# Pythium Blight of Turfgrass

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Pythium blight, sometimes called cottony blight, is one of the most destructive turfgrass diseases. Several species of Pythium, a fungus-like water-mold (oomycete), cause the disease. The disease can "explode" in only a few days if conditions are right. Perennial ryegrass and tee- or fairway-height creeping bentgrass are the most common hosts in Kansas. Tall fescue also can be infected. Kentucky bluegrass, bermudagrass, and zoysiagrass can become infected, but this is rare.

## Symptoms

In fairway-height bentgrass and perennial ryegrass, the first symptoms are irregularly shaped, water-soaked, greasy patches up to 4 inches in diameter. If it is humid, a cottony growth may be present early in the morning (Figure 1). The patches may merge into larger blighted areas (Figure 2). The pathogen can be spread by equipment (Figure 3) and in water drainage patterns. Diseased plants eventually turn straw color and wither, resulting in crater-like depressions in the turf.

Pythium blight is believed to be common on creeping bentgrass putting greens. However, in Kansas this disease rarely occurs on bentgrass mowed shorter than ¼ inch in height. It is not uncommon to find Pythium blight on the putting green fringe, yet see no damage on the putting surface.

Pythium blight occasionally affects tall fescue during hot, humid weather. Softball-sized patches of water-soaked turfgrass form during hot, wet conditions. Diseased grass blades within the patch tend to stick to one another and have a mushy texture. Spots can coalesce and streaks can form along drainage patterns. Affected plants eventually wilt and die to the crown. However, crowns and roots might not be killed and plants can recover after several weeks.

Pythium blight can cause damping off and seed rot in plantings of cool-season grasses that are established in late spring or summer. Young, succulent tissue is vulnerable to the pathogen, and new plantings are often kept wet, which further increases the risk.

*Look-alikes:* Pythium blight can be confused with brown patch, damage due to thick thatch, drought stress, or grubs.

## Conditions for Disease Development

The risk of Pythium blight is highest during humid weather when day temperatures are 86 to 95 degrees Fahrenheit and overnight lows are consistently at least 68 degrees Fahrenheit. The disease is most common when soils are saturated with water, due to excessive rainfall or irrigation. Long dew periods, high relative humidity, and lush, dense turfgrass growth also favors disease development. Low areas, sites with poor air flow, and sites with poor drainage are particularly vulnerable.

**Figure 1.** *Cottony mycelium. Turf sometimes appears matted down and greasy. By J. Pierzynski*

**Figure 2.** *Blighting caused by Pythium. By M. M. Kennelly*

## Management

Pythium thrives in water, so water management is the key to Pythium blight control. The following practices will reduce the risk of other diseases, too:

- Improve drainage in areas where water is likely to stand for any length of time.
- Avoid overwatering, especially during hot, humid periods.
- Promote rapid turfgrass drying by proper spacing and pruning of shrubs and trees.
- Fans can improve airflow in closed-in areas where collars and approaches have a history of disease.
- Irrigate in the early morning to reduce the number of hours of leaf wetness.

Excessive nitrogen fertilization stimulates lush growth that is more susceptible to Pythium blight. Maintain a proper balance of nutrients and avoid fertilizing during periods of Pythium blight activity.

If active mycelium is present, avoid mowing, which can spread the pathogen.

Preventive fungicide applications during the summer months may be necessary on perennial ryegrass or creeping bentgrass golf fairways but are not normally needed for putting greens or residential lawns in Kansas.

Perennial ryegrass seeded in the late spring is susceptible to Pythium because of its succulent, juvenile condition. Preventative applications may be beneficial. For fall-seeded plantings this not necessary because weather conditions at that time do not favor Pythium.

See Table 1 for a listing of labeled fungicides.

## Resistance

Follow label instructions for resistance management for all fungicides:

- Resistance to mefenoxam and metalaxyl in turfgrass Pythium has been reported in some regions. In addition, many Pythium species in crop and ornamental production have developed resistance to these materials.
- Resistance to QoI (strobilurin) fungicides has been reported in Iowa, and these fungicides have been shown to be at risk to resistance for many other pathogens.

**Figure 3**. *Pythium blight can follow mowing patterns and water/drainage flow. By R. St. John*

- Resistance to propamocarb has been documented in Pythium isolates in ornamentals, suggesting a potential for resistance in turfgrass Pythium.

### Fungicide Notes

- In some studies, flutolanil (Prostar) and azoxystrobin (Heritage) applied to control brown patch have increased damage from Pythium.
- Under high disease pressure, use shorter spray intervals.
- In research trials, mefenoxam and propamocarb have performed well for curative situations.
- Ethazol can cause phytotoxity during hot weather especially at low water rates: see label.
- Fosetyl-al often provides poor curative control. For preventative control, two to three consecutive applications may be needed if disease pressure is high.

**Table 1.** *Fungicides labeled for Pythium: It is the responsibility of the user to read, understand, and follow the label directions. Labels can change over time.*

| Active ingredient | Fungicide group | Efficacy and notes | Typical application interval (days) | Examples of products |
|---|---|---|---|---|
| azoxystrobin | QoI (strobilurin) | Good, at risk for fungicide resistance | 10 to 14 | Heritage |
| chloroneb | aromatic | Limited data available | 5 to 7 | Terraneb SP, Proturf Fungicide V |
| copper hydroxide + mancozeb | copper + EBDC* | Limited data available | 7 to 14 | Junction |
| cyazofamid | cyanoimidazole | Consistently good to excellent | 14 to 21 | Segway |
| ethazole (etridiazole) | triadiazole | Inconsistent, sometimes performs well | 5 to 10 | Koban, Terrazole |
| fluoxastrobin | QoI (strobilurin) | Good to excellent in most trials, at risk for resistance | 14 | Disarm |
| fosetyl-al | phosponate | Good | 14 to 21 | Chipco Signature, Prodigy |
| mancozeb | EBDC* | Fair to good | 5 | Fore, Protect T/O, Mancozeb, Dithane |
| mefenoxam | phenylamide | Good to excellent in most trials, at risk for fungicide resistance | 7 to 21 | Subdue MAXX, Quell |
| metalaxyl | phenylamide | Good to excellent in most trials, at risk for fungicide resistance | 7 to 21 | Subdue 2E, Proturf Pythium Control |
| phosphite (salts of phosphorous acid) | phosphonate | Good to excellent, some variation among the products | 14 | Magellan, Biophos, Resyst, Alude, Vital |
| propamocarb | carbamate | Good to excellent in most trials, at risk for fungicide resistance | 7 to 21 | Banol |
| pyraclostrobin | QoI (strobilurin) | Good, at risk for fungicide resistance | 10 to 14 | Insignia |

*EBDC = Ethylene bis-dithiocarbamate

## References


- Fungicide table modified with permission from Chemical Control of Turfgrass Diseases 2008 by P. Vincelli and A.J. Powell, University of Kentucky
- Compendium of Turfgrass Diseases, Third Edition. 2005. RW Smiley, PH Dernoeden, BB Clarke. APS Press
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- Original fact sheet by N. Tisserat. Revised by M.M. Kennelly, July 2008





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