

Make a little water go a long way.

- Save up to 20% in water & energy usage
- Rate and frequency flexibility for easy use
- Faster wetting and penetration times
- Reduced runoff and evaporation
- Improved turf uniformity and appearance on fairways and roughs
- Outperforms any injectable surfactant available

AQUATROLS

DispatchTM
Soil Penetrant

The Injectable Soil Surfactant

AQUATROLS

5 North Olney Avenue • Cherry Hill, NJ 08003 • (856) 751-0309 • (800) 257-7797 • Fax (856) 751-3859

www.aquatrols.com

CIRCLE NO. 132



“No one wants to commit to a standard because of endophytes’ inherent instability.”

LEAH BRILMAN
RESEARCH DIRECTOR
SEED RESEARCH OF OREGON

Continued from page 70

showed that tall fescues could also benefit from the fungus. Its future as a turf industry mainstay seemed secure.

A fall from grace

Although it's hard to pinpoint the exact moment when endophytes' popularity began to wane, most breeders attribute their fall from grace to three factors: market oversaturation, the fungi's fragility and government regulation.

When endophytes were hot, everyone wanted them. Most companies started adding endophytes into their ryegrass and fescue varieties. As a result, having “endophyte-enhanced” splashed across their advertising materials offered companies no advantage.

“It's hard to charge customers more for endophyte-enhanced seed when the guy down the street claims he's also got an enhanced product for less money,” says Crystal Fricker, president of Pure-Seed Testing. “After a while, it became common rather than extraordinary.”

Endophytes' fragile nature also inhibited its continued fame. As living organisms, endophytes need ideal storage conditions to survive. Sitting in hot, humid warehouses in the Midwest and East after harvesting didn't meet the requirements for “ideal” conditions.

“We couldn't guarantee that the percentage of endophytes when we harvested the seed would remain constant until it was planted,” Brilman says. “That's when the government stepped in.”

Government intervention occurred after users complained that the seed labeled “endophyte-enhanced” didn't live up to its claims. As a result, state governments and turf organizations demanded quantifiable endophyte levels that would ensure their pest-controlling properties. Unfortunately, researchers and breeders have yet to reach a definitive definition of what an acceptable level is.

“Until you have a widely accepted standard, it's hard to measure,” Brilman says. “No one wants to commit to a standard because of the endophytes' inherent instability.”

Some states started requiring breeders to test their seeds every three months to make sure endophyte levels remained high. Such testing became cost-prohibitive, says Meyer, who is one of the researchers who helped propel endophytes into the limelight 20 years ago.

“Seed companies decided that rather than pay for all those tests, they'd rather pull back on the marketing,” Meyer says. “Now they just label their products as containing high, medium or low levels of endophyte. No one's quite sure what that means, but it's a way to let people know you have endophytes in your seed without committing to specific levels.”

Woodall says he's amazed that after a decade of training his customers on the importance of endophytes, they hardly ever ask him about the fungi anymore.

“I spent so much time training them, and now they don't care,” Woodall says. “It's a big change from when endophytes first hit the market.”

“Like anything else new, people were excited when endophyte-enhanced grasses hit the market,” Meyer says. “After a while, people took them for granted. Their reaction now to someone who raises the issue is likely to be, ‘Who cares?’”

Staging a comeback

Like pop star Michael Jackson, however, endophytes may yet stage a comeback. The development of a hardier form of the fungus could make it easier for companies to guarantee their efficacy, Fricker says.

“We haven't even come close to examining all the potential strains of endophytes out there,” Fricker says. “If you can find one that will stand up to the rigors of shipping, it would be a huge boost to their popularity.”

Adding the fungi to new plant species would help, too. Researchers still hope to find a strain of the fungus that can survive in bentgrasses and bluegrasses, Brilman says.

“If we could break through that barrier, their effect on the seed business would be phenomenal,” Brilman says. “Unfortunately, it hasn't happened yet because of plant tissue compatibility issues.”

Despite their struggles, endophytes still offer tangible benefits, Meyer says. It's up to researchers like him to spark their resurgence.

“They're still an important tool in improving turfgrass quality and reducing chemical applications, so we'll continue to work with them,” Meyer says. “We'll keep working on these fascinating fungi, trying to unlock all of their secrets.”

Until then, endophytes will have a hard time recapturing their fame. ■



Let us help your business ride off into the green.

Happy trails are in store for you when you go with ProSource One. No one else rounds up products and services as focused on growing your success as we do. Saddle up with us and we'll take your business to the kind of green everyone envies.

Welcome to a Greener World



Do They or Don't They?

Studies spark debate on whether organic fertilizers suppress disease

BY FRANK H. ANDORKA JR., MANAGING EDITOR

You can almost hear Mike Archer squirm in his seat when you ask him whether organic fertilizers suppress dollar spot and other diseases.

Archer, director of market development and research for Milwaukee-based Milorganite, says the answer to the question depends on who's responding.

"I want to make it clear that Milorganite is *not* a pesticide product," Archer says finally. "Organic fertilizers can help create a soil profile that promotes healthier turf, however, which will resist disease more easily than unhealthy turf."

Interest in the issue increased last year when a study by Michigan State University professor Joe Vargas indicated that organic fertilizers reduced a dollar spot infestation by 61 percent. An article by University of Maryland professor Peter Dernoeden in the March/April 2002 issue of *Crop Science* disputed those findings and argued that there was little difference in the affects on disease of organic fertilizers vs. synthetic products.

"We found little evidence that natural organics enhanced disease suppression any better than the synthetics," Dernoeden says. "Maybe organics helped control the thatch layer slightly better, but not enormously so."

So which study do you believe? Well, if you talk to both researchers, you'll find they came to similar conclusions: Healthy turf promotes resistance to diseases, and organic fertilizers can play a role. If you hope organic fertilizers alone will solve your disease problems, however, you're asking too much.

"You can't just replace synthetics with organics and expect miracles," says Joel Simmons, owner of Martins Creek, Pa.-based Earthworks, which manufactures organic fertilizers and other soil conditioners. "You have to balance the essential elements of the soil to achieve healthier turfgrass. That's where organics come in."

The studies in question

Vargas, who studied an organic fertilizer on test plots over a five-year period, says the product did reduce dollar spot in 2000 by 61 percent. With apologies to Paul Harvey, however, that's only part of the story.

"The truth is, 2000 was not a heavy year for dollar spot," Vargas says. "If it had been, you wouldn't have that level of suppression because the pathogens would be more aggressive."

Besides, 61 percent suppression means there's still 39 percent of the dollar spot that you *didn't*

Continued on page 76

Invested in nature's stewards, the...

Keepers of the Green

*"Floratine...
The Edge for Quality Turf"*

We rely on Floratine for technical services and the superior products that make the difference between no grass and quality grass.

It boils down to applying the basics of sound agronomics, common sense, and the best products.

Floratine gives us the edge to achieve top quality turf.

**Michael Dieckhoff, Superintendent
Spring Creek Ranch*
Collierville, Tennessee**

* Ranked #2 of new private clubs by Golf Digest


Floratine
Invested In The Wonder

*Invested in the power of nature...
Committed to her custodians, the Keepers of the Green.*



Do They or Don't They?

Continued from page 74

suppress, Vargas says. "That's still a lot of disease out there," he adds.

Dernoeden's article concludes that the most important factor in disease suppression isn't the type of fertilizer you use, but the overall fertility plan you institute. If you don't scrimp on your fertilizer program, you're likely to see little disease. It's all about feeding the beneficial microbes in the soil.

"Disease suppression is far more likely to be tied to the amount of nitrogen available in

the soil," Dernoeden says. "In the end, our study doesn't see a huge difference between using synthetic slow-release products and organic ones as long as the nutrients are made available consistently."

Bob Weltzien, co-founder of Independence, Mo.-based Roots, says he believes organic fertilizers are more likely to help in sand-based turf situations rather than soil-based turf.

"In sand, organic products help establish a more natural profile," Weltzien says. "It's harder to demonstrate a benefit in other situations."

Ideal Environmental Factors Affecting Soil Microbes

Organic carbon — grass clippings, organic wastes, etc.

Moisture — 50 percent to 60 percent of water-holding capacity

Aeration — balance of air- and water-filled pores

pH — near neutral (between 6 and 8)

Temperature — 50 to 104 degrees F

Inorganic nutrients — adequate nitrogen, potassium, phosphorus and sulphur

SOURCE: TEXAS A&M UNIVERSITY

Part of a broader plan

To grow healthy turf, it's vital to maintain a balance between the soil it grows in, the air it needs to breathe and the water that nourishes it. Organics promote the balance, says Bill Byrnes, president of Collierville, Tenn.-based Floratine.

"As with everything in life, it's a matter of moderation," Byrnes says. "If you get too much or too little of any one element, you can damage the turf."

Byrnes says he views organic fertilizers as bug



TourTurf Artificial Grass Applications

Course Construction
Practice Greens
Tee Lines & Boxes
Cart Paths
Target Greens
Driving Range Landing Area
Turf Maintenance Issues

www.tourturf.com
e-mail: info@tourturf.com



The Official Synthetic Turf
Recommended by
Palmer Course Design Company

Toll-free: (866) 710-TURF



Tom Barber Golf Center - Moorpark, California



food rather than plant food. When beneficial microbes eat the carbon in organic products, they leave less food for predatory microbes. Then when the beneficial microbes die, they release nitrogen in an easily digestible form for the plant.

"When you use organics, you're giving a boost to the power of nature," Byrnes says. "Healthy soil helps your turf resist disease, survive severe outbreaks and recover more quickly."

"Not using organics as part of your fertility program would be like feeding your kids nothing but Rice Krispie treats and water."

RICK GEISE, DIRECTOR OF MARKETING, GRIFFIN INDUSTRIES

Rick Geise, director of marketing for Valdosta, Ga.-based Griffin Industries, which produces Nature Safe fertilizer, says superintendents can reduce their thatch layer by using organics, which is a breeding ground for disease.

"Not using organics as part of your fertility program would be like feeding your kids nothing but Rice Krispie treats and water," Geise says. "It would keep them alive, but in the end their health would suffer. That's why you want to

give your turf as balanced a nutrition program as possible so it can be prepared when disease pathogens attack."

Some products boost turf's immune system, improving its disease resistance, says George Barger, director of the agricultural division of Edgewood, Md.-based Nutramax Laboratories.

"The studies prove that anything you can do to help boost a plant's strength will make it less susceptible to disease," Barger says. "Organics certainly help with that process."

Consistency is an issue

Monica Elliott, associate professor of plant pathology at the University of Florida, says that since organic fertilizers contain natural products, they often suffer consistency problems. In fact, Elliott buys organic fertilizers in large enough quantities to ensure she's applying fertilizer from the same lot throughout an experiment. Otherwise, the product's variability might affect the outcome.

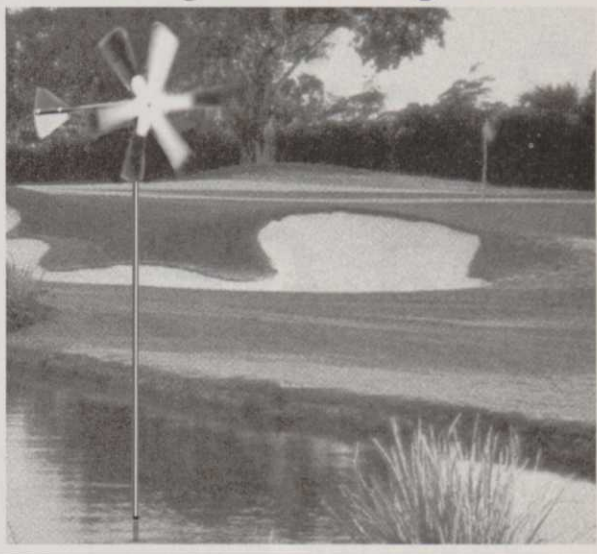
"The companies do everything they can to ensure consistency, but it's impossible to be perfect when you're dealing with living things," Elliott says. "There's a limit to how uniform you can be."

Elliott's advice for superintendents is to test organics on small areas of their courses before starting full programs.

"You shouldn't rely on someone else's experience to decide whether an organic product will suppress disease on your course," Elliott says. "You should try it out yourself and see what works best for you." ■

You can reach the author of this article, Frank Andorka, at fandorka@advanstar.com.

Introducing the **ScareWindmill.** 
A new visual bird repeller that uses uv light to scare geese.



Uniquely painted blades scare geese with uv light. Wind driven blades repel geese in one acre area.

\$69each

JWB Marketing

Call: (800) 555-9634

www.birddcontrolsupplies.com

CIRCLE NO. 136

PROVEN PERFORMANCE WITH

Adams Earth[®]
Organic Soil Amendment

AND

Green T[®] Liquid Fertilizers

some formulations include:

- ◆ 0-0-25 w/ Sulfur
- ◆ 12-3-12 50% SRN
- ◆ 18-3-6 50% SRN & Micros
- ◆ 20-0-0 50% SRN
- ◆ 20-3-3 20% SRN w/ Iron
- ◆ Amino Acid Calcium



PLANT FOOD COMPANY, INC.

The Liquid Fertilizer Experts

www.plantfoodco.com

Toll Free: (800) 562-1291

Fax: (609) 443-8038

CONTACT US FOR THE DISTRIBUTOR NEAREST YOU.

CIRCLE NO. 137

www.golfdom.com Golfdom 77

Good Greens and Good Fortune

Superintendent happens upon overseeding solution by sheer luck

BY DAVID ROULE

Speed and consistency — that's the dilemma. One of the biggest problems at any golf course is the perennial pain in the neck regarding fast and consistent green speed. The faster we make the greens, the faster golfers want them.

The problem

I've never had any major agronomic problems with the greens at the courses I've worked, including Elmwood CC in White Plains, N.Y., where I've been superintendent since 1999. But green speed is a different story, thanks primarily to *Poa annua*.

At Delwood CC in New City, N.Y., where I worked before coming to Elmwood, fast greens were sometimes inconsistent because of the bentgrass/*Poa* putting surface. Because *Poa* is less resistant to disease and insect damage, diseases like summer patch and pythium were a constant threat in wet weather because of the course's low height of cut, high soil pH and poor surface drainage. All of this contributed to an erratic putting surface.

Dealing with the *Poa* was a merry-go-round experience. I wanted to keep it alive, but I didn't want it to overtake the greens. The crew and I syringed the *Poa* to keep it alive in the hot weather, but it was a constant battle to keep it from spreading.

I wish we could have gassed the greens and started anew, but that's expensive and time-

consuming. However, I discovered a new and less-expensive method to upstage *Poa* and achieve fast and consistent green speed.

The solution

I happened upon the solution by sheer luck almost five years ago. We were overseeding the greens with hybrid bentgrass seeds we thought would yield a more aggressive grass that would be able to maintain lower heights of cut. But during the overseeding process, we ran out of seed for the last two holes — a sand-based green and a push-up green.

So we tried Penn G-2 on the last two greens. Three days later, we had great germination on the last two greens, but had no visual growth on the other 16.

One week later, the two greens were filled with new seedlings. This was not unusual in aerifying holes, but what was surprising was that two weeks later the grass was creeping beyond anything I've ever encountered. We were ecstatic with the results, but wary. We had seen other grass start like that and then fade. We decided to overseed all the greens with Penn G-2. The other greens displayed the same results.

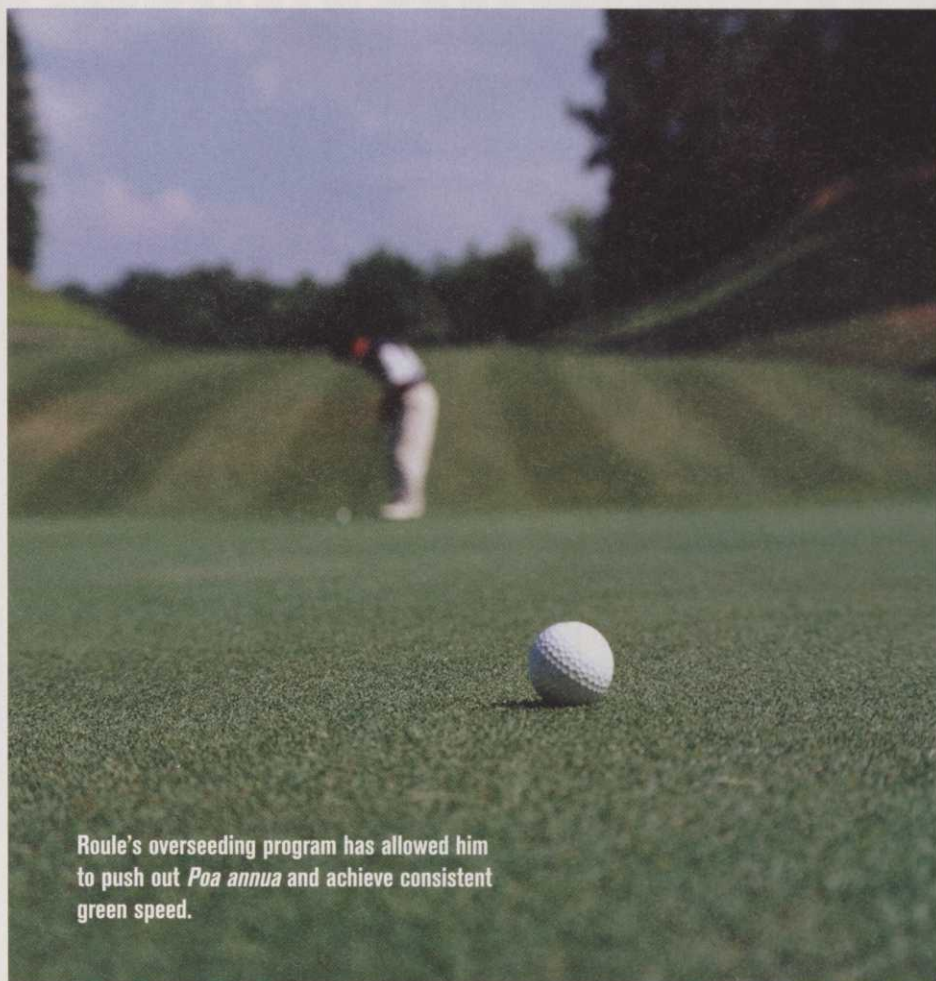
Next, we implemented a plant growth regulator program using TGR. We figured if we could stop the *Poa* from seeding and growing while we were overseeding with the Penn G-2, the new bentgrass would creep aggressively. But there was a dilemma. Delwood's members

Problem

Dealing with *Poa annua* on greens is a constant challenge. You want to keep it alive, but you don't want it to spread.

Solution

An overseeding program featuring Penn G-2, which crept aggressively, helped oust the *Poa*. A biostimulant made the Penn G-2 spread even faster and develop an excellent root system.



Roule's overseeding program has allowed him to push out *Poa annua* and achieve consistent green speed.

preferred dark green-colored greens, and plant growth regulators tend to discolor *Poa*. So we applied Roots 123 — a product made of chelated iron, a wetting agent from the Yuka plant and biostimulants — to the greens.

This gave us not only a brilliant dark green plant with no growth, but it helped our surface water retention and solved our surface drainage problem. The biostimulants made the bentgrass spread even faster and develop root systems we never had before.

We implemented virtually the same program with heavier doses of PGRs on the greens when I came to Elmwood. It has proved so successful that we use the program every month of the growing season.

Our green speed has increased and is more consistent — no matter what the weather. The program has also let us reduce watering and syringing of our greens during the season.

Outlook

When we overseed the greens with Penn G-2,

we aerify with small, solid tines and use a light broom to push the seeds into the holes. Few members notice the small needle-sized holes, and the greens are deep-tined twice a year to improve drainage.

A drawback of the Penn G-2 bentgrass is that it has to be mowed almost daily to keep its creeping pattern low. So we have to back-lap our mowers more often to keep a sharp cut. Still, that's not a bad tradeoff for faster greens.

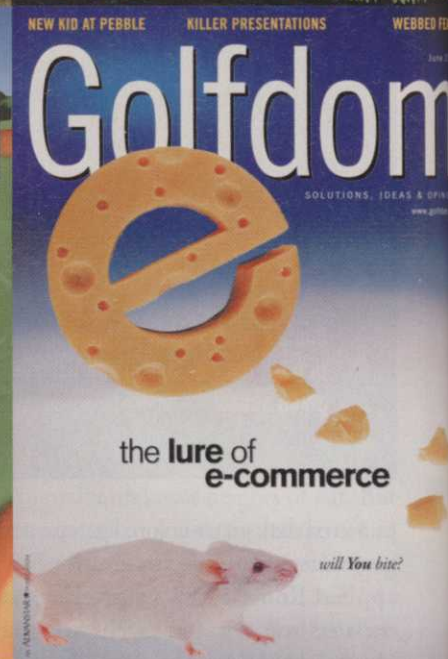
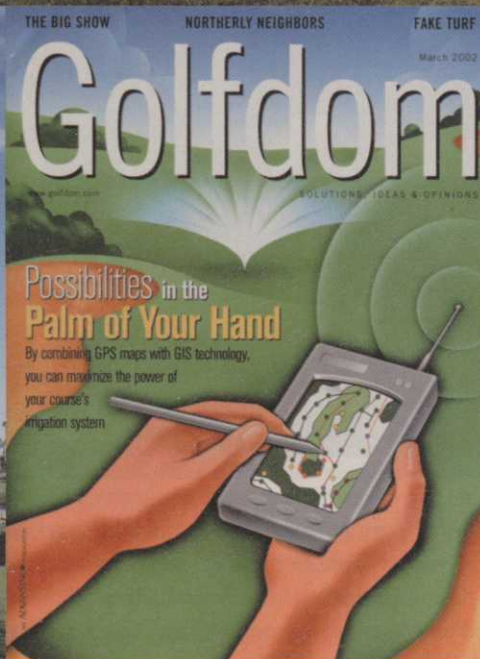
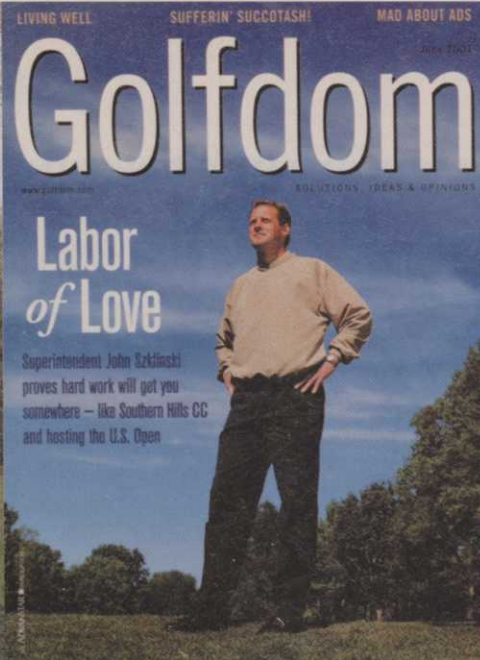
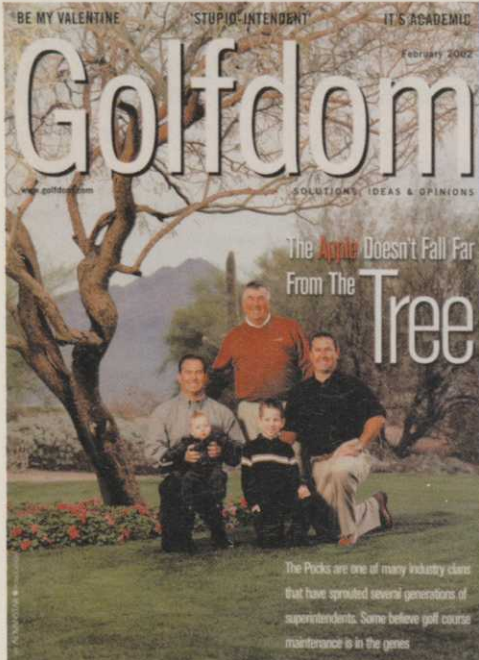
Other courses have had success with the program, and members and players at those places didn't even know the greens were undergoing a surface renovation to attain a fast, consistent green speed.

The bottom line: This program has allowed the bentgrass to push out the *Poa*. The greens are now more than 85 percent bentgrass and are no longer considered *Poa*/bent. ■

Roule is superintendent of Elmwood CC in White Plains, N.Y. He has been a superintendent for 30 years.

We decided to overseed all the greens with Penn G-2. The other greens displayed the same results.

Read another
Real-Life Solutions
on page 86



Golfdom delivers the best cover-to-cover readership in the industry

Your ad gets SEEN in

Golfdom

For advertising information, call Pat Jones, Publisher, at

800-225-4569

or log onto **www.golfdom.com**