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## EDUCATION REVIEW

Charles Anfield, CGCS, *Heritage Bluffs Golf Course*



# 1.17.12

*The MAGCS January Meeting was held at Seven Bridges Golf Club, hosted by Don Ferreri. Paul Koch: Assistant Researcher and Turfgrass Diagnostic Lab Manager made the trip down from the University of Wisconsin Madison to make his presentation titled, "Know Your Fungicides". Paul and staff have done research using ELISA (enzyme-linked immunosorbent assay) to measure fungicide degradation.*

His latest research project was on "what happens to snow mold fungicides over the winter?" The fungicide product of his research featured the common snow mold fungicide of iprodione. His goal was to measure the degradation of the fungicide with snow cover and without snow cover.

Fungicides are "broken down" by numerous ways.

1. They become soluble in water
2. Sorption and desorption
3. Volatility
4. Plant uptake
5. Biotic degradation: temperature dependent
6. Abiotic degradation: photodecomposition, pH

Paul's research was focusing on the effects of abiotic degradation. He used ELISA tests which uses mammalian

immune system based technology. ELISA tests are very commonly used in medical research. Some examples are: home pregnancy test kits, HIV tests and pesticide detection. Samplings were taken weekly, two for each plot, treated and untreated.

The results were variable over a two year period. One conclusion he came to was there was not much difference between plots with snow cover and plots without snow cover. One the challenges he faced was determining at what point the concentration of the fungicide no longer effective for control of snow mold. He figured and used 100 PPM as this critical point at which fungicides are no longer effective for disease control. An interesting take away was that microbial degradation was determined to be the key factor in fungicide decomposition and not photo-degradation.

*(continued on page 25)*







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So the big question becomes: do we reapply fungicides over the duration of the winter period?

The answer is not so simple with outcomes dependent upon the inputs.

Pros: can increase protection, less chance of spring disease

Cons: waste of money, spray rig traffic can cause excessive damage, granular and systemic products need to be watered in and translocation is required.

Paul also worked on summer fungicide degradation. Once again, the fungicide tested for was iprodione.

Reasons for Loss of Disease Control during the summer:

1. High disease pressure: hot, humid
2. Decomposition factors: rates, coverage, intervals
3. Depletion of protection through mowing practices

Paul focused on the depletion of protection using ELISA test kits, testing different rates on treated and non-treated plots.

His research found that high temperatures are the key component that causes fungicides to degrade faster.

His recommendations from his research:

1. Shorten spray intervals during hot weather
2. Microbial degradation is faster during warmer weather and is the key factor
3. Plant metabolism is higher during warmer weather
4. Extend treatment intervals during cooler temperatures
5. There is loss off of leaf tissue from mowing practices

### Final thoughts:

- Could disease control have as much to do with the “knockdown” power of a fungicide application as fungicide degradation and the time it takes the disease to go through its lifecycle and reproduce?
- There are many more fungicides, insecticides and herbicides to test for.
- There is so much variability from environmental conditions. Ex. Shade, soil moisture, course to course...
- What is the effect of PGR's, fertilizer, and irrigation?
- We need to continue to develop mathematical models and create inexpensive field test kits for “real time” pest concentrations.
- For more information contact Paul at the diagnostic lab: [www.tdl.wisc.edu](http://www.tdl.wisc.edu)

The next presenter for the day was from Leslie Lowry, Environmental Engineer from the Illinois EPA. Her presentation was titled “General NPDES (National Pollutant Discharge Elimination System) Permit for Pesticide Application Point Source Discharges.”

Legislation was passed in October of 2011 associated with Clean Water Act to enact new application restrictions associated with “Waters of the State.” This may or may not affect your golf course. Waters of the State are considered water that is hydraulically connected. In layman's terms it is any water feature that runs off your property into the surrounding water shed. This does not include self-contained ponds or lakes with no discharges. Drainage ditches that may be wet or dry during certain times are considered waters



of the state. This law covers residues from treatments that include insecticides, weed and algae control, animal control and forest areas. Areas outside the scope of the law are off target drift, agricultural storm water run-off and irrigation return flow.

A NOI (Notice of Intent) permit is required to be applied for prior to applications. It can be submitted electronically and include a signed original document. The permit is good for 5 years and covers all aspects of the property if application includes all future pesticide application sites. Ideally (one) NOI is made for each property or application district. An Endangered Species Consultation is also required prior to applications. This can be done on the NOI permit process through an existing data base. If you do not exceed EPA threshold for specific pesticide product use and area restrictions this is all you will need to do. If you plan on exceeding the EPA thresholds you will also be required to submit a PDMP (Pesticide Discharge Management Plan) after the NOI permit is submitted. Record keeping will also be required.

Leslie gave a very technical presentation and this summary is designed to provide basic information about the new law. For specific detailed information visit: [www.epa.state.il.us/water/permits/pesticide/index.html](http://www.epa.state.il.us/water/permits/pesticide/index.html)

This education session was also video recorded. If you would like a copy, please call Luke at 630-243-7900 or drop him an email at [luke@magcs.org](mailto:luke@magcs.org) and he will send one out to you. -OC