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Resistant Dollar Spot

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Dr. Nathaniel Mitkowski, Assistant Professor of Plant Pathology
URI - Department of Plant Sciences

DOLLAR SPOT is one of the most prevalent turfgrass diseases nationwide. For many years, the majority of fungicides applied on golf courses were aimed primarily at controlling this disease. As the incidence of anthracnose has increased, preventative anthracnose applications have given a significant degree of protection against dollar spot, reducing the need to treat dollar spot separately. In the past two years, however, a handful of dollar spot isolates have been positively identified that are resistant to multiple commonly used fungicides. Additionally, there are many anecdotal reports of this phenomenon from North Carolina to Maine.

Dollar spot is caused by the fungus *Sclerotinia homoeocarpa* and was identified in 1936. Dr. Joseph Vargas at Michigan State has recently proposed that the fungus be placed in the genus *Rutsroemia*, an idea originally suggested by Dr. Noel Jackson in 1973.



Figure 1. While dollar spot can attack most cool season grasses it looks worst when found on high maintenance turf, particularly golf course putting greens. Left unchecked, pitting will occur and damage may take months to recover.

Whichever name you use, the dollar spot pathogen is a peculiar organism. Its most unusual characteristic is that it does not produce any spores. Fungi generally rely on spores as a method of dispersal, similar to seeds in plants. The more spores a fungus produces, the more opportunity it has to spread, usually by wind or water. Even though the dollar spot pathogen produces no spores, it is extremely successful and is found on almost all high maintenance turf. The dollar spot pathogen is also unusual in that it has an extremely wide host range within North America. All turfgrasses

are susceptible to the disease. And finally, the dollar spot pathogen has shown an excellent ability to develop fungicide resistance. *Sclerotinia homoeocarpa* was one of the first fungi identified with resistance to cadmium, a heavy metal used widely in the 1960's that was thought to be a nearly indestructible fungicide. Since then, isolates of the fungus with resistance to many different fungicides have been identified in many locations.

High Risk Fungicides: Controlling dollar spot usually relies on the application of a single chemical at a time with about 14 days between applications. Some chemicals have been shown to be more at risk for dollar spot resistance than others and are considered "high risk" for resistance development. If you think you have a resistant population, you are probably using one or more of the chemicals listed below.

Both active ingredient and the most common accompanying trade-names are found in the list below. Not every generic name is listed for the sake of brevity. In general, the generics work just as well as the brand names. The list below is not intended as an endorsement of any manufacturer over another. However, some active ingredients are better than others for dollar spot control. For example, we do not recommend flutolanil for dollar spot control but we do recommend iprodione. Whether the iprodione product is Chipco 26GT™ or Iprodione Pro™ is up to you.

Chlorothalonil (Daconil™, Concorde™, Echo™): A contact fungicide, will give good 7-10 day control at 3.2 oz/M. Years ago, 14-21 days of control were possible but most isolates of the pathogen have developed some limited resistance. A protectant, needs to dry on leaves.

DMI's (Bayleton™, Banner™, Eagle™, Rubigan™): The DMI's are extremely effective systemics at controlling dollar spot for 14-21 days at low rates. At high rates, 28 days may be achievable but only with low disease pressure. Best used in the spring and fall to avoid negative growth regulator effects on roots.

Thiophanate-methyl (Cleary's 3336™, T-Storm™, Fungo™): A very effective systemic fungicide at 14-21 days, can be used throughout the season and often a good replacement for the DMI's in the summer.

Iprodione & Vinclozolin (Chipco 26GT™, Touche™): Both of these are in the same class of fungicide and do extremely well against dollar spot at 14-28 days, based

on rate. Very few reports of resistance have been made. A penetrant fungicide, should not be watered in.

What If I Have Resistance?: If you have a resistant isolate of the dollar spot pathogen, it will likely occur in one of the products named above. Iprodione and vinclozolin are still effective in most places, but there have been a few anecdotal reports of failures. If you do have a resistant isolate, you can 1.) Tank mix the products listed above 2.) avoid using the one product that is not giving control or 3.) use something entirely different. Some other products for dollar spot control include:

Boscalid (Emerald™): Provides extremely good control of dollar spot at 14-21 days, has been tested for 28 days at higher rates. Interestingly, in the same class as ProStar, a fungicide that works against brown patch but **not** dollar spot. Boscalid is not effective against brown patch.

Pyraclostrobin (Insignia™): While most of the QOI or strobilurin fungicides have shown little activity against dollar spot, this one is the exception providing suppressive activity. Not recommended for curative use.

Fosetyl-Al (**Signature™ Brand ONLY**): Although traditionally a *Pythium* fungicide, Signature™ (or Prodigy Signature™) does have a substantial effect against dollar spot and even anthracnose in research trials. But don't try to substitute plain Aliette™ in its place, it will only work against *Pythium*.

Mancozeb (Dithane™, Junction™): A contact fungicide, it can fill the void when chlorothalonil is not effective or available. A combination of manganese, copper and zinc, use precautions to avoid phytotoxicity.

Thiram (Defiant™, Spotrete™): An old fungicide, more commonly used for seed treatments, it can be a very effective backup against resistant strains of dollar spot or used in rotation with other fungicides. Another contact fungicide, should not be watered in.

Why Fungicides Fail: Just because your fungicide application did not work against dollar spot does not mean that you have a resistant isolate. You may, but you may have other problems. The biggest problem we see with fungicide failure is application failure. Using an inappropriate rate or not enough water is a sure way to induce a failure. Another way to induce a failure is to

apply a chemical before a 2 inch deluge. Even soil applied systemics need to be within the proximity of roots to be absorbed. If you dump an inch of rain on a sand based green, recently applied fungicides and fertilizers can be blown all the way through the root zone.



Figure 2. Some of the resistant dollar spot isolates found are very fluffy with copious aerial mycelium. Although they still produce dollar spot symptoms, the presence of this mycelium can be mistaken from *Pythium* or brown patch unless observed microscopically and cultured.

Another consideration is the weather. Under high pressure and optimal conditions for disease, it may be extremely difficult to control a dollar spot outbreak even if it is susceptible to all the chemicals you have available. Some greens in particular provide for a hotbed of dollar spot activity year round and control is often only temporary in these situations. Decreasing humidity, decreasing shade and increasing fertilizer can remove many of the conditions that favor the disease.

Finally, it is important to realize that a preventative application and a curative application do two very different things. If your preventative applications fail, resistant dollar spot may be the problem. But if your curative applications are failing, you may just need to wait and let the damage recover. Once pitting occurs, all you can do is spray and wait.

Dr. Nathaniel Mitkowski can be reached at mitkowski@uri.edu or 401-874-5996. The URI Turf Disease Diagnostic Laboratory can be accessed online at www.uriturf.org. Disease samples are accepted all year long.

PESTICIDES ARE POISONOUS! Read and follow all safety precautions and all labeled directions. The label is the law. Handle carefully and store in original containers out of reach of children, pets or livestock. Dispose of empty containers immediately, in a safe manner and place. Pesticides should never be stored with foods or in areas where people eat.

When trade names are used for identification, no product endorsement is implied, nor is discrimination intended against similar materials. Be sure that the pesticide you wish to use is registered for the state of use.

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