appears to reduce anthracnose, regardless of sand topdressing. The benefits of sand topdressing (better wear tolerance and decreased disease) are also seen in areas that receive daily foot traffic.

Cultivation

- Do not avoid the use of verti-cutting or other cultivation practices (e.g., aerification, scarification, grooming) if needed when disease is present, since wounding from these practices has not been shown to increase anthracnose severity. However, make sure fungicides have recently been applied before utilizing any cultivation practice when anthracnose is active.

Fungicide Management

- Avoid the sequential use of any fungicide chemistry, and tank-mix or alternate fungicides with different modes of action to enhance efficacy and reduce the potential for resistant strains of the anthracnose pathogen from developing.
- Develop fungicide programs that focus on the strengths (efficacy) of fungicide chemistries and time their application to optimize the control of all major diseases on the site.
- Use as many different fungicide chemistries with proven efficacy against anthracnose - i.e., the QoI, DMI, Nitrile (chlorothalonil), benzimidazole, dicarboximide (iprodione), phosphonate, antibiotic (polyoxin-D), and phenylpyrrole fungicides - as practical during the growing season to enhance anthracnose control and reduce the potential for fungicide resistance.