

Part 2

# PLANT HEALTH

of a 3-part series

*Golfdom* is proud to once again partner with BASF Professional Turf & Ornamentals to bring readers the 3-part Plant Health series. In part one of the series, written by associate editor Molly Gase, we took a look at the meaning of Plant Health and how superintendents are using this concept to succeed at courses in Georgia and Michigan. This month, contributing editor Chris Lewis writes on new tools to help turf survive extreme temperature swings. The final part, by *Golfdom* editor-in-chief Seth Jones, will appear next month and focuses on the results of the upcoming BASF Media Summit in Durham, N.C.

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# Fun in the Heat of Summer

Hot summer days and warm summer nights will be a welcome relief after the miserable, long winter that affected most of the country. Greens and fairways are still recovering from the unrelenting snow, ice, cold and rain, even in late May.

The southeast alone experienced wild temperature swings — 90



BY JEFF VANNOY

degrees one day, 40 degrees the next — making it hard to know what to pull out of the closet when you head out the door. We're now hoping our weather

stabilizes and we can finally pack up the sweaters.

Turfgrass, on the other hand, doesn't have the luxury of pulling on a sweater when the temperatures drop. It has to withstand whatever nature throws at it — and look good doing it. Fortunately for long-suffering courses everywhere, BASF introduced two new blockbuster fungicides this year: **Lexicon Intrinsic brand fungicide** and **Xzemplar fungicide** which contain the active ingredient Xemium, a new and versatile SDHI (succinate-dehydrogenase inhibitor). Xemium is a highly mobile and very effective active ingredient that provides both

## Better roots for stress tolerance



Root comparison between grass untreated, treated with Lexicon Intrinsic brand fungicide and a competitive azoxystrobin. Location and photo: BASF Corp., Research Triangle Park, N.C.

preventative and curative action on key turfgrass pathogens.

Lexicon Intrinsic brand fungicide is the newest addition to the Intrinsic brand fungicide line, known for promoting denser roots and improved photosynthesis — the foundation of healthy, resilient turf. Lexicon Intrinsic brand fungicide is a combination product based on the proven product, **Insignia SC Intrinsic brand fungicide** plus the new fungicide active, Xemium. It is the longest-lasting, broadest spectrum turfgrass fungicide to date (treating more than 28 diseases). These plant health benefits help turf withstand mechanical and environmental stresses that are thrown at it every day.

The additive effect from adding Xemium to Insignia SC Intrinsic brand fungicide has led to improvements in the following key areas of Turf Health:

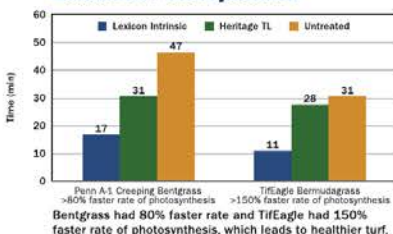
1. Advanced Disease Control
2. More Efficient Photosynthesis
3. Higher Stress Tolerance

Superintendents across the country are trialing these new fungicides and reporting terrific results. When failure's not an option, Lexicon Intrinsic brand fungicide offers excellent protection for turf and reputations. BASF continuously invests in research and development to bring superintendents new tools to effectively and efficiently maintain impeccable playing conditions. The introduction of these two new products, featuring the innovative active ingredient Xemium, provides excellent solutions for consistent superior disease control. Stress-tolerant turf is what really makes for fun in the heat of summer.

Jeff Vannoy is Senior Product Manager, BASF Professional Turf & Ornamentals



### Enhanced Photosynthesis



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*Always read and follow label directions.*

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# MANAGING

BY CHRIS LEWIS

To help superintendents better manage extreme variations in weather conditions and temperatures, BASF has released its most recent lineup of fungicides – Lexicon Intrinsic and Xzemplar.

**L**et's face it. Golf is an unpredictable game. One moment you may be sinking every putt you look at and then, for no reason, your putter cools off, as you struggle to even make a three-footer. The same can be said of the superintendent profession, particularly concerning two ever-changing variables: weather conditions and temperatures. One week, as the result of a drought, you may have to adjust the timing of your sprinkler systems, and then, suddenly, the floodgates open, forcing you to protect your course from excessive rain showers and saturation.

With regards to extreme variations in weather conditions and temperatures, 2013 may have been the epitome, at least in recent memory. On one hand, approximately 75 percent of the western United States experienced at least a moderate drought last summer, ac-

ording to the Climate Prediction Center. On the other hand, residents of the Northeastern, Southeastern, and Midwestern United States regularly encountered below-average temperatures — and steady rainfall.

In fact, Atlanta reportedly had its fifth wettest year on record in 2013, according to *The Atlanta-Journal Constitution*, while Los Angeles documented its driest year since 1877, when rainfall was first tracked, according to the *Los Angeles Times*. Unfortunately, the unpredictability in weather conditions and temperatures has continued this year, with cities such as Chicago and Detroit reporting near-record snow accumulation in January and February.

Since even short periods of mild stress can affect your turf quality, what can you do to protect your course from Mother Nature's volatility this summer? How can you reduce the impact of extreme variations in weather

From left to right below: Prestwick CC (first 3), and Leewood GC.



# EXTREME WEATHER

conditions and temperatures so your turfgrass remains healthy all-season long?

“Superintendents need to have a plan,” says Kathie Kalmowitz, Ph.D., Market Development Specialist for BASF Professional Turf & Ornamentals. “The weather patterns for the last few years have shown that we do not know exactly when or what will happen, but something will likely occur that negatively affects superintendents’ turfgrass.”

The solution? Kalmowitz suggests integrating fungicides into your course management regime to ensure you have proper protection prior to unexpected, extreme variations in weather conditions or temperatures.

## A new lineup of BASF fungicides

To help ease the burden of turfgrass protection, BASF revealed its two latest fungicide offerings — Lexicon Intrinsic and Xzemplar — this February at the 2014 Golf Industry Show in Orlando. Both fungicides are comprised of fluxapyroxad, an active ingredient that blocks an enzyme complex known as succinate dehydro-

genase. As a result, mitochondrial respiration is inhibited, energy is no longer produced, fungal cells stop growing, and disease development ceases.

Both of the fungicides were registered by the U.S. Environmental Protection Agency in late 2013 and will be available for purchase this year, after state registrations are approved. In the meantime, the fungicides have already been distributed to courses throughout the United States, so that superintendents can conduct trials.

“I recently received some Lexicon Intrinsic test material from BASF and, at their request, have initiated a trial of the material on one of the greens,” says Paul Kaufman, superintendent of Myrtle

Beach, S.C.’s Prestwick CC. “My team and I applied the material on February 28th

to see how long we could go before we saw any disease pressure. I will say that the green we applied the fungicide to showed a very nice green-up, especially considering it was unoverseeded TifEagle in mid-March.”

By combining two renowned fungicides, branded as Xemium and Intrinsic, Lexicon Intrinsic will offer some new



Paul Kaufman

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PHOTOS COURTESY: PRESTWICK CC; HERMEN VAN DUNK



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benefits that have not been observed to the same degree with BASF's two other Intrinsic fungicides, Honor and Insignia. Featuring the broad spectrum foliar fungicide pyraclostrobin, along with fluxapyroxad, Lexicon Intrinsic will also be able to withstand stresses like extreme temperatures and weather conditions, as it refines the vitality of turfgrass, increases photosynthesis, and strengthens grass roots. In addition, it is labeled for 26 different diseases in all, including brown ring patch, dollar spot and pythium root dysfunction.

"It will be a particularly excellent treatment for dollar spot on cool-season putting greens and fairways, while also protecting against brown patch and anthracnose," says Jim Kerns, Ph.D., Assistant Professor and Extension Specialist for Turfgrass Pathology at N.C. State University.

In the past, Kaufman and his staff have used a variety of fungicides with plant health benefits, as they have improved Prestwick CC's turfgrass appearance and vigor, despite variations in weather conditions. For example, in 2012, he began to apply Honor Intrinsic four days prior to his core aeration of greens, resulting in a near immediate healing of aeration



"I saw an increase in the fibrous roots, leading to deeper root structures," says Van Dunk, New York CC.

## **WORKING FROM THE ROOTS UP**

*To protect Sugar Creek CC's bermudagrass from diseases, Chris Lineberger applies a strobe family fungicide*

**A**s the superintendent of Sugar Creek CC, Chris Lineberger knows firsthand just how extreme weather conditions can be in Sugar Land, Texas, a city located about 20 miles southwest of Houston. From droughts to torrential downpours, as well as regular variations in temperature, Lineberger never knows what to expect.

"Our weather is so different here, as most years our grasses never go completely dormant," says Lineberger. "We have a lot of highs and lows in the winter where the grass will start to shut down, so to speak. Then the temperatures will suddenly rise, then fall back down, and then rise again."

Consequently, three diseases tend to remain prominent on the course every year — leaf spot in the early spring, fairy ring and bermudagrass decline in the summer.

"Decline usually hits in the heat of the summer when we are doing our most aggressive cultural practices," he says. "The only problem then is that the times in which we have our most extreme, hot temperatures are when our grasses need the most cultural practices."

Luckily, Lineberger has a solution: to apply a strobe family fungicide prior to any aggressive cultural practices. He has found that, whenever he has to be more aggressive with bermudagrass, due to extreme weather conditions and temperatures, fungicides offer additional protection against future pathogens for which ever turf remains and surrounds the diseased grass.

Although he intends to continue to use fungicides in the future, he stresses that any one specific product will not be a "cure all" for diseases.

"I think every situation and every location will vary. What might work for us, might not work for everyone," he says. "I believe it takes a complete package to maintain plant health. You should always know when your stress periods occur and then add in a plant protectant, when necessary."

He adds, "During stress periods, my team and I always work from the roots up. The stronger you are down below, the better you will be up top."



**Chris Lineberger**

holes. Consequently, he is now intrigued by the potential of Lexicon Intrinsic.

"The effect of the Honor Intrinsic has been so pronounced that it has become 'standard operating procedure' to apply the fungicide prior to core aeration, or at any time we felt the greens could use a little something to get through tough conditions," he says. "However, from everything we have been hearing about Lexicon, it seems it will be like Honor Intrinsic on steroids, in respect to its plant health benefits."

Meanwhile, Xzemplar is also anticipated to offer broad turfgrass benefits. Developed through carboxamide technology,

Xzemplar will provide superintendents a key ingredient that BASF's Emerald did not — the Xemium component, which features the active ingredient fluxapyroxad, to protect turfgrass from susceptible fungi development. By attaching to spores and vegetative mycelia present at the time of application, fluxapyroxad inhibits fungal cell growth during the earliest stages of disease development, so that future infections are avoided.

### **Preparing for the future**

While working as a superintendent at Eastchester, N.Y.'s Leewood GC, Hermen

*Continued on page 28*

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For use in disease control and plant health on golf course turfgrass

Active Ingredients:

pyraclostrobin, carbamate acid, [2-[[[1S-4-chlorophenyl]oxy]methyl]propanoic acid]	15.5%
1,1-dimethyl-3-(2-propylbutyl)urea, triethylamine, butoxide, 3-sulfonycarbonylbenzimidazole-2-thione N-(4-chlorophenyl)-2-yl-	11.2%
Other Ingredients	73.3%
<b>Total</b>	<b>100.0%</b>

2.5 US oz (0.0706 kg) of pyraclostrobin in 1 oz of Honor® Intrinsic™ brand fungicide      EPA Est. No. 51035-GA-001  
0.112 oz (0.00318 kg) of Insecticide in 1 oz of Honor® Intrinsic™ brand fungicide      EPA Reg. No. 7069-268

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If used as intended in accordance with the label, this fungicide is not expected to be harmful to humans or animals. If you do not understand the label, read additional information for you, as listed below. If you do not understand the label, read additional information for you, as listed below.

See label for complete First Aid, Precautionary Statements, Directions For Use, Conditions of Sale and Warranty, and state-specific and/or use site restrictions. In case of an emergency endangering life or property involving this product, call day or night 1-800-832-HELP (4357).

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"The effect of the Honor Intrinsic has been so pronounced that it has become 'standard operating procedure' to apply the fungicide prior to core aeration," says Kaufman, Prestwick CC.

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"Trapper" Burgess Van Dunk IV generally used fungicides like Honor Intrinsic one week prior to, as well as one week after, the aeration of tees and greens, with well-evidenced benefits.

"In following this routine over a couple of seasons, I saw an increase in the fibrous roots, leading to deeper root structures," Van Dunk says. "The stronger root structure actually strengthened the plant in the midst of the extreme summer conditions we had last year, and I am confident the greens and tees will remain healthy."




Hermen Van Dunk IV

Van Dunk, a second-generation superintendent, transferred to Spring Valley, N.Y.'s New York CC in February (see sidebar), but will continue to utilize fungicides in the future.

"I expect New York CC will experience the same results that Leewood did. In fact, I have been working with management personally to ensure fungicides will be available on the property," Van Dunk says.

Kaufman agrees that Prestwick CC will also need to continue utilizing fungicides, especially to defend the course's ultradwarf bermudagrass from extreme weather conditions.

"During periods of stress and various weather conditions, I know the course is holding up well when it is not only surviving, but thriving," says Kaufman. "Prestwick thrives with assistance from fungicides, which control and prevent common diseases. To me, the decision to purchase fungicides has been easy to justify — and will continue to be." 

Michigan-based writer Chris Lewis has written for The Golf Channel, Colorado Golf Magazine and Desert Golf Magazine among many others. Lewis is a member of the Golf Writers Association of America, and this is his fourth article to appear in *Golfdom*.

## TRANSITIONING THE EASY WAY

Van Dunk's slam-dunk tips on a successful career transition

**T**he fear of change is simply not an option for Hermen B. Van Dunk IV. It never has been. ¶ Since working under veteran superintendent Ed Walsh, CGCS, as a college intern at Monroe, N.Y.'s Mansion Ridge GC, he has transitioned to a variety of new career opportunities throughout the last 16 years. After graduating from college, he worked as an assistant at Denville, N.J.'s Rockaway CC and then accepted a new offer a couple years later, as an assistant at West Nyack, N.Y.'s Manhattan Woods GC.

Two years later, he was hired as an assistant superintendent at Eastchester, N.Y.'s Leewood GC, where he served for another two years before he was hired as the head superintendent when he was just 29.

So Van Dunk's friends and family were not entirely surprised when he announced he was transitioning to yet another job earlier this year, after working at Leewood for nine years.

"It was time for a new challenge and for a change," Van Dunk says. "I simply needed to move in a different direction."

To continue to grow as a person and as a professional, Van Dunk began working at Spring Valley, N.Y.'s New York CC as its superintendent back in February. Since the transition occurred, he believes he has already grown on multiple levels — personally, socially and professionally.

"I have grown personally because the change in location and job has allowed me to look only to myself, fully trusting in my abilities to succeed at a new course," Van Dunk says. "I have also grown socially, as I have been forced to open up to new people and to set up a new dynamic with new personalities, with hopes of forging new bonds."

He adds, "And professionally I have grown, knowing my successes at Leewood were recognized by my peers in the area, which ultimately led to my new job."

Considering his past successes with career transitions, Van Dunk offers the following tips to superintendents who may also be contemplating a transition in the near future:

**Take full advantage of technology.** "Try to stay in touch with past — and new — contacts as often as possible through text messages, phone calls, Facebook, e-mail and Twitter," says Van Dunk. "Remember, if you do transition, never shut any doors. I have continued my relationships with many Leewood members and employees by using every technological application I possibly can."

**Network at neutral courses.** "Attend local networking meetings, and invite fellow superintendents to play golf at neutral golf courses, where you can learn about new career opportunities and potentially meet other contacts who can introduce you to golf course owners and managers," he says.

**No fear.** "Never be afraid of change, as fear is often people's worst enemy," he says. "Consider your options when deciding on which transition is best for you and your family."





# Super Science

## // TEN YEARS LATER

### SOIL ANALYSIS BEFORE, 10 YEARS AFTER EFFLUENT IRRIGATION

Yaling Qian, Ph.D.

To ensure sustainable and affordable water supplies, more and more golf courses are using effluent water for irrigation. It is well documented that some effluent water sources have marginal quality with relatively high levels of nutrients and salts.

Long-term and continued use of effluent water may lead to changes in soil chemical and physical properties. To determine the degree of soil property changes, we compared soil and turfgrass samples collected at the initiation of, and ten years after, effluent water irrigation at several golf courses in the Denver area.

Ten years ago, prior to the start of using effluent water for irrigation, we collected soil and plant baseline information at several golf courses. All the sampling sites were marked physically (by burying a metal rod at each sampling spot) and with GPS systems. The original soil samples were archived for measurement comparison.

Baseline data is available for both soil and turfgrass. In 2014, 10 years after the start of effluent water irrigation for these sites, we will re-sample those sites. Soil cores will be collected about one foot from the baseline soil sampling locations.

Samples will be taken at different depths at 0-7.9, 7.9-15.7, 15.7-23.6, 23.6-31.5 and 31.5-39.4 inches below soil surface. The 10-year long-term evaluations in real world conditions will be very valuable. At the same time, we will determine turfgrass and landscape plant quality and mineral composition prior to and after 10 years of irrigation with effluent water.

Yaling Qian, Ph.D., is in the Department of Horticulture at Colorado State University. Dr. Qian can be contacted at [yaling.qian@colostate.edu](mailto:yaling.qian@colostate.edu) for more information.



Golf course irrigated with effluent water

PHOTO BY: YALING QIAN

## NEWS UPDATES

### MATT CIMINO, CGCS, JOINS CIVITAS

The Civitas team welcomes superintendent Matt Cimino, CGCS, to their team. Cimino joined the Civitas team May 5, 2014 as Sr. Technical Services Advisor in the Southern USA, supporting the Professional Turf team.

"We're very pleased to have Matt joining our Civitas team," says Oriana Persechini, lawncare category portfolio manager, Petro-Canada Lubricants. "We feel his experience, knowledge and professionalism make him a perfect fit for our brand and we're excited to work together to help grow Civitas across the Southern US."

While in the field, Cimino has had ample experience growing and constructing championship-quality courses from Ohio and Virginia to Missouri and Texas.



"Turf maintenance is my life. As a previous superintendent, I know the issues, the hours, the schedules as well as the feeling of accomplishment of delivering high quality

turf," says Cimino.

As part of his new role, Cimino will be responsible for providing technical support for the Southern states, handling golf courses and turf in the warm season region.

PREPARING FOR WINTER INJURY SHOULD BE CONSIDERED A YEAR-LONG PROCESS THAT ENCOMPASSES A NUMBER OF DIFFERENT CULTURAL PRACTICES."

Sam Bauer

(see full story on page 30)

//MELTDOWN

# Winterkill in the crosshairs

## *Cultural considerations for preparing greens for winter*

By Sam Bauer, Brian Horgan, Ph.D. and Lindsey Hoffman, Ph.D.

*Editor's note: This is the first of two articles by the authors on turf survival during winter.*

**T**he 2013-2014 winter has gone down in the record books as one of the worst. Depending on your location, conditions may have included severe and prolonged freezing temperatures (aka: polar vortex), temperature fluctuations above and below freezing, excessive rainfall followed by freezing temperatures

and significant snowfall events from December through March.

With this in mind, it is important to understand the multitude of factors contributing to winter injury and the cultural practices that can be implemented to minimize damage.

The term "winter injury" is a catchall term that refers to damage caused by a number of different factors including crown hydration, anoxia and gas buildup, desiccation, low temperature fungi and freezing temperatures. These

factors may act alone or in concert causing damage to plants, and are collectively recognized as winterkill. Regardless of the type or number of stresses affecting the plant, the occurrence of winterkill is directly attributed to death of the turfgrass crown.

Management strategies should be implemented throughout the year to promote crown survival during and following winter months. This involves minimizing or eliminating conditions that would favor the development of

PHOTO 1



An ice melting study at the University of Minnesota's Turfgrass Research, Outreach and Education Center, conducted this last winter. These manufactured ice blocks were treated with 20 different salt and solar absorption products to evaluate ice melting potential. More detail on this study can be found at: [www.turf.umn.edu](http://www.turf.umn.edu).

PHOTO BY: ANDREW HOLLMAN