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# SUPER SOLUTIONS

New **“plant health”**  
benefits are popping up  
on more product labels

GCI finds the  
**NEW FORMULA**  
behind the  
trend





Fungicides with additional plant health benefits promise to not only help handle invading fungi, but promote an environment that encourages more resilient plants and better root growth.



Jim Myers has been waging a hard-fought war on anthracnose.

As superintendent of The Plateau Club in Seattle, Myers says

anthracnose is the most persistent and serious summer pathogens many courses in the Pacific Northwest face in a season.

"We see anthracnose all season long, that and pink [snow mold]... and we're over 60 inches of rain so far for the season, so you can imagine the disease pressure," he says. "We spend well over \$50,000 on fungicides annually. True, that's not as bad as the Midwest guys fighting pythium, but it's a pretty good chunk of change for us guys in the Northwest."

This past season, though, Myers had a new weapon in his arsenal; a super serum, so to speak, that treated the anthracnose and boosted turf health. Early on, Syngenta asked Myer to do some protocol work at The Plateau Club on its recently released Daconil Action fungicide product. In addition to the fungicide chlorothalonil, the chemistry contains acibenzolar, a purported plant health booster. Myer split a fairway and a green and treated half with the Daconil Action. After six applications every 14 days the turf on the treated side was noticeably more disease-resistant.

"There certainly was a notable difference," he says. "The turf on the treated side seemed healthier."

Many new fungicide products and formulation have entered the turf market recently that claim secondary "plant health benefits." While most suppliers define these benefits differently, in a broad sense these products have an added punch that treats the problem and boosts

the turf's well being.

Are these products all they claim to be? GCI looks at the secret identities of a few of these super serums so you can come to your own conclusions.

**STRESS BUSTER.** Syngenta isn't the only supplier with a new plant health booster in the fungicide market. BASF's Intrinsic fungicide turf products – Insignia and Honor – contains the strobilurin pyraclostrobin. BASF research has found secondary plant health benefits to turf – a sort of stress buster – in addition to its primary use as a pathogen control, which the company has begun to market this season.

"We position Intrinsic as a disease-control product first and we don't stray from that," says Kyle Miller, BASF senior technical specialist, turf and ornamental products. "However, we do see an ability to protect against stress – cold and hot, wet or dry and mechanical – which can really help the turf."

In addition to fighting disease pressure, Miller explains BASF's research has seen pyraclostrobin contribute to improved turf root systems during times of stress. "If the turf is in perfect health, we don't see a significant difference between our turf and someone else's turf that was treated with another product," he says. "What we are seeing is that when stress is imposed on the turf, this benefit kicks in."

Miller equates that benefit to receiving a vaccination. "Everyone's healthy until the flu hits," he says. "I've got the vaccination and you don't, therefore I'm protected. That's a little bit of what's going on here."

As a result, BASF has positioned the plant health benefits of the Intrinsic

products for the times when superintendents know their turf is going to be under extreme stress. For example, around the Fourth of July when Mother Nature historically turns up the heat in the Midwest, or in preparation for tournament play.

"Our positioning is, here are the times when, traditionally, your turf is under the most stress," Miller says. "Why don't you slot it into your rotation during those periods of time – like before a big tournament when you've lowered your mowing height and you know your greens are going to get extra play. Your turf is going to get stressed... there's no two ways about it. Therefore, you want to time your applications around this."

Miller warns, though, there is a danger overuse could lead to a resistance effect, and it's an issue they address with superintendents when they talk about the product's benefits. "Our stance is no more than two applications back to back," he says. "That comes from the Fungicide Action Committee (FAC) guidelines for the use of strobilurins. We've had one of our university colleagues jump up and say that by using this product for plant health people will begin to use it more and even may overuse it. Our position on how we want people to use it hasn't changed."

"When you look at the economics of these products, they're on the high end because they're broad-spectrum products," Miller adds. "Unless you have a blank check, you can't afford to overuse these products."

**PROTEIN POWER.** While they both promote plant health as a secondary benefit, both BASF and Syngenta go about it in two very different ways. BASF's Intrinsic products'



added turf health benefits are based solely on those provided by the fungicide, pyraclostrobin.

Syngenta's fungicide, Daconil, doesn't provide any benefits to the turf beyond its properties as a contact fungicide. It's the addition of acibenzolar that kick-starts protein production inside turf. "The plant basically produces the proteins that build up resistance to multiple diseases responsible for defense mechanisms," says Bob Goglia, Syngenta brand manager. "The acibenzolar builds up these proteins without the plant having

to be sick or stressed to do it. Then you have a healthy plant that has never been injured that is able to ward off diseases and stress."

Overuse and resistance effects are not issues with Daconil Action, Goglia says, because acibenzolar services as the plant health booster. Goglia stresses that Syngenta's product isn't a one-application silver bullet. Rather, it's a preventative approach that takes time to realize the plant health benefits.

Myer can attest to this fact. During his fairway test at The

Plateau Club, Myer witnessed outbreaks of necrotic ring spot develop on both the treated and untreated sides. "On the right side – the untreated side – the necrotic ring spot was worse than it was on the left side, which was treated," he says. "Necrotic ring spot was not listed on the Dac Action label. So I was able to see some definite improvements with the necrotic ring spot on the left side compared to the right side, which I can attribute to the protein boosters that help the turf get some control against

the necrotic ring spot."

**CONTINUED GROWTH.** Of course, mixing fungicides with plant health products is not an entirely new trend. Several Bayer CropScience fungicides, like Triton and Reserve, have carried the company's StressGard Formulation Technology since it was introduced in 1994.

"It was the discovery that we had with our first product that we brought to the market which was Signature, which was used for the prevention of pythium," says Jimmy Johnson, Bayer's fungicide business manager, market manager for golf. "We discovered that probably the larger benefit the plant was getting was from the standpoint for summer stress. We had an effect on anthracnose, but the active ingredient itself doesn't actually control for anthracnose.

"From there, we started taking this formulation technology and screening other active ingredients to see if we got similar results. Not necessarily doing the same thing, but affecting the plant as it relates to turf density, quality and being able to handle different stresses."

The products have the most benefit when summer stress is already coming up. A fungicide like Reserve, with DMI and chlorothalonil, can sound like a bit of a long shot in the heat of the summer since the mixed chemicals could have a PGR and thinning effect on turfgrasses. However, the addition of StressGard helps protect against those effects, says Johnson, where similarly formulated products can leave turf dazed while the fungicide combats disease.

"We look at it as going beyond traditional and classical plant protection," says Johnson. "We're evaluating it from the plant physiology structure and

## PLANT HEALTH BENEFITS WORTH IT FOR TURF?

**T**hough mixing fungicides and added plant health benefits is a growing trend for suppliers, not every supplier is getting behind it. Adding to overall plant health is a bonus, says Mike Riffle, manager of research and development at Valent, but if the turf is well-cared-for, it's already going to be healthy.

"If you're out there controlling the diseases in your turf, the turf quality is high already without considering any kinds of turf health benefits," says Riffle. "If you have a really good fungicide program, you've got good turf quality. If you don't control the diseases, you're not going to mask that with any other additives. You don't even have a job if you can't control the diseases."

But it's not that the additives are acting as a mask at all for the fungicides. It's more about being able to say with certainty what the additive is doing, and what the plant can handle on its own, says Jim Goodrich, product sales specialist for professional turf and ornamental products for PBI/Gordon.

"I think more needs to be put into it scientifically as to university research to determine what's being done that the plant's not already doing itself," he says. "I think it's a really positive benefit for supers if in fact through replicated studies we can find out what the ingredients are doing."

University studies are helpful, says Riffle, but not the final word when it comes to proving the real usefulness of these products.

"The turf health goes hand-in-hand with controlling the pests and diseases in that crop," he says. "If they're controlling the diseases in the plot they're testing, the turf quality is going to be excellent and anything else you add in there is going to be really difficult to determine exactly what

it's doing."

Not only should the benefit be consistent, it should be a clear, visible difference in the turf, says Riffle.

"You have to be able to go out to the research plots and be able to say, 'That plot clearly has the advantage over the one next to it,'" says Riffle. "At least the way I see these technologies right now, it's what I'll call a marginal increase in turf quality. I'm not being disparaging at all in what they're trying to do. I just don't know that the technology is advanced enough that we can see a clear difference in turf quality."

Superintendents are looking for more visible results and effects they can see clearly in action on the course, says Goodrich.

"The thing about the industry of golf course superintendents is that everyone is well-educated," he says. "These guys rely on companies to give them valid information they can use themselves. We're seeing more and more of the superintendent saying 'Show what this has done,' for these products."

As budgets tighten, the superintendent is pickier about taking chances with a product, says Riffle.

"It depends on what it costs and if they see a clear benefit to their turf," he says. "The superintendent is not going to read some flyer and say this may help your turf. They'll try it, look and evaluate. They have to be able to see the value of what they're spending their dollar on. If they find something that's striking, the industry will take notice."



Superintendents should test fungicides to find a program that suits the course.



processes and how different inputs and materials affect those plant structures, not just the control of a disease.”

As opposed to just using fungicides to make healthy plants, using the combination fungicides and plant health products can help build the ability of the plant to fight off disease in the first place, he says. As restrictions and budgets get tougher, they could help supers do more protection with less product.

“It’s going beyond just your standard controlling dollar spot, brown patch, things that we already expect the fungicides to do,” says Johnson. “If you minimize the stresses, that in itself is going to have a reduction of disease pressure. We’re taking a really in-depth look at managing water, plant nutrients, the fungicides and insecticides themselves, as regulations are having more impact in some areas in the tools that they can use. It’s one thing to take these products and just ‘add this too’ and spend more. What we’re talking about is spending less or changing your input and relying on other technology to actually make up for that or even do more and better.”

Though the mixed fungicides themselves could cause resistance over time, the inclusion of the StressGard technology in several products is meant to help supers keep turf protected throughout the season, he says.

“These are fungicide-based products and we are definitely

a proponent of rotating fungicides,” says Johnson. “This allows the super to choose the products they need to take care of the disease

aspect and rotate those products to make sure they don’t have resistance concerns and at the same time continue to protect the plant from heat and cold stress and things like that.”

**A GREEN FUTURE.** And not all added plant health benefits come by means of a chemical additive – SipcamAdvan is pushing for a bio-heavy approach with products like Echo Ultimate ETQ, which includes a pigment meant to protect turf from the effects of UV sunlight. It shades the turf like sunblock, which helps below the surface, says George Furrer, the company’s director of specialty business.

“We have a product that’s got fungicide plus some pigment technology that reduces the effect of UV sunlight,” says Furrer. “When you look at university trials side by side, the whole difference there is plant health. Disease control is the same from one to the next, but the overall turf health is much greater in the product with the plant health benefits. They’re finding out that plant health and root health have an awful lot to do with what you’re seeing on top at the putting surface.”

But the pigment isn’t a change to the fungicide itself, just an addition to products that already work, as suppliers try to make life easier through each new mixture, says Furrer.

“We have our fungicide with chlorothalonil that’s about 50

years old that is basically the fungicide used today,” he says. “I think it’s absolutely a defining strategy for companies like us. There aren’t any more home runs to be discovered or developed in terms of straight fungicides. What this has done is forced everyone to look for ways to make that standard control better or unique.”

But while the price for products with plant health benefits is usually higher, it could make turf care cost less overall while providing more solid coverage, especially as suppliers find more ways to focus their fungicides.

“We’re at the point now

where the paradigm for suppliers or developers of products has changed,” says Furrer. “Every super, I don’t care whether he’s at a top course, has to find a way to do more with less. Application costs are all greater than usual, and budgets to manage that same amount of turf is flat or down from three or four years ago.

“They’ll be able to eliminate some of those things they’re using today just for plant health benefits. And with the added benefits, you can maybe use less. If you can condense for applications into three, that’s huge for a golf course super.” GCI

## THE SCIENCE OF BOOSTING PLANT HEALTH

Dr. Tom Hsiang, turfgrass pathologist and professor of environmental sciences at the University of Guelph

**What are fungicides with plant health benefits supposed to do for turf?** They enhance the natural resistances of the plant to respond to attacks. In some cases, they may work in the sense of fending off the attacker. It means there’s a chemical that causes the plant to produce resistance compounds that are going to make the plant better able to handle an attack. We might use the term, “resistance activators.”

**Is there any significance to when the fungicide is applied?** Well, if the plant is already under stress or weakened because of normal use conditions, and you give it more of a chemical that causes it to produce more resistance compounds, you are redirecting some of its normal energy to resistance chemical production, which might make it less likely to survive. Let’s use this analogy: humans, we have drugs to stay healthy. But if somebody’s very sick and you start giving them very potent drugs, those things may make them even worse and may actually end up hastening their death.

I think it’s the timing issue. If something’s under a lot of stress, you don’t put it under more stress. Probably before that would be a good time to get their defenses built up. But it’s not like once they produce it, it lasts throughout the growing season. The product produces certain compounds that allow it to fight off infection more, chemicals that fight off other invaders like fungi.

**Will more fungicides continue in this trend?** I think it’s going to come that way. The societal trend is toward decreased fungicide use in the cities and much more restricted usage. This wave is not something that can be fended off or pushed back, regardless of the science behind it. I think they’ll continue to use them as they’re promoted as environmentally friendly.

The governments have accepted the data that they’re not considered hazardous to humans. I’m not distrustful of them at all, but companies always promote the benefits of things and may not mention all the downsides that have been observed in research.