

Fungicides

By **Brandon Horvath, Ph.D.**

DISEASES MIGHT NOT BE THE FIRST PRIORITY FOR TURF MANAGERS (weed control is usually number one), but outbreaks of disease will certainly decrease the appearance of quality turf, so it is important to have a management plan for those diseases that may be a priority. During the last couple of years, chemical manufacturers have developed granular fungicides that are as effective as sprayable products. The key to using them effectively is to know when and how to apply them. Another development in turf management is the use of air-induction and twin jet nozzles to improve coverage and minimize drift. The final development has been the creation of various combination products in order to combat post-patent chemistry, and to streamline

the applications of various products. You can employ each of these developments to gain efficiency in your operations, reduce environmental impact, improve public perception, and increase the efficacy of your applications for disease control.

Sprayers can be expensive. Those that have an adequate budget can usually justify the expense of having a dedicated sprayer to make control applications. However, for those that don't have sprayers, being able to make granular applications that are comparable to their sprayable counterparts would be a large improvement. In the past, granular fungicides were not recommended largely due to their inability to provide comparable control to a spray application. Today, with the development of the dispersible granule, application of a granular that disperses after contact with water makes it possible to achieve disease control as good as the sprayable fungicide. Fungicides on dispersible granules are available for most fungicide mode of action classes, so finding a product that is useful for controlling a disease on your turf — whether cool or warm season — should be pretty straightforward. Fungicides containing the active ingredients azoxystrobin, myclobutanil, propiconazole, thiophanate-methyl, and tridimefon are all currently on the market and available for use. There are also fungicides in the pipeline that are being developed as granulars, and they should also be available in these classes of chemistry. The strobilurins, sterol biosynthesis inhibitors, and benzimidazoles are able to provide disease control for most of the major pathogens that infect

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Arysta LifeScience (www.arystalifescience.com)

Product Name	Active Ingredient	For use in/on
DISARM 480 SC	Fluoxastrobin	Anthracnose (Foliar Infection Phase), Anthracnose (Crown Rot Phase), Brown Patch, Cool Weather Brown Patch, Dollar Spot, Fairy Ring, Gray Leaf Spot, Leaf Spot, Melting Out, Microdochium (Fusarium) Patch, Pink Patch, Powdery Mildew, Pythium Blight, Pythium Root Rot, Pythium Damping Off, Red Thread, Rust, Pink Snow Mold, Typhula Blight Snow Mold, Southern Blight, Spring Dead Spot, Summer Patch, Take-All Patch, Zoysia Patch.
DISARM G (granular)	Fluoxastrobin	Anthracnose (Foliar Infection Phase), Anthracnose (Crown Rot Phase), Brown Patch, Cool Weather Brown Patch Yellow Patch, Dollar Spot, Fairy Ring, Gray Leaf Spot, Leaf Spot, Melting Out, Microdochium (Fusarium) Patch, Pink Patch, Powdery Mildew, Pythium Blight, Pythium Root Rot, Pythium Damping Off, Red Thread, Rust, Pink Snow Mold, Typhula Blight Snow Mold, Southern Blight, Spring Dead Spot, Summer Patch, Take-All Patch, Zoysia Patch.
DISARM M	Fluoxastrobin/Myclobutanil	Anthracnose (Foliar Infection Phase), Anthracnose (Crown Rot Phase), Brown Patch, Cool Weather Brown Patch (Yellow Patch), Copper Spot, Dollar Spot, Fairy Ring, Fusarium Patch, Gray Leaf Spot, Leaf Spot, Melting Out, Pink Snow Mold, Typhula Blight Snow Mold, Powdery Mildew, Pythium Blight, Pythium Root Rot, Pythium Damping Off, Red Thread, Rust, Southern Blight, Spring Dead Spot, Summer Patch, Take-All Patch, Waitea Patch, Zoysia Patch Large Patch of Zoysia.

BASF Professional Turf & Ornamental (www.betterturf.com)

Product Name	Active Ingredient	For use in/on
Insignia	Pyraclostrobin	Dollar spot, Field Sandbur, Woolly Cupgrass, Lawn Burweed, Hop Clover, Cudweed, Evening Primrose, Fiddleneck, Filaree, Puncturevine, Pennsylvania Smartweed, Annual Spurge, Chickweed Species, Yellow Woodsorrel.
Trinity	Triticonazole	Anthracnose, Brown Patch, Brown Ring, Waitea Patch, Dollar Spot, Fusarium Patch, Gray Snow Mold, Large Brown Patch, Necrotic Ring Spot, Pink Snow Mold, Red Leaf Spot, Red Thread, Rust, Summer Patch, Take-All Patch, Zoysia Patch.

Bayer Environmental Science (www.BackedbyBayer.com)

Product Name	Active Ingredient	For use in/on
Armada	Trifloxystrobin, triadimefon	Broad-spectrum disease control in turf
Bayleton	Triadimefon	Broad-spectrum disease control
Compass	Trifloxystrobin	Brown patch, anthracnose, leaf spot, and gray leaf spot
Prostar	Flutolanil	Brown patch, fairy ring, large patch
Triton 70 WDG	Triticonazole	Broad-spectrum disease control
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Dow AgroSciences (www.DowAgro.com)

Product Name	Active Ingredient	For use in/on
Dithane Rainshield	Mancozeb	Major leaf spots and blights, preventive control of rust, scab, and other key diseases.

turfgrasses. Other granular fungicides may provide disease control, but our experience has been that having a fungicide on a dispersible granule is important for maximum effectiveness.

For those operations that do have a sprayer, the selection of nozzle types has taken on new importance. Research into nozzle selection was first evaluated for disease control on golf course turf such as bentgrass. The findings of this work showed that nozzles that are of the “flat fan type” — such as an air induction nozzle or an XR Teejet — provide the best coverage and this results in an improvement in disease control with fungicides. Nozzles of the “flood jet type” produce coarse droplets that reduce coverage, and thus result in a slight decrease in a fungicide’s efficacy. In my lab, we were interested in evaluating the performance of different nozzles on higher-cut turfs. We evaluated brown patch severity on tall fes-

cue, and only found differences in nozzle types when fungicides were used that might not be optimal products for the disease, or were extended beyond their normal spray interval. The best nozzles in our work were the air induction, the Turbo Twin Jet, and the XR Teejet. Once again, the flood-type nozzles were not as good, presumably due to the lesser coverage. One note on nozzle use: when you think about the value of the products you are applying, you should really check to make sure that the nozzles you are applying them with are in good shape. The cost of brand new nozzles more than makes up for the cost of product wasted due to worn-out or damaged nozzles.

Finally, the development of post-patent products has led some manufacturers to develop value-added and combination products. An example of a combination product is the fungicide Headway by Syngenta. This product contains propiconazole (found in

Banner Maxx) and azoxystrobin (found in Heritage) and provides disease control for brown patch and dollar spot with a single application. This product would be especially useful on Kentucky bluegrass fields concerned about these diseases in addition to summer patch and necrotic ring spot. The key to using a combination product is to evaluate the components of the product and do an honest assessment whether the products in the combination are both needed at the same time. Some products make more sense for certain applications than others, so it is important to perform that assessment. ■

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Eagle 20EW	Myclobutanil	Dollar spot, anthracnose, summer patch, brown patch and many other turf diseases.
Fore Rainshield	Mancozeb	Broad-spectrum for preventive control of brown patch and 11 other key diseases.

FMC Professional Solutions (www.fmcprosolutions.com)

Product Name	Active Ingredient	For use in/on
Segway	Cyazofamid	Pythium blight, Pythium damping-off, and Pythium root dysfunction

SipcamAdvan (www.sipcamadvan.com)

Product Name	Active Ingredient	For use in/on
Echo 6F ETQ	Chlorothalonil plus pigment	Dollar spot, brown patch, leaf spot, melting out, brown blight, gray leaf spot, anthracnose, red thread, copper spot, stem rust, dichondra leaf spot and others.
Echo 720, Echo Ultimate, Echo Zn	Chlorothalonil	Protects turf and ornamentals from more than 75 diseases.
ProPensity 1.3ME	Propiconazole	Enhances cool-season turfgrass establishment and controls dollar spot, brown patch, anthracnose, summer patch, snow molds, Fusarium patch, powdery mildew, stripe smut, gray leaf spot and others in turf and ornamentals.
Proplant Tee-1-Up WDG	Propamocarb hydrochloride Chlorothalonil, Thiophanate-methyl	Prevents and cures many Pythium diseases, including damping-off, cottony blight, grease spot and root rot in turf. Dollar spot, leaf spot, brown patch, snow molds, powdery mildew, downy mildew and others in turf as well as cedar apple rust, ovulinia blight, anthracnose, black spot, botrytis, scab and other diseases in ornamentals.
Tee-Off 4.5F	Thiophanate-methyl	Anthracnose, summer patch, gray leaf spot, brown patch and other diseases in cool- and warm-season turfgrass, as well as ornamental diseases, including leaf spots and tip blights.

Syngenta (www.greencastonline.com)

Product Name	Active Ingredient	For use in/on
Headway	Azoxystrobin	Controls turf diseases on a variety of turf types, and is expressly formulated to balance each active ingredient for control and optimal efficacy. Available in a 1-gallon container or a 10-gallon LinkPak.
Heritage	Azoxystrobin	Consistently provides exceptional disease control for extended intervals and improves overall turf quality. Controls a broad spectrum of turfgrass diseases, including brown patch, Pythium and snow mold.
Banner MAXX	Propiconazole	Provides effective broad-spectrum disease control in turf and ornamentals. It is a microemulsion concentrate formulation providing excellent tank mix compatibility and stability; no odor, and mixes into a clear solution.

Always read the label. Visit www.greencastonline.com/prod/index.aspx for label information and additional details about each product.

Valent Professional Products (www.valent.com/professional)

Product Name	Active Ingredient	For use in/on
Tourney	Metconazole	Broad-spectrum control of brown patch, anthracnose, dollar spot, fairy ring, snow mold and grey leaf spot, among others.
Stellar	Fluopicolide	A combination of the new chemistry of fluopicolide and the proven power of propamocarb, Stellar is a unique, synergistic fungicide premix that offers excellent control of Pythium due to its novel mode of action.