

BRIEFS



FTGA ELECTS BARNES PRESIDENT

TAMPA, Fla. - David Barnes has been elected 1997-1998 president of the 1,200-member Florida Turfgrass Association (FTGA). Elected during the FTGA's 45th annual Conference & Show here, Barnes has more than 20 years experience in golf course turfgrass management. He is vice president and general manager of the Greg Norman Turf Co. in Avon Park. He has been a member of the FTGA since 1988, serving as vice president in 1996-1997. Barnes is also involved with the University of Florida IFAS.

MIDWEST EXPO IN JANUARY

.....

INDIANAPOLIS, Ind. — The 1998 Midwest Turf Expo will be held Jan. 20-22 at the Indiana Convention Center here. A pre-Expo Golf Course Superintendents Association of America (GCSAA) seminar entitled "Design, Construction and Maintenance of Chemical Storage Facilities" will be held on Jan. 19. Registration and exhibitor information is available by calling Beverly Bratton at 765-494-8039.

IMG INKS FOUR CONTRACTS

LAKELAND, Fla. — International Golf Management has signed golf course maintenance contracts with The Blueberry Plantation Golf and Country Club in Alma, Ga., and with three golf facilities in Florida - Heritage Greens, Pelican Strand in Naples and Delray Country Club in Delray Beach. Heritage Greens is an 18-hole course scheduled to open in January. Pelican Strand is a semi-private 27hole facility whose final nine holes will open in mid-January.

FREE BALLS? YES ... AT THAYER CC

THAYER, Mo. - No, that is not a misprint. Thayer Country Club has devised a plan to east the "fall foliage frustration" that strikes golfers each

autumn. You know: Great drive, down the middle, but unfindable because of tree leaves. Thayer's new policy won't find those lost balls for its golfers, but it gives them the chance to replace them. Using the honor system, golf-

ers can just take the balls they lost that round from a collection of those found throughout the year by superintendent Tom Benyo. "I've never heard of a course replacing lost balls, but why not?" said Benyo. "After all, these balls came from the golfers. Let's give them back.'

Ohio show hits hot buttons

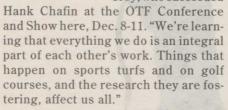
President stresses green 'marriage'

COLUMBUS, Ohio - Calling the relationship of the state's golf course superintendents, sports turf managers and lawn-

care operators "a beautiful marriage," new Ohio Turfgrass Foundation (OTF) President Joe Duncan said the different groups are learning more and more from each

other as time passes.

That relationship has existed for a long, long time, but we depend on each other more than ever before," said Duncan, owner of Evergreen Lawn Care Inc. in Troy, who succeeded



Continued on page 35



Prof. pushes more biological control

By MARK LESLIE

COLUMBUS, Ohio Questions abound in the arena of turfgrass soil ecology and biology, but Dr.

Michael Boehm pointed to a future where biological care plays an equal role in maintenance with chemical and cultural care and the turfgrass' genetic resistance.

The Ohio State University (OSU) assistant professor of plant pathology painted a picture in which current maintenance practices are dominated by chemicals, and where cultural practices and genetic resistance dwarf biological controls.

'We want to get all spheres relatively the same size to give turfgrass managers the ultimate and largest arsenal to combat turfgrass diseases," Boehm told an audience at the Ohio Turfgrass Foundation Show and Conference here.

"Our goal," he said, "is the integrated management of diseases ... to push the responsible use of biorational, environmentally friendly and environmentally

Continued on page 36

GOLF AND THE ENVIRONMENT



A water sample is taken at TPC River Highlands in Cromwell, Conn.

Tackling unreasonable expectations

By RON DODSON

It's interesting how jobs seem to define who we are. For instance, when we ask, "What is a golf course superintendent?" we're really asking what job does he or she do, and, believe me, everyone's got an answer about what they're supposed to do.

First of all, everyone seems to agree that a superintendent's primary job is to manage the golf course (meaning turfgrass). And it follows that every golfer has an opinion about how a golf course should be managed. They've played a lot of golf, they have a lawn, they have a lot of money, and they know how their greens ought to look and play. That makes them experts on how turfgrass ought to be managed. Right?

Sometimes that's how it sounds when I talk with golfers about superintendents.

Well, I'm here to tell you that good golf

course superintendents do a whole lot more than manage turfgrass. In addition to all of the work and expertise it takes to manage turf, they manage water, and from this environmentalist's perspective they also manage wildlife, wetlands, lakes, streams, forests, landscape ecology, insects, the weather, the media, the government, their staff, and the biggest challenge of all: the unreasonable expectations of golfers.

What do I mean by unreasonable? From an economic and environmental perspective, think about wall-to-wall manicured turfgrass, both in terms of man and machine hours as well as in loss of habitat. Think about fertilized turf right down to the edge of water bodies, both in terms of cost of fertilizers, man hours to spread it, and the potential damage to water quality

Continued on page 23



Gathering data by GPS and GSI

Computer maps offer advantages for maintenance and construction

By KEVIN P. CORBLEY

LAKEWOOD, Colo. - Computerized mapping is the future of golf course maintenance and construction. That's the direction Larry Rodgers of Larry Rodgers Design here sees the industry taking. And his clients, some skeptical at first, tend to

For more than a year, Rodgers has been using Global Positioning System (GPS) and Geographic Information System (GIS) technologies to monitor and map the installation of irrigation sys-

tems his company 1ST OF 3 PARTS

designs for new and existing courses. When each project is completed, Rodgers' clients not only have new irrigation, they are left with a digital map of the course they can use for many

"Digital mapping essentially replaces aerial photography in golf course mapping," explained Rodgers. "GPS and GIS are a lot more accurate and much less expensive in the long run than air photos.

Typically, an aerial photo of a course is taken after construction and has limited use as a map reference for some maintenance and future design changes. Digital mapping is conducted throughout the construction process, whether for a new course or a replacement irrigation system at an existing one. The digital map is created in layers as the project progresses and can be used to facilitate the construction itself.

"The bottom line is, this technology saves money by virtually eliminating change orders in renovations of existing courses,' said Rodgers.

Digital maps give contractors an extremely accurate visual guide they can follow during construction. As a result, completed projects match very

Continued on page 22



On 'thin edge' with sand greens? Rieke presents nutrient strategy

By MARK LESLIE

COLUMBUS, Ohio — Declaring that superintendents "are on the thin edge" by putting high stress and low mowing heights on turfgrass, Dr. Paul Rieke proposed a nutrient strategy for sand greens.

Although unknowns abound concerning such things as micronutrients, and the impact of iron, manganese and fertility in general, the Michigan State University professor warned superintendents "you'd better know what's in the ground."

Soil and tissue tests are becoming staples in modern greenkeeping, helping superintendents control fertility, water, turf growth, thatch or pests, Rieke said during a session at the Ohio Turfgrass Conference and Show here.

"Sand greens are unique and must be controlled differently," he said. And, he stressed, on many older courses where the top 2 to 3 inches are sand, the superintendents are actually managing sand greens during the colder months because the roots are often only growing in the sand.

"At that time," he said, "you basically will be managing the greens fertilitywise as you would a sand green."

"That's when the roots are only in the sand layer, and the soil below is no longer impacting the plant," Rieke added.

Rieke told superintendents tending sand putting greens:

- They need to be top dressing more in the spring and fall, when thatch accumulates, than during the summer.
- Higher phosphorus levels will not enhance poa annua ("I've seen no data to substantiate that claim.")
- A rate of 30 pounds per acre is best for phosphorus, which is required for root growth.
- Surface application of phosphorus is as good as injection.
- During the first couple of years after establishment of turf, apply 6 to 8 pounds of nitrogen annually, including some organic sources with the application. Reduce the annual nitrogen as appropriate in subsequent years.
- Consider a late-fall application of nitrogen as part of the fertility program.
- On most sand greens, superintendents are not able to get by with less than 5 pounds of nitrogen a year.
- Follow soil tests for phosphorus levels, applying it throughout the season.
- Apply potash regularly at a rate related to the nitrogen rates.
- Use soil tests to determine the annual potassium needs for sandy loams and finer soils.

Spread potassium throughout the growing season.

- Monitor calcium based on pH and magnesium levels.
- Know what is in the irrigation water. ("You're getting sulfur, calcium and magne-



Dr. Paul Rieke

sium from sources you don't know," he said.).

• Consider a micronutrient package, including high iron, some manganese, a little bit of zinc and copper. ("But watch your balance.")

• Tissue testing is a

valuable tool. ("Make sure to shake the sand out of your sample because it will throw off the results big-time.")

Rieke said more research needs to be done on micronutrients, iron, manganese, zinc and copper.

"Micronutrients? That is kind of a black box," he said. "We don't really have any information on

that. That work hasn't been done... In micronutrients we're dealing with a situation in which different sands will give you different responses..."

OTF Show

That is why he recommended

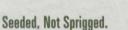
Continued on page 38





Less Maintenance.

Sunrise Brand
seeded Zoysia needs
infrequent mowing and
little or no fertilizer to
maintain its thick
green appearance.



Sunrise Brand Zoysia is seeded. So you can have beautiful turf in weeks, instead of years from plugging.



Come see us at booth #3577.

Jacklin Seed • 5300 W. Riverbend Ave., Post Falls, ID 83854-9499 USA 800 688-7333 • 208 773-7581 • Fax 208 773-4846



Come see us at booth #1816.

Medalist America • 5300 W. Riverbend Ave., Post Falls, ID 83854-9499 USA 800 568-8873 • 208 773-2587 • Fax 208 777-7954



Duncan: Mutual help in green industry

Continued from page 19

Duncan noted that the first day of the OTF conference was filled with joint sessions of the three disciplines, dealing with topics common to them all.

"It's a sign of the times," he said. "It's amazing what we [lawn-care industry] have learned from the golf course guys. We don't have structures of golf greens on lawns, but what they do filters down to us, and vice versa.

"Going into the 21st century, we will be learning more and more this way."

Saying the lawn-care industry is "constantly being thrown curve balls with regulations, such as composting and yard waste," Duncan added that ideas coming from the golf course industry have helped cope with the new rules.

Referring to the \$260,000 in grants and scholarships OTF donated to Ohio State University this year, he said he hopes to continue, and even improve, this performance, "especially with the addition of turf plots and new professors [recently added to the staff].

"We have more good reasons

Genetic engineering

Continued from previous page

and insect resistance you will have fewer dead spots ... less mowing, fewer clippings, and less irrigation."

On the other hand, he said, "more people will want finer turf. There will be more do-it-yourselfers in lawn care. There will be a higher demand for greens, tees and fairways, and for renovation of existing turf to new varieties."

Overall, he said, it should be easier to manage turf, "but it depends on what spectrum of turf-care management you are on. If you're on the professional end, you'd better know what the varieties are you are treating, and from that standpoint you will need more knowledge, more record-keeping, better communications with your crew, and able to keep up with a faster pace of advancing technology."

Market size is critical to pay for genetic research, Meier said.

"One of the concerns is, if you find a fantastic gene for herbicide or disease resistance, do you have a plant that is going to be harder to control?" he said. "Who knows, if it is disease-resistant, is it going to grow wild and take over [tracts of land]? The USDA [U.S. Department of Agriculture] controls the release of transgenic organisms and this is one criteria it looks at."

to support their research," he added. "None of us individually has the funds, or the staff to do this research. We appreciate what OSU does for us."

The OTF function, Duncan said, is the research and technology of products and services. "We feel we are the education arm of all the other groups —

the golf course superintendent associations, Ohio Lawncare Association and Professional Grounds Management Association. We feel they better serve their constituents in the administration and business aspects. What we're doing in gathering and disseminating information and research is the beauty about

the marriage. It's what makes the green industry in Ohio so successful. Both groups are very viable and important to all the people involved."

Duncan, who has been in the lawn-care industry since 1975 and started Evergreen Lawn Care in 1985, said extraordinary advances have been made in technology and the use of computers.

"These things will come more

naturally to the next generation," he said. "Some of us in this industry are dinosaurs. Look where we've come in the last 20 years, in the way we managed turf then and now. It is the difference between night and day. I can't imagine where we're going to be 20 years from today.

"It's exciting because what we're doing now is so much better for the environment, for our clients, and for the turf."

Answering All Your Concerns About Environment, Safety And Precision

SPRAY STAR 3000

Powerful, quiet and highly maneuverable

With four-cylinder water-cooled
gasoline engine, two wheel hydrostatic
drive and power steering Electric cruise
control automatically maintains speed
Impervious 300-gallon polyethelene
tank Filtered-air cab, fresh water wash
tank and operator safety switches



STAR SHIELD BOOM

With advanced engineering for precise application and operator safety — Aerodynamic design redirects air flow and minimizes drift, especially in windy conditions — Three section breakaway boom, with tension adjustments and automatic fold by operator — Separate wheels for each boom section to closely follow terrain — Dripless nozzle TeeJet® tips and flow indicators — Half the weight of other booms — Easily retrofitted to most sprayers



SPRAY STAR 1600

Ultra-low profile for maxium stability and top visibility With two-cylinder OHV gasoline engine and two-wheel drive Hydraulic power steering and braking Solid fiberglass 160-gallon tank with 5-year guaranty Choice of electric or manual spray controls
Wide array of safety features



YOUR SMITHCO DISTRIBUTOR HAS ALL OF THE ANSWERS FOR BETTER, SAFER SPRAYING

CIRCLE #141/GCSAA BOOTH #1510

SMITHED WAYNE PENNSYLVANIA 19987

Visit Us In Exhibit #1510 at the GCSAA Show

GOLF COURSE NEWS



Boehm: Much to learn in bio-ecology

Continued from page 33

sound chemistry - whether it's synthetic or from a natural origin - and to better understand and increase the use of biologicals."

Composts add nutrients and micro-organisms to soil that have been shown to control or counter pathogens, he said. The focus of research at OSU and other universities is understanding how and why diseases are sup-

"We know that if you increase the nitrogen level on turf you can suppress dollar spot nearly 60 percent," Boehm said. "But there are still lots of issues. Is the nitrogen in the form we are

applying it directly toxic to the pathogen? Or is the nitrogen giving the plant the ability to outgrow the pathogen? Or is the nitrogen somehow changing the physiology of the host, thereby making it less susceptible?

"Those are all very valid questions that we'd like to address.'

From a plant pathologist's perspective, he said, mechanisms of biocontrol are:

· competition between the biological control agent, or the organism that is suppressing the pathogen for space or nutrients;

· antibiotic production, since the biological control agent produces antibiotics that are toxic to the pathogen;

· hyperparasitism, wherein the biocontrol agent uses the pathogen as a food base or energy source; and

duced resistance-"an area," Boehm said, "we



don't understand very well, but the presence of these beneficial organisms brings about a physiological, or biochemical change in the plant that renders the plant resistant." He likened this to spraying Crenshaw bentgrass, which is prone to dollar spot, with a chemical and finding it is resistant to dollar spot.

Boehm released some findings from a compost study that is in its second year.

Asking what a single application of compost does to the turf, he said it gives the turf "a huge swell in growth and clipping yield. Depending on what kind of compost you use, that lasts anywhere from six to 10 weeks. If an epidemic occurs during that period of enhanced nitrogen fertility, we see a significant decrease in the amount of dollar spot. If, however, like last summer, we make our compost application in May - even though we get nice fertility and greening effect on the turf ... we did not see any appreciable effect on disease management.

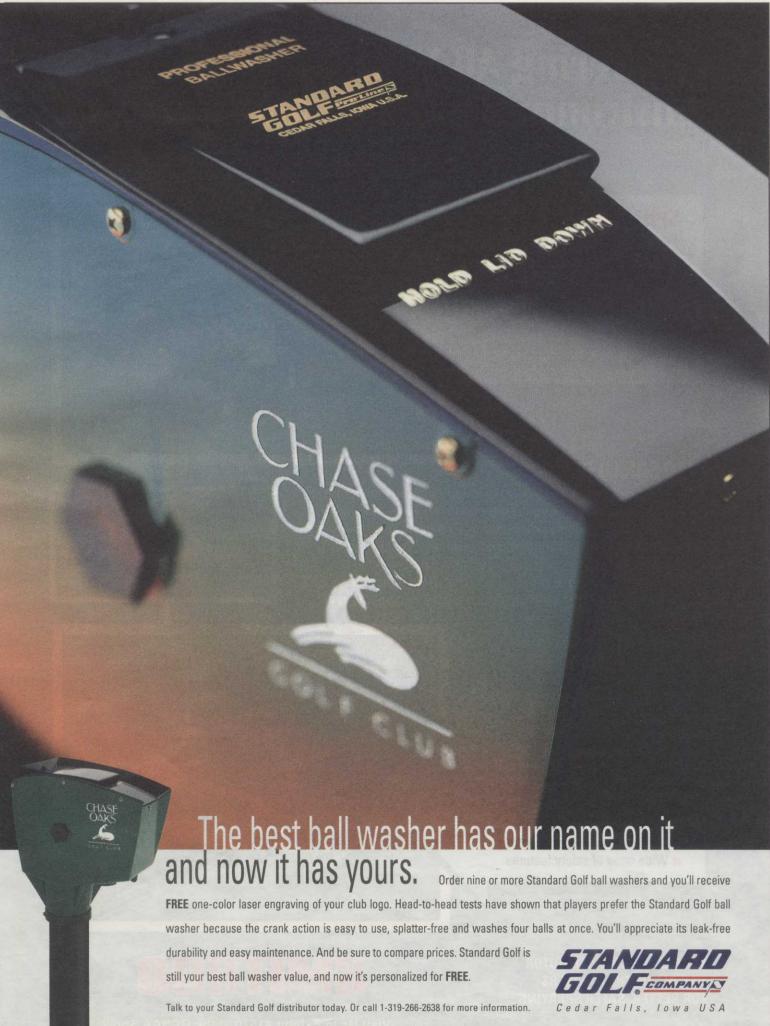
The OSU professor hopes to discover the effect of continued use of compost top dressing incorporated in spring and fall, along with spring and fall aeration, over a four-year period.

He mentioned studies at Cornell University by Dr. Eric Nelson, in which compost top dressing has suppressed pythium root diseases in sand putting greens.

In one his own projects, Boehm has established bentgrass greens to compare compost and peat in the rootzone mixes.

"It's a pretty striking difference when you look below the ground," he said, adding that, while using take-all patch as a test pathogen, he found that compost was good, peat was







Biologicals & biorationals: An emerging world in turf

By MARK LESLIE

COLUMBUS, Ohio — You may not find the "neem tree" in your dictionary. Nor the words "biorationals" and "naturalites." But they will be playing increasingly important roles in golf course maintenance, according to Dr. Parwinder Grewal, an assistant professor of turfgrass entomology for the Ohio State University (OSU) Extension Service.

Speaking at the Ohio Turfgrass Foundation Conference here, Grewal said some biological controls have succeeded and some have not, but their use has increased tremendously in the last decade — a harbinger of the future.

Piecing together research from OSU, Cornell University and other colleges, Grewal updated the audience on research done on biologicals and biorationals. He defined biological control as the use of a living organism — such as insectpathogenic nematodes, bacteria or fungi — to control a pest insect.

Biorationals — a new word in golf course lexicon — are products of natural origin that are safe to non-target organisms. The Environmental Protection Agency calls them pesticides with different modes of action than conventional pesticides, with higher selectivity and lower risks to humans and wildlife.

Researchers are delving into these fields in response to concerns about human health and safety, environmental and ground-water contamination, and the impact of chemicals on wildlife, fish and beneficial organisms.

Biorationals include botanicals, microbial elements and synthetic chemicals with alternative modes of action.

Grewal spelled out various findings of research into biologicals, including:

- Nematodes of the genera steinernema and heterorhabditis fight armyworms, webworms, black cutworms and white grubs that feed near the surface. They can become part of the environment if not exposed to toxins.
- The fungi beauveria bassiana infects chinch bugs under hot, humid weather. The product, named Naturalis-T, had limited success in 1997 trials.
- The bacteria bacillus popillae (the milky disease) is a natural pathogen of white grubs. It is highly specific and different strains infect different grub species. Infected grubs die in a month. The products are Doom, Japidemic and Milky Spore. Grewal said the quality of current products is questionable.

Among biorationals, Grewal

• Of the microbial derivatives, cacillus thuringiensis deltu endotoxin is the most widely used microbial insecticide on the urban landscape. New products with encapsulated toxins have become available, Grewal said, and research is continuing to incorporate delta endotoxin

The buibui strain of bacillus theringiensis variety japoneensis provides excellent control of the Japanese beetle and white grubs.

- Naturalites a new class of insecticides are active on lepidoptera, diptera, hymenoptera, siphonoptera and thysonoptera.
- Conserve SC, a product from the microbial derivative

spinosad, has performed well against cutworms, armyworms and sod webworms.

- DiTerra, a new biological nematicide, has not been tested yet at OSU, but is "widely accepted for turf nematodes."
- Among plant derivatives, azadirachtin, from the neem tree, acts as a growth regulator

and as a feeding deterrent to some insects.

• Of the phenyl pyrazoles, Fipronil is effective against mole crickets and fire ants. The product: Chipco Choice.

OTF Show

• The product Merit, from Continued on page 38

A TURF HERBICIDE <u>YOU CAN LIVE WITH</u>

As a golf course professional, it's your responsibility to make the right choices. Right for the turf, and for the people who enjoy it. One way to meet that responsibility is with Dimension® turf herbicide.

Dimension provides season-long control of crabgrass and over 20 other tough grasses and weeds, with excellent safety on established turf. And Dimension does it without staining, or harming adjacent ornamentals. That means no more weed "fringes," because you can apply Dimension with confidence right up to the turf's edge, even around walks, drives, and landscaping.

Dimension's low use rates and favorable environmental profile mean less worry. The active ingredient features very low toxicity to mammals, birds, and insects. Plus it bonds to soil particles instead of leaching into groundwater.

Dimension offers the widest application window—6 weeks more than other preemergence products. That lets you delay application for optimum control of goosegrass and other weeds. And split applications can stretch control even further for areas with long growing seasons. It all adds up to a turf herbicide that only weeds find hard to live with.

Call 1-800-987-0467 or visit us at www.dimensionpro.com to learn more.





ALWAYS READ AND FOLLOW LABEL DIRECTIONS.

DIMENSION® is a registered trademark of Rohm and Haas Company.

©1997 Rohm and Haas T-O-227





By Bob Spiwak

he Golf Course Superin tendents Association of America (GCSAA) has scheduled a round table discussion entitled "The Americans with Disabilities Act (ADA) and Golf Courses" for its February convocation in Anaheim, Calif.

Set for 2-5 p.m. on Friday, Feb. 6, the panel will include Greg Jones, president of The Association of Disabled American Golf-

Panel on disabled scheduled for **GCSAA** Conference and Show

ers; Jerry Coldiron, superintendent at Lassing Pointe Golf Course in Kentucky; and Peggy Greenwell of the U.S. Department of Justice.

According to Cynthia Kelly Smith, government relations counsel for GCSAA, several other participants have been in- a panel of experts discussing vited. Smith said that she gets a call each week from a superintendent somewhere about the

The GCSAA convention program notes, "This government relations program will feature the ADA and its impact on golf...compliance issues, case studies, advice on handling complaints and the status of the government's draft golf access guidelines are a few of the topics that will be covered

in this interactive, topical session.'

Smith noted that the ADA involves not only superintendents, but architects, the rules of golf, and the way golf is played.

"More superintendents need to be aware (of ADA ramifications) and they need answers," he said. "We are hoping to work with the disabled community and we all agree this [forum] will be a good way."

Biologicals and biorationals are emerging

Continued from page 37

chloronicofinyls imidadoprid, is very effective as a broad-spectrum, long-residual insecticide.

• The halofenzide Mach 2, a molt-accelerating compound, gives excellent control of white grubs, billbugs and beetles.

The synergism between the Cruiser nematode and Merit (used at 1/10th the recommended rate) provides 100-percent control of Japanese beetle grubs, Grewal said.

Grewal warned that fipronal had an adverse effect on the natural population of nematodes.

The OSU professor said more work needs to be done in a number of areas, especially on fungi and bacteria biologicals as well as to develop products to control white grubs.

"We need to try to understand naturally occurring biocontrols that are already there and easy to establish... They save water, the environment, money and much more," Grewal said.

Rieke: Are your roots in sand?

Continued from page 33

a micronutrient package.

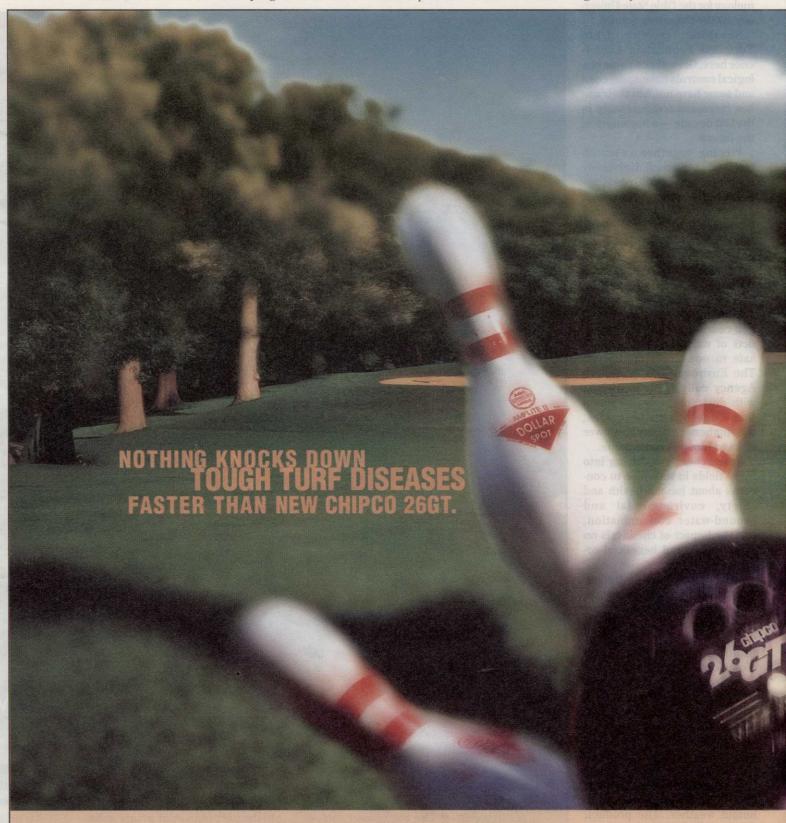
He suggested that superintendents look at soil-ratio tests. Calcium (Ca) should have a 60- to 85-percent saturation in soil test reports, magnesium (Mg) 8 to 12 percent and potassium (K) 5 to 8 percent.

The ratios, Rieke said, should be less than 6.5:1 for Ca:Mg; less than 13:1 for Ca:K; and less than 2:1 for Mg:K.

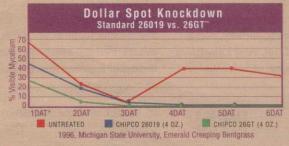
"Are we overfertilizing?" Rieke asked. "Maybe we are.

He said granular fertilizer should be applied to sand greens in the spring and fall, including some slow-release material; and the turf should be spoon-fed during prime playing season, using mostly soluble fertilizer with sprays through the irrigation system.

Finally, he said superintendents should "do all you can to get oxygen into the soil," adding that is an important factor that has been overlooked.



For years, you've relied on CHIPCO®26019 brand fungicide to deliver the best brown patch and dollar spot control available.



But, sometimes, when soaring summer temperatures made you feel the heat, you've turned to contact materials to give you the quick disease knockdown you need. Now, you can get the same powerful, long-lasting disease control you've come to expect from CHIPCO® 26019, plus the quick knockdown you demand. Introducing new CHIPCO® 26GT." . University trials prove that new CHIPCO® 26GT." provides consistently quicker knockdown of dollar spot and brown