K-STATE Research and Extension Plant Pathology EP163

Rust Diseases of Turfgrass

All turfgrass species are susceptible to rust diseases. Several fungi in the genus *Puccinia* cause rust in turf. The level of susceptibility is affected by environmental conditions, shade, turfgrass cultivar, and management practices. Home lawns, low-maintenance golf courses, and athletic fields more commonly experience outbreaks of rust infections; however, rust also occurs on intensively managed turf.

Symptoms

Turf stands infected with rust exhibit a dull, yellow-green to light-brown cast (Figure 1). Close-up, initial symptoms appear as individual yellow lesions or flecks that enlarge over time. Mature spore-producing structures are visible as rust-colored, powdery pustules that can be yellow, orange, red, or brown (figures 2, 3, and 4). Late in the season, the pustules turn black. The spores come off easily, like powder, when touched. Spores are dispersed from the pustules of infected plants to healthy ones by wind and rain splash. Severely infected turf stands become noticeably thin and may die, and they are more susceptible to winterkill.

Conditions for disease development

Moderate temperatures (68 to 85 degrees Fahrenheit) and long periods of wetness foster leaf rust infections. Underlying stress caused by shade, drought, nutrient deficiencies, or other factors makes turfgrass more prone to damage by rust.

In Kansas, initial rust symptoms usually occur in August or early September, and symptoms can linger into the fall. Depending on the weather conditions, turfgrass species, and plant vigor, rust also may develop in other months.

Disease management

Resistant cultivars

Turfgrass varieties differ in their levels of susceptibility to rust infection. A complete list of turf variety ratings for rust disease is available from the National Turfgrass Evaluation Program at *www.ntep.org*.

Use of cultural practices

Appropriate levels of fertilizer and water reduce the risk of rust in turfgrass. Refer to fertilization guidelines for

Figure 1. *Perennial ryegrass with a yellow-green cast due to rust disease. Photo by Megan Kennelly, Kansas State University.*

Figure 2. *Rust pustules on perennial ryegrass. Photo by Megan Kennelly, Kansas State University.*

specific turfgrass species for recommendations of rates and timings. Mow at heights and frequencies recommended for the turfgrass species you are managing. Rust infection is fostered by leaf wetness, so avoid watering at night.

Fungicides

Rust does not reach damaging levels in most years, and fungicides are not typically used. However, several fungicides are labeled for the control of rust (see Table 1). In general, these products work best when applied early in disease development. It can be difficult to determine if and when a rust outbreak will occur, making timing of application challenging.

Additional references

Identification and Management of Turfgrass Diseases by B. Corwin, N. Tisserat and B. Fresenburg. 2007. University of Missouri Extension Publication IPM1029. Available online at *http://extension.missouri.edu/explorepdf/agguides/pests/ipm1029.pdf.*

Figure 3. *Rust pustules. Photo by Megan Kennelly, Kansas State University.*

Figure 4. *Rust pustules on zoysiagrass. Photo by Megan Kennelly, Kansas State University.*

Table 1.

Active ingredient	Efficacy*	Application interval (days)	Examples of products
azoxystrobin	4	14-28	Heritage
Bacillus subtilis, strain QST 713	L	7-10	Rhapsody
chlorothalonil	3	7-14	Chlorostar, Daconil Ultrex, Echo, Manicure, Concorde SST, Pegasus L
copper hydroxide + mancozeb	L	7-14	Junction
fluazinam	L	14	Secure
fluoxastrobin	L	14-28	Disarm
mancozeb	3	7-14	Fore, Dithane, Protect DF, Manzate 200, Pentathlon
metconazole	L	14	Tourney
myclobutanil	L	14-28	Eagle
propiconazole	3.5	14-28	Banner MAXX, Spectator, Savvi
pyraclostrobin	3	14-28	Insignia
tebuconazole	L	28	Torque
thiophanate-methyl	2.5	7-14	Cleary's 3336
tridiamefon	3.5	14-30	Bayleton, Proturf fungicide VII
trifloxystrobin	2.5	14-21	Compass
triticonazole	L	14-28	Trinity, Triton

*4=consistently good to excellent control in published experiments; 3=good to excellent control in most experiments; 2=fair to good control in most experiments; 1=control is inconsistent between experiments but performs well in some instances; N=no efficacy; L=limited published data on effectiveness.

Table modified slightly and used with permission from *Chemical Control of Turfgrass Diseases 2015* by Paul Vincelli and Gregg Munshaw, University of Kentucky.

Megan Kennelly
Plant Pathologist
Kansas State University

Ken Obasa
Former Graduate Student
Kansas State University

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

EP163 (Rev.) July 2015

K-State Research and Extension is an equal opportunity provider and employer. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, John D. Floros, Director.