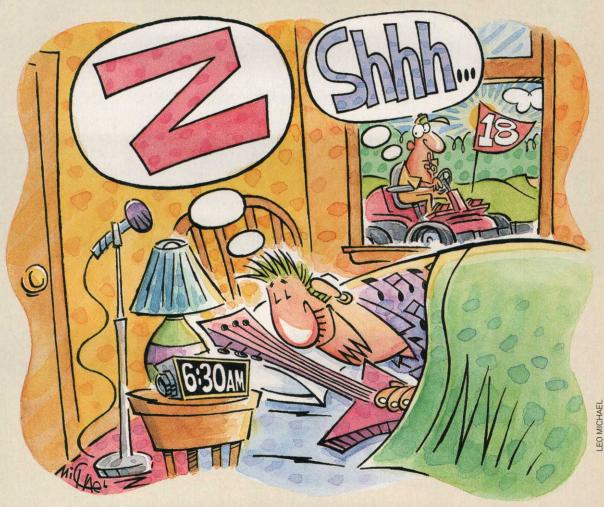


### **Real-Life Solutions**

■ ELECTRIC GREENS MOWERS

### Rock Stars Can Sleep Late

Thanks to 'Vrrummless' Electric Greens Mower



Jacobsen E-Walk
helps superintendent
out of a "quiet"
predicament

BY LARRY AYLWARD, EDITOR

aul Stroman considered it pretty cool when he learned that the celebrated and chock-full-of-smash-hits rock 'n' roll band that was coming to town had booked three nights at his resort's posh hotel. After all, it wasn't often that the \_\_\_\_ came to town. (Editor's note: The resort asked us not to name the rock band in print. While we respect the resort's request, we will tell you that the band's name has six letters in it — and it's killing us to keep a secret.)

Later, Stroman, superintendent of the golf

course at the Ballantyne Resort in Charlotte, N.C., heard about the band members' special requests during their stay. The band's requests, while certainly not outlandish, threw a guitar-sized monkey wrench into Stroman's normal plans for morning mowing.

The band's singers don't like to sleep with the air conditioning running — the cool air apparently wreaks havoc on their vocal chords — and they prefer to snooze with the windows open. Nothing wrong with that — except the band also requested that noise be kept to a minimum until noon. (Now before

you go on about how pampered these guys are, consider that rock stars have *always* slept late. It's part of the culture, man.)

Stroman had no problem with them sleeping late. Heck, they could sleep until mid-afternoon if they wanted. But because the band's rooms abutted the 18th green of the resort's golf course, Stroman and his maintenance crew found themselves in what you could call a "quiet" predicament. The 18th green was normally mown at 6:30 a.m. Since the maintenance crew's gasoline greens mower would "vrrumm" as loud as feedback from Jimi Hendrix's guitar, the sleeping rock stars would surely wake up. (Now that would be karma at work. How many times have you been awakened by neighbors playing loud music into the wee hours of the morning?)

Stroman wondered what to do. He couldn't leave the green unmowed because golfers would groan about the slow green speed. If he mowed it and awoke the rock stars, well, let's just say he might be going his own way, as the song says. (No, the unidentified band in question is *not* Fleetwood Mac.)

"We knew we had to use an alternative means to mow the green," Stroman says.

So Stroman called his pal, Russell Spangler, who operates G&S Turf Equipment, a distributor in nearby Greensboro. Stroman had heard about Jacobsen's E-Walk Greens Mower, which runs off two 48-volt DC electric motors and, more importantly, is as quiet as a rabbit hippity-hoppiting across a dew-soaked fairway at sunrise.

"It's really quiet," Spangler says of the E-Walk, the only electric walking greens mower on the market. "You can carry on a conversation with someone while you're using it."

Stroman asked Spangler if he could borrow the E-Walk for a few days, and Spangler delivered it to the course. The 22-inch mower, introduced last year after two years of development and testing, uses no oil or hydraulic fluids and spews no emissions. It features an 11-blade reel that delivers an adjustable height of cut down to three-sixty-fourths of an inch.

"E-Walk fills a clear need in the golf market for quiet and environmentally friendly greens mowers," says Ralph Nicotera, Jacobsen's vice president of product management. Stroman won't argue. The mower's silence impressed him. "If you were standing off the green, it looked like someone was just walking behind the mower because you couldn't hear it," he says.

The only sound was the slight "clip" of the reel, Stroman says. Otherwise, "you'd think the mower wasn't even operating," he adds.

Stroman was also pleased with the E-Walk's cutting performance and noted that it provided a good quality of cut.

"A major selling point for this machine is the quality of the cut," Spangler says, noting that one electric motor allows the operator to set the

ground speed while the other electric motor allows adjustment of the clip frequency.

Stroman didn't purchase an E-Walk after using it, but he may add an electric greens mower to his fleet in the future. "It fit the need in which we used it," he says.

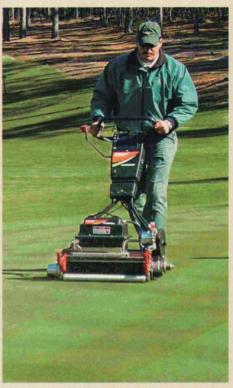
Spangler says E-Walk hasn't taken the industry by an electrical storm, so to speak. He says superintendents are nervous to switch from gas to electric versions. They're concerned about how long an electric mower will last on a course before pooping out. For the record, Spangler says the E-Walk can mow an average of 25,000 square feet on one battery or about 90 minutes.

The E-Walk was developed for situations like the one in which Stroman found himself. It's a good bet that similar situations, as well as new local sound ordinances, will continue to affect how the golf course maintenance industry operates — literally.

Although not electric, John Deere introduced three walk-behind greens mowers a few years ago to combat the noise issue. The mowers — named the 180-B, 220-B and 260-B — feature larger mufflers and composite side covers that minimize noise.

The electric surge has also hit the triplex greens mower segment, where Jacobsen and

Continued on page 54



How quiet is Jacobsen's E-Walk? It's so quiet that you can carry on a conversation with someone while you're using it.

### **Problem**

The rock stars were staying at the resort's hotel. Their rooms abutted the 18th green. They requested to sleep with the windows open and for no noise to be made before noon. What's a superintendent, who must mow the golf course's greens at 6:30 a.m., to do?

### Solution

The superintendent used a walking electric greens mower to mow the 18th green. It provided a quality cut and didn't wake the "special guests."

### **Electric Greens Mower**

Continued from page 53 John Deere have developed mowers, but their mowers are distinctly different, however.

In developing its new 2500E Tri-Plex Electric Reel Greens Mower, Deere focused strictly on eliminating hydraulic leaks that can burn and damage turf, not reducing noise, says Jon Gorman, group brand marketing manager for John Deere Golf & Turf One Source.

Gorman says it has eliminated more than 100 leak points at the reel circuit of the mower, which recently started production and has limited distribution this year. While it's partially electric, it still whirrs because it runs on a gas or diesel engine. The only sound that has been eliminated is that of the hydrostatic pump noise, Gorman points out.

"The engine still runs at the same revolutions per minute (RPM)," Gor-



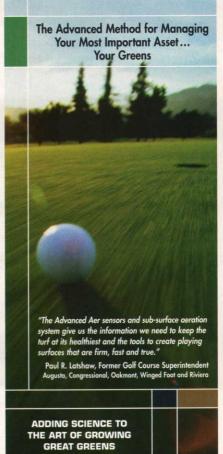
man says, noting that Deere didn't want to sacrifice the power of a gas or diesel engine for an electric engine. "In theory, this machine isn't driven to be quiet. It's about elimination of the hydraulics."

As expected, superintendents who have experienced turf damage caused by mowers' leaking hydraulic fluid on greens are the people likely to be most interested in Deere's 2500E, Gorman says.

Like the E-Walk, Jacobsen's E-Plex is entirely electric. Jacobsen bills it as: "No fluids to spill. No oil to change. No emissions. No noise."

We think rock 'n' roll stars would like it and any greens mower that's quiet - especially if it lets them sleep late.





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### **Designs on Golf**

**ARCHITECTURE** 

# ajor League Baseball owners agreed to accept \$3.6 million from Sony Studios to slap *Spiderman* logos on bases during weekend games in June — the same weekend that coincided with the release of *Spiderman 2*.

Baseball's chief operating officer rebutted a small group of complainers by saying the move didn't detract from the game, but added to its entertainment value instead. But overwhelmed by millions of complaining "purists," baseball's decision makers backed out of the deal 24 hours later.

Some NASCAR fans claim that pervasive product plugging is simply part of that most soothing of American pastimes. After all, watching loud cars race around in circles is merely interesting. Slap ads everywhere you look, and now it has character.

But here's the really sad news: Golf is next. To enhance "entertainment value," some course owners will do more than install tee signs sponsored by local hardware stores. Soon you'll see revenue-desperate courses auctioning off their names.

Get ready for Rogaine Ridge, Clorox Creek, Levitra Lakes and The Experience at T Mobile Ranch Golf Course.

According to the spokesman for a new Northern California-based company brokering naming rights, this new income "can be passed on to consumers either through better course maintenance or lower green fees." The spokesman prefaced that side-splitter by telling *Golf World*, "should the course owner be so inclined, of course."

Of course. We all know where that new income will go: straight to an owner's pocketbook.

For those involved with big-time tournament courses, brace yourselves for a different kind of commercialism. Within the next few years, expect to be mowing, painting or maybe even constructing architectural advertisements. You can thank TiVo for that.

TiVo is the hi-tech VCR which records programs digitally and makes televised golf tolerable again. Armed with a TiVo remote, the viewer can fast-forward through the excessive number of commercial breaks necessitated by huge purses, declining ratings and corporate greed.

# Get Ready for Rogaine Ridge GC

BY GEOFF SHACKELFORD



IS COMING TO GOLF,
THANKS IN LARGE
PART TO TIVO

Now that TiVo is affordable (\$140 for the recorder, \$13 a month for the service), golf fans will have a blast watching the final round in about 30 minutes.

Here comes a dreaded interview with the senior vice president of Brand Platform Cross-Polarization. No thanks. Fast forward.

Earlier this year, I TiVo'd the final round of the Ford Championship at Doral. I wasn't going to watch, but heard something amazing happened. So I flew through the first two hours of Ford commercials and the senior VP's contractually obligated interview to see Craig Parry's amazing sudden-death playoff eagle. No commercials — just a few goose bumps.

When tournament sponsors go home and TiVo through events they've put \$8 million into, they're going to start asking how they avoid being TiVo'd.

Look for some enterprising PGA Tour vice president to suggest that fairways, bunkers and greens be employed to ease the multimillion-dollar sponsorship blow. Perhaps we'll see fairway-mowing patterns subtly crafted into a shape closely resembling the sponsor's logo. Or how about bunkers in the shape of products? Disney World has already done that.

Shoot, why not just paint an ad on the putting surfaces so the camera has no choice but to beam the billboard into TV sets across the land?

It's only grass. It will grow back. And most of all, some tour official will insist that golf's entertainment value was increased.

Right. And I have some nice links land on the Gaza Strip I'd love to sell you.

Geoff Shackelford would normally take this opportunity to insert a plug for his current book, The Future of Golf in America, but he doesn't feel that such a promotion would add to the entertainment value of his column. You can e-mail him at geoffshackelford@aol.com.

## TURFGRASS TRENDS

DISEASE MODELING

### What's the Forecast for Turfgrass **Disease Modeling?**

By L.P. Tredway, R.D. Palmieri, G.M. Lackmann and D.S. Niyogi

urfgrass managers are under constant pressure to minimize fungicide use, primarily because of economic constraints and environmental concerns. At the same time, customer tolerance for damage from disease is dwindling, and fungicides are becoming more costly and narrow in their control spectrum. Therefore, new tools are needed to support turfgrass managers in their efforts to manage diseases with minimal inputs.

How is it possible to reduce fungicide use in the current environment? Development of a truly integrated disease-management program is essential. Taking advantage of resistant varieties, cultural practices, biological controls and other practices to limit disease

A fundamental change in the way fungicides are used is also needed in the turfgrass industry.

development can reduce the number of fungicide applications needed to maintain quality turf. In many cases, however, turfgrass managers are limited in their ability to perform essential disease-management practices such as fertilization, aerification or sand topdressing. Fungicides will always be an essential component of disease-management programs for this reason.

A fundamental change in the way fungicides are used is also needed in the turfgrass industry. The fungicides coming to the market today are safe and highly

effective, but are also expensive and more narrow in their control spectrum compared to the old, contact fungicides. They must be used differently as well because these new products are so different. Accurate diagnosis of turfgrass diseases is becoming more and more important because of this shift in fungicide availability.

In the past, when an unidentified disease occurred, turf managers would often control the disease by trial and error. This "spray-and-pray" approach seemed reasonable at the time, but this is no longer an option because the cost of an unneeded application is too great.

Improving the accuracy of fungicide application timing may also reduce the number of applications needed to maintain high quality turf. Indeed, the fungi that cause turfgrass diseases are highly dependent on certain environmental conditions, such as temperature and moisture, for growth and infection. Therefore, it is theoretically possible to predict disease development based on weather conditions.

### Forecasting turfgrass diseases

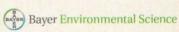
Most turfgrass managers already attempt to predict disease development based on the weather. When you walk outside on a summer morning and the warm, humid air hits you like a wall, is your first thought, "When's the last time we sprayed for brown patch or Pythium blight?" This is your attempt to predict disease development and time fun-

Continued on page 58

### IN THIS ISSUE

- **Bt Bacteria Might Form Basis for** Future Insecticide . . . . . . 64
- **Ultradwarf Bermudagrasses Exhibit Easy Mutation**
- **Scientists Start to Recognize** Silicon's Beneficial Effects ......69

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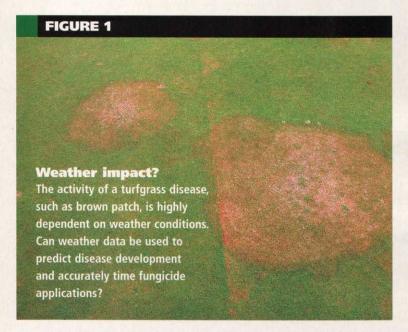
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Continued from page 57 gicide applications based on weather conditions conducive to the disease.

Plant disease forecasting is a specialty within plant pathology that seeks to predict the development of plant diseases based on weather data. The goal is to improve the timing of fungicide applications and other practices for disease control. This is accomplished by development of a model or statistical relationship between disease development and weather variables.

Models for prediction of disease development can be applied to either observed or forecasted weather data. When observed data are used, the result is a warning model. When forecasted weather data are used, the result is a forecast model. This is similar to the difference between a storm warning and storm watch — a warning model describes the current risk for disease development, whereas a forecast model describes the risk at a specified time in the future.

Most efforts to predict disease development use disease warning models. Forecasting models would be more useful because they allow some lead time for making a preventative fungicide application. However, it is unknown if forecasted weather data are sufficiently accurate for prediction of turfgrass disease development. The confidence and accuracy associated with a weather forecast deteriorates with the forecast lead time. For example, there is higher accuracy and confidence in model estimates of tomorrow's weather as compared to next week's weather.

A variety of weather-based models have been developed for prediction of turf disease development. These models vary in their complexity as well as the disease they aim to predict. For example, models are available for all of the most important turfgrass diseases — brown patch, dollar spot, Pythium blight, gray leaf spot, anthracnose, summer patch and take-all patch. Yet few turfgrass managers use these models to assist in timing of fungicide applications.

There have been two main limitations to the widespread use of disease forecasting by turfgrass managers. First, it is believed that site-specific weather data are needed to accurately predict disease development, but this type of data is expensive to collect and not always readily available. Second, there has been no systematic, dedicated effort to develop disease prediction models that are accurate on a regional scale.

### The North Carolina project

At North Carolina State, we have initiated a project to develop a system for prediction of turfgrass-disease development based on weather conditions. A diverse team comprised of turf scientists, agrometeorologists, weather forecasters, computer programmers and geographic information systems (GIS) specialists has been assembled to accomplish this goal.

In 2003, two turf disease warning models were evaluated in the field for their ability to predict brown patch development in creeping bentgrass. The Schumann Model was developed from observations on creeping bentgrass in Massachusetts, and the Fidanza Model was developed in Maryland from observations on perennial ryegrass.

The Schumann and Fidanza models both use temperature and moisture thresholds to predict development of brown patch, but these models differ in how the thresholds are implemented. The Schumann Model has a list of criteria that must be met for brown patch to develop. The Fidanza Model uses a mathematical formula to calculate a value, called E2, which indicates the degree of risk for brown patch development. E2 values greater than or equal to six indicate the potential for brown patch activity.

One advantage of a threshold based model is that turfgrass managers can modify the E2 threshold based on their management practices or microclimates. For example, a threshold of four may be more appropriate for a putting

Continued on page 60



#### QUICK TIP

Stretch your budget with smart equipment choices. Remember to consider how equipment decisions affect your labor costs. The new Toro® ProCore® 648 is designed to aerate 18 average greens in one day with easier cleanup. Toro's Sidewinder® cutting system, available in reel and rotary mowers, virtually eliminates the need for hand mowing around bunkers and water features. Take your demo evaluation further and add your labor savings to the bottom line.

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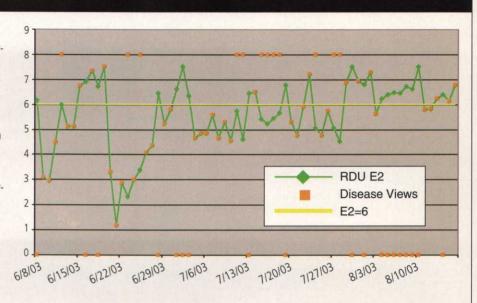
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think it matters a lot. We also think getting in front of a problem is smart too. Which is why we have a relentless commitment to finding new ways to improve turf quality. Our research and training facility in Clayton, N.C., is the Anybody can sell you a load of goods. Being around when you have a question or a problem is another matter. At Bayer, we

#### FIGURE 2

Fidanza Model E2 values generated from Raleigh Durham airport (RDU) weather data compared to daily observations of brown patch development. E2 correctly predicted whether or not brown patch would develop on days when disease observations (pink squares) lie on the E2 curve. E2 issued false alarms on days when disease observations = 0. E2 missed brown patch activity on days where disease observations = 8. The E2=6 line indicates the threshold for brown patch development according to the Fidanza Model.



North Carolina State University seeks to develop a system for prediction of turfgrass disease development. Continued from page 58 green with poor soil drainage or that is surrounded by trees.

To test the two models, monitoring of brown patch activity was conducted on creeping bent-grass at the Faculty Club Turfgrass Field Lab in Raleigh, N.C., in 2003. The plot was established with individual 1,250 square-foot blocks of the cultivars SR1119, G-6, G-2, Crenshaw, L-93, Penncross, A-4 and A-1 maintained under putting green conditions.

Visual observations of disease development were conducted on a daily basis from June 2, 2003, through Aug. 17, 2003. Brown patch development was detected by the presence of a smoke ring surrounding the infection centers. Weather data was collected from the National Weather Service site at the Raleigh-Durham International Airport, which is about 11 miles from the field research site.

Brown patch pressure was relatively low in North Carolina in 2003 because of unusually cool weather conditions. At our study site, brown patch activity was observed on 23 of the 70 days from June to August. The Schumann Model correctly predicted only five of the 23 brown patch outbreaks. The Fidanza Model was slightly better, correctly predicting 11 of the 23 brown patch outbreaks (Figure 1). Thus both the models failed to be sufficiently accurate to use in timing of fungicide applications.

Although the Fidanza Model is not suffi-

ciently accurate for immediate use in North Carolina, this model may serve as a starting point for development of a new model. During analysis of the results, two common themes were noted on days when the Fidanza Model was incorrect. First, high temperatures (86 degrees Fahrenheit or greater) were noted on the day preceding 11 of the 12 days when this model missed brown patch development. Second, precipitation exceeding .1 inch occurred overnight on 13 of the 18 days when the Fidanza Model issued a false alarm.

A modified Fidanza model that accounts for high temperatures and timing of rainfall may prove to be more accurate for prediction of brown patch development in North Carolina.

As mentioned above, there is a perception that on-site weather data are needed to accurately predict disease development. This has been a major limitation to the use of disease forecasting. Many golf courses are equipped with weather stations, but it's difficult to access this data for use in disease forecasting. Weather stations are also cost-prohibitive for many turfgrass managers, and require regular calibration and maintenance. There are many other sources of weather data available — collected at airports and DOT weather stations.

Can these weather data be used to predict disease development in the turfgrass environment?

To answer this question, three sources of off-site weather data were collected and analyzed in 2003.

Continued on page 62