COVER STORY

By Kyle Brown & Mike Zawacki

SUPER SOLUTIONS

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

GCI finds the NEW FORMULA behind the trend
im 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..."
A GREEN FUTURE. And not all added plant health benefits come by means of a chemical additive—SipcamAdvantage 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.”

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.”

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.