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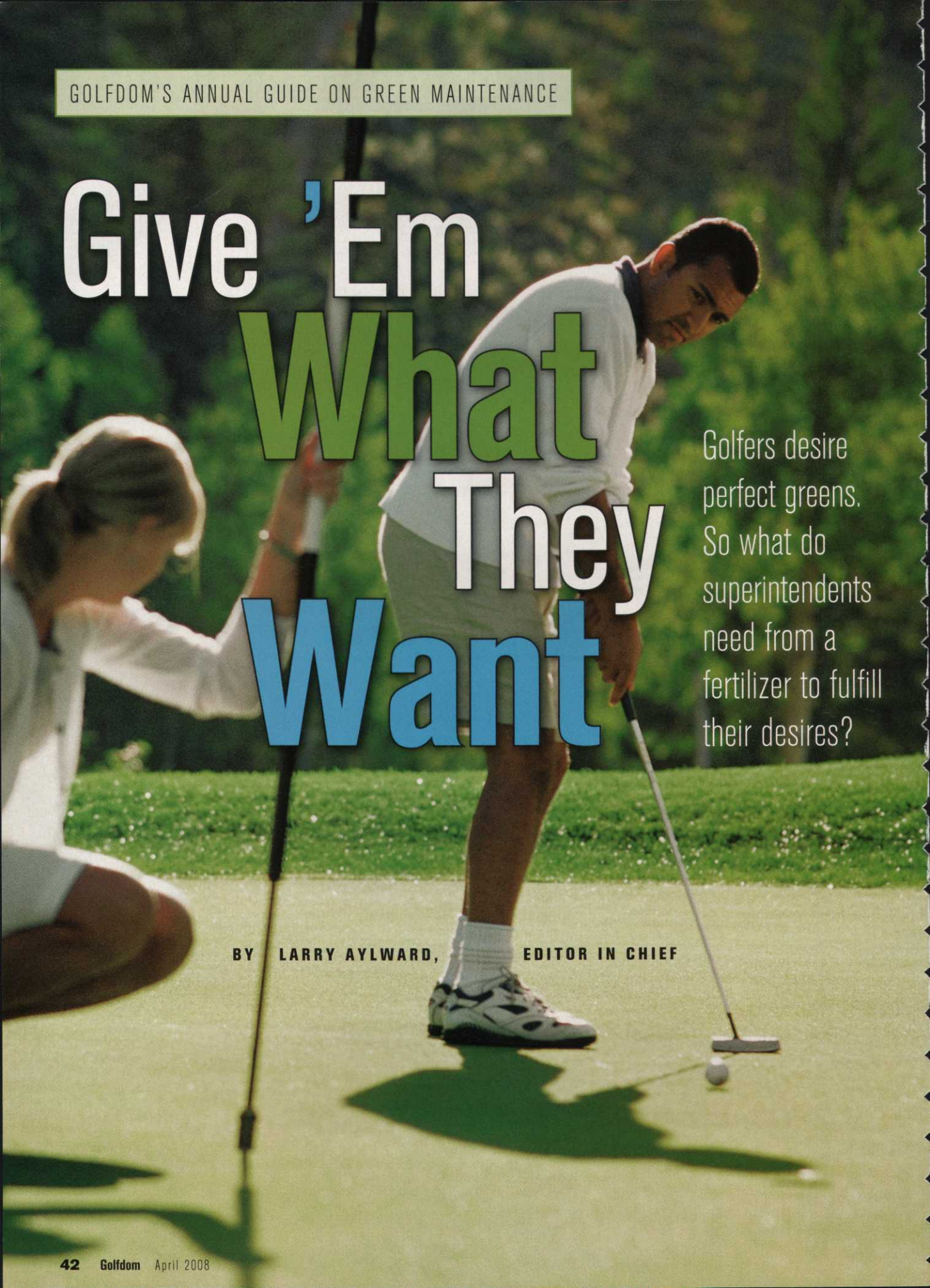
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Give 'Em What They Want



Golfers desire perfect greens. So what do superintendents need from a fertilizer to fulfill their desires?

BY LARRY AYLWARD, EDITOR IN CHIEF

The putting greens are where a lot of green — as in mucho dinero — is invested in the golf course. The putting greens are also where golf course superintendents are often graded for their agronomic abilities.

“His greens play just perfect,” is what a superintendent *hopes* Joe Golfer says about this course’s putting surface.

Obviously, fertilizer applications play a major role in how putting greens play. So how does fertility influence a golfer’s perception of putting surfaces? We posed that question to Mike Bandy, marketing manager of turf products for The Andersons.

“Golfers are looking for great greens — measured by rich color, high density and optimal green speed,” Bandy says.

OK, now that we know that, what do superintendents want and need fertility-wise to give golfers those great greens?

“They want their nutrition programs to create and maintain turf that is healthy and consistent, despite high traffic and the limitations in irrigation, labor and other resources,” Bandy says. “They also want products that are predictable, cost-effective, labor-effective, easy to apply, environmentally friendly and invisible to the golfer.

“That’s a pretty long list,” Bandy adds.

But not too long that Gary Grigg, an agronomist for Grigg Brothers, can’t add a few more things to it. Superintendents also want fertilizer that improves soil structure, contains less salt, has controlled and long-lasting color response, and has no or low ash content. And Grigg says superintendents also desire products that won’t stink up the place.

Obviously, fertilizer manufacturers have their work cut out for them to help superintendents appease golfers’ demands for everything Bandy and Grigg have listed. Of course, that’s what makes their jobs challenging.

As superintendents know, there are two ways to get nutrients into the plant — one is through the roots and the other is through the foliage. Despite which method superintendents prefer, they must keep some key things in mind when fertilizing their greens in their aim to provide the best putting surfaces possible.

Don’t flush

It’s when golf course greens are on the fringe of their demise that they pose the most remarkable putting surface, says Carmen Magro, senior agronomist and director of education and training for Floratine Products Group.

“Anybody who has been a superintendent knows that the best putting performance conditions are when the grass is literally on the edge of failure,” says Magro, a certified superintendent.

Alas, golf course greens on the ropes must be revitalized eventually. And this is where fertility programs come in. But be careful; it can be a tricky process. Even if your greens appear in the most dire of straits, be careful not to overreact. For instance, the last thing you want to do is fertilize for a flush of growth, Magro says. The most important thing is to meet the needs of the turf according to demands, such as the turf’s transition from winter to spring.

“If you flush the foliage with growth, not only can’t you keep up with the mowing, but ball roll will be affected throughout the day,” Magro says. “You don’t want any spikes in growth — not during the day and not during the week. Every nutrient works in balance with others. When all are balanced and at optimum levels, [superintendents] can manage through the toughest conditions the environment and their demands impose.”

The best fertility program is one that allows the turf to have what it needs at all times, Magro points out. Having greens on the edge is no exception. Magro says science reveals that flushes of growth, which are really nutrient peaks and valleys, are bad for the turf’s health. He says superintendents should also avoid fertilizing greens for a spike in growth and then quickly mowing it back. It might sound like a good thing to do to prepare for an important tournament, such as the member-guest, but it should be avoided.

Mike Sisti, marketing manager of fertilizer for Lebanon Turf, says fertilizer manufacturers have developed high-end fertilizer with excellent dispersion capability to offset flush-of-growth problems. He notes that growth surges in turf cause unevenness, which can lead to stress.

Continued on page 44

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Give 'Em What They Want

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Continued from page 43

Sisti stresses that a smart agronomic approach to fertilization dictates the type of analysis fertilizer applied and when it's applied. Then color and healthy turf will subsequently occur.

To avoid the peaks and valleys of growth, superintendents have been trying to perfect spoon-feeding on greens. Chris Derrick, Agrium Advanced Technologies' technical product specialist, says spoon-feeding continues to be popular to achieve frequent light applications.

"You want to put enough out to supplement the turf and keep it green, and have it have a little bit of growth ... but at the same time not overload the system and the plant," he says.

Proper fertility on greens is akin to proper nutrition for the human body, Magro says. "The best fertilizer program in the world is one where we can apply exactly what the plant needs for a 24-hour period," he adds.

Of course, that's not easy to do in the real world of golf.

"It is logistically difficult to go out and spray a green every day," Magro says. "That's almost impossible, even at some of the high-end courses. But we can get pretty close to this nutrient-release pattern through scientific advances."

Other factors

Sisti says superintendents also desire fertilizer that is predictable and consistent. That's why he says Lebanon has invested a lot of time and research in its composite technology, which the company says produces a fertilizer that disperses quickly and cuts down on mower pickup, not to mention golfer complaints "that a granule of fertilizer stopped my ball from going in the hole."

Jaime Staufenbeil, an agronomist for Milorganite, echoes Sisti's statement that superintendents want to know they can rely on fertilizer to perform consistently.

"They want to know what's going to happen every time they put it down," she says, adding that a reliable performance and size are vital attributes of granular fertilizer.

Rick Geise, director of marketing and brand manager for Griffin Industries/Nature Safe Fertilizers, points out that consistency has everything to do with establishing a sound foundation for fertilization.

"Superintendents ask us to continue to deliver products that have the highest concentration of organic nutrition in the bag," Geise says. "In addition, we're asked to ensure that our products will deliver a predictable, consistent and complete release of nutrients. Ultimately, our customers want a nutrition foundation that will improve their overall IPM programs."

A big reason superintendents use soluble fertilizer is because it can't be seen once it is applied, says Derrick, the former assistant superintendent at FarmLinks Golf Club in Sylacauga, Ala. They also like tank mixing soluble fertilizer with pesticides. Also, nozzle technology has improved immensely for reliable applications.

That said, Derrick says dispersible granulars, which dissolve quickly to the point that they can't be seen, are growing in popularity with superintendents. Grigg says superinten-

Continued on page 46

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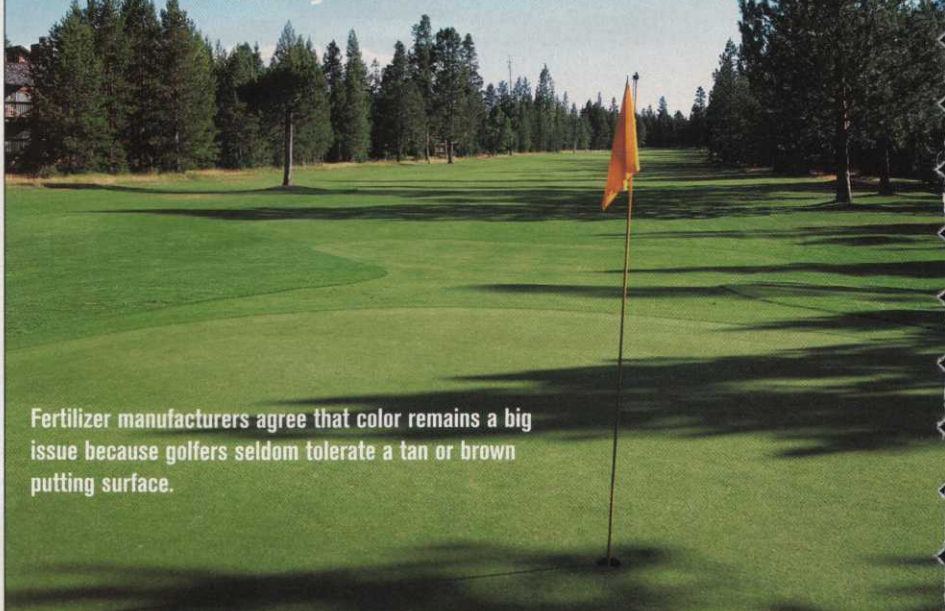
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Fertilizer manufacturers agree that color remains a big issue because golfers seldom tolerate a tan or brown putting surface.

Continued from page 44

dents prefer granules with smaller SGN (size guide number) and a product that breaks down after one watering.

Milorganite's Staufenbeil, also a former assistant superintendent, says putting green color remains a big issue for superintendents because golfers want green — not tan or brown — greens.

"Golfers say, 'I don't care what the greens look like as long as they're fast,'" Staufenbeil says. "But I don't think that's true. ... Aesthetics still play a huge role in golf."

Sisti agrees and says managing color with fertilizer should not be underestimated. "Color is important, but you influence the color only so much based upon the variety genetics," he adds.

Sisti says another important factor is managing fertilization in regard to disease pressure. Disease can also affect color, he adds.

Fertility and the future

A teacher once told Magro, "The only way you can know where you're going is if you know where you've been." Magro believes the reflective statement applies to fertility programs.

"If we really want to maximize the benefit of foliar nutrition, we have to find the key component in every ingredient that is most beneficial to the plant," he

says. "And the key with that is to do more practical research and develop more products along those lines."

Magro knows "hormone" is a taboo word in the industry, but he believes more research is needed to discuss hormonal regulation in turfgrass.

"People don't like to talk about hormones when it comes to turfgrass," Magro says. "But let's call a spade a spade. If we have a turf plant growing in the rough and nobody is putting stress on it, that plant is regulating its hormonal balance on a continuous basis. If there's an environmental stress, the plant will reduce its foliage, absorb some energy down in its crown and wait until environmental conditions are better. Then it will switch the hormonal balance to start making the leaves grow again. The plant has a natural hormonal reaction to stress, which is induced daily in our world of turfgrass management."

Magro's point is that regulating hormonal balance can help turfgrass grow deeper roots and do what "we need it to do to survive our stresses," especially when putting performance is at its peak. "In the next 10 years, more work will be done on hormonal science and management than anything else in turfgrass nutrition," he predicts.

Grigg also mentions hormones when asked about research. "We see foliar-ab-

Continued on page 49

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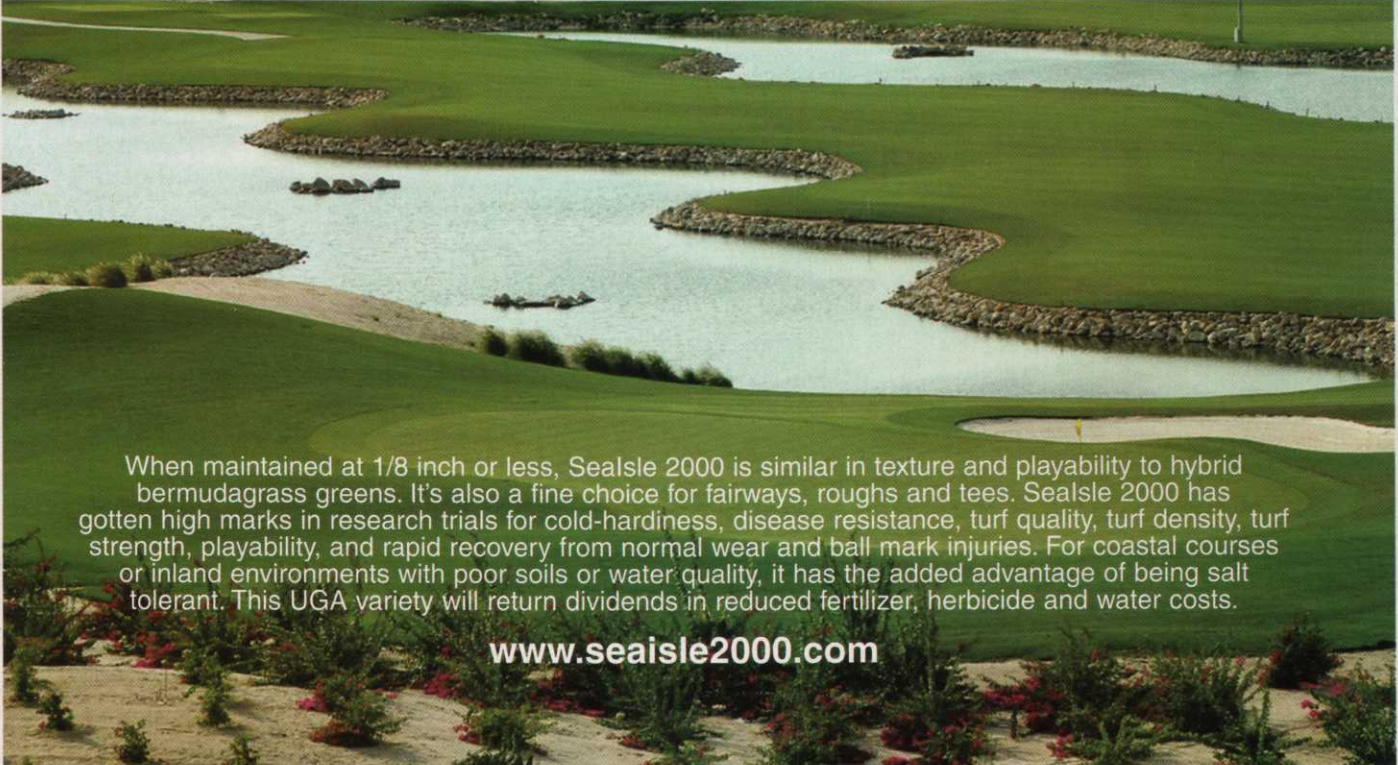


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Give 'Em What They Want

Continued from page 46

sorbed nutrient sales increasing with the addition of more elicitors and phyto-hormones to increase plant health," he says.

Grigg also predicts future fertilizers will contain less or no phosphate as states continue to legislate against it. "As to granular fertilizer, we see the need [for research] for longer-lasting controlled response," Grigg adds.

Sisti says more work needs to be done to improve slow-release fertilizer.

"The industry doesn't have anything that's perfect right now," he says, noting that some slow-release fertilizers are immediate and others are slow to react. "More research in soil moisture, soil temperature and microbial activity could provide more clues to improve the slow-release technology."

Sisti would also like to see more research on fertility as it relates to common turf diseases on greens.

"If you can crack those nuts, that will certainly save the golf course superintendent a considerable amount of time, money and energy in how to manage those diseases," he adds.

Derrick also believes more research is needed to improve slow-release fertilizers. "The dispersible granulars are as good as the polymer-coated products," he says. "But coating in relation to longevity can be improved.

"We have a polymer polyurethane-coated fertilizer," he adds. "How can we make it better and more durable? There's room for improvement. I think we can learn more from the pharmaceutical industry as far as slow-release technology goes."

From an organic standpoint, future technology should involve improving the basic technologies applied to animal nutrition, Geise says.

"There is a lot more money invested in animal feed technology as compared to turf science that is very applicable to soil and plant nutrition," he adds. "We feel we can continue to leverage this expertise to further enhance and improve our ability

to feed and stimulate microbial activity to then maximize fertility efficiency."

Geise also says competitive exclusion, which results when increases in beneficial bacteria populations translate to reductions in disease-causing pathogen populations, will be studied in greater detail.

Bandy believes research is focusing on three areas — overall plant health, environmental risk management and improved delivery methods.

"Better overall plant health can improve so many things about turf, such as resistance to stress, disease, insects and less-than-optimal-irrigation levels," Bandy says. "Much of this work will focus on taking more effective care of the root zone."

Bandy says management of risk to the environment and the work force will stimulate interest to create products that are more efficient and easier to apply, precisely and efficiently. Improved delivery methods of nutrients to the plant will result in similar benefits, particularly for granular nutrient products, he adds.

How low can greens go as far as height of cut? Staufenbeil says fertilization research should apply to that realm. More research should also be devoted to fertilizer to see how it can benefit turf root structure, she adds.

And with an increase in the amount of effluent water that golf courses are using to irrigate greens, Staufenbeil says research is needed to find out what role fertilizers play in managing greens irrigated with effluent. Staufenbeil also expects continued research into fertilizers that are safer for the environment.

Finally, Derrick hopes future slow-release fertilizers will also contain slow-release pesticides.

"Why not a combined granular that has an extended-release fungicide?" he asks. "In the future I think you'll see products that are easily incorporated into the greens and have a multitude of different releases of different fertilizers and pesticides.

"I'm excited to see them, but they could be years down the road." ■

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Soil sensor manufacturers say their technology will help superintendents better understand what's going on below the ground.

Makes Sens-ors

New technology gives information to help superintendents make better water-management decisions

BY ANTHONY PIOPPI, CONTRIBUTING EDITOR

Water is the big issue for many golf courses, what with the belief among superintendents that one day there might not be enough of it for irrigation. But not according to Robert Criste, vice president of sales for Golflinx, a manufacturer of soil sensors.

"It's not a water shortage issue; it's a water management issue," Criste says, echoing the words of the other two companies — Advanced Soil Technology and The

Toro Co. — that also produce soil sensors for the golf industry.

Criste insists there is enough water, no matter what part of the country, if the water is used correctly.

To that end, the three companies have entered the golf soil-sensor market in the last three years with devices they say will allow superintendents to better understand what's going on below ground and ultimately lead to a reduction in water usage and pesticides as plant health increases. Joining Golflinx, an Australian company

Continued on page 52