

## Prevention is The Best Medicine

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Recently a few publications have hinted at controlling turfgrass diseases curatively and with the economic times I have heard more and more turfgrass managers saying the same thing. Curative control of turfgrass diseases are extremely difficult and require many hours of scouting in order to achieve acceptable playing conditions.

Under the auspices of Integrated Pest Management, it is stated that prevention is the best way to control pest population. I think the following website is a very nice summary of IPM: <http://www.epa.gov/pesticides/factsheets/ipm.htm>. However, under the prevention heading you'll see terms like crop rotation, resistant varieties, planting disease free root stock, etc. Basically IPM was developed for the agricultural world, but I think we can apply IPM to turfgrass disease management.

The goals of an IPM program are to effectively and safely manage pests that rely on a multitude of management strategies. Pesticides are a part of an IPM program. What is the

best way to effectively manage turfgrass diseases effectively and safely? I contend that following a preventative mind-set is the way to go.

First and foremost if diseases have been a major issue for you in the past, it maybe time to look at a change in cultural practices. Cultural practices that typically are beneficial with respect to turfgrass disease management are raising the mowing height, frequent sand topdressing, light, frequent nitrogen applications, alternating mowing and rolling, lightweight rolling and dew removal techniques.

These have all been shown to have a positive impact on turf quality and limit disease development. Yet, they have not completely eliminated the need for chemical prevention of turfgrass diseases. In this article I would like to highlight the research that is being conducted on lightweight rolling and its effect on dollar spot, preventative fairy ring control and preventative and curative control of dollar spot.

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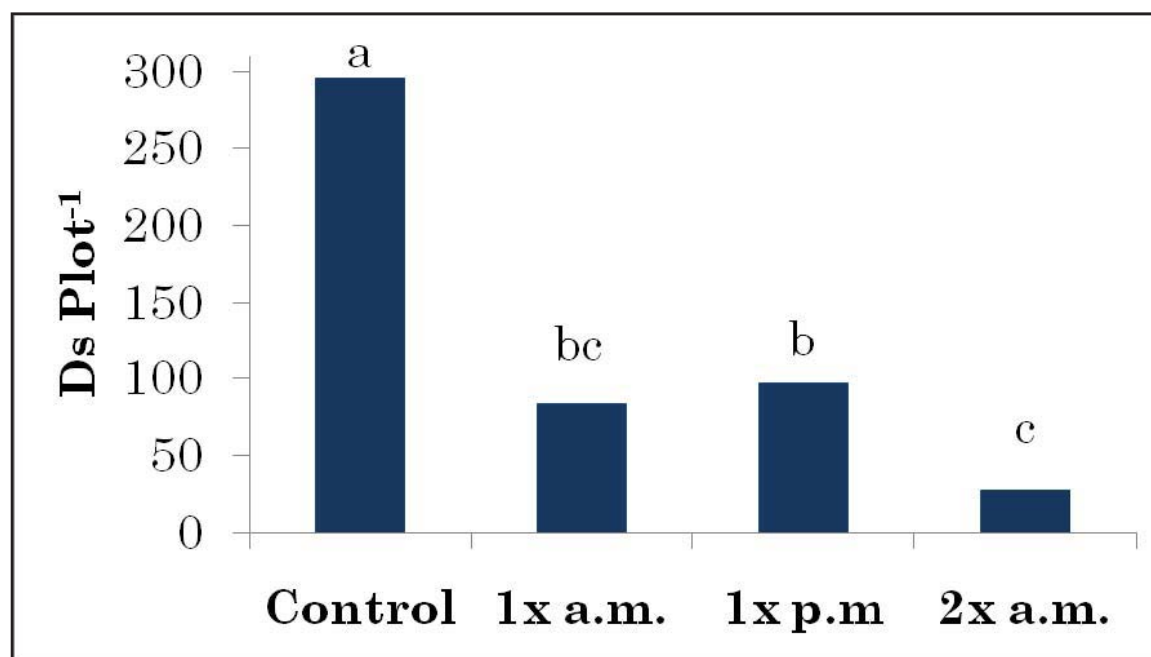
## Lightweight Rolling and Dollar Spot Development:

Paul Giordano, Dr. Joe Vargas' student at Michigan State, recently sent me a Power Point presentation summarizing his results on the effects of lightweight rolling on dollar spot development. This study was conducted on a USGA specification putting green that was a mixed stand of annual bluegrass and creeping bentgrass.

The treatments consisted of a non-rolled control, rolled once in the morning, once in the afternoon and twice in the morning. Plots that received a rolling treatment received rolling 5 days a week and the plots were walk mowed 6 days a week. They found that simply rolling once in the morn-

ing reduced dollar spot intensity significantly; specifically a 68% reduction in dollar spot development was achieved (Figures 1 and 2). This could have major implications on the duration of fungicide protection or on how many fungicide applications are made. Paul and Dr. Vargas have two theories to explain their results: 1) removal of dew and guttation water 2) a change in volumetric water content which in turn affects the microbial population.

I will let them explain the theories, in the meantime I think this is very interesting research. It is also a perfect example of using preventative cultural practices for disease management.



**Figure 1.** Impact of lightweight rolling on dollar spot intensity in Michigan. Plots were mowed six days a week and were either rolled once in the morning or afternoon or twice in the morning. A non-rolled control was included as well. Data courtesy of Paul Giordano, graduate research assistant at Michigan State under the direction of Dr. Joe Vargas.

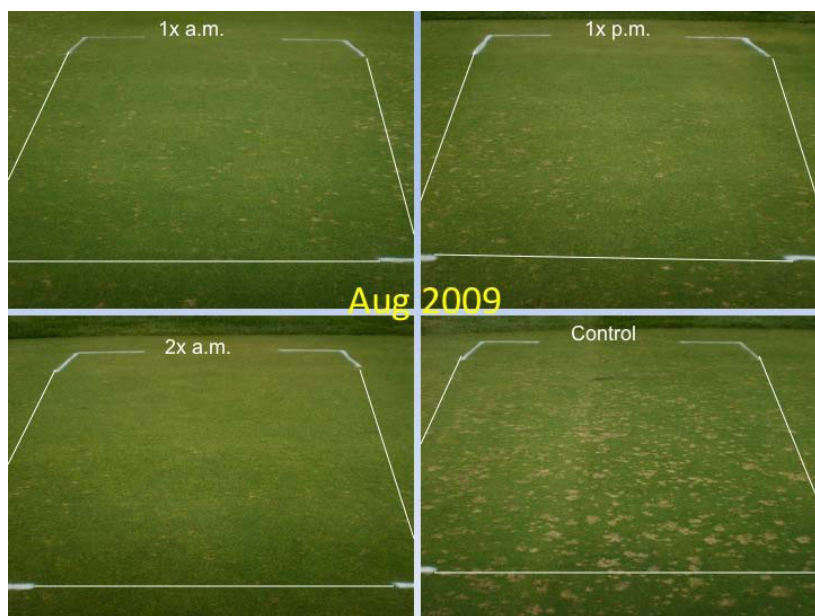
## Preventative and Curative Control of Dollar Spot:

It is true that in some years preventative control of dollar spot may waste multiple applications of fungicides, yet until we understand this pathosystem better they are a necessary evil. Why? Controlling dollar spot curatively is a major headache! It is an uphill battle and one I think you cannot win. In order to effectively control dollar spot, high rates of fungicides on short intervals are often required. We have seen this at the OJ Noer each year in our trials. Although we allow for rampant disease development before initiating our trials, many other programs across the country report difficulties controlling dollar spot curatively. In our trials we can reduce dollar spot intensity significantly, but we cannot eliminate symptoms completely. Furthermore we are limited in the products that we can use to curatively control dollar spot (Figure 3). Another factor to consider with curative applications is the development of fungicide resistance. The

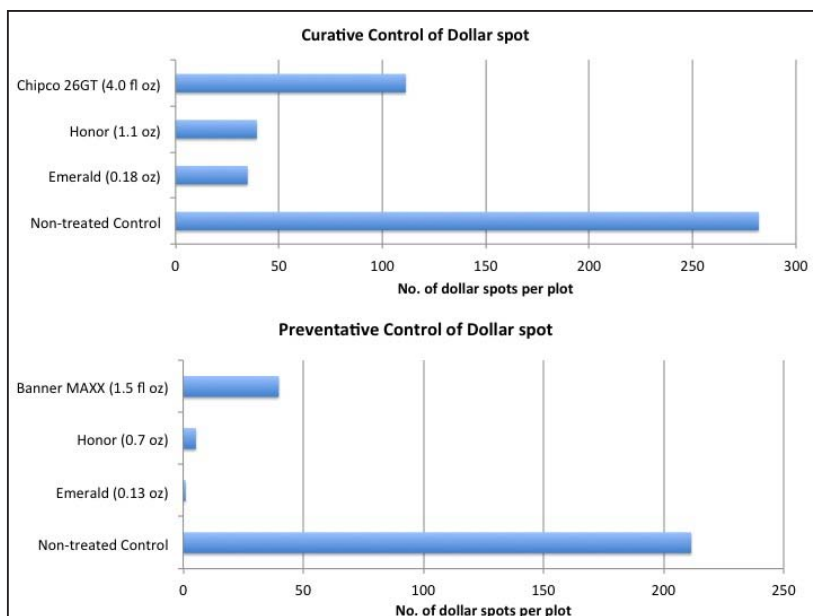
general consensus among the fungicide resistance community is using curative control measures is more a selection pressure on the population than preventative applications. Remember higher rates are typically necessary for curative control and on shorter intervals

Therefore, with respect to dollar spot I think it is best to attack that bug preventively. In order to time preventative applications accurately we have developed a model that predicts dollar spot development in the field using relative humidity. My collaborator, Dr. Damon Smith, and I are close to finalizing our model experiment and publishing that work soon. Once it is published we plan to undergo a national validation of the model and to develop tools to deliver this product to turfgrass managers. I know there are still some skeptics out there, but this model performed well in Chicago last year and we plan to test it in Milwaukee this year.





**Figure 2.** Images of the four rolling treatments included in the MSU rolling study. Notice the stark reduction in dollar spot development, just with a single rolling each orning. Images courtesy of Paul Giordano, graduate research assistant at Michigan tate under the direction of Dr. Joe Vargas.



**Figure 3.** Comparison of curative and preventative dollar spot control at putting green height. Study was conducted at the OJ Noer Turfgrass Research and Education Center and the data was collected on August 2, 2010 for both the preventative and curative study. Note the differences in control and the amount of product used.

## Preventative Fairy Ring Control:

The main reason I wanted to write about preventative control of turfgrass diseases was to remind golf course superintendents about the best practices for the prevention of fairy ring. Fairy ring seemed to be a major issue throughout the Upper Midwest in 2010 in part because we had nice warm temperatures and a lot of moisture. This is another disease that is an absolute bugger to control curatively. In most studies the only product that has consistently worked is Prostar. However, in order for that product to work, the affected area should be spiked before hand and a wetting agent should be tank mixed with the product.

Another option is to attack these fungi preventively. Research at NC State and the CDGA has demonstrated when fungicides are applied when 5-day average soil temperatures in the top two inches are between 55 and 65°F preventative control can be achieved. Moreover, more fungicides demonstrate activity when they are applied preventively.

Products like Headway G, Bayleton FLO, Heritage TL, Prostar, Tartan, Tourney and Triton FLO showed excellent suppression of fairy ring when applied preventively (Figure 4). When attacking fairy ring preventively, tank mixing a wetting agent with the fungicide is not required. In some cases a wetting agent mixed directly with the fungicide during preventative control reduced efficacy.

Wetting agents are required however, if fairy ring fungi are attacked curatively. Although this list is pretty extensive, you may need to do a little bit of experimenting to see what works at your facility. There are 3 to 4 common fungal species that incite fairy ring, but 50 more are associated with fairy ring development. This is important because we do not know the response of each species to fungicides.



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