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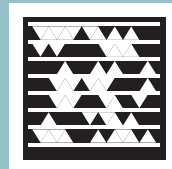
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Learning more can lead to more than just growing your turfgrass. It can lead to growing your résumé, your credibility and your intellect.

My best learning experiences include my college years (B.A. Geology), military service (U.S. Coast Guard), time in graduate school, and experience teaching junior high science.

Eventually, I made my way to the golf industry. I was on construction and grow-in crews in the early days and began my Disney golf career with a shovel and a rake edging bunkers. Along the way, I became a CGCS and served as president of the Central Florida and Florida GCSA chapters.

Each one of those experiences gave me an opportunity to master new skills. And some gave me very formal training. At each stop along the way I met peers who brought their own knowledge and experience to the classroom and workplace. The color and richness of those personal experiences gave form and perspective to the academic facts and figures of whatever specialty or task I was involved in at the time.

Whether your turf knowledge comes from work experience on the job with a respectable mentor or from some of our highly regarded turf programs at universities around the country, you're learning the most current information available. In today's world, technical knowledge continues to change rapidly with research and development, so continuing education in turf management and business is a must if one is to be successful.

Whether you are promoted in-house or graduate magna cum laude, the reality check comes when your duties and responsibilities change and you have to blend agronomy, communications and business management skills as a team leader or department head.

Back in the day, we looked to books for information. Now, with the advent of local professional chapters, networking between superintendents and suppliers became another reliable source of information, along with the Internet, blogs, Facebook, Twitter and smart phones.

But technology is not a substitute for human

The More You Know the More You Grow

BY JOEL JACKSON



DON'T SEQUESTER YOURSELF FROM OPPORTUNITIES TO MIX AND MINGLE. TAKE ADVANTAGE OF UNIQUE LEARNING EXPERIENCES OUTSIDE OF GOLF.

contact and bonding, which is so important in our profession. And it is equally important to learn proper business and social etiquette. Today's technology enables us to be increasingly mobile and find information quickly, but nothing says sincerity and good manners like a returned call or a hand-written thank you note. Making a good impression as a well-mannered person also builds your collateral as a worthwhile go-to person.

At local, regional and national meetings and conferences, opportunities abound for making new contacts who may one day be the connection you need for a job change or promotion. To help you stay on top of your game, the latest technical information is available in education sessions. But it's at receptions, banquets and private dinners that you can rekindle old friendships and develop new ones.

Don't sequester yourself from opportunities to mix and mingle. When you're trying to balance your family life and work, take advantage of unique learning experiences outside of golf to expand your interests. At the very least, you should attend as many local chapter meetings and events as possible to keep up with the latest news and recharge yourself.

We all know superintendents and suppliers who are in the know and have built a network of contacts from coast to coast. They didn't attain their knowledge simply by working hard from dawn to dusk. They built their careers on a multi-faceted desire for deeper knowledge and personal growth. They did it by being actively involved in their associations, meeting new people and welcoming the opportunity to learn new things. You can too.

Certified Superintendent Joel Jackson is executive director of the Florida GCSA.

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One of today's hot topics is the development of nutraceuticals — a combination of the words “nutrition” and “pharmaceutical.” Food used as medicine has the benefit of combining desirable therapeutic effects with reduced side effects associated with traditional pharmaceutical drugs. Food was used thousands of years ago as medicine, but it wasn't until the 1980s that the modern nutraceutical era was born in Japan.

Plants have been known for centuries to have medicinal properties. One of the earliest reports of that dates back to the preeminent Greek philosopher and doctor Hippocrates, who encouraged women in the fourth century B.C. to chew willow leaves to relieve pain during childbirth. Over the centuries the extract from willow was purified and eventually called salicylic acid. The demand for this natural painkiller led to the development of synthetic versions that were relatively inexpensive. In 1899, Bayer marketed an over-the-counter version of salicylic acid known by its common name: aspirin.

Although not new, the interest in salicylic acid and other plant-beneficial hormones has only taken place in the last 20 to 30 years. Salicylic acid is important as a plant signal, or hormone, that stimulates the plant's defenses in response to a pathogen attack. In an oversimplification of the plant/disease interaction, plants recognize pathogens and mount a defense through the production of specific proteins by host-resistant genes. If the plant lacks the corresponding pathogen-resistant gene, it cannot activate its defense mechanism quickly or intensely enough to fight off the pathogen. The signaling effect of salicylic acid becomes apparent when a turfgrass plant has a hypersensitive, early defense response to a pathogen attack. A hypersensitive response occurs at the point of pathogen entry, where the plant sacrifices cells around the infection point, producing a lesion in an attempt to isolate the pathogen.

Not a lot is known about the impact of salicylic acid on turf. Nearly all the research has been done on dicots. Research on monocots in general and turf specifically is limited.

Activating the Plant's Defenses

BY KARL DANNEBERGER



ON TURF, WHERE RESEARCH IS MUCH MORE LIMITED, BENZOTHIADIAZOLE HAS SHOWN SOME PROMISE.

However, the application of salicylic acid, its derivatives, or associated hormones, which are known as plant activators, are commercially available in Europe and other places. Plant activators like acibenzolar-s-methyl (benzothiadiazole) have been tried on rice, wheat and several vegetables. When applied topically, benzothiadiazole has shown some protection against diseases like rust and powdery mildew.

On turf, where research is much more limited, benzothiadiazole has shown some promise. In a study conducted at Kansas State University, researchers found that benzothiadiazole applied during the season could significantly reduce dollar spot compared to an untreated control on various creeping bentgrass cultivars. Applications of benzothiadiazole had to be made throughout the growing season. Although dollar spot was reduced by the applications, no effect was found in reducing brown patch.

With increased government and environmental pressure on this industry to reduce pesticide use on turf, the battle to control diseases will need to be fought a number of different ways. One plan of attack is to activate the plant's own defense mechanism by applying the appropriate plant activator (plant and disease dependent) that can reduce the incidence and severity of disease.

I believe we will see the use of plant activators tested, which is already underway, in combination with fungicides that may extend the period of control, and/or reduce the fungicide rate. Although that promise is there, sound science will be required in order for us to know what the advantages and limitations of plant activators are.

Karl Danneberger, Ph.D., Golfdom's science editor and a turfgrass professor from The Ohio State University, can be reached at danneberger.1@osu.edu.

THE 2011 PLANT HEALTH SERIES



GOLFDOM AND BASF Professional Turf & Ornamentals are proud to present the third and final part of the 2011 Plant Health Series, “A Super’s Touch,” by Anthony Williams, CGCS, CGM of Stone Mountain (Ga.) Golf Club.

Williams does with plant health what superintendents across the country do with anything they consider for their golf courses: He scrutinizes it. As he says, with so many products on the market these days, a superintendent must distinguish the innovations from the impostors.

In **part one** of the series, we took a journalist’s approach, utilizing *Golfdom* staff to re-

port on the advent of the plant health label in the turfgrass industry. Appearing in the April issue, we wrote about the label’s beginnings in the crop industry, and how it broke into the turf industry in early 2011.

In **part two**, Clark Throssell, Ph.D., took a

scientific look at plant health, interviewing turf researchers about what they’re seeing in labs, greenhouses and on golf courses around the country. That story appeared in our May issue and is still available online at www.golfdom.com.

And now, in **part three**, we round out our plant health coverage with the perspective of a superintendent.

The award-winning Plant Health Series would not be possible without the support of BASF Professional Turf & Ornamentals. Our hope is that this effort has produced useful information for our readers, information that will enable them to keep their turf healthier.

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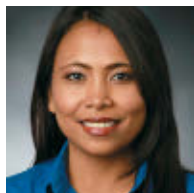
Practical Science For Stress

Few understand more clearly than golf course superintendents that living organisms, including turfgrass, are dynamic by nature. Superintendents spend much of their careers trying to understand and anticipate turfgrass needs to preempt negative reactions, while promoting positive reactions. Maintaining healthy turfgrass is a balancing act that demands constant attention to stresses and practical science-based tools.

Stress is inevitable, whether it's environmentally or mechanically induced. Disease, extreme temperatures or drought, low-mowing heights, reduced nitrogen rates and aeration create stress events in plants that require the use of more plant energy. When turfgrass uses energy during a stress event, it becomes further compromised and more susceptible to stress — creating the potential for a downward spiral.

If the turf is healthy, it's better able to endure the stress. Superintendents can't control Mother Nature but they can create better environments for turf growth using sound agronomic practices and practical tools to reduce stress, improve quality and manage pests, including disease.

Superintendents cannot afford to lose turfgrass in today's competitive environment. To help them improve turfgrass environments, BASF provides advanced



BY THAVY STAAL

tools, such as Insignia SC Intrinsic brand fungicide and Honor Intrinsic brand fungicide. Intrinsic brand fungicides are the industry's first fungicides labeled for disease control and plant health benefits, which help reduce the stress effects on turfgrass.

At BASF labs, researchers see turfgrass health improvements in test tube turf growth plots as well as in analyses that measure plant health at the biological level using microscope analysis and WinRHIZO tron root imaging and measurement studies.

On the course, superintendents can expect to see Intrinsic brand fungicide disease control and plant health benefits in the form of improved stress tolerance, plant vitality and healthier root cores, the literal foundation of healthy turfgrass. However, superintendents should keep in mind that just looking at root cores does not always show a visual difference between treated and untreated turf. An analysis utilizing WinRHIZO provides the most comprehensive results because measurements including

total root length and root length density can be derived.

BASF worked with numerous golf courses in 2010 to demonstrate these benefits and using WinRHIZO technology for analysis was included in the demonstration protocol.

Rotated within an integrated pest management plan, Intrinsic brand fungicides support the metabolic systems, defense responses, growth efficiency and overall health of turfgrass. It's practical science that gives superintendents plant protection value and peace of mind when stress arrives.

Learn more about Intrinsic brand fungicides at www.Intrinsic-PlantHealth.com and other BASF Professional Turf & Ornamentals innovations by visiting www.better-turf.basf.us. ■

Thavy Staal is marketing manager for BASF Professional Turf & Ornamentals.

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“My root system is better than yours.”



“The secret to my good green looks? Longer roots under drought stress. Research shows that **Honor® Intrinsic™ brand fungicide** has disease control and **plant health benefits** that make me more efficient and better able to withstand stresses like extreme temperatures and aeration. So I'll keep looking good—and so will you.”

Intrinsic brand fungicides don't just fight disease; they give turf the resilience to endure stress. Find out more at IntrinsicPlantHealth.com.

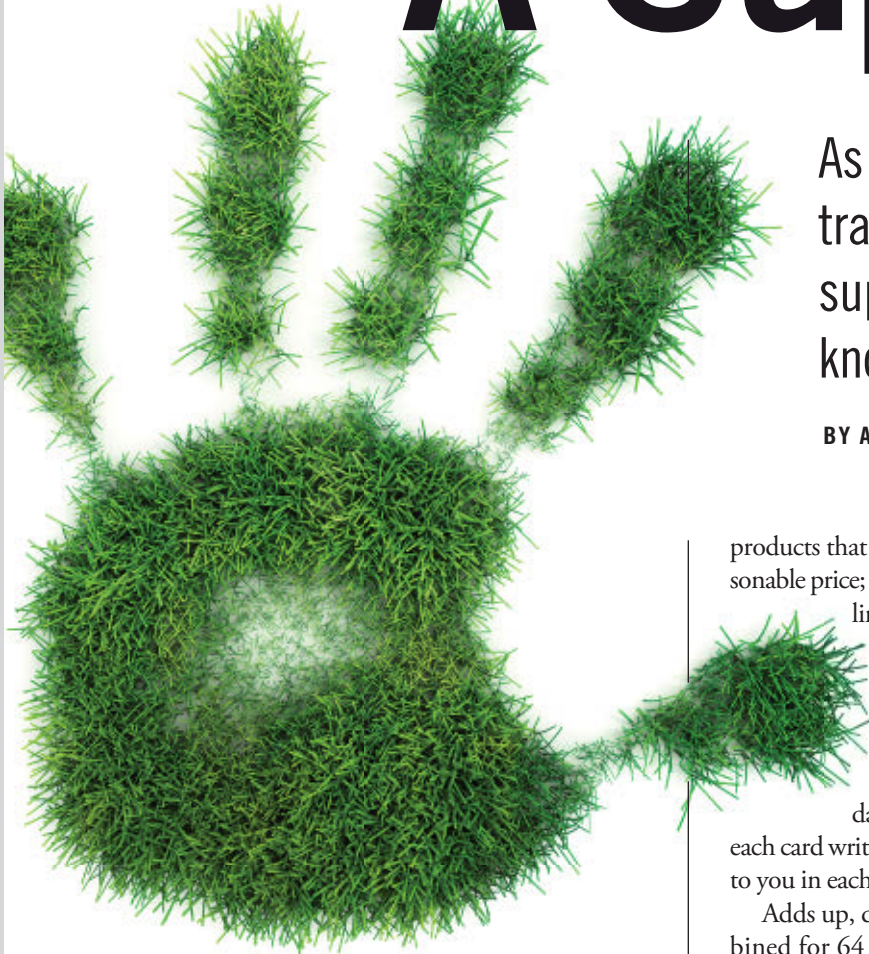




A Super's

As plant health gains traction in the industry, superintendents gain knowledge on the subject.

BY ANTHONY L. WILLIAMS CGCS, CGM



believe a successful superintendent strives to create synergy in everything.

The current golf economy has placed incredible pressure on superintendents to maximize results with minimal resources. The fact is that every golf/turf maintenance operation is taxed with the axiom, “do more with less.” This has made synergy even more important. Synergy is a method of finding ways to make the sum of the individual parts equal more than the collective individual value.

Superintendents, researchers and vendors are finding this synergy in the area of plant health chemistry.

Superintendents have always been interested in

products that can protect agronomic resources for a reasonable price; they know that their personal job security is linked directly to it. I was taught an interesting test to gauge the number of products that are put before a superintendent for review: First, keep all of the business cards that are presented to you by sales representatives for a set time — say, 60 days — visible on your desk. On the back of each card write the number of products that were pitched to you in each meeting.

Adds up, doesn't it? My record is 18 cards that combined for 64 different products. This is proof that in today's golf industry the superintendent is given more products and program options than ever. The key is to be able to analyze and quickly tell the difference between innovations and imposters.

Let's look at plant health products and scrutinize their value and benefits based on the way a superintendent would: by evaluating the product label, research and personal testimonials from successful superintendents who have used these products in their programs.

Show me the label

One of the current hot topics around golf maintenance facilities is the growing list of plant health products that offer a true synergy of benefits — more than just basic disease/

Touch

pest control. Their chemical structure creates additional value by helping improve overall plant health.

It's an easy claim to make, but successful superintendents demand a little more proof before putting a product — and their livelihood — out for review.

The first thing a superintendent or other professional pesticide applicator evaluates is a product's label. Remember, the label is the law and can often be the first commercial sign of a true innovation.

Last year BASF Turf and Ornamentals launched its Intrinsic brand of products specifically labeled for plant health in the turf and ornamental market. The brand included two products: Honor and InsigniaSC. This year, Bayer Environmental Science received EPA approval to add plant health to two of its fungicides — Interface and Reserve.

Let's take a closer look at the Insignia SC label. The

contents of the label itself are familiar and include details on approved uses, rates (0.4 to 0.7 fluid ounces per 1,000 square feet for turf uses), personal protection equipment required, emergency numbers, compatibility and precautionary statements. Notably, front and center on the label you find the words, "For disease control and plant health in turfgrass and ornamentals." This simple statement has spawned some debate from superintendents, researchers and others about whether the target is disease control or plant health.

Andy Hutchinson, superintendent at The Falls Resort and Golf Club in Kentucky, has a practical approach to the subject. "The question is not whether you are targeting disease control or plant health," he says. "The question is, since you can impact both with a single affordable application, why would you debate which aspect is greater?"

Continued on page 20



Seeing is believing, and David Phipps is seeing plant health results at Stone Creek Golf Club in Oregon City, Ore.



Continued from page 19

Show me the research

There are several interesting research projects that have supported the plant health label and benefits claims and the impact these products have on the maintenance of high quality turfgrass. Initially, L.T. Lucas, Ph.D., a turfgrass pathologist at North Carolina State University, observed that in his field experiments where Alette (fosetyl-Al) and Fore (Mancozeb) were applied regularly to creeping bentgrass greens throughout the summer there was marked performance of the turf beyond mere disease control.

He also noted that to achieve maximum results, applications must begin prior to the onset of stress conditions. Scientists at Bayer took this information further by evaluating the components of Alette and Fore. They found that a color pigment in Fore combined with Alette produced similar plant health results. Chipco Signature (aluminum tris) has been documented to help manage summer bentgrass decline (summer stress complex) by improving plant health. It also increases a plant's stress tolerance. Bayer now offers several products containing StressGard, which was developed from this earlier work on Chipco Signature. StressGard protects plants from UVB radiation and thus helps improve plant health — especially during stressful periods.

Some of the most interesting work on plant health from a pathology standpoint was done by Dr. Bruce Martin at Clemson University. I have been fortunate to attend several seminars taught by Dr. Martin. Martin believes that a compound that has a positive impact on plant health should promote better rooting and activate natural plant defenses. This would be used to precondition plants/turf prior to the stress period to better cope with prolonged stresses.

In short, an ounce of prevention, or in this case preconditioning, can be worth a pound of cure. In 2009 Martin began a series of tests commonly known as programs 13, 14 and 15. All three programs consisted of eight separate fungicide applications, applied at label rates on 14-day intervals beginning in late May.

The programs are the same, except each features a different strobilurin fungicide; program 13, Insignia; program 14, Heritage TL; and program 15, Disarm. The tests were conducted in Florence, S.C. The summer of 2010 in Florence was one of the most stressful on record but gave rise to the success of program 13. Program 13 did see decline in late summer but maintained acceptable turfgrass quality.

At Northland CC in Duluth, Minn. (right), superintendent Chris Trita-baugh has seen better snow mold control and faster green-up than ever.

Anthony Williams says shared knowledge continues to help Stone Mountain (Ga.) GC enjoy better plant health.



The reasons for the success of program 13 are still being evaluated. Martin theorizes that Insignia offered superior control of *Pythium volutum* or *pythium* root rot/ root dysfunction and suppression of other minor pathogens. *Volutum* is very aggressive in periods of prolonged heat and stress. I have had some experience with it and agree with Martin; Insignia should be a critical part of any program aimed at controlling *Pythium volutum*.

Martin's research has consistently shown that fungicide programs that include two applications of Insignia provide more uniform, denser turf while providing equal disease control compared to programs that include other strobilurin fungicides. The synergy in Insignia in relation to plant health is hard to analyze but equally hard to ignore.

Share your results

Superintendents have a long history of apprenticeship and mentorship. There is a unique brotherhood that exists between superintendents, so much so that in my experience I have never reached out to another superintendent for help or advice and not been overwhelmed with genuine responses. This is a rare thing in the green industry, where many people see other professionals as competition and hold their insights as a competitive edge.

It is the advantage of shared knowledge that will give us a deeper, more practical and personal look into plant