Using the Smith-Kerns Dollar Spot Model
May 15, 2018

We use different models to help make agronomic decisions in turf. There are growing degree day models to help control *Poa* seed heads, schedule plant growth regulator applications, and anticipate emergence of pests. Even simple models, like soil temperatures windows to schedule PRE herbicides or fungicides to control root diseases, help us use data to improve the efficiency of turfgrass management. And while all models are wrong to some degree, models are generally better than calendar-based applications. That's because every year is different, so what's appropriate one year could by a tremendous waste of money the next year.

Plant pathologists have released a new model for predicting dollar spot outbreaks this past winter. Dr. Paul Koch, at the University of Wisconsin-Madison, spoke about its development at conference last January. They use the five day average temperature (Celsius) and five day average relative humidity to predict the probability of a dollar spot outbreak.

To effectively use the model at your facility, you'll first need to determine your risk action threshold. This is the "Outbreak Probability" where you chose to treat for dollar spot. The exact threshold is specific to your course, and will depend on several factors including grass species and cultivar susceptibility to dollar spot (i.e. Crenshaw vs Declaration), the microenvironment, and your tolerance to dollar spot. The researchers suggest 20% as a good action threshold starting to point.

To use the model, apply a fungicide that controls dollar spot once the action threshold has been surpassed. The model results can then be largely ignored until the fungicide has worn off (usually 7 to 28 days depending on the active ingredient(s) in the product). The dollar spot model does not tell you when a fungicide is going to wear off/stop working. However, it does provide guidance if another fungicide application is required once a fungicide stops control the disease. Figure 1 is from Dr. Koch. It shows how the dollar spot pressure has increased and triggered a fungicide application on 5/22. Then the model output is

Figure 1. A hypothetical example of how to use the Smith-Kerns Dollar Spot Model to schedule fungicide apps.

ignored until 28 days after the application. At that point, the model probability is below the action threshold of 20%. The next application would then be applied on 6/27.
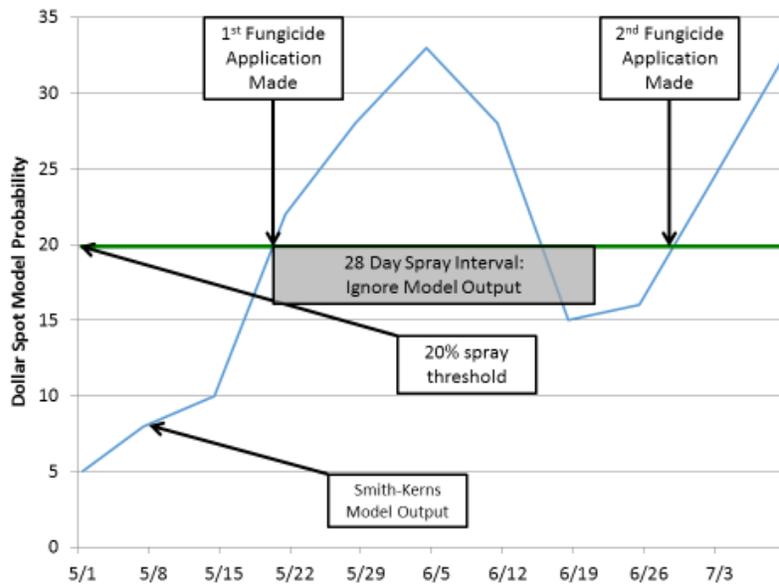
Dr. Koch has a nice website with more information about how the model is calculated and an excel sheet to calculate the current pressure: https://tdl.wisc.edu/dollar-spot-model/. We also have the current dollar spot pressure in GreenKeeper. It automatically calculates the current outbreak risk, the action threshold for your course, and if the turf is protected but a fungicide or not. The weather data is automatically generated by Weather Underground (Figure 2).

Try to be more precise with your dollar spot control applications this summer. The Smith-Kerns Dollar Spot model is a step in the right direction. It could possibly save you an application or more in 2018.

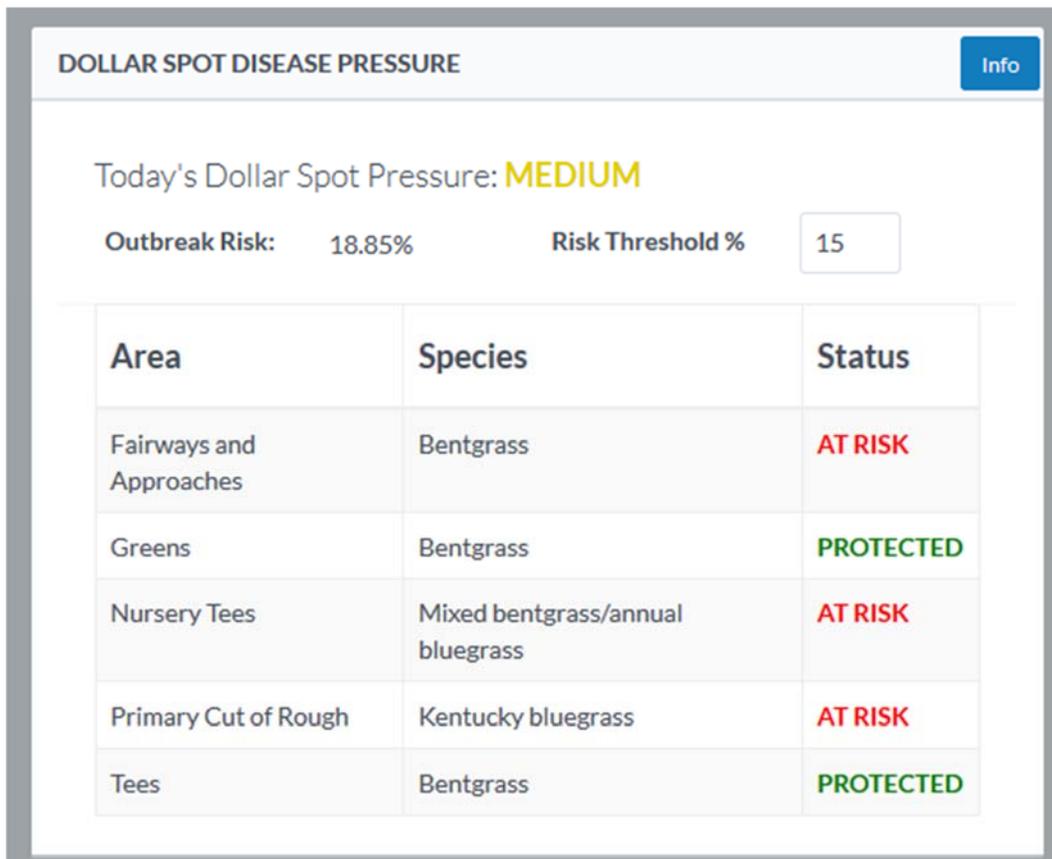***Bill Kreuser, Assistant Professor and Turfgrass Extension Specialist, wkreuser2@unl.edu***

Figure 2. An example of the Smith-Kerns Dollar Spot model display in GreenKeeper. The Greens and Tees are "Protected" because a fungicide was applied to protect to areas recently.