

Chemical Control Options for Common Lawn Diseases in Arkansas

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Introduction

Turfgrass diseases often wreak havoc on Arkansas lawns. Arkansas is a unique state in that it is located squarely in the Transition Zone, which means both warm- and cool-season grasses can grow here but not optimally. Suboptimal growth conditions mean turfgrasses are far more susceptible to diseases and other pests. The most effective way to manage lawn diseases is to use an integrated approach that combines cultural and chemical practices. Cultural management practices include proper mowing, fertilizing, watering, and more. However, this fact sheet will focus on chemical control options (i.e., fungicides).

Fungicide Options for Lawns

There are dozens of effective fungicides that manage turfgrass diseases, but not all of them are labeled for use in home lawns/residential areas. This presents a challenge for homeowners and lawn care operators selecting a fungicide for disease control, and it underscores the importance of thoroughly reading the product label before purchasing and applying a fungicide. Remember, the label is the law! Table 1 presents the currently available

fungicides labeled for use on home lawns/residential areas on the market. Note that product labels are subject to change, and new products are regularly introduced to the market. Also note that many of the fungicides listed in Table 1 may have additional trade names produced as “generic products” by other companies.

Fungicides have a wide array of physical and chemical properties that affect their performance. One such property to pay special attention to is the *phytomobility* of a product. The *phytomobility* of a fungicide is how it moves on or within a plant. Fungicides can have one of four phytomobilities:

- 1. Contact:** the fungicide stays on the surface of the plant and does not absorb into the plant tissue.
- 2. Localized penetrant:** the fungicide absorbs into the plant tissue but does not move up or down the plant—only in a translaminar fashion.
- 3. Acropetal penetrant:** the fungicide absorbs in the plant and only moves upward through the xylem.
- 4. Truly systemic:** the fungicide absorbs in the plant and translocates both up and down the plant.

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This is important because it is necessary to know how the fungicide interacts with the plant after an application. If you, as a turf-grass manager, are targeting a root disease, knowing the phytomobility of the fungicide you are applying will help you determine whether to water it in post-application. If the product is a truly systemic fungicide, then watering it in may not be necessary for a root disease. However, if the product is a localized penetrant or acropetal penetrant, then watering it in post-application would be necessary for the fungicide to work optimally.

Another example: You are targeting a foliar disease with a fungicide application and rain is

forecasted. In this case, knowing the phytomobility of the fungicide would help you determine whether to apply the fungicide and allow it to be watered in with the rainfall. If the product is an acropetal penetrant, then applying it for a foliar disease before rainfall would be fine because it would absorb in the plant and move up through the xylem, providing protection to the foliage. In contrast, if the product is a localized penetrant fungicide, then it should not be applied prior to rainfall for a foliar disease because it would not move up from the roots to the foliage and provide protection from foliar pathogens. The phytomobility of each fungicide labeled for lawns in Table 1 is denoted.

Table 1. Fungicides available for use in home lawns (labels are subject to change).

Single Active or Combination	FRAC Code(s)	Group Name(s)	Active Ingredient(s)	Trade Name
Single Active	1	Benzimidazole	thiophanate-methyl ¹	3336
Single Active	3	DMI	metconazole ¹	Tourney
Single Active	3	DMI	myclobutanil ¹	Eagle
Single Active	3	DMI	propiconazole ¹	Banner Maxx
Single Active	3	DMI	triticonazole ¹	Trinity/Triton
Single Active	4	Phenylamide	mefenoxam ¹	Subdue Maxx
Single Active	7	SDHI	cyclobutrifluram ¹	Trefinti
Single Active	7	SDHI	fluopyram ¹	Indemnify
Single Active	7	SDHI	flutolanil ¹	Pedigree
Single Active	7	SDHI	fluxapyroxad ¹	Xzemplar
Single Active	7	SDHI	isofetamid ²	Kabuto
Single Active	7	SDHI	penthiopyrad ¹	Velista
Single Active	11	Qol	azoxystrobin ¹	Heritage
Single Active	11	Qol	mandestrobin ¹	Pinpoint
Single Active	11	Qol	pyraclostrobin ²	Insignia
Single Active	11	Qol	trifloxystrobin ²	Compass
Single Active	12	Phenylpyrrole	fludioxonil ²	Medallion
Single Active	19	Polyoxin	polyoxin D ²	Affirm
Single Active	21	Qil	cyazofamid ²	Segway
Single Active	33	Phosphonate	phosphites ³	multiple
Single Active	U17	Tetrazolyoxime	picarbutrazox ²	Serata
Combination	11 + 21	Qol + Qil	azoxystrobin ¹ + cyazofamid ²	Union
Combination	3 + 11	DMI + Qol	propiconazole ¹ + azoxystrobin ¹	Compendium
Combination	7 + 11	SDHI + Qol	fluxapyroxad ¹ + pyraclostrobin ²	Lexicon
Combination	3 + 11	DMI + Qol	triticonazole ¹ + pyraclostrobin ²	Pillar
Combination	1 + 7	Benzamide + SDHI	thiophanate-methyl ¹ + flutolanil ¹	SysStar
Combination	3 + 11	DMI + Qol	triadimefon ¹ + trifloxystrobin ²	Armada

¹acropetal penetrant; ²localized penetrant; ³truly systemic

Fungicide Recommendations for Common Lawn Diseases in Arkansas

Lawns in the state can be compromised by a variety of turfgrass diseases, but there are four common diseases that this fact sheet will address in detail:

1. **large patch,**
2. **spring dead spot,**
3. **brown patch, and**
4. **fairy ring.**

As previously mentioned, the most effective way to manage these diseases is by implementing an integrated management approach with cultural and chemical practices. Because this fact sheet focuses on chemical control options, we will only discuss fungicide recommendations (product selection, application timing and application strategy) here.

Large Patch

Large patch is a foliar disease caused by the fungus *Rhizoctonia solani* AG 2-2 on warm-season turfgrasses (Figure 1). It primarily causes damage in the spring and fall. Zoysiagrass, St. Augustinegrass, and centipedegrass are all highly susceptible to this disease. Large patch can also damage bermudagrass, but it is of less concern because bermudagrass is generally less susceptible to the disease and grows out of large patch damage quickly. Since zoysiagrass is highly susceptible to large patch, the disease is sometimes called “zoysia patch,” but “large patch” is the widely recognized name for the disease.

The best time to apply fungicides for large patch is during the fall and spring. The first fall fungicide application for large patch should be made when soil temperatures are consistently below 70°F and a follow-up application should be made four to five weeks later. One or two spring fungicide applications may also be necessary in Arkansas. The first spring fungicide application for large patch should be made when soil temperatures are consistently above 50°F, which usually corresponds to approximately 50 percent turf green-up. Depending on weather conditions, second or third fungicide applications may be necessary at four-week intervals after the initial application. Depending on the phytomobility of the fungicide, products may be watered in or left on the foliage. It is recommended to tank-mix a soil surfactant and apply at higher carrier volumes (~2.0 gal/1,000 sq.ft.) if possible.

There are many fungicides that are efficacious against large patch. Certain products within the DMIs (Group 3), SDHIs (Group 7), and QoIs (Group 11) are effective on large patch. Although generally more expensive, combination products that include two of these fungicide groups are recommended over single active ingredients. Some of the top-performing fungicides, in no particular order, for large patch suppression include metconazole (Tourney), flutolanil (Pedigree), propiconazole + azoxystrobin (Compendium), triticonazole + pyraclostrobin (Pillar) and triticonazole (Trinity or Triton). Azoxystrobin (Heritage) and pyraclostrobin (Insignia) can also provide good control of large patch.



Figure 1. Typical large patch symptoms on zoysiagrass.

Spring Dead Spot

Spring dead spot is a root disease caused by the fungus *Ophiosphaerella* spp. on warm-season turfgrasses (Figure 2). Symptoms appear in the spring, but infection primarily happens in the fall. Most warm-season grasses are susceptible to spring dead spot, but bermudagrass is the most susceptible species. Spring dead spot is the most problematic disease on bermudagrass lawns in Arkansas, so proper chemical management is crucial.

The best time to apply fungicides for spring dead spot is in the fall, when soil temperatures are consistently between 55-65°F. One well-timed fungicide application may be adequate,



Figure 2. Typical spring dead spot symptoms on a bermudagrass lawn.

but often a second application is recommended three to four weeks after the initial fall application. Only fall fungicide applications have been proven to be effective — spring fungicide applications are not effective. Since spring dead spot is a root disease, all fungicides should be immediately irrigated in with 0.2-0.5 inches of water post-application. Carrier volumes are not important as long as the product is immediately watered in.

Only a few fungicides provide adequate suppression of spring dead spot. Recommended products for spring dead spot management include isofetamid (Kabuto), penthiopyrad (Velista) and Trefinti (cyclobutrifluram).

Brown Patch

Brown patch is a disease caused by the fungus *Rhizoctonia solani* AG 11A or AG 2-IIIB on cool-season turfgrasses (Figure 3). It is very similar to large patch, although brown patch only occurs on cool-season grasses and large patch only occurs on warm-season grasses. Brown patch is the most problematic disease affecting tall fescue in Arkansas lawns.

Tall fescue is grown in a very small percentage of lawns in Arkansas, but it is still an important turfgrass species in the state. Brown patch causes damage to tall fescue lawns in the late spring and throughout the summer. Many tall fescue cultivars are susceptible to brown patch.



Figure 3. Typical brown patch symptoms on a tall fescue lawn.

The best time to apply fungicides for brown patch is in the late spring, when humidity levels are high and nighttime temperatures are above 60°F. Follow-up applications are recommended every four to six weeks throughout the summer. Similar to large patch, depending on the phytomobility, fungicides may be watered in or left on the foliage. Recent research has shown that carrier volume does not significantly reduce efficacy if a well-suited fungicide is applied.

There are many fungicides that control brown patch. Most QoI (Group 11) fungicides, such as azoxystrobin (Heritage), pyraclostrobin (Insignia) and trifloxystrobin (Compass), or combination products containing these QoIs, are very effective on brown patch. Additionally, fungicides other than the QoIs, such as flutolanil (Pedigree), polyoxin D (Affirm) and fludioxonil (Medallion) are also efficacious against brown patch and provide different modes of action than the QoI fungicides. To achieve optimal brown patch suppression, fungicides should be applied preventatively rather than curatively.

Fairy Ring

Fairy ring is a disease that occurs on all turfgrass species and is common across Arkansas lawns. There are three types of fairy ring: Type I (dead and brown ring), Type II (dark green ring), and Type III (ring of mushrooms) (Figure 4).

Type I fairy ring is caused by fungi that secrete waxy substances while feeding on organic matter in the soil. The waxy substances

that the fungi secrete cause the soil to become hydrophobic, preventing water from holding in the soil. The dead rings seen from fairy ring are actually localized drought damage that was caused by fairy ring fungi. Type II fairy ring is also caused by the fungi feeding on organic matter and releasing nitrogen. This fertilizes the turfgrass, leading to dark green rings of turf. Type III fairy ring is the appearance of the fungus itself in the form of mushrooms. Type III fairy ring is most often observed after rainfall.

Fairy ring fungi are most active during the spring and can cause symptoms throughout the entire season. The optimal time to begin applying fungicides for fairy ring is during the spring when soil temperatures are consistently above 55°F. Follow-up applications may need to be made every four weeks after the initial spring application. Fungicide should be tank-mixed with a wetting agent to alleviate soil hydrophobicity and increase the fungicide distribution throughout the soil profile. Additionally, fungicides must be immediately irrigated in with 0.2-0.5 inches of water post-application to achieve optimal disease control.

Certain fungicides belonging to the DMIs (Group 3), SDHIs (Group 7) and QoIs (Group 11) are effective against fairy ring. Some of the better fungicides for fairy ring suppression in home lawns include flutolanil (Pedigree), penthiopyrad (Velista) and metconazole (Tourney). Combination products are also usually effective on fairy ring.



Figure 4. Left: Type II fairy ring (dark green ring) progressing into Type I fairy ring (brown ring). Middle: Type II fairy ring (dark green ring). Right: Type II fairy ring (dark green ring) with presence of Type III fairy ring (mushrooms).

References

- Benelli, J. J., Horvath, B. J., Womac, A. R., Ownley, B. H., Windham, A. S., and Sorochan, J. C. (2018). Large patch (*Rhizoctonia solani* AG 2-2LP) severity on Japanese lawngrass (*Zoysia japonica*) influenced by fungicide and application target site. *Crop Protection*, 106, 23-28. <https://doi.org/10.1016/j.cropro.2017.12.003>
- Burpee, L. L., and Martin, S. B. (1992). Biology of *Rhizoctonia* species associated with turfgrass. *Plant Disease*, 76, 112-117. https://www.apsnet.org/publications/plantdisease/backissues/Documents/1992Articles/PlantDisease76n02_112.pdf
- Butler, E. L., Galle, G. H., and Kerns, J. P. (2019). Influence of Nitrogen Rate and Timing, Fungicide Application Method, and Simulated Rainfall after Fungicide Application on Brown Patch Severity in Tall Fescue. *Crop, Forage & Turfgrass Management*, 5(1), 1-6. <https://doi.org/10.2134/cftm2019.03.0018>
- Fidanza, M. A., Wong, F. P., Kostka, S. J., and McDonald, S. J. (2007). Use of a Soil Surfactant with Fungicides for Control of Fairy Ring Disease in Turfgrass. *Journal of ASTM International*, 4(4), 1-6. <https://doi.org/10.1520/JAI100892>
- Kreinberg, S. T., Kerns, J. P., Miller, G. L., Richardson, M. D., Spurlock, T. N., and Hutchens, W. J. (2025). Review of the biology and management of large patch of warm-season turfgrasses. *Crop Science*, 65(2), e70055. <https://doi.org/10.1002/csc2.70055>
- Latin, R. (2021). *A practical guide to turfgrass fungicides* (2nd ed.). APS Press.