

# Nature of the Business

Challenges abound for **two superintendents** whose golf courses are located on environmentally sensitive federal parkland



**T**he sun ushers in a spring morning at Wawona Hotel Golf Course on the southern tip of the Yosemite National Park in Wawona, Calif. Although the ground is saturated from the previous night's rain, irrigation heads are going full blast — putting out so much water on the soaked greens that the cups are turning into veritable frog jacuzzis.

But it's just another day of playing by the rules for golf course superintendent Kim Porter, who has no say in the irrigation regime on this day. Because the course is located on national parkland, Porter's guidelines are federal and not state.

That means Porter must irrigate when told. In fact, he must go through a complex process just to remove a bunker or get permission to apply pesticides.

A world away on the far reaches of Cape Cod, Mass., Stuart Eyman faces the same sort of dilemmas. As superintendent of Highland Links Golf Course, the only layout inside the confines of the National Seashore and thought to be the oldest course on Cape Cod, the federal government also controls Eyman's work life.

For the two superintendents, regulations and guidelines are at times confounding and sometimes arbitrary, usually administered by someone hundreds of miles away.

The soaked greens at Wawona, a delightful nine-hole layout that opened in 1918, serve as a perfect illustration of the alternate universe the two superintendents find themselves. The golf course is the overflow area for the effluent tanks of hotels located within the National Park. So when the tanks are full, Wawona is watered whether it needs it or not per order of the parks department.

Porter combats the excessive water use with an aggressive aeration program, plugging his greens three times a year and putting on ample amounts of topdressing.

He also does not use pesticides or fertilizers on the course. And because Porter limits irrigation during summer months, he encourages hearty varieties of turf while driving out weaker ones and holding off disease. Few weeds survive.

Porter last applied for pesticide-use permits in 1981 during his first year as superintendent and was turned down. Since that time, and with the backing of current owners Delaware North Corp., the company that runs the hotel and course, he has maintained the place sans



pesticides but with plenty of ingenuity.

The health of the turf, including what he calls a mutant strain of bermudagrass on some tees, and the lack of weeds are a testament to the success of his program as it is to his patience.

"It's all done culturally," says Porter, who graduated in 1977 from Fresno State University with a degree in plant science and soil fertility.

For instance, Porter is not allowed to trap varmints that might tear up turf, but that does not stop him from pursuing them — indirectly. "We're very friendly to birds of prey that go after gophers," he says, noting that hawks are his pals.

Porter removes cutworms from greens by flooding the putting surfaces, which drives the pests to the surface where they turn into meals for the abundant bird population found inside the park.

"Or you can step on them," he adds.

He notes the effluent is not all bad and in fact helps combat clover. The practice putting

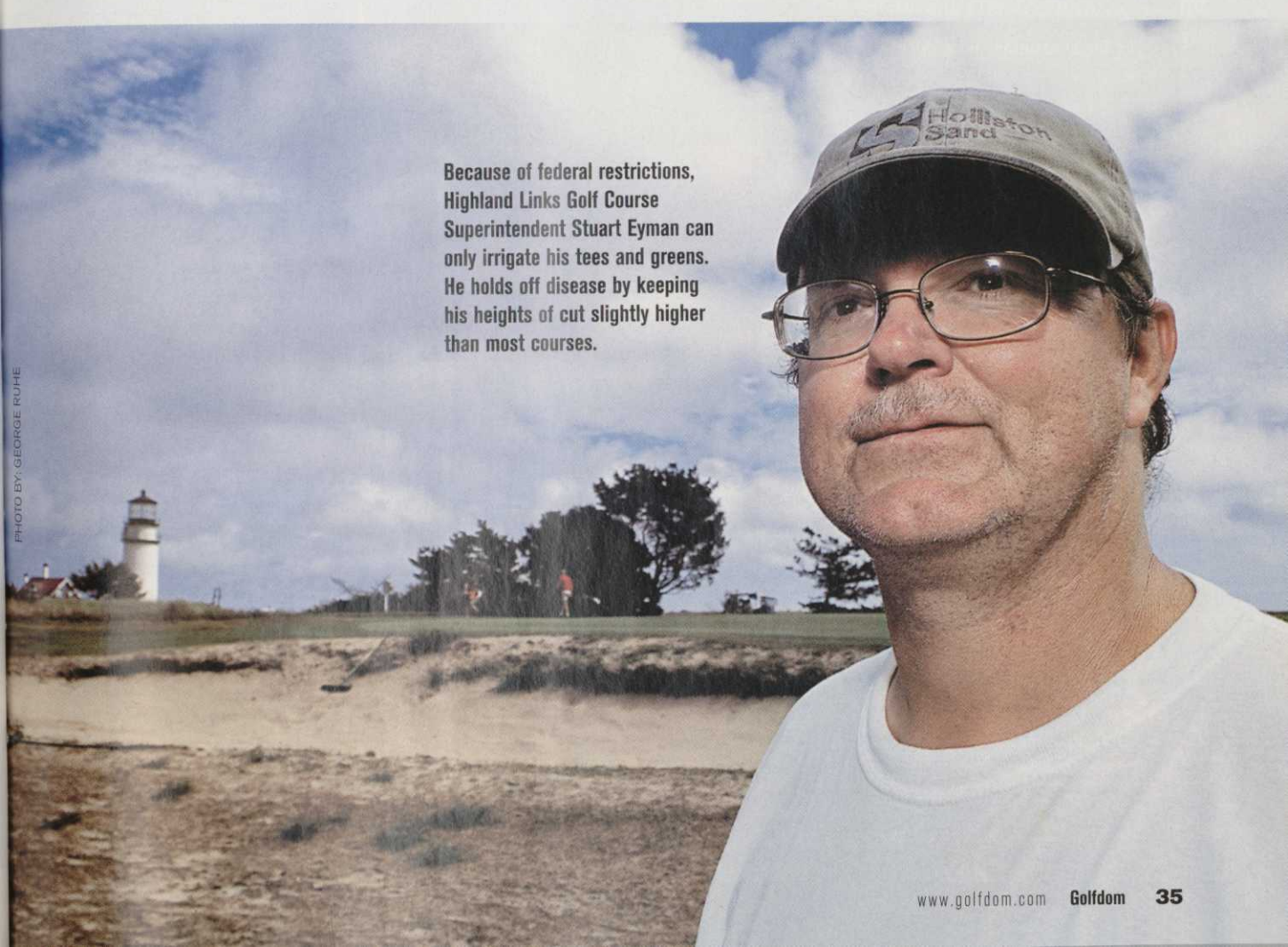
green located across the street from the course and just outside the door of the pro shop is rife with clover, Porter says, because it is irrigated with potable water.

The guidelines are not just about chemicals. Nearly every spring the annual snowmelt causes a spring to pop up near the ninth green, sending a stream of water over the putting surface and making it impossible to mow, never mind putt on. Nearly half the putting surface is out of play for a good portion of the season.

Porter is forbidden by regulations from installing any permanent drainage anywhere on the course. The best he can do is carve temporary shallow trenches to move the water away from in-play areas and off the course.

Even restoring the land can be challenging. A few years ago, on the recommendation of the United States Golf Association, Porter wanted to remove a fairway bunker located near a small stream. By converting the area to rough, players would avoid having to hit long

*Continued on page 36*



Because of federal restrictions, Highland Links Golf Course Superintendent Stuart Eyman can only irrigate his tees and greens. He holds off disease by keeping his heights of cut slightly higher than most courses.





As the superintendent of a course located inside Yosemite National Park, Kim Porter hasn't used pesticides since 1981.

**“We had to get triple-X clearance” to remove a fairway bunker.**

**KIM PORTER**

SUPERINTENDENT, WAWONA  
(CALIF.) HOTEL GOLF COURSE

*Continued from page 35*

sand shots over a hazard. It was months before he received permission to fill in the small area. Porter first applied to make the change to the parks office in San Francisco. The request was then kicked up the ladder to the Denver office where the decision was eventually made.

“We had to get triple-X clearance to get that done,” Porter says.

Because the golf course land is considered to be a pristine archeological site with possible Native American artifacts buried beneath the turf, any digging or filling-in is tightly monitored. Even the removal of trees more than 6 inches in diameter — ponderosa pine, oak fir and cedar — must be classified as a danger to be taken down. Otherwise they stay, even if the shade or root structure seriously harms turf growth. Porter says he counts on heavy winter snow to do some of the pruning for him.

Out on Cape Cod in the town of Truro where the Pilgrims first landed before moving on to Plymouth, Eyman has his own hoops to

leap through. Highland is a nine-hole layout thought to have opened in 1892, making it one of the oldest golf courses in the country. Originally part of the Highland Resort, the eighth green is located just a few yards from the resort's Highland House, which now houses the Truro Historical Society.

Behind the seventh green is Cape Cod Light. The original was built in 1792 and sat some 450 feet closer to the ocean, but the lighthouse was relocated closer to the course in 1996, away from the eroding bluffs. The National Seashore, part of the U.S. Parks Department, came to be in 1962 at the urging of President John F. Kennedy. Since 2001, Cape Cod native Eyman has been the superintendent working for the town of Truro, which is the concessionaire and leases the course from the federal government, but plays by federal rules.

Part of Eyman's job is to submit a list of pesticides and fertilizers he wishes to use on the course annually.

*Continued on page 38*



## Nature of the Business

As the only golf course located inside the National Seashore on Cape Cod, Highland Links is controlled to a large degree by the federal government.



### Check out these other "green" stories:

► In **Out of Bounds** on page 84, Mark Luce writes about hybrid cars. At 60 miles per gallon, we can't help but brake for these gas-saving alternatives.

► In his **Designs on Golf** column on page 26, Geoff Shackelford advises the golf world to embrace nature.

*Continued from page 36*

"Even if it's approved one year, there's no guarantee it will be the next," he says. "I don't know why. They never tell me."

In 2004 Eyman was allowed to use a popular insecticide to combat grubs. He applied for use again this year and by June, when the window for ridding the course of grubs was closed, he still had not heard.

"You do what you can with what you have," he says.

In another instance that left Eyman baffled, he was allowed to use a name-brand fungicide. But when the product went to generic labels, he was not given clearance to use those products but could continue to use the name brand.

Although frustrated by the process, Eyman, understands the motive.

"I realize the park has its job to do, which is protecting its assets," says Eyman, a graduate of the University of Massachusetts-Amherst. "So I may not agree with its decisions concerning what I can and cannot use, but I will always abide by those decisions and do the best job I know how to do."

Part of Eyman's cultural practice in holding off disease is keeping his heights of cut slightly higher than most courses. His course's greens are mowed at eleven-sixty-fourths of

an inch, fairways at seven-eighths of an inch and the rough at 3 inches. Only tees and greens are irrigated, and irrigation is kept to a minimum over the links-like design.

At Wawona, Porter does the same. Greens are mowed at slightly more than a half-inch during hot months and slightly under in cooler periods. Fairways and tees are mowed at just under nine-sixteenths of an inch.

Incidentally, Porter deals with other problems that few other superintendents face, and these have nothing to do with government regulation.

There is an abundance of mule deer on the property and they have a tendency to gouge the greens with their hooves. Mountain lions and coyotes are the best defense against that problem.

For some reason, bears have taken a liking to one particular putting surface.

"They like to the use No. 6 green as a toilet," Porter says. "Whoever mows that green in the morning takes a shovel with him."

One of the course's workers says coyotes have their favorite spots as well. Valve boxes are often their rest stop of choice — without approval of the parks department. ■

*Anthony Pioppi is a contributing editor of Golfdom.*





# Natural



Wetlands consultant Ed Hauser (left) and superintendent Brent Palich take in the view at Sand Ridge Golf Club.

The picturesque **Sand Ridge Golf Club** was built and is maintained to function in harmony with the environment

**STORY AND PHOTOGRAPHS BY  
LARRY AYLWARD, EDITOR IN CHIEF**

From atop a grassy knoll, standing amid the tall fescue and timothy hay near the Sand Ridge Golf Club's fourth green, the view looks like a painting. If Norman Rockwell were here, he would promptly set up his easel and get to work on a watercolor.

In the distance, the emerald-colored third fairway, etched neatly with bunkers and lined precisely with stripes created from fairway mowers, appears impeccable, like newly laid carpeting. Several sprinklers whirl water toward the dark-green bluegrass rough. A pond, its calm surface shimmering in the sun,



# Wonder

borders the fairway against a backdrop of billowy trees under a big, blue sky dappled with a smattering of clouds.

Brent Palich, superintendent of Sand Ridge, located in rural Chardon, Ohio, stands silently with his hands on his hips and studies the chromatic scene with squinting eyes on this blazing-hot August day. Palich turns his head from side to side to gain a panoramic view.

"I don't have a favorite hole on the course, but this is my favorite view," Palich remarks.

It's not the only marvelous view the course affords. Such scenery dominates the environmentally sensitive landscape at Sand Ridge. What makes the sights so engaging is the naturalness associated with the course. The land rules the golf course, not vice versa.

Sand Ridge occupies 300 acres, 150 of which are wetlands. The course, which opened in 1998, was designed and constructed to function in harmony with the environment and is maintained with the same intent by Palich and his crew.

"We always think of the environment first," Palich states firmly.

Sand Ridge is a member of Audubon International's Signature Cooperative Sanctuary Program, which means the course was planned, constructed and is managed with a primary focus on environmental quality. The course staff worked with Audubon International, a not-for-profit environmental education organization, to achieve the designation. Sand Ridge was the first golf course in Ohio and the 10th in the nation to receive full Audubon International Signature status.

If the golf industry wants to showcase a course for its ecological prowess, Sand Ridge could take center stage and shine. The course is home not only to 18 holes but also to an assortment of plants and wildlife. The course is also the origin of two popular rivers in northeast Ohio — the Cuyahoga and the Chagrin

— their headwaters begin in the same wetland and flow opposite each other.

Abundant plant life grows in the wetlands, which include marshes, ponds and streams. The seasons dictate when certain plant species bloom so the look and color of the wetlands change throughout the year. No non-native wildflowers and plants have been introduced to the property, not even annual flowers.

Wildlife includes rabbit, squirrel, wild turkey, coyote, deer and many bird species. A black bear was spotted on the course this past summer.

The club also has no swimming pool or tennis courts. Adding to the course's backwoods feel is the lack of housing on the property. There are no busy streets nearby, meaning the course is spared the obnoxious sounds of whizzing cars and rumbling trucks.

In fact, Sand Ridge, located about 30 miles from Cleveland, hardly resembles the parkland-style courses that dominate the region.

"We get frequent comments like, 'I feel like I'm not in Ohio,'" says Peter Conway, Sand Ridge's president and son of the club's owner, Bill Conway. "The course really has more of a Low Country Carolinas feel to it."

It wasn't Bill Conway's dream to build a golf course. It just worked out that way.

Conway is chairman of Fairmont Minerals, one of the largest producers of industrial sand in the country, including production of top-dressing and bunker sand. In 1992, Fairmont acquired 500 acres of land near its sand-mining operation. The hope was the company could mine the land, even though Fairmont officials knew it was composed largely of wetlands.

The company was able to mine about 200 acres, but that left 300 acres for ... what? At a board meeting discussing the topic, Conway says someone joked that "we could always build a golf course." But there were more

*Continued on page 42*



## Natural Wonder

Wetlands and native grass are abundant at Sand Ridge.

**'It wasn't a dream [to build the course], but I got excited about it once we got into it.'**

**BILL CONWAY**

OWNER

*Continued from page 41*

curious looks left on people's faces than laughs.

So the company's leaders checked into the realm of constructing a course. They surveyed the golfers in the community about the idea. Would they join another club?

"The answer was, 'Yes,' provided it was absolutely first rate," Conway says.

A first-rate golf club meant only two words to Conway: Tom Fazio. So he phoned the famous architect to see if his firm was interested in designing it. Fazio said "yes" and surveyed the property with one of his top men, Tom Marzolf, who was placed in charge of the design.

"It wasn't a dream [to build the course], but I got excited about it once we got into it," Conway says with a grin. "What we ended up with is a routing plan that takes advantage of all the natural terrain of the land and utilizes the wetlands as a feature."

Because of the land's environmental sensitivity, Conway wanted to employ an experienced wetlands consultant on the project. He hired Edward J.P. Hauser in 1993. Hauser was known as a stickler for doing the right environmental thing, precisely the type of person Conway wanted for the job.

Conway recalls Hauser walking the dense forest of the property early in the project and waxing intelligently about wetland management. "He not only knew what he was talking about, but he loved the concept of trying

to utilize the land in a way that protected the wetlands," Conway says.

It was Hauser's job to provide a wetland delineation, which is to establish the boundary between wetlands and uplands or non-wetlands. Hauser advised the wetlands be avoided during construction of the course.

Hauser, a North Carolina resident, was raised in northeast Ohio and knows the area's wetlands well. He has performed more than 200 wetland delineations in the area, but Sand Ridge was his first major golf course project.

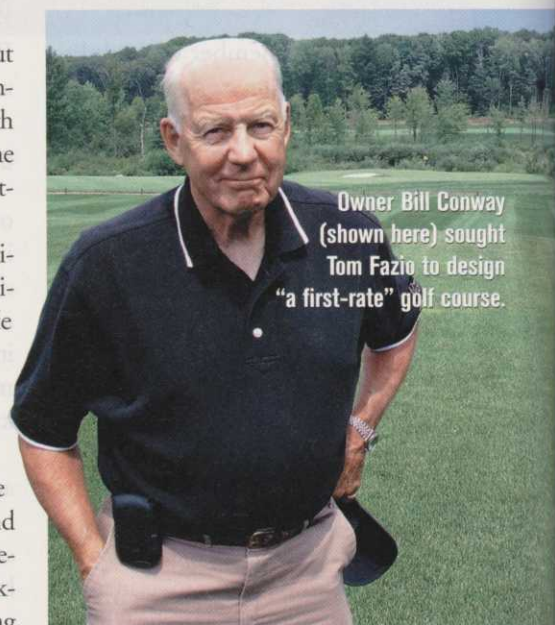
Hauser worked closely with Marzolf. "Many golf course designers want to change the land to fit their images of what they think golf courses should be," Hauser says. "We took the opposite approach. We designed the golf course to fit the surrounding environmental area."

Marzolf says he learned a lot from Hauser about wetland delineation. "He was a big help," Marzolf says. "We dropped back and did the science before we built the golf course to protect the site."

Hauser's initial goal was to restore portions of the wetlands to their original states. Parts of the wetlands had become choked with woody exotic invasive species, including buckthorn and thicket.

Scanning an area that was cleared of invasive plants, Hauser says it took about four days for four men, armed with chain saws and weed whackers, to remove them and their deep roots.

*Continued on page 44*



Owner Bill Conway (shown here) sought Tom Fazio to design "a first-rate" golf course.



► The wetlands at Sand Ridge are now inhabited by colorful native flowers such as joe-pye weed.

*Continued from page 42*

Hauser points to a swamp inhabited by a hoard of handsome native plants. He explains the area was formerly full of thicket. But on this day, white spiraea, a flowering shrub, is in full bloom. The same wetland supported dense blooms of yellow marsh marigolds in the spring, Hauser says, and the pink-flowered swamp rose had peaked only a month earlier.

The native plants, which require full sunlight, grow more wholly now because they're not covered by shade from the aggressive thicket. And because the plants yield flowers, more birds have flocked to the course. Hauser estimates that Sand Ridge is home to more than 100 species, including bluebirds, hawks, herons and owls. In essence, the building of the golf course in conjunction with the wetland restoration has rejuvenated the land, Hauser says.

"There's no question in my mind that we've increased the ecological diversity and wildlife diversity of the land more than twofold," he says. Hauser conducts all of the annual ecological monitoring and reporting as required



by Audubon International.

From the outset, the philosophy at Sand Ridge has been to grow the best possible turf — but only by using pesticides when necessary.

Needless to say, adhering to a detailed in-

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egrated pest management (IPM) program is the ultimate challenge for a superintendent. Palich has accepted it willingly. He has only been superintendent of Sand Ridge since February, but he's no stranger to the course. After graduating from The Ohio State University's Agricultural Technical Institute in 1998, he took a job as the course's spray technician under then-superintendent John Zimmers. Palich left Sand Ridge after 18 months to join Zimmers, who was named superintendent of Oakmont Country Club in Pittsburgh, as his assistant. After spending four years at Oakmont, Palich landed his first job as a superintendent at Potowomut Golf Club in East Greenwich, R.I. But when Jim Roney, who succeeded Zimmers at Sand Ridge in 1999, left the club earlier this year to become superintendent of Saucon Valley near Philadelphia, Palich was contacted about replacing him.

He jumped at the chance.

Fretting about and taking care of the environment are two of Palich's job responsibilities. He does them both through his IPM plan.

The IPM plan begins with the club's chemical building, which is self-contained. If there's a liquid chemical spill from a sprayer in the building, the liquid funnels into a pit where it can be pumped safely back into a sprayer. Chemicals can't leak from the building.

Speaking of chemicals, Palich uses as little pesticide as possible. He has implemented several maintenance tricks to keep use to a minimum.

For instance, Sand Ridge's bentgrass greens are built on sand-based soil and the perimeters of the collars can take a beating from greens rollers and greens mowers that turn on them. To keep that turf from weakening and fading, Palich and his crew lay quarter-inch 4-foot-by-8-foot sections of plywood on the top of the collars. So mowers and rollers, instead

*Continued on page 46*

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## Natural Wonder

*Continued from page 45*

of turning around on the grass, can change directions on the plywood, which disperses the equipment's weight and protects the turf as well. Because there is less stress on the turf, there's less chance of disease occurring. That means fewer fungicide applications.

Yes, laying down the plywood can add nearly 90 minutes to mowing time. But the course reclaims the cost by not having to spray fungicides and the environment benefits from the process, Palich adds.

It's just one of the proactive approaches the club takes to minimize pesticide use. Another is the science involved with the strip of ryegrass grown between the outer edge of the bentgrass fairways and the inner edge of the bluegrass roughs. The ryegrass, which is more susceptible to disease than bentgrass and bluegrass, acts as a bellwether to turf maladies such as pythium and dollar spot.

"Disease on the ryegrass will

occur before it does on the bentgrass," Palich says.

So Palich and his crew watch the 6-foot-wide ryegrass strip closely for disease breakouts. If they see disease, they make curative fungicide applications to the ryegrass to stop it from spreading to the bentgrass and bluegrass. But they don't spray the bentgrass and bluegrass.

Alas, Palich and his crew only treat up to 1.5 acres of turf, which the ryegrass comprises. Without the ryegrass acting as a disease indicator, Palich and his crew would have to spray much larger areas of turf and use more fungicide to treat turf disease. The bentgrass fairways, for instance, comprise 30 acres.

Palich and his crew still spray preventive applications of fungicide, but not often. "We push fungicides to last longer here," he says, noting that the bentgrass (L-93 from Tee-to-Green) used on the course's greens, tees and fairways fares well against stress and certain diseases. "We use low rates of chlorothalonil about once a month on fairways."

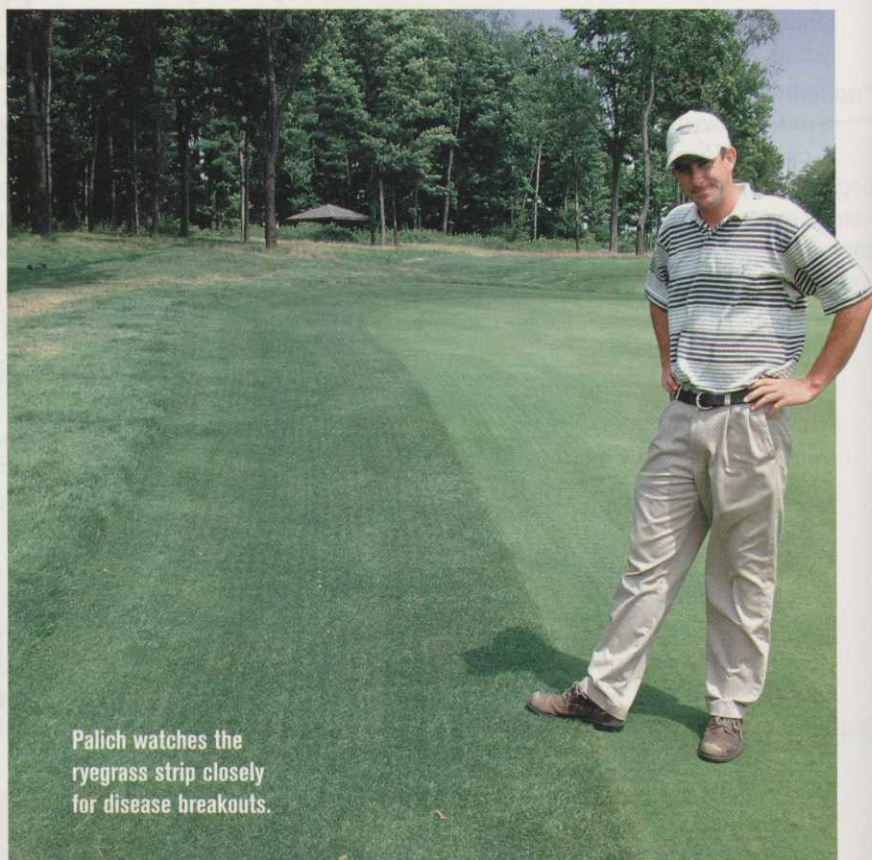
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Palich watches the ryegrass strip closely for disease breakouts.





Sand Ridge sports many good views thanks to its naturalness.

Like other superintendents in his region, Palich battles *Poa annua* continually. Palich's plan of attack begins in the rough. He knows that if *Poa* gets in the rough, it will soon contaminate the fairways and greens.

"We have a thick Kentucky bluegrass rough that we water and fertilize," Palich says, explaining that a healthy rough has no room for *Poa annua*.

If *Poa* does reach Sand Ridge's greens, it's not treated with a herbicide. Palich's staff uses 1-inch diameter pluggers to remove it. "We're able to keep up with it, but we have to stay on top of it," Palich explains.

Palich is proud to report that Sand Ridge, which is just completing its eighth season, has never applied herbicide on its greens to treat *Poa annua*.

Palich and his crew also watch the course's fairways closely for *Poa*. While they treat it chemically, they do so sparingly and use cotton balls dabbed with a glyphosate herbicide.

Overall, herbicide use is kept to a minimum. Broadleaf weeds are spot-sprayed by maintenance staff members who carry hand-held spray tanks.

Would Palich like to use even less pesticide than he already does? You bet, but it's not always his decision.

"We have a membership that expects tournament conditions every day," he says, noting that most members don't have a high threshold for lost turf caused by agronomic problems.

Palich is big on organics and biostim-

ulants for fertilization, such as calcium- and potassium-based products. He only makes two light applications of inorganic fertilizer a year on the greens. He uses no inorganic fertilizer on fairways. He prefers organics and biostimulants because he says they re-energize the turf rather than make it grow substantially.

Water management is also a key component of IPM, and Palich manages water use on the course like Tony LaRussa manages the St. Louis Cardinals — steadfastly. Over-watering leads to more disease, Palich says, which can lead to more fungicide use.

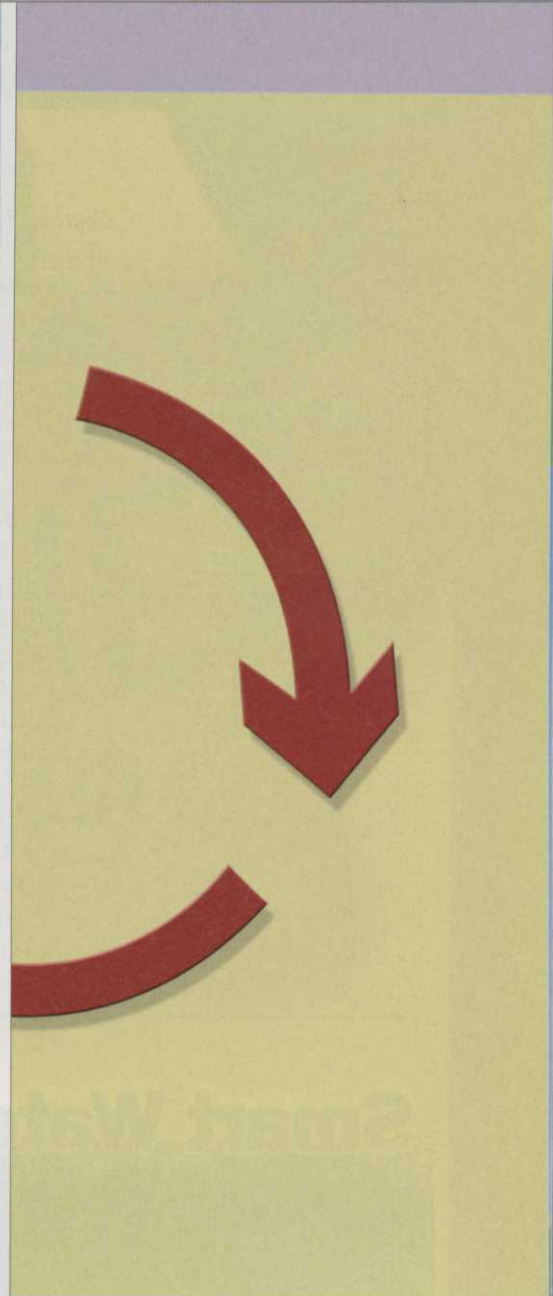
"We err on the drier side and tend to do a lot of hand-watering in the rough," he says.

The course also uses several buffers to protect the wetlands. Most are at least 20 feet wide and are comprised of various layers, including natural vegetation, tall meadow grass and waste bunkers. Long waste bunkers are located strategically along wetland areas to act as buffers. They not only catch errant-shot balls that could bounce into the wetlands, they also keep fertilizer and other chemicals from running off into them during heavy rains.

"They are a great feature to the golf course from an aesthetic point and a playability point," Palich says of the bunkers. "But they were put there for the specific reason to prevent runoff from going into the wetlands."

Palich admits that a more-than-

*Continued on page 48*



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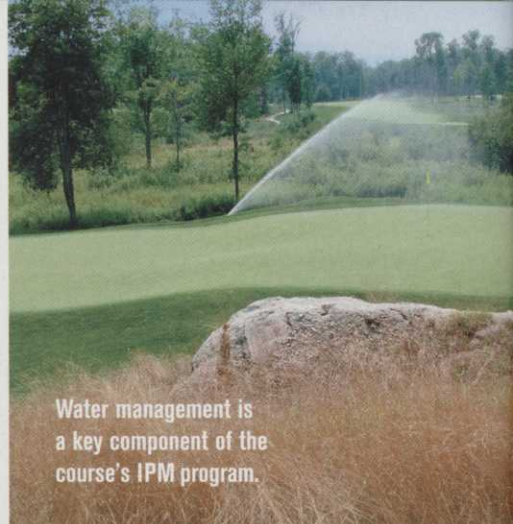
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adequate maintenance budget allows his staff and him to perform many of the maintenance-intensive tasks to maintain and conserve the course as best they can. His crew contains up to 30 people in the summer. "We need everyone," Palich says, "because there's a lot of handwork."

Speaking of the crew, most don't take the outdoor office they inhabit as a workspace for granted. Gavin Johnson, Sand Ridge's irrigation tech, grew up in England and says the course's setting is "completely unique" to any course he has seen.

"I don't think you'll find anything back home that's anything like this — a course intertwined with wildlife and wetlands," he says. "I look forward to waking up every day and coming to work."

Sand Ridge has 350 members and Peter Conway says most are supportive of the course's quest to preserve the environment. "Most of the members treat the environmentally sensitive areas with respect," he says.



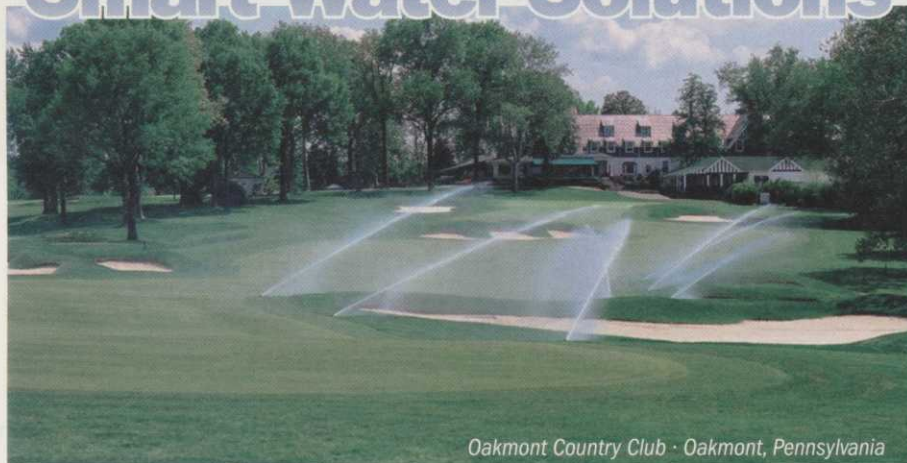
Water management is a key component of the course's IPM program.

The scents, sights and sounds that one experiences at Sand Ridge are markedly different than at many courses. Driving through the property in a utility vehicle recently, Palich watches a golfer pluck berries from a bush near a cart path and eat them.

Such encounters make Palich cherish his job even more. While he's only 28 years old, Palich is already talking about retiring from Sand Ridge.

"I don't ever want to leave," he says softly but affirmingly. "It's just such a special piece of property." ■

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# Utility Vehicles Slowly Take Eco-Friendly Route

Gas-powered engines still reign, but manufacturers are moving toward **electricity** for a variety of reasons

BY THOMAS SKERNIVITZ, MANAGING EDITOR



**A**t The Toro Co., protecting the environment is “our largest priority today,” according to the director of the company’s Center for Advanced Turf Technology. “I’ve got more of my people and more money working on this

general area of environmentally friendly alternative fuels than any other project,” Dana R. Lonn says. “It’s important to us. We think it’s an important thing to our future, and it’s something that will play out over the next two to 10 years.”

Not that there aren’t obstacles. Foremost, there has to be demand, and right now the golf course customer isn’t exactly antsy to replace gas- and diesel-powered equipment. And throughout most of the country, there’s no one twisting the superintendent’s arm to make the switch.

“If what we do is implement something, and then customers say, ‘Oh, that’s really nice, but I’m going to buy the diesel one,’ that isn’t very motivating for us,” Lonn says. “Ultimately, we need customers that want these kind of products.”

Three things could spur interest, according to Lonn:

► **Laws** — Automakers began installing catalytic converters on cars in 1975 because the government made it the law. As for similar mandates in the green industry, “We’re prob-

Club Car has introduced an electric-powered utility vehicle that it says can “do everything that a gas vehicle can do.”





ably a ways away from that," Lonn says, "although it's evolving."

► **Governmental pressure and incentive** — Evolution is evident in New York, where state employees, per executive order of Gov. George Pataki, are required to limit their emissions by using alternative fuels.

"New York's a big buyer. New York, in doing this, means business," Lonn says. "Obviously, if New York was the only one in the world that was doing this, we wouldn't worry too much about it. But we believe they're on the leading edge of a trend that will continue, as opposed to a bunch of goofballs out on their own."

► **Fringe benefits** — With no laws or outside pressure to force the issue, the best way to attract the customer, Lonn says, is to attach eye-catching attributes to eco-friendly equipment. It's really not a big deal, Toro believes, if customers have ulterior motives — the desire for reduced noise, low maintenance, better control, easier diagnosis — behind the purchase of alternative fuel equipment.

"Customers are starting to ask more for the attributes than they are the actual products," Lonn says. "So you kind of get the best of both worlds — better products that happen to have better emissions. That's what is motivating us to put quite a bit of money into them today, because we think we can make products every bit as good and with lower emissions."

The majority of golf cars as well as a good number of light- and mid-duty utility vehicles are already powered by battery. Again, however, the switch from gas isn't necessarily environmentally motivated.

"The lighter-duty utility vehicles have evolved from gas because they're cheaper to operate and require a lot less maintenance," Lonn says. "(Environment) in most parts of the country is the third factor."

Cost will continue to be a concern as fuel prices continue to rise, although the environmental factor should not be forgotten, according to Mike Packer, the vice president of utility vehicle and international sales for Club Car.

"In some of the lighter-duty products we see today, electric product is certainly beginning to make sense," Packard says. "Environmentally, it's the right thing to do when you can. You do have fuel prices continuing to creep up, so if there are opportunities to decrease fuel consumption, it's certainly a way to go."

The superintendent's biggest com-

plaint against electric vehicles has always been a perceived lack of power and range. In many cases, it's not so much perception as first-hand experiences with second-hand golf cars.

"By the time those products are handed down, they may be a little tired anyway," Packer says. "It really gives the electric

*Continued on page 52*

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## Eco-Friendly Route

*Continued from page 51*

vehicle a bad name because you may have a product that has a couple of cells that are weak, and they're not going to hold a charge. And quite honestly a golf car power train is not well suited for a mid-duty type cycle on a golf course that a superintendent would subject a vehicle to."

If heavy-duty utility vehicles are to be successfully powered by batteries, hybrids or fuel cells, they likely will have to follow in the tracks of mowers, Lonon says.

"The utility vehicle runs less than two hours a day. There really isn't any mowing machine out for less than two hours," Lonon says. "But on the other hand, what we're doing is not exclusive to mowing machines. Traction drives and hybrids and fuel cells can really be applied to any product. It's really a matter of deciding which one makes sense to do first."

In addition, utility vehicles, fair or not, are considered "second-tier products," Lonon says, when compared to mowers.

"They're the kinds of things you need to do your job, but your greens committee and the golfer couldn't care less what vehicle you got," Lonon says. "They're worried about what the greens look like or what the fairway looks like."

In August, Club Car released an electric-powered utility vehicle that it considers anything but lower tier. Powered by eight six-volt batteries rather than six eight-volt batteries, the vehicle provides a best-in-class top speed of 17 mph and a category-leading useful range. The vehicle also has a weight capacity of 1,200 to 1,500 pounds.

"In my opinion ... this electric (mid-duty) vehicle will do everything that a gas vehicle can do," Packer says. "The primary difference is that you could still run a vehicle out of power at the end of a day if you're working it real hard. So, is it for 100 percent of the population? I would say no. But we're to the point where 75 to 80 per-



**Mowers are already operating on electric power, as Toro's Dana R. Lonon explains.**

cent of the population should have a very good reason to look at this product."

As for that necessary demand to inspire research and development, Packer says it's coming.

"The market will continue to look electric once it understands there are viable electric options out there that will give them the performance and reliability that they are looking for and have become accustomed to with gasoline products," he says. ■

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# Gaining Appeal

More superintendents are using  
**biostimulants** and trusting in  
them, companies say

BY LARRY AYLWARD, EDITOR IN CHIEF

**B**iostimulants sound like a category of relatively new and cool products used to treat turf. They are . . . but they aren't.

Joe Lara, the product manager for horticulture and specialties at Becker Underwood, points out that what the industry knows today about biostimulants and their benefits to growing turf plants isn't all that new.

"Seaweed extracts, for example, have been used by turf professionals for more than 75 years, originally in the form of composted kelps," says Lara, whose company first developed and offered its line of biostimulant products to the turf and horticulture specialty markets in the mid 1990s. "And the renewable benefit to soils derived from the addition of humic substances is certainly nothing new to agriculture."

That said, there have been dramatic evolutions both in market acceptance and in product diversity and sophistication of biostimulants, says Bill Byrnes, president of Floratine Products.

"Relatively few superintendents were using biostimulants in the early 1990s," Byrnes says. "Today a vast majority of superintendents apply

them for both day-to-day and high-stress management. Today biostimulant use is a mainstream management practice as far as most superintendents are concerned."

Joel Simmons, president of Earthworks, says the biostimulant market has grown significantly over the past 10 years mostly because superintendents have discovered the real significance to using a soil-based program and the value that a quality liquid and dry organic product line can provide.

Unfortunately, the growth has led to a surge of new products that are trying to capitalize on the sector's growth, even though they are de-



veloped with little understanding of the agronomic importance that a quality biostimulant can provide. "This helps to perpetuate the stereotype of smoke and mirrors," Simmons adds.

Speaking of the smoke and mirrors, John Sedivy, Novozymes' global business manager for Roots Plant Care Group in Salem, Va., says Roots conducted several focus groups with superintendents in 2004 and learned that the snake-oil perception was alive and strong.

"The situation has gotten better over time, but it still persists," he says.

Biostimulant products, some with exaggerated claims, have come and gone from the market for many years, Lara points out. But the research conducted in the past 15 to 20 years has helped move the turf industry forward with biostimulant use, Lara says. Hence, there has been a growing trend to re-evaluate and subsequently use true biostimulant products, Lara says.

Sedivy says a key to success in the biostimulant market place is reliability.

"We're not going to put out a product that we know doesn't work," he says. "And we're not going to make marketing claims on products that go above and beyond what we believe those products can do."

Product consistency is another key, Sedivy points out.

"We're consistent in the way we produce a product," he adds. "We make sure that every time we put product in a jug, it's the same product. "Because Novozymes is a science-based company, the formulas and manufacturing processes our team has developed ensure we're consistent in the way we produce and package every product."

It's also vital that a biostimulant company's personnel know how to market its products appropriately. Byrnes says that Floratine invests "an incredible amount of time and money" into training associates so they can provide users

with appropriate product-use and result expectations.

"Many would say that we have been pretty successful, but it remains our biggest challenge," Byrnes says of the training. "We feel our representatives must be competent to understand what is going on with the turf before offering a solution from the available product choices."

Lara says Becker Underwood "encourages all end-users to know and fully understand what is in the product, demand and expect only the highest quality ingredients, and not be misled by exaggerated claims that seem too good to be true — because in all likelihood they are."

Simmons agrees that education is Earthworks' biggest challenge. "There is so much bad information in the market about what a biostimulant is to begin with, not to mention how and when they should be used," he says, adding that too many manufacturers are trying to call a

*Continued on page 56*

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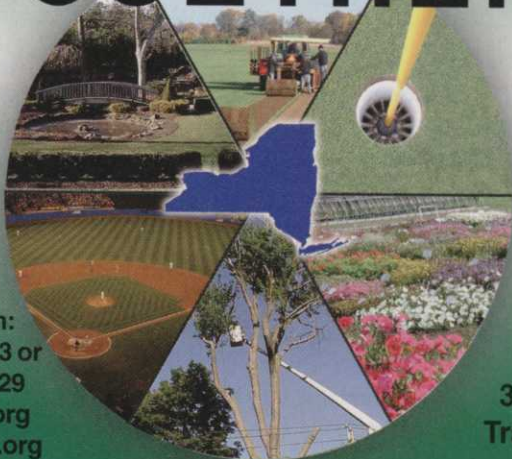
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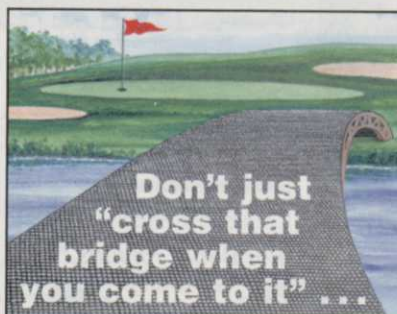
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## Gaining Appeal

*Continued from page 55*

fertility product a biostimulant, "when in reality these products do little to feed microbial activity and often actually have a negative effect on their survival."

Below are many biostimulant products on the market and their descriptions:

### Foliar products

**Milliken Turf Products** offers True Foliar NPK Phosphite 10-20-16. It contains more macronutrients and a phosphite source derived from phosphorous acid. True Foliar NPK Phosphite contains a minimum of 10 percent of the company's proprietary seaplant extract.

The company also offers SeaBlend, a blend of high-quality organic and synthetic ingredients to product a rich turf color.

### Dry-soluble combination

**Becker Underwood** offers VigaROOT, used in spray application programs to reduce stress and stimulate root growth through enhanced water and nutrient uptake and correct micronutrient deficiencies.

VigaROOT is a dry-soluble combination of iron-chelated manganese, chelated zinc, natural humic substance, seaweed extract, yucca, and a proprietary blend of natural sugars, vitamins, amino acids and beneficial bacteria.

VigaROOT biostimulant programs are most beneficial applied at two-to-three week intervals during stressful summer conditions and as an establishment boost during overseeding.

### Composted chicken manure

**EarthWorks Natural Organic Products** has been formulating and manufacturing dry and liquid organic soil amendments since 1988. Its products include Replenish 5-4-5 — Formulated Organic Fertilizer. The foundation of the product is composted chicken manure with 40 percent of the product made of rock minerals and carbon activators. Turf is a cover crop, one that is constantly de-mineralizing the soil, and 5-4-5 is a good way to replenish this mineral content and provide the plant with a sustainable supply of needed macro and minor nutrients, the company says.

### Meal-based fertilizer

**Nature Safe** fertilizers are constructed meal-based fertilizers derived from feed-grade pro-

teins such as meat, bone, blood, poultry, fish and feather meals as well as bakery by-products and humates, not waste by-products. The fertilizers promote strong turf color and build stress tolerance. Some of the company's products include: 8-3-5 Stress Guard Fertilizer, which is for new or established turf or can also be used during renovation and overseeding; and 10-2-8 All-Season Fertilizer, which enhances root and shoot stability with controlled plant growth. It also improves overall disease management by increasing the efficiency of fungicides.

### L- amino acid-based fertilizers

**Nutramax Agriculture** offers products that feature only biologically active L-form amino acids obtained through enzymatic hydrolysis of natural protein. Included is MACRO-SORB foliar, a biofertilizer based on amino acids. It allows for greater absorption and transport of nutrients through the leaves into the plant. The action of L- amino acids and substances with phytohormonal effect in MACRO-SORB foliar helps to regulate the opening of the stomata, increase water potential, regulate osmotic pressure, slow down photorespiration, and increase net photosynthesis.

MACRO-SORB foliar is a true systemic with no phytotoxic effects and is tank-mix compatible with soluble fertilizers, fungicides, insecticides, plant growth regulators, and herbicides.

### Organic fertilizer

**Milorganite's** organic fertilizer is versatile and can be used anywhere a superintendent or groundskeeper deems necessary. Milorganite is ideal for a variety of applications: greens; fairways and roughs; tee boxes; trees; planting beds; and flowering shrubs.

### Foliar auxiliary nutrients

**Floratine Products** offers a variety of foliar auxiliary nutrients designed to address the photosynthetic and chlorophyll requirements of turfgrasses. The products include Astron, Per "4" Max, ProteSyn, Knife, Renaissance, Perk-Up and others.

The company also offers value-added foliar nutrients to provide linear sustenance and support even, consistent growth.

*Continued on page 58*



## Gaining Appeal

Continued from page 56

### Microbial-based products

**Novozymes Biologicals**, ROOTS Plant Care Group says its endoROOTS granular, a mycorrhizal rooting stimulant for turf and plants, now includes patented high-impact microbes. Designed to increase root development, accelerate plant establishment, increase drought and stress tolerance, and convey nutrients more efficiently from the soil, endoROOTS granular can be used in aerification, sod and seeding.

### Combination products

**Bio Basics LLC** markets natural-based granular fertilizers using Pasteurized Poultry Manure from Perdue Farms as the base for both the stand-alone product and the ALLY product line. PPM 4-2-3 alone provides excellent carbon and calcium sources for the plant and soil while performing as a slow-release fertilizer.

The alliance of PPM and regionally specific blends of synthetic fertilizer allows the customer to apply sufficient N-P-K requirements along with organic carbon and mineral sources at the same time.

### Micronutrient delivery system

**Clawel Specialty Products** offers Specialized Nutritional Formulas that are a combination of nutrients and other compounds which contain hormone precursors, natural plant amino acids, plant vitamins and anti-stress (antioxidants) substances. A proper combination of nutrients and biostimulants will enhance photosynthesis, negate toxic levels of stress-producing substances (oxidants) and enhance root production.

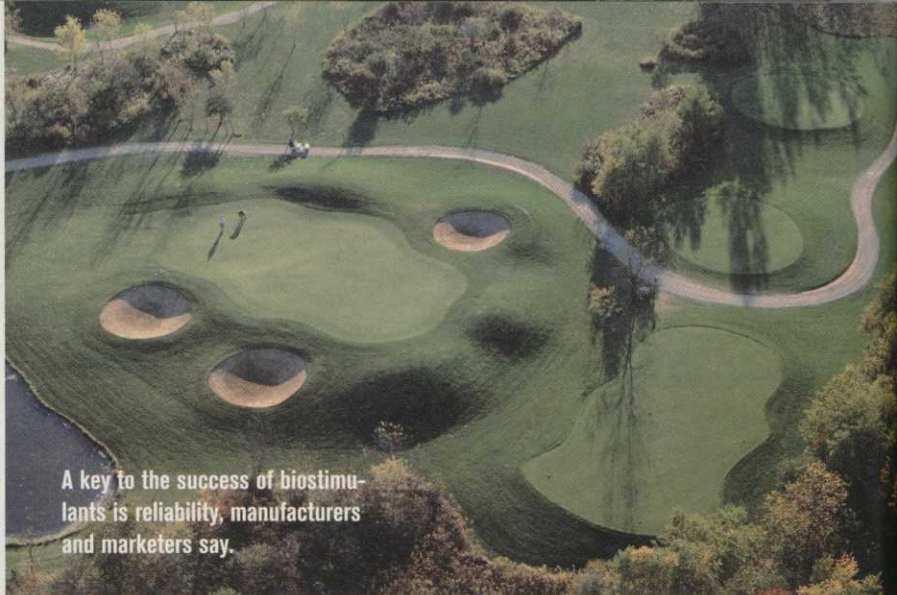
Clawel also offers Premium Fertilizers, a combination of different nutrient formulations designed for specific needs.

### Fertilizers

**PRO-SOL** offers its turf fertilizers Chameleon and Transition intended for direct application.

Chameleon contains iron with a combination of eight essential macro, secondary and micronutrients.

Transition contains potash with a combination of four essential secondary and micronutrients.



A key to the success of biostimulants is reliability, manufacturers and marketers say.

### Remineralizer and bioinoculant

**Soil Technologies Corp.** introduces TurfTech Bio-Min, a new re-mineralizer and bioinoculant. The patented technology combines three agronomic tools in one easy-to-use formula. Research on TurfTech Bio-Min has demonstrated that the product reduces fertilizer requirements, suppresses common turfgrass pathogens and improves water infiltration.

One of the unique contributions of TurfTech Bio-Min is the addition of a micronized volcanic rock powder that delivers more than 60 trace elements not found in conventional N-P-K fertilizer. When applied to soil and plants, TurfTech Bio-Min strengthens the cell wall and activates enzyme activity. The result is turfgrass that resists damage by diseases, mowing, frost and drought.

### Microbial inoculant

**Growth Products** offers Companion, a microbial inoculant that contains *Bacillus subtilis* GB03 microbes, which quickly colonize the root zone. It is good for use with sterile soils, as well as with high-sand-content tees and greens. A vigorous beneficial microbe population means healthier soil and plants.

The company also offers Essential Plus, a root stimulator that contains plant extracts such as humic acid, L-amino acids and a natural wetting agent not found in standard NPK fertilizers.

### Foliar absorption

**Grigg Brothers** products have been specifically designed for foliar application and foliar absorption. All product contains "facilitators" which aid penetration into plant cells, effectively translocate to sites of action, and provide all or most of the nutrients needed by

plants to chelate minerals.

In addition to special facilitators, Grigg Brothers products contain an organic base, consisting of natural organic compounds that function metabolically and are found naturally in the plant.

### Liquid irons

**PBI/Gordon** offers biostimulants and micronutrients. Its liquid irons include RROMEC and FeRROMEC AC. The former provides fast, dependable green-up, usually within 24 hours of application, and corrects chlorosis due to iron deficiency. The latter is an amine-compatible formulation for FeRROMEC green-up that can be tank-mixed with other turf care products.

The company also offers turf biostimulants, including FOCUS, which contains high concentrations of turf-beneficial materials extracted from humic acid and help in precise ratios for optimum turf response for resistance and recovery from stress.

### Soil conditioner

**Gro-Power** Premium Green 5-3-1 is a multi-purpose homogeneous fertilizer/soil conditioner. Using the company's Matrix technology, the product was developed for greens, tees and any other areas where fine-bladed bent and hybrid bermuda turf grasses are utilized. The particle size will ensure even distribution, rapid penetration into the root zone and minimum mower pick-up.

The basic material in Gro-Power Premium Green 5-3-1, as in all the Gro-Power products, is humus. Humus promotes bacterial propagation, which tends to improve soil structure, helps to increase the moisture-holding capacity and helps in breaking up compacted soils. ■