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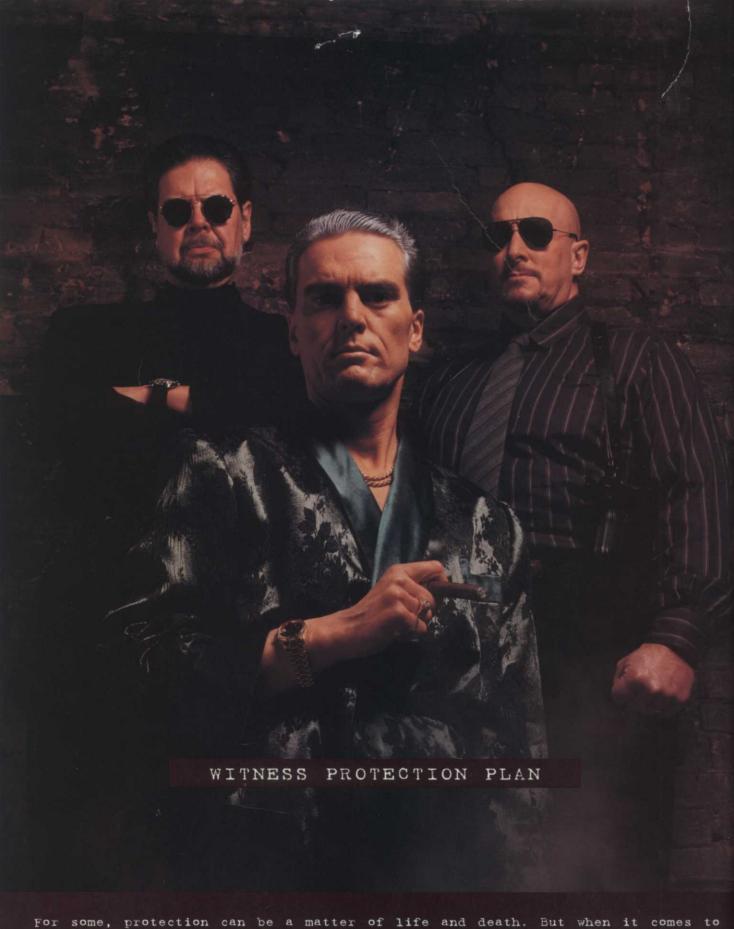
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## SAVING WATER the politics of conservation

Ornamental disease control

Flooding and trees

LM Reports: stump cutters



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**JUNE 1997 VOLUME 36• NUMBER 6** 





ON THE COVER: BUTCHART GARDENS, IN VICTORIA, BC. DISPLAYS MORE THAN ONE MILLION BEDDING PLANTS IN 700 VARIETIES FROM MARCH THROUGH OCTOBER. PHOTO BY OSCAR WILLIAMS.

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DRS. E. BUCHANAN; C. LULEY; B.RAO

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ver wonder who will fund turfgrass research in the days ahead? So do some of the people doing that very research that helps fuel industry growth and product improvements.

"At almost all universities there have been enormous cutbacks," says one researcher who wants to remain anonymous. "In order to preserve faculty positions, a lot of the support services positions are being lost. Those are the people who take care of the farms, the technical people."

Some turf profs are even being asked to pay for their projects.

On the upside, there are grants here and there from industry to fund product research on behalf of the manufacturers of control products or equipment. But in between are the cracks through which fall jobs and individual research projects.

"The money for ag research is more than likely going to be coming from funds raised from state and regional turfgrass associations through conferences and trade shows,

and also through industry grants. The money coming from the USDA is going to be less and less," says Dr. Eliot Roberts of Rosehall Associates, Sparta, Tenn.

"With so many humanistic concerns higher on the list, the agricultural/turfgrass industry can well afford to provide the funds for turf research so federal funds can be used for humanistic concerns," says Roberts.

Turfgrass is becoming the USDA's poor cousin who has to look elsewhere for help.

As Jim Elgin, USDA national program leader for forage grasses told me, programs in food safety, human nutrition and environmental issues—\$26 million worth—are priority items. Which explains why Congress plans to eliminate the \$55,000 it gives to the National Turfgrass

Evaluation Program, this time for good.

"The [NTEP] program has matured, and has arrived at the point where it's capable of supporting its own needs," says Elgin.

NTEP receives more than \$600,000 from seed companies. The \$55,000 is a drop in the bucket, but Kevin Morris, NTEP director, believes the USDA and Congress are blind to the intangible benefits of NTEP support.

"We're trying to get them to understand we're good for them," says Morris. "I get a lot of national and international visitors here. To have a national program for research so close to D.C. makes sense."

Dr. Tim Murphy of the University of Georgia says the funding there is sufficient for now.

"We get pretty good support...from our state appropriation and some federal dollars the university uses for turf and ornamental research, extension and teaching.

"Within the state, our state associations, the Golf Course Superintendents Association, and the Georgia Turfgrass Association provide monies to the Georgia Turf Foundation, which in turn funds various projects and activities."

However, Murphy sees a trend at the federal and state levels in terms of cash support for salaries, physical plant expenses and the like. "Those funds will likely remain level or decrease. 'Level funding' is actually a cut, when inflation is factored in," Murphy explains.

The money is out there. Lofts Seed, for example, this year presented a generous \$670,000 in endowment/royalty money to Rutgers University and the University of Rhode Island, and another \$14,000 to the USGA.

Associations are indeed doing their part, through golf tournaments, scholarships or outright cash contributions, and it looks like more of that kind of support will be needed in the days ahead. Support research whenever you can. **LM** 

What's your opinion on the state of research funding in the green industry? Write to us at 7500 Old Oak Blvd., Cleveland, Ohio 44130. Or e-mail to tmciver@advanstar.com

# Research money: now you see it, now you don't



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TERRY McIVER Editor-in-Chief

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#### EDITORIAL STAFF

Terry McIver Editor-in-Chief (216) 891-2709 E-mail: tmciver@advanstar.com

Ron Hall Managing Editor (216) 891-2636 E-mail: rhall@advanstar.com

Dr. Bill Knoop Technical Editor (903) 860-2410 E-mail: knoop@mt-vernon.com

Vernon Henry Group Editor (216) 826-2829 Lisa Lehman Art Director (216) 891-2785 Lisa Bodnar Graphic Designer (216) 891-3101

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#### ADVERTISING OFFICES

Headquarters 7500 Old Oak Blvd. Cleveland, OH 44130-3369 (216) 243-8100 Fax: (216) 891-2675

John D. Payne Publisher (216) 891-2786 E-mail: jpayne@advanstar.com

Sean Carr Regional Manager (216) 891 2767 Fax: (216) 891-2675 E-mail: scarr@advanstar.com

Torn Galligan National Sales Manager

National Sales Manager 3901 52nd Ave. Kenosha, WI 53144-1830 (414) 653-9523 Fax: (414) 653-9524 E-mail: tgalligan@advanstar.com

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Turf and Ornamental Communicators Association P.O. Box 156, New Prague, MN 56071 (612) 758-5811

#### Cover for shaded areas

What is an attractive, green vegetative cover for a shady, wooded area? Wildflowers and turfgrass aren't taking.

-ILLINOIS

Reports indicate that under heavy shade, where less than 25 percent of the daily available sunlight is reaching an area, it is difficult to establish and main-

tain turfgrass.

Several turfgrass cultivars adapt well to shade. but you have to determine the amount and duration of shade. In the North, several Kentucky bluegrass cultivars, such as Bristol, Glade, Nugget, Touchdown and Birka have show good establishment under less than 70 percent shade. These cultivars would do better with more light. In areas with between 70-80 percent shade, tall fescues and fine fescues have shown good establishment. Consider using some

improved turf-type tall fescues such as Rebel II, Falcon, Mustang, Arid, Jaguar, Cimarron, or Bonanza. Some of the fine fescues with good shade and root competition, drought tolerance and winter hardiness include:

sheeps fescue (Bighorn), hard fescue (Biljart and Reliant), chewings fescue (Jamestown and Banner), and creeping fes-

If the shade is above 85 percent, it would be difficult to grow turfgrass.

cue (Fortress, Ruby; Ensylva).

Check with your local cooperative extension service and/or nurseries for plants suitable to grow in your area.

You might also consider some of the following ground covers in addition to turfgrass, for shady conditions:

Note: varieties are listed as examples. Exclusion of any variety is unintentional.—ed.

#### SHADE TOLERANT GROUND COVERS

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Powdery mildew problem

Every year on our oak trees we see whitish-powdery growth on the lower surface of the leaves. We also see a number of small, black specks present. Is this caused by mites?

-MICHIGAN

The black structures you have seen are probably not mites, but fruiting bodies of the powdery mildew fungus, which contain fungal spores. There are several different powdery mildew fungi which attack oak,

including Sphaerotheca lanestris, the most troublesome mildew producer. Others include Erisiphe trina, Microsphaeria alni, and Phyllactinia corylea.

If the problem is powdery mildew, generally there is no need for fungicidal treatment on large shade trees. For aesthetic reasons, fungicides such as Bayleton or Cleary's 3336 can be used when the first sign of fungal mycelium is noticed. These fungi produce superficial, whitish-mycelial growth. As they mature, they produce small fruiting bodies, which may look like mites. These will not easily dislodge when leaves are shaken.

To check for mites, shake the leaves over some white paper or cloth. Mites will fall and begin to crawl on the white surface. Mites have eight legs while insects have six legs. Mites leave a stain when crushed. If the problem is related to mites, these are warmseason mites that become active when the temperature warms up. They overwinter away from hosts on nearby debris on the ground. Oil applications on trees to manage eggs will notwork if applied as dormant application.

If the problem is mites, a miticide, such as horticultural oil, Kelthane, or Morstan in mid-June and two to three weeks later is recommended.

Read and follow all label specifications for best results. LM



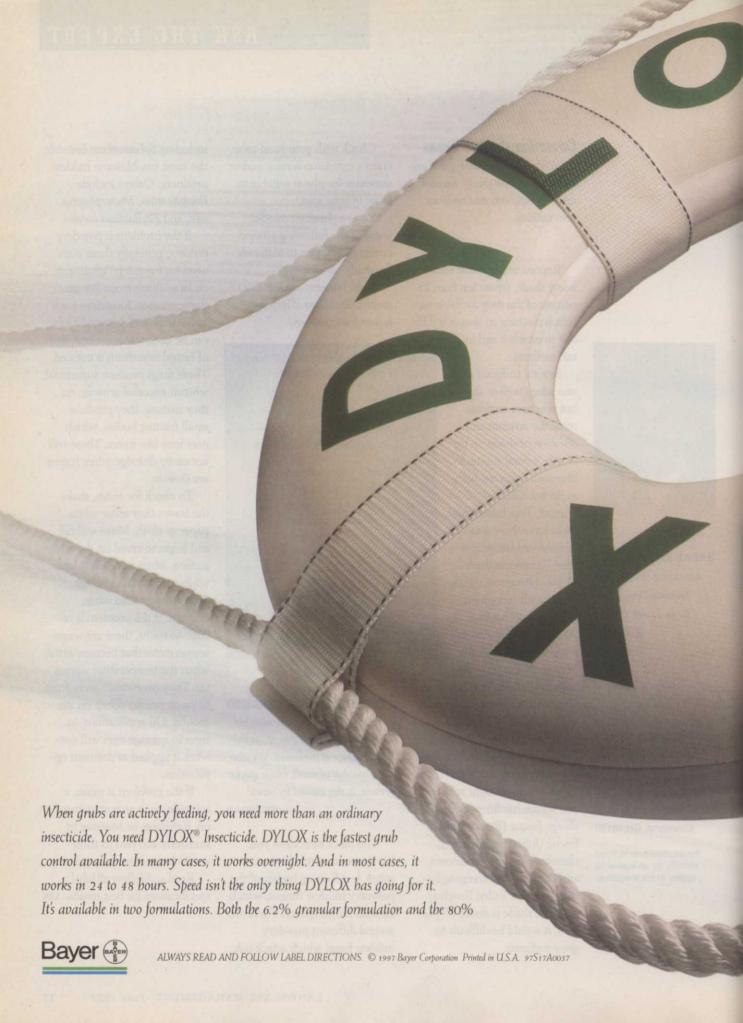
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#### **Deere links up with TPC**

Deere & Company has been named the "Official Golf Course Equipment Supplier of the PGA Tour," effective 1998 through 2006.

The company will provide a full range of golf and turf equipment, along with utility

vehicles and selected construction equipment, on an exclusive basis to each of the PGA tour's owned-and-operated Tournament Players Club courses. As courses are added to the TPC network, Deere will provide the equipment.



The company has also been named the title sponsor of the Quad City Classic for 1998-2006, representing one of the PGA Tour's longest title sponsorship agreements.

The PGA Tour will design, construct and operate a new Tournament Players Club, to be named TPC at Deere Run, to serve as the future home of the Quad City Classic. Three-time Quad City Classic Champion D.A. Weibring will be player design consultant for the project, to work closely with Maury Miller, lead golf course architect for Golf Resources, Inc. and Chris Gray of PGA Tour Design Services.

The new daily-fee course will be located near Deere's corporate headquarters in Moline, Ill., on 385 acres known as "Friendship Farm."

Chris Gray says the natural features of the site for "TPC at Deere Run" include 50-foot high bluffs overlooking the Rock River.

"Friendship Farm is a beautiful piece of land with some striking natural features that we can incorporate into the design," says Gray.

"The topography, mature trees, ravines and views offer us the opportunity to design a very traditional and classic golf course," adds Weibring.



John Deere Worldwide's new factory near Raleigh, N.C., Turf Care, Inc., is expected to employ 250 people by 2000. "Many new machine models and attachments" are on the way, reports the company.

#### B. J. Johnson retires

After 40 years on the job, starting in agriculture but spending most of his career as a turfgrass researcher, B. J. Johnson announced his retirement at the Southeastern Turfgrass Conference in May.



Wayne Hanna, USDA, ARS, Coastal Plain Experiment Station, presented Johnson with a plaque and offered his sincere appreciation to Johnson, whose last official duty as a member of the Agronomy Department of the University of Georgia, Griffin, Ga., was to update turfgrass managers on his most recent weed control findings. □

#### Boynton heads PLCAA's list

Rex Boynton, executive director of the Picture Framing Association, is the leading candidate to replace Anne McClure as executive director of the Professional Lawn Care Association of America (PLCAA). McClure left PLCAA in April to manage the International Gas Turbine Association. She was PLCAA's second-ever executive director and served the 17-year-old association for almost seven years.

Boynton, who now lives in Richmond, Va., has been with the Picture Framing Association for the past six years. Boynton was scheduled to travel to PLCAA headquarters in Marietta, Ga., on May 30 for final discussions with the PLCAA executive committee. Boynton was one of over 170 people who expressed interest in PLCAA's top management position.

### LM wins six writing, design awards

SAN DIEGO— LANDSCAPE
MANAGEMENT received six
writing and graphic design
awards from the Turf and
Ornamental Communicators
Association, at the association's annual meeting in May.

Awards for articles appearing in 1996 were presented in the following categories:

- ▶ 1st Place to Managing Editor Ron Hall and Editor-inchief Terry McIver in the category of "Business Management Article," for "Mexican Labor Moves In" (October 1996), about the growing number of Hispanic workers in the professional green industry.
- ▶ 1st Place to Terry
  McIver in the category of
  "Editorial/Opinion Piece," for
  "Good Crew, Busy Members
  Help Manage Small Budgets"
  (February 1996), which explained how a golf course superintendent makes ends
  meet with minimal funds.
- ▶ Merit Award to Ron Hall in the category of "Product Information Article," for 'New Insecticides Excel at Grub Dig' (Nov. 1996).

The story covered product research findings at an annual OSU turf industry field day.

"Good use of experts, graphics and layout," said judges from the San Diego Union Tribune and San Diego State University.

► Merit Award to Ron Hall in the category of "Turf Feature Article," for "The Day Sarge Saved Milwaukee's Field from Seagulls" (April 1996), which explained how the Milwaukee Brewers used a Springer Spaniel to chase seagulls from the outfield. This was an interesting, informative article, which provided a solution to a common problem.

- ▶ 1st Place to graphic designer Lisa Bodnar in the category of "Overall Magazine Design." The graphic design judge, Mona Howell of COVI Communications/Design, San Diego, said Bodnar was able to give the editorial pages a look that is well-differentiated from advertising, and that makes good use of state-of-the-art design technology.
- ▶ Bodnar also earned a Merit Award in the Multiplepage Design" category of " for the "LM 100" feature (September, 1996). The judge was most impressed with Bodnar's skill at balancing a tremendous number of photos and copy.

The "LM 100" article contained 54 art elements and thumbnail profiles of 100 green industry professionals.

"The TOCA Awards are an exclamation point to the great year LM is having in 1997," said McIver. "The editorial and design partnership is working very well. The entire staff is dedicated to producing the best green industry magazine there is."

The Turf and Ornamental

Communicators Association is comprised of green industry editors, freelance writers, public relations account executivesnd supplier representatives. Current membership is at 130. The leading magazines and suppliers are members. The 1998 annual meet-

ing will be held in Cleveland May 2-4.

For information on how to become a member of TOCA, call the association at (619) 758-6340. □

### U.S. EPA registers Mach 2; product available for '98

Mach 2 turf insecticide, a product developed by RohMid, a joint venture between Rohm and Haas Company and American Cyanamid Company, was registered by the U.S. EPA on May 20 for use in controlling grubs and other soil-borne pests in turf. Approved formulations include a liquid (2SC) and 1.5 percent granular. The granular will be available for all turf sites including home lawns, golf courses and industrial sites. The liquid may be used on golf courses and commercial landscapes. Most state registrations are expected to be granted over the next six to eight weeks.

John Thomas, Ph.D., RohMid manager, said the products will be available for the 1998 application season.

"Golf course superintendents and lawn care operations already are in the midst of grub and cutworm control season," explained Thomas.
"Mach 2 turf insecticide does have an extraordinarily wide window of application bridging preventative and curative application timings. However, the completion of the various state registrations will create a patchwork of product availability, limiting our full sales potential in 1997.

"RohMid will conduct a demonstration program with select golf courses this season using the liquid. Both products will be available to all users for the 1998 season."

The joint venture between the two speciality chemicals manufacturers was formed in 1995 to develop, register and commercialize Mach 2. The insecticide belongs to a new class of chemical compounds called molt accelerating compounds (MACs) which interfere with the normal molting processes of targeted pests.  $\square$ 

#### SUPPLIERS CORNER

AgriBio Tech, Inc. has purchased E. F. Burlingham & Sons seed company. Dr. Johnny R. Thomas, CEO of AgriBio Tech, says the buy combines research, production and distribution to establish AgriBio Tech in the turfgrass sector of the green industry. "Ownership of Burlingham germplasm should enhance AgriBio Tech's negotiations for biotechnology access," says Thomas. Burlingham will continue to market its proprietary turf products through its traditional channels.

AquaMaster Fountains and Aerators of Kiel, Wisc., has established distributorships with the following U.S. and foreign companies: Kamex Industries, Inc., Seoul, Korea; Irritec Irrigation, Belmont, Western Australia; Mantag Irrigation Systems, New Delhi, India; Kilbpatric International Sales, Boynton Beach, Fla.; Globen Co., Ltd., Nagoya, Japan; and Landscape Li Chuan Corp., Taipei, Taiwan.

Cargill Salt has completed its purchase of Akzo Nobel Salt, Inc. The buy includes all of Akzo's North American production, processing and marketing assets, including familiar brands such as Alberger; Diamond Crystal; Salt Sense; Champions Choice; Red • Out; and ResinGard. "We have increased our production capacity for all types of salt; rock, solar and evaporated," says Charles Sullivan, president of Cargill's Salt Division. Both companies have been suppliers of deicing salt to the green industry.

Morbark, headquartered in

Winn, Mich., the largest manufacturer of wood chipping and solid waste grinding equipment, has bought GDS
Screens, the largest maker of portable trommel screens.
Loran Balvanz, CEO of USM
Equipment, which owned GDS, will serve as a consultant.

Plant Health Care, Inc. has an Internet web site to serve as a one-stop information resource for biological plant heath care products. Root zone ecology and living microorganisms that promote plant health including mycorrhizal fungi, beneficial bacteria and biostimulants, are included. The address is: http://www.planthealthcare.com

**Pursell Industries** has completed a management-led buyout of its consumer product division, with Citicorp Venture Capital joining as an equity investor. Taylor Pursell will lead the business, to be known as Pursell Technologies, Inc. Jim Pursell is chairman of Pursell Technologies; David Pursell is president and CEO.

Don Clark is marketing manager for **Rain Bird Sales**, **Inc.**'s Contractor Division. He oversees the strategic marketing communications activities of the Division, and manages the product planning staff.

Christopher R. Shadday is products manager for **Rohm** and Haas Company's Turf and Ornamental Products business. Shadday contributes to the company's marketing, business development and management programs for its turf and ornamental products.

Sostram Corporation's Echo 720 Turf and Ornamental Fungicide has received EPA approval for use in California. The broad-spectrum, flowable, contact fungicide works on a wide variety of turfgrass and ornamental diseases.

The Toro Company will move the Toro Hardie Irrigation administration/distribution offices to Toro's Riverside, Calif. irrigation headquarters. The move will begin in mid-June and is expected to be completed by the end of November. Also, all Toro irrigation valves will now be produced at the Toro Hardie El Paso, Texas manufacturing plant; irrigation products will be built at the Riverside site. LM

## Info center

VIDEOS AND LITERATURE FOR THE GREEN INDUSTRY

TURFGRASS DISEASE CD-ROM... Turfgrass Diseases: Diagnosis and Management, by Gail L. Schumann and James D. MacDonald is an interactive guide to identifying and managing more than 65 turfgrass diseases and disease agents. It combines an extensive collection of high-quality images with vast reference material and expert advice on disease control, including the most current approaches to environmentally-sound integrated programs. The guide is designed for anyone who works with turfgrass—from professionals to students to plant scientists. It's simple yet authoritative, with more than 350 images. Cost is \$295 U.S., \$310 outside the U.S. There is a 30 percent quantity discount with purchase of 10 or more. Contact: APS PRESS, American Phytopathological Society, 3340 Pilot Knob Rd., St. Paul, MN 55121-2097; (612) 454-7250; fax: (612) 454-0766.

IRRIGATION CATALOGUES... HIT Products Corporation of Lindsay, Calif., has a catalogue of turf products that includes 'Procode Solar Controllers, Rainbow Controllers, pop-up sprinklers, valves and pressure compensation devices, and more. Contact the company at (209) 562-5975. George Cook is the company owner and marketing manager. Superior Controls Co., Inc., of Valencia, Calif., makes a variety of solid-state controllers, electro-mechanical controllers, automatic adaptors, globe valves and pressure reducing valves. To obtain a catalogue, contact the company at (805) 257-3533.

### **Events**

#### TUNE

18: Turfgrass/Landscape Workshops, SUNY Cobleskill College of Agriculture and Technology, Cobleskill, N.Y. Contact: (800) 873-8873

18: UMass Turfgrass Research Field Day, South Deerfield, Mass. Contact: Thom Griffin, (413) 545-3066.

#### TULY

9-12: AAN/TNA Convention and Trade Show

Opryland Hotel and Convention Center, Nashville, Tenn. Contact: AAN at (202) 789-2900.

17-19: Turfgrass Producers International, Summer Conv. & Field Days,

Hyatt Regency, Minneapolis, Minn. Contact: Tom Ford, (847) 705-9898; (847) 705-8347.

22-25: Soil & Water Conservation Society Annual Meeting, Toronto Sheraton; Contact: Nancy Herselius, (515) 289-2331.

26-28: International Lawn, Garden & Power Equipment Expo, Kentucky Fair and Exposition Center, Louisville, Ky.; Contact: Warren Sellers, (502) 562-1962. LM

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## SAVING WATER: the politics of conservation

Interaction between water utilities, green industry groups and government agencies can be confrontational or cooperative.

by LEAH ROTTKE

he politics of water is very much like the politics we see from Washington: there are those who make the rules, and those who must obey them, like it or not.

But the industry can help legislators understand that turf doesn't waste water, people do.

Here's a look at what's happening with water politics in the green industry today.—ed.

#### **Nevada association wins**

In January, 1997, the regional water board for the Reno, Nevada area attempted to have turf banned from all new landscape installations on commercial properties. The plan called for:

- no turf on new commercial properties;
- ▶ no turfgrass on slopes greater than 10 degrees;
- ▶ 25 percent maximum amount of turf allowed in multi-tenant developments.

The Nevada Landscape Association responded quickly, says NLA president Michael King. It turned to Dr. James Beard, professor emeritus, Texas A&M, and others for help. It also hired attorneys and produced a 90-minute video showing industry's side.

The county responded to King's suggestions for revisions. The water board and the NLA met to work out a conservation plan together. They now meet twice each month, but city and county governments dictate irrigation scheduling to green industry professionals with a law limiting landscape watering to two days per week.

King wants to see the state adopt a performance-based water use program based on evapotranspiration (ET) rates.

"This has been a proven method in other cities where I have collected information, and it is a win-win situation in those cities; for the water purveyor, the landscape industry and conservation," says King, who adds that a water conservation program based on performance would secure the water needed for landscapes.

#### **Automatic shut-offs**

In 1991, the state of Florida passed a law requiring all newly-installed irrigation controllers to have rain shut-off devices. The on/off switch idea sufficed until October 1996, when Hillsboro County passed an ordinance requiring all controllers, regardless of their installation date, to have auto-

matic rain shut-off capability. The penalty for non-compliance is a \$500 fine, per controller.

The Southwest Florida
Water management District
oversees sixteen counties and
regulates irrigation scheduling
throughout its territory. Even
numbered properties are permitted to water on Tuesdays
and Saturdays. Odd-numbered
properties can water on
Wednesdays and Sundays.

Customers using reclaimed water are exempt from restrictions, and a 'stress exemption' can be made for commercial agriculture and golf courses.

The district tempers regulation with communication. A group called the Green Industry Advisory Committee meets with the water authority monthly. According to Water Conservation Analyst, Kathy Foley, all of the committee's revisions to a list of recommended plants—to be published for use by the public—were adopted.

#### The Georgia plan

Georgia passed a water conservation law in 1994 requiring applicants for a new commercial meter to present a water conservation plan. The law

#### More science than art

Technological advancements have allowed landscape managers to apply water at much slower rates, using low-flow nozzles and semi-porous tubing that reduce runoff," explains Dave Hanson, Environmental Care, Calabasas, Calif.

"Improvements in drip irrigation and bubbler equipment have made spot applications of water highly successful.

"Combined with changes in irrigation clocks that allow multiple programs and cycles of water application as well as moisture and flow sensing capabilities, one can easily see why water management programs are now more efficient than ever before," says Hanson.

"While we are not yet perfect, the importance of landscape water management is now certainly practiced as more of a science than as an art."

does not regulate specifics, such as irrigation equipment. Currently, only commercial customers using 100,000 gallons or more per day must file for a "withdrawal permit" from the Georgia Environmental Protection Division, but a bill to

lower that threshold has been introduced as H.B. 528.

Drought conditions of 1988 brought about the formation of the Georgia Water Wise Council.

Jeff Jordan, board member and professor of Agricultural Economics

at the University of Georgia, recalls Water-Wise's beginning as "one contentious meeting." The water utility had proposed shutting off the supply to land-scaping completely. Today, the council brings together university faculty, the state EPA, municipal and water utility personnel and members of the Georgia Green Industry Association. The post of council president is shared on a rotating basis between representatives of each interest group.

The result of council's interaction is the development of a cooperative approach for Georgia, to conserve water without limits on landscapes.

#### California 'BMP' revision

Water utilities, environmental groups and "other interested parties" (the category green industry associations fall into) signed a "Memorandum of Understanding" in California in 1991. Signatories of this document pledged themselves to certain "Best Management

Practices" if they proved cost effective.

The BMPs, a voluntary effort, are now under revision because they weren't specific enough and water savings could not be quantified.

The most recent set of revi-

sions do not offer the changes the California Landscape Contractor's Association hoped to see, says CLCA's Director of Governmental Affairs, Larry Rohlfes.

CLCA supports self-regulation, such as water budgets for landscapes, based on

100 percent ET values for turfgrass and water rate structures that penalize waste.

Jeff Jordan: 'Water

working in Georgia.

Wise' council is

Otay Water District in Spring Valley, Calif. and Irvine Ranch in Southern California have already adopted these strategies, but older utilities faced with the cost of retrofitting meters, in addition to political considerations, have delayed making a change.

"Another factor to consider," adds Jan Tubiolo, water conservation coordinator for the Otay Water District, "is the financial or staffing capability of an agency to implement the sophisticated computer data base tracking system required." Smaller agencies, says Tubiolo, have limited revenue.

The Otay Water District developed a budget-based Water-Efficient Landscape Irrigation Ordinance to assist commercial irrigation customers in their efforts to reduce water consumption and to achieve savings through reduced water demand. A one-year study used base-year consumption data and 30 years of weather data, based upon a reference evapotranspiration (ET) for the area.

"Commercial irrigation accounts have water use allotments set by their reported square footage. The annual allocation is seasonalized," says Tubiolo, "and unused water is banked, to allow them to avoid incurring overuse penalties while using their allocation during brief hot spells, or while establishing new plantings or in the event of system breaks.

Water budgets, explains Tubiolo, give customers with irrigation accounts an annual allocation of water. Monthly water use for irrigation needs is monitored by computer.

"Over-use water bud penalties are automatically set and compliance is enforced through the billing system."

Tubiolo says the water demand on the district was reduced 23 percent the first year.

"Landscape water management is now certainly practiced as more of a science than as an art," says Dave Hanson, vice

presiden, regional manager and director of technical support, Environmental Care, Inc. ECI is a division of Environmental Industries, Calabasas, Calif. As new regulations dictate how new landscapes will be



designed and irrigated, landscape managers have responded by combining common sense with new technology, says Hanson, a specialist in issues concerning chemical technology and turfgrass science.

Says Hanson, "Common sense changes include eliminating small, difficult-to-irrigate areas; separating plant material into irrigation zones (hydrozones) based on water use requirements; reducing the amount of turf in non-functional areas; and utilizing reclaimed water when possible."

#### **Hardware solutions**

Lynda Wightman and Eric Bescoby are involved in the issue from the product manufacturers' point of view. Wightman as sales education manager for Hunter Industries, and Bescoby as general manager of Rain Bird's Golf Division.

"As I talk to people, I find water conservation concerns are everywhere, even in places you wouldn't expect to find them," says Wightman.

"It's not confined to Southern California."

Equipment makers are doing what they can, says

Wightman, to invent the technology needed to save every extra gallon.

"In today's equipment, you see more specialty features: adjustable arcs; more versatile pop-up strokes; efficient swing joints; adjustable sprinkler



Hanson: commonsense changes can be made.

#### Ways to conserve

Forward-looking manufacturers are always looking at ways to make their equipment better address the following key areas of opportunity for good irrigation management practices.

- 1. Education of industry professionals. Irrigation product manufacturers, along with landscape architects and irrigation consultants have taken the lead in educating industry professionals about the basics of irrigation design. Rain Bird has taken a pro-active role with the Irrigation Association in promoting water conservation.
- Placement of irrigation water. The design and installation must put water only where it is needed, not on street, sidewalks or walls.
- Application rate of irrigation zone needs to match soil absorption rate.
  - Apply water in an irrigation zone uniformly. Note how evenly water is applied.

Use 'deficit watering'. Apply water today based only on the amount of water that was evapotranspirated the day before.

was evapotranspirated the day before.
In order to replace water that has been evapotranspirated, do I have to add 10 percent

more (90 percent efficiency); 20 percent more (80 percent efficiency) or 50 percent more (50 percent efficiency) water through my irrigation system? Uniform water distribution can be a big factor in irrigation system efficiency.

Evaporation, misting, overspray, high pressure fogging and misadjusted sprinklers, mean that an irrigation system's efficiency will always be less than 100 percent.

Landscape drip watering is by far the most efficient way to water non-grass areas because pressure regulation, filtration and very slow application rates that are lower than the

soil absorption rate are standard when it comes to landscape drip system.

- Control zones: move from electromechanical to 100 percent solid state and hybrid controllers, to increase precision.
- 7. Improve watering efficiencies: control water pressure or water flow at the point of water distribution; use pressure compensating emitters, pressure compensating modules and pressure compensating bubblers; improve the evenness of the water coverage through technological improvements in nozzle design.

Karima Lalji, marketing coordinator, Rain Bird Sales, Inc.

heads; and precipitation rates matched to different soil mixes.

"As a manufacturer," says Wightman, "[Hunter] works with customers, public agencies, designers, installers and maintenance personnel," to conserve more water.

"Even though 80-85 percent of California's water is used for agriculture, golf courses get a lot of public and press attention," says Bescoby. "They're easy targets for environmental and water use issues."

Bescoby cites an Irrigation Association study that says average water use on a California

golf course is 250,000 gallons per day.

"Reclaimed
water is becoming
the trend, and it
can be done with a
high degree of professionalism," says
Bescoby. Other
ways to save include reducing

runoff; more frequent turf aeration; drought tolerant grasses; weather stations; drip irrigation systems: and mulch.

#### Home of xeriscaping

The word "xeriscape" was coined in Colorado, when local green industry professionals first brought the idea of "water conservation through creative landscaping" to Denver Water's attention. (Denver gets less than 15 inches of rain a year.)

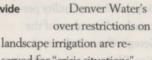
In 1982, they designed and constructed a demonstration garden on ½ acre of the water utility's land. Denver Water has sought to teach by example ever since. Eight years ago, it adopted a 10-year capital im-

provement plan to convert all of Denver Water's landscaped areas to a more water-efficient style. Now, even the turfed areas are irrigated supplements.

Denver Water sees potable water security as a global problem, that will only grow more difficult to solve, and has prioritized its strategy to meet demand. The plan includes conservation, use of reclaimed water and the development of a new supply.

Ken Ball, landscape architect and Conservation Analyst for Denver Water says the utility supports the use of alterna-

> tive water sources for commercial users (such as by capturing runoff), and provides engineering assistance to projects during the design process to help develop these outside water sources.



served for "crisis situations" only, and have been used in 1955 and 1977. LM

Wightman: water is-

sues nationwide

The author is a horticultural and irrigation consultant based in San Diego. "Xeriscape" and the phrase "water conservation through creative landscaping" are trademarked properties of the National Xeriscape Council, Inc.

Additional reporting by Terry McIver.







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IMAGE Control The Uncontrollable.

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Husqvarna's 2725 is a lightweight stump grinder with an 8-inch steel blade and anti-vibration technology. It folds and stores compactly.

## The idea is to grind the stump into pieces or cut it apart, not smash it into oblivion.

by CURT HARLER

To get the best use out of a stump cutter, make sure the teeth are sharp. A good set of carbide cutting teeth will last from two to four hours with normal operation. Of course, an old oak stump will be tougher to remove than freshlycut pine. Teeth should be sharpened after every four hours or after each job, whichever is sooner.

First, and foremost, say engineers with Vermeer, Pella, IA, keep safety in mind when sharpening teeth. Disengage the clutch, stop the engine and be sure all motion is fully stopped.

Engineers at Crary Co., West Fargo, ND, recommend dry grinding when sharpening carbide teeth. It reduces the chance of cracking from insufficient coolants. It also allows better visibility and longer wheel life because you will have better control of the grinding action.

Be sure to move cutting teeth constantly whenever they are in contact with the grinding wheel. This has two advantages: it reduces the chance of uneven wear on the teeth, and it reduces heat concentration which often will damage

> the tooth. Carbide will retain its sharpness longer, cut faster and smoother, and will withstand the heat of use, but carbide teeth will wear.

Engineers at MacKissic, Parker Ford, PA, note that keeping the teeth sharp will prevent frustration at the job site. The "digger" teeth on their cutters must be sharpened constantly because they are the most abused of the teeth. The diggers are the teeth set at a 45-degree angle. Other teeth are set at 25 degrees or straight.

Sharpen the carbide portions of the teeth with a silicon carbide grinding wheel, the green-colored wheels. Steel sections should be cut with an aluminum oxide wheel. Steel can be ground with a carbide wheel (the gray ones), but the wheel will last longer if aluminum oxide is used. Carbide is a bit like the Wicked Witch of the West...although it's really tough, it can't tolerate water. Putting carbide cutter teeth into water immediately after grinding will crack the carbide tip. Avoid grinding on the face of the carbide which will reduce its thickness and weaken it, making it susceptible to chipping. Lastly, be certain the teeth or cutter wheel get bolted back on the machine at the recommended tightness. Don't over-torque. It is a good idea to retorque screws after running the machine for a couple of hours.



One of two models from Mackissic, Inc. Both with reversible handle bars. Automatic, self-aligning cutter head-to-shaft. Units require only two inches of clearance from walls, fences, trees.

#### STUMP CUTTERS

#### J. P. CARLTON (800) 243-9335 Circle No. 250

Models range from a 25 hp Kohler-powered unit,—the Model 2500-4—to a 106 hp turbocharged Deutz Diesel. An economical tow behind unit, the Model 3500 has an optional remote control. The Model 7500 is built with a 1½-inch thick, 31-inch diameter cutter wheel with 48 teeth.

#### CRARY BEAR CAT (800) 247-7335 Circle No. 251

Two tough units — the Bear Cat 71755 and 71785 - make quick work of stumps. The 71785 features a 7-inch diameter cutter head and a large enclosed drive shaft which prevents chips from building up in the belts and pulleys. The two-belt cutter-head drive system assures more positive power transfer. Unit runs on a Briggs & Stratton 8.5 hp industrial/commercial engine. The 71785 will remove an 8-inch diameter stump, 8-inches tall (four above ground, four below) in four minutes. A 15-inch diameter stump the same height is gone in 14 minutes. A single wheel brake allows the grinder to pivot and keep in position while grinding the stump.

#### HECKENDORN EQUIPMENT CO. (800) 835-7805 Circle No. 252

Mounted on their own towable trailers, the Heckendorn Stump Remover line's depth of cut is controlled by a hand screw that makes it easy to adjust for maximum removal on each pass. Units come with four or six replaceable carbide teeth which can cut stumps standing 12 to 14 inches above ground and down to four to six inches below grade in minutes. The full 45 inch swing on the cutter disk ensures that even multiple stumps can be cut cleanly and simply. These are hefty units: the smallest, the 80301 with a 8 hp Kohler recoil start engine, weighs 350 pounds; the 80307-1 is 480 pounds and powered by a 13 hp Honda with electric start. Several models are in between. All have 2-inch trailer hitch balls. Just 32 inches wide.

#### HODGES MANUFACTURING CO. (501) 492-6116 Circle No. 253

The Bull and the Rhino stump cutters from Hodges Manufacturing, Mountain Home, AK, both are powered by 25 hp Kohler engines, and both feature standard carbide teeth. The Bull features a 15.25-inch cutter wheel and digs down 10 inches below the ground surface. It will handle stumps up to 24 inches above grade. The machine is less than a yard wide and weighs 715 pounds. The Rhino paws down 16 inches below grade and can handle stumps up to three feet high. It comes equipped with a hitch for easy transportation, and its sliding axle (from 34 inches to 52 inches) allows it to move through standard gates. Both units feature key start.

#### HUSQVARNA (704) 597-5000 Circle No. 254

The 272S is a lightweight stump grinder with the latest in anti-vibration and decompression valve technology. The unit uses an 8-inch steel blade with tungsten carbide tips. It is ideal for tree services, landscape contractors and companies that offer stump removal services, says the company. The unit folds and stores compactly for easy tranport. with "Smart Start" decompression valve, a simple push of a button opens a cylinder valve that reduces pressure during the piston upstroke, making the starter cord easier to pull. LowVib, two-mass antivibration system completely separates the engine section from the handle to dampen vibration.

#### LEVCO MANUFACTURERS, INC. (800) 524-9252 Circle No. 255

The HD45 grinder from Levco is a self-propelled model that fits through tight places. Its hydraulic drive makes operation safe for the operator and the unit is easy to keep running — there are no grease fittings, no gears to replace, no Vbelts to align, no chains to break. The larger TM540 works with any 30-80 hp tractor equipped with a 540 rpm pto. Optional chip curtain contains chips and sawdust produced by the spinning cutter drum. The TM540 will cut stumps of any diameter from 12 inches above grade to 12 inches below. The



The SG50 stump grinder with the 763H Bobcat. Its 3-inch wide cutting head has 34 teeth, and cuts down 20 inches below grade.

HD47D is a self-contained grinder that's pulled behind a pickup truck. Operating off a John Deere 40 hp diesel engine, it can cut stumps from 44 inches above grade to 22 inches below.

#### MACKISSIC, INC. (610) 495-7181 Circle No. 256

Handle even the toughest stump removal jobs with the Mighty Mac stump cutters from MacKissic, Parker Ford, PA. The new CPSC9V, with 9 hp Vanguard gas engine, joins the 5.5 hp CPSC5.5V. Both have reversible handle bars for front or rear cutting. The hefty 14-pound patented cutter head has the weight and speed for fast, smooth cutting. The cutter head is set 30 degrees off vertical, allowing it to work like a router. With teeth positioned at 45, 25 and zero-degree angles, the units require lower horsepower to cut through stumps. The automatic, self-aligning cutter head-to-shaft assures correct balance. These units require only two inches of clearance from walls, fences or other trees.

#### MELROE BOBCAT (701) 241-8700 Circle No. 257

Attach your stump grinder to a Bobcat loader and go to work. The SG25 has 16 carbide-tipped teeth. The head can be sideshifted 25 inches without moving the loader and will cut 12 inches below grade. The larger SG50 is designed for the 763H and 853H loaders (with high horsepower and high-flow hydraulics). Its 3-inch wide cutting head has 34 teeth and will grind down to 20 inches below grade.

The head can be sideshifted 50 inches without moving the loader. A control kit must be installed inside the skid-steer's cab before using a stump cutter. The whole system makes it easy to switch over to a bucket to pick up debris.

#### STEINER (216) 828-0200 CIRCLE NO. 258

The front-mounted quick hitch SC 101 stump cutter from Steiner features a heavy flywheel type cutterhead and hardened cutters. It chips away a stump by moving back-andforth at a controlled depth. Cutter depth is managed by the front lift while side-to-side motion is governed by the tractor's steering. The unit weighs 250 pounds, is 34.5 inches wide and 18 inches long. Operating at 1600 rpm, it digs down to five inches below the surface.

#### VERMEER (8880 837-6337 CIRCLE NO. 259

The newest model in Vermeer's line of stump cutters is the 252SC, equipped with the Auto Sweep function. It works like a car's cruise control—maintaining engine speed by adjusting the feed rate of the cutter wheel. This gives maximum horsepower needed to cut stumps. The 252SC is just 35 inches wide. yet handles stumps 13 inches deep and 39 inches wide with its 1250 rpm 16-tooth cutter wheel. The firm's most powerful stump cutter is the 1102, with 102 hp. It handles stumps up to 25 inches deep and up to 88 inches wide and also has Auto Sweep. The 1102 is powered by a Perkins T4.236 turbo diesel engine, and is 4650 pounds. LM



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**FMC** 



# Disease control in cool-season ornamentals

By JOHN E. WATKINS/ University of Nebraska



Apple scab (above) is identifiable by its scablike, olive-colored lesions. Right: black spot on rose leaves appear as circular, black lesions with fringed or feathery margins.



rnamentals, because of their versatility, are the basis of any landscape design. Unfortunately a number of plant pathogens attack ornamentals, and when a disease gets out of hand the popularity of an ornamental falls rapidly. Ornamentals require proper care, including disease control, during the growing season. This article focuses on general groups of ornamental diseases and uses specific examples for illustration.

#### **Rust diseases**

Yellow to orange to reddish brown pustules form on leaves, twigs and fruits. Rust fungi have interesting life cycles and many, like cedar-apple rust, require two different plant species to complete their life cycles. The bright orange gelatinous swellings with finger-like tendrils on junipers in May signal the presence of cedar-apple rust for another season. Spores produced within these tendrils infect crabapple leaves where orange spots appear on the upper leaf surface with finger-like tubular structures projecting from the lower leaf surface. Other rust diseases occur on roses, hollyhocks, snapdragons, asters and geraniums.

#### **Powdery mildew**

Powdery mildew is the name for the grayish white powdery coating consisting of fungus mycelium and masses of spores growing on plant leaves, shoots and flowers. This disease is caused by a distinct group of similar fungi that attack lilac, zinnia, phlox, rose and many other flowers, shrubs and trees. Although powdery mildew-infected plants rarely die, the disease detracts from the natural beauty of omamentals. Damage ranges from an unsightly white powdery coating on the foliage to malformation of leaves, destruction of flowers and stunted growth.

#### **Bacterial diseases**

Fire blight and crown gall are serious diseases of woody ornamentals. With fire blight, infected twigs of crabapple, hawthorn, cotoneaster, pyracantha, mountain ash or other hosts form a cane-like shepard's crook at the tips. Leaves rapidly wilt and turn brown to black, hence the name 'fire blight'. Crown gall causes rounded galls with irregular rough surfaces on stems and roots of a great number of plant species. Euonymous, honeysuckle, rose and wisteria are common shrub hosts. Infected plants lack vigor and fail to produce quality flowers. Another important bacterial disease is bacterial blight or wilt of geranium which in the landscape actually starts with infected cuttings in the greenhouse. Symptoms include wilting at the leaf margins which produces a

pronounced V-shaped, yellow lesion bounded by veins. Infected stems blacken and shrivel.

#### Scab, spot & blight diseases

Scab diseases of pyracantha and crabapple, although caused by different fungi, have similar symptoms. These are scab-like, olive-colored lesions on leaves and fruits. Black spot of rose is a prime example of a destructive leaf spot disease. The spots are roughly circular, black lesions with fringed or feathery margins. Infected leaves yellow and drop off throughout the growing season leaving the rose unsightly and prone to winter kill. Phomopsis twig blight causes a progressive die-back of landscape junipers and arborvitae which severely detracts from the landscape when junipers are used as focus plants.

#### Mosaics & aster yellows

Symptoms of rose mosaic are a light green to bright yellow mosaic patterns on the leaves. The viruses that cause rose mosaic diseases are carried in buds, scions and root stocks. There is no known cure for rose mosaic. However, symptoms are usually not severe enough to require removal of the plant from the landscape. One of the most striking symptoms of aster yellows is the abnormal production of secondary shoots. These shoots are deformed, yellowed and often brittle. The internodes of the main stem are shortened and the flower heads dwarfed and deformed. Aster yellows is common on many annual flowers such as asters and strawflower.

Approach disease management in the landscape from a holistic plant health view point which includes the categories of :

- ▶ exclusion which concentrates on preventing pathogens from entering the landscape and involves sanitary and regulatory practices.
- ▶ eradication removes the pathogen from the landscape by removing and destroying infected plants and plant debris and by treating annual beds with a soil-applied fungicide.
- ▶ immunization. Although you cannot immunize plants in the same manner that animals are immunized against disease, you can immunize them by using disease resistant cultivars, by treating roots with biological control agents or by applying a systemic fungicide.
- ▶ protection involves treating disease-susceptible plants with a fungicide before infection occurs. Although these practices sound somewhat theoretical, they do work when used in an integrated disease management program. LM



Rust diseases are characterized by yellow to orange to reddish brown pustules on leaves, twigs and fruit. There are many rust diseases.

### Fungicides for disease management in landscape ornamentals

#### **Bordeaux mixture**

Dormant application for anthracnose and other diseases.

#### Triforine (Funginex)

Rusts, powdery mildews and certain leaf spot diseases.

#### Mancozeb and Maneb

Protectant fungicides for various foliar diseases.

#### Triadimefon (Bayleton)

Powdery mildews.

#### Sulfur

Organic fungicide for powdery mildew and other diseases.

#### Chlorothalonil (Daconil 2787)

General purpose protectant fungicide.

#### Metalaxyl (Subdue)

Phytophthora and Pythium root rots.

#### Fosetyl-Al (Aliette)

Phytophthora root rot diseases.

#### Myclobutanil (Eagle)

Systemic fungicide for rusts and powdery mildews.

#### Iprodione (Chipco 26019)

Botrytis blight and Rhizoctonia root and stem diseases.

#### Thiophanate-methyl (Cleary's 3336)

Rhizoctonia root and stem diseases and certain foliar blights.

#### Propiconazole (Banner)

Powdery mildew and leaf spots on certain ornamentals.

#### Fenarimol (Rubigan)

Powdery mildew on certain ornamentals.

Agrobacterium radiobacter (Galtrol) Biological control of crown gall.

#### Streptomycin (Agri-Strep)

Antibiotic for control of fire blight.

#### Captan

General purpose foliar fungicide.

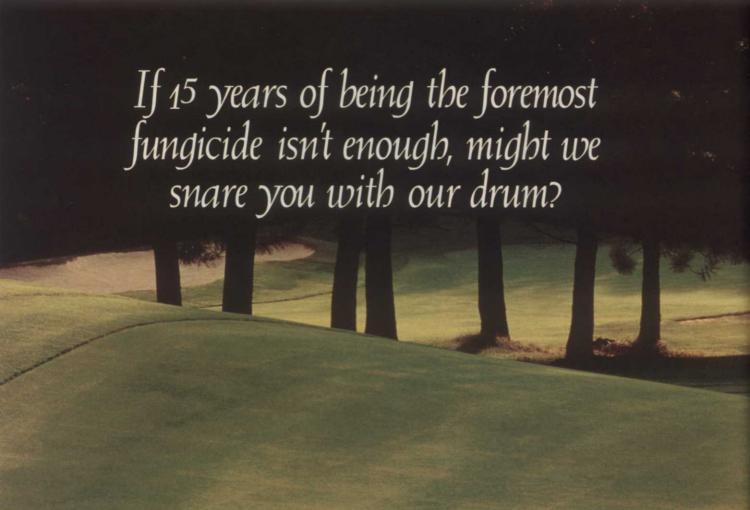
#### Lime Sulfur

Dormant application for certain diseases.

#### Phaltan

General purpose foliar fungicide.

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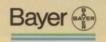
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# Disease control in warm-season ornamentals

by JANELL STEVENS JOHNK, Ph.D.



Powdery mildew on rose leaves appears as whitish or grayish mildewy growth on young plant tissues or upper leaf surfaces.

he great variety of ornamental host plants and their many diseases precludes a comprehensive list of common diseases. Fortunately, several common diseases attack a wide range of host plants.

As with turfgrasses, many diseases of ornamentals are caused by fungi. However, the leading causes of death of most ornamentals are cultural or environmental problems.

#### **Powdery mildew**

(Erysiphe spp., Sphaerotheca spp., Phyllactinia spp., Microsphaera spp., Podoshaera spp., Uncinula spp.)

Powdery mildews are probably the most wide-spread and easily recognizable plant diseases. They seldom kill the host plant but they do reduce photosynthesis and impair growth. Whitish or grayish mildewy growth appears on young plant tissues or upper leaf surfaces. Slight reddening and curling of leaves may occur before fungal mycelium is seen. Tiny, black pinhead-sized spherical fruiting bodies may be present in older areas of infection. Plants may be stunted and flower buds deformed.

Powdery mildews are specialized pathogens specific to a given host. The powdery mildew found on roses won't infect zinnias, crape myrtles, or turfgrass. Unlike most fungal pathogens, powdery mildew spores don't require free water to germinate, so mildews are more abundant in semi-arid regions than areas of high rainfall. Powdery mildew needs moderate to high relative humidity for infection to occur.

#### **Management strategies**

- 1) Avoid overcrowding of plants and use selective pruning to improve air circulation.
- Irrigate early to allow the relative humidity at the leaf surface to drop quickly.
  - 3) Select resistance species or cultivars.
- Fungicides are available, when needed, to control established infections.

#### LANDSCAPE ORNAMENTALS - TIMING OF COMMON DISEASES Chart gives general times when common ornamental diseases occur. They may occur at other times, however, depending on location and environmental conditions. Feb. Jan. Mar. Apr. May June July Aug. Sep. Oct. Nov. Dec. Anthracnose **Bacterial diseases** Fire blight Peach leaf curl **Fungal leaf spots** Powdery mildew Cedar apple rust Pathogen most active Persistent symptoms often still visible

#### **Rust (various fungal species)**

Rusts attack leaves and stems, although sometimes flowers and fruits are affected. Most rusts are very specialized and attack only specific host plants. However, there are more than 4,000 kinds of rusts and many ornamental plants are susceptible to at least one of them.

Rusty, orange, yellow or even white spots break through the leaf surface. Spots don't enlarge, unlike most fungal leaf spots. Reddish discoloration (caused by spray injury, weather, or other leaf spot fungi) is often mistaken for rust. When rusts cause disease, the tissue around the pustule is usually yellow and the pustules have a powdery, rusty "dust" in them. Frequently, plants are stunted.

#### **Management strategies**

- 1) Plant resistant varieties when available.
- 2) Fungicides are effective in controlling many rust diseases.

#### **Botrytis**

(Botrytis spp.)

Many bedding plants are susceptible to botrytis. Symptoms vary depending on the host plant but may include bud and flower blights, blossom blights, gray-mold rot and stem and crown rots. When infection occurs on leaves, they appear watersoaked and often a brownish-gray mold covers the affected area. Dark spores can be rubbed off affected areas with a light touch. Botrytis diseases generally occur in areas of high humidity or excessive moisture. They are especially damaging in greenhouse situations.

#### **Management strategies**

- 1) Sanitize; remove fading flowers, blighted foliage or whole plants if infection is near the base.
  - 2) Use proper plant spacings and good ventilation.
  - 3) Avoid overhead watering and too cool temperatures.
  - 4) Fungicide applications may be necessary.

#### General foliar leaf spots

Fungal leaf spots are the most common ornamental diseases, so common we seldom notice them, which is good. It would be impossible to control the myriad of leaf spots every season. Most leaf-spot-causing fungi require a thin layer of moisture on the leaf surface for them to germinate and infect. While many leaf spots are unsightly, few cause significant damage to the plant and, in many instances, can be ignored.

#### **Management strategies**

- 1) Irrigate to allow leaves to dry quickly.
- 2) Improve air circulation.
- 3) Several broad-spectrum fungicides are available.

#### Pythium and phytophthora rots

These fungi are known as water molds, and cause more damage in poorly-drained areas when temperatures prevent optimum plant growth and when excessive nitrogen has been applied. Both cause seed rots, damping-off, root rots, and soft rots. Infected seeds fail to germinate, become soft and mushy, and finally disintegrate. Seedlings can be infected at the roots, sometimes at or below the soil line. Invaded areas become water soaked and discolored. Infection of older roots is usually limited to the outer cortex of the root. The cortex slips easily from the rest of the root when held between the thumb and forefinger and gently tugged. In some cases, Phytophthora can cause aerial diseases of foliage. Leaves appear to melt away very rapidly.

#### **Management strategies**

- 1) Improve surface and subsurface drainage.
- 2) Manage water carefully.

- 3) Plant when temperatures are favorable for fast germination and growth.
- 4) Seed treatments and foliar-applied fungicides are available.

#### Rhizoctonia, Fusarium,

#### **Thielaviopsis Rots / Blights**

These fungi cause root rots, stem rots, and in some cases, leaf spots and blights. As soil-borne organisms, these fungi attack roots or stems near the soil line. While *Pythium* and *Phytophthora* do best in the low oxygen environment of poorly drained soils, *Rhizoctonia* causes similar root rots in well-drained soils. *Thielaviopsis* is most destructive in heavy, cold wet soils with lots of organic matter. All of these diseases are problems in greenhouses where cuttings are being started.

#### **Management strategies**

- 1) Use sterile potting mix.
- 2) Optimize environmental conditions for rapid plant growth.
  - 3) Practice good sanitation.
- **4)** Fungicides may be necessary to bring these diseases under control once they become established. **LM**

The author is extension plant pathologist, Texas A&M University at Dallas

Botrytis causes leaves to appear watersoaked. Brownish-gray mold often covers leaves.





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# Flooding and landscape trees

Damage to trees from prolonged submersion depends on water temperature, species, age of the tree and length of time under water.

by ELIZABETH BUCHANAN, Ph. D. / CHRISTOPHER LULEY, Ph. D. / BALAKRISHNA RAO, Ph.D.

loods washed over various parts of the United States this spring causing damage to thousands of acres of property.

The primary concern during floods of course is feet.

The primary concern during floods, of course, is for the safety of residents. After flood waters recede, however, preservation of personal property, including valued landscape trees, becomes a priority.

Although floods are natural events, human activity has made them worse. Natural wetlands and flood plains serve as nature's controls. Development along stream banks and coast lines have altered or destroyed these natural habitats which are nature's way of mitigating storm water. This problem is worsened as more land in watersheds is developed. Land that is made impervious or less pervious by development results in more storm water run off directly

into receiving streams. This water bypasses natural filtration into ground water. All these conditions add up to increased flooding of landscapes in susceptible watershed areas.

#### Flooding's affects

It is important to understand how woody plants respond to flooding in order to manage existing situations, as well as to plan for landscape designs in flood prone areas.

Even though trees are amazingly resistant to environmental

▶ Damaged root systems often mean that flood-damaged trees are more susceptible to insect and disease attack in the years after flood waters recede.

extremes, there are times when they succumb to prolonged flooding, ice/wind storms or other extremes. In the case of flooding, trees may be uprooted by water current, blown over after the soil is saturated, or be chronically weakened by the event and eventually be predisposed to secondary factors such as insects and disease. Additionally, trees can be injured mechanically by flood waters laden with debris, waste and logs that cause trunk wounding and limb breakage. The severity of the effects of



flooding on landscape trees varies depending on the season, the duration of the event, water level, whether the water is flowing or stagnant, and the degree to which siltation has occurred. Other factors that influence whether plants can survive flooding include: species (or genetic constitution), the age and size of the tree, and general vigor of the plant.

#### Season

Flooding is less detrimental to woody plants during the dormant season than during the growing season. Actively growing trees and shrubs are more susceptible to the detrimental effects of flooding. Many species of trees may not be adversely affected at all by flooding during the dormant season. They may even be stimulated if the flood waters recede before the growing season beings.

#### **Duration of flooding**

The longer trees are exposed to flooding, the more likely they will be impacted or



killed. Most trees can withstand only one to four months of continuous inundation of the root crown by flood waters. Shorter periods of flooding (less than one month) during the growing season are not as detrimental to trees unless the flooding is recurrent and the soil remains saturated.

#### Water level, movement and temperature

Tree mortality is higher when exposed to standing water as compared to saturated soils. After water covers the soil, the depth may have little significance until the lower foliage is covered. Flowing water is generally less detrimental than standing water because flowing water usually has higher oxygen content. Colder water is less injurious than warmer water because cold water has the capacity to hold more dissolved oxygen.

#### Sedimentation and scouring

As flood waters recede, sediment often remains. If silt and sand deposits of three inches or more cover the tree roots, the roots may experience oxygen deprivation and the tree may die. Species vary in tolerance to sedimentation but young trees and seedlings are especially susceptible to root injury. Trees that have evolved on flood plains such as cottonwood, bald cypress, tupelo and black willow can withstand moderate siltation.

The opposite extreme is scouring of the soil around the base of trees. Strong currents associated with flooding may cause soils around trees to be washed away, thus exposing tree roots. Exposed roots result in stress, and also make the trees more vulnerable to wind throw.

#### Species and age

Certain tree species seem to be genetically programmed to tolerate flood conditions, while others are quite intolerant.

Very tolerant species are able to survive deep prolonged flooding for more than one year. Tolerant species are able to survive deep flooding for one growing season. Somewhat tolerant trees survive flooding or saturated soils for 30 consecutive days during the growing season, and intolerant species can not tolerate more than a

few days of flooding during the growing season without significant mortality.

Younger trees and older declining trees are the most susceptible to flooding. Seedlings and young trees may die because they are buried in mud or uprooted by the flood. Newly transplanted trees may show various degrees of distress from flooding because of insufficient root systems and poor recovery after transplanting. Older trees may be further weakened by flooding and succumb to secondary problems such as insect and fungal damage.

#### Physiological effects of flooding

Inundation, even if only short in duration, dramatically effects the ability of a tree to grow normally and defend itself against other stresses in the environment. Many of the negative effects of flooding are related to the changes that occur in the tree's root system environment.

Low oxygen levels in saturated soils cause most of the negative impacts of flooding. Flooded soils are rapidly depleted of oxygen that is required by tree roots to thrive. In this regard, flooded soils are similar to heavily compacted soils. Both flooded soils and compacted soils cannot exchange enough oxygen with the atmosphere to support normal root tissue metabolism and growth.

Along with the depletion of oxygen, toxic compounds begin to accumulate in the root zone of flooded trees. These toxins may be produced by tree roots themselves or by soil microorganisms. Eventually, roots and microbes quickly use all

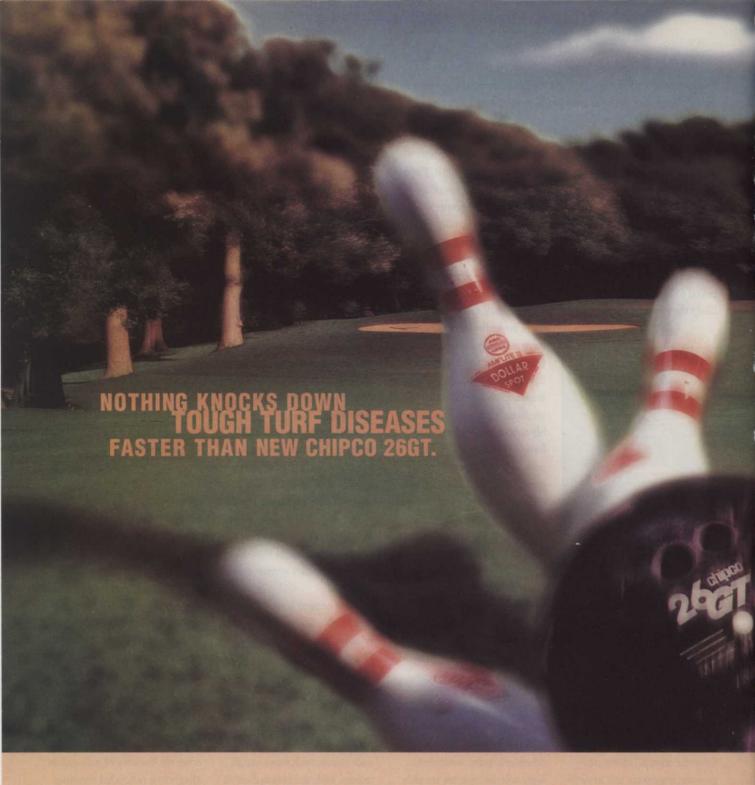
the oxygen in the soil. This creates anaerobic (without oxygen) conditions in flooded soils. In flooded soils, many of the compounds that are toxic to trees are produced under these anaerobic conditions.

Trees react to flooding and the stressful environment surrounding their roots in a number of ways. First, tree growth slows. Reduced growth may occur only after a few weeks of flooding. Flooding may also slow the initiation and expansion of leaves if it occurs in the spring of the year. Other symptoms include yellowing or browning of leaves, premature leaf drop, sparsely foliated branches, branch dieback, and tree mortality.

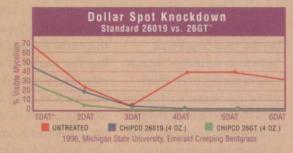
Health impacts of flooding can vary greatly depending on tree species, tree age and prior health of the tree. Many flood tolerant trees produce adventitious roots in response to the flooding. These extra roots are an adaptation that helps them survive the saturated, low-oxygen conditions.

#### **Effects on roots**

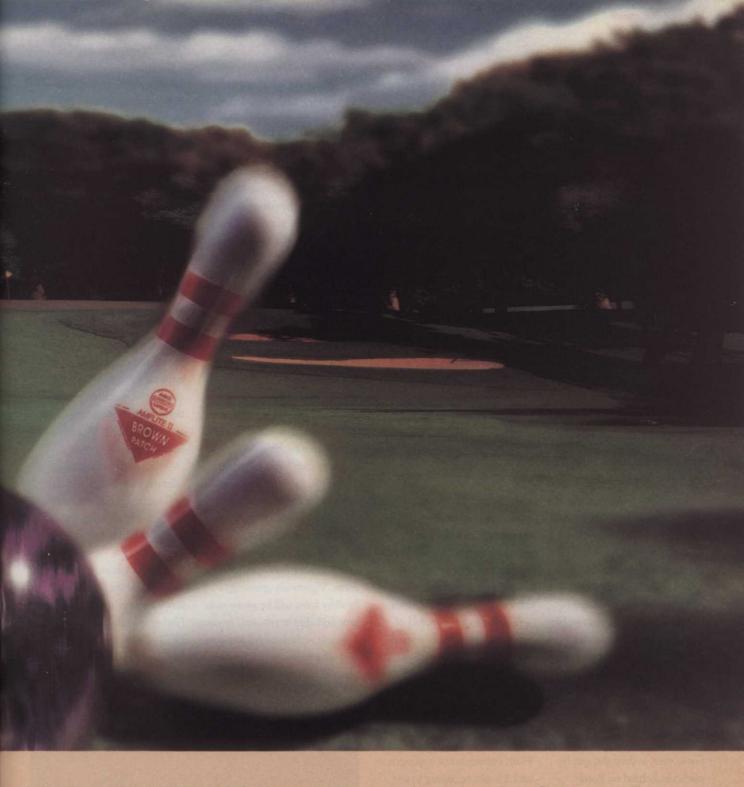
Flooding also reduces root growth. But smaller root systems found on flooded trees are probably due to a number of factors in addition to slower growth. Small absorbing roots often die because of suffocation after a tree is flooded resulting in "wet feet disorder." Affected plant roots will be bluish black, have a pig pen odor, and bark that can be sloughed off. Foliage may display off color, mimicking nutrient deficiency disorder. Root decay from root rot fungi has also been found in the smaller root systems of trees after flooding. In addition, stud-



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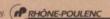
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| Very tolerant*/  | Somewhat  | Intolerant   |
|--|---|--|
| bald cypress* black willow* boxelder eastern cottonwood green ash  | American elm American holly black gum burr oak downey hawthorn                        | bitternut hickory<br>black cherry<br>blackjack oak<br>black oak<br>black walnut                                |
| hackberry nutall oak* overcup oak* pin oak red maple shingle oak silver maple  | honeylocust red elm river birch southern red oak swamp white oak water oak willow oak | flowering dogwood<br>Kentucky coffeetree<br>linden<br>loblolly pine<br>mockernut hickory<br>post oak<br>redbud |
| sugarberry sweetgum sycamore water tupelo*  PRIMARY SOURCE: WHITLOW, FLOOD TOLERANCE IN PLANTS VIEW; NATIONAL TECHNICAL II DEPT. OF COMMERCE, AUGUST | A STATE-OF-THE-ART RE-<br>NFORMATION SERVICE, U.S.                                    | red mulberry red oak sassafras shellbark hickory shagbark hickory shortleaf pine shumard oak white oak         |

ies have also shown that mycorrhizal fungi, or beneficial fungi that help trees take up water and certain nutrients, are reduced on flood-impacted trees.

Damaged root systems often means that flood-damaged trees are more susceptible to insect and disease attack in the years after flood waters recede. Low oxygen conditions in soils often persist after flood waters abate, particularly in finer textured soils. Other environmental stresses that follow a flood, such as drought, can be particularly hard on floodweakened trees. Reducing any additional tree mortality is often the main challenge facing landscape managers after flood waters are gone.

#### Managing flood-affected trees

Most prescriptions for flood-affected trees are similar to those recommended for the

care of stressed trees in the landscape. Appropriate plant health care practices and timely management of insect and disease pests are essential.

Prompt sanitation or removal of dead or dying trees will help limit the spread of secondary pests that establish on flood-injured trees. Selective pruning of branches that have died or been damaged as a result of flooding is important. Proper pruning minimizes the size of the pruning wound. Flush cutting is not appropriate and it is not necessary to use wound treatments. Wound repair on lower stems may also be needed. Removing only loose bark and scribing or bark tracing wounds will help the

▶ Along with the depletion of oxygen, toxic compounds begin to accumulate in the root zone of flooded trees.

compartmentalization process and wound closure.

Injured trees may also require care for problems that are unique to flooding. For example, removal of sediment, if greater than three inches deep, may improve soil aeration. Lesser amounts of sediments can usually be incorporated depending on the situation. In addition to the removal of sediment, vertical mulching or aeration may be beneficial (research and field trials are needed to verify this).

The impact of flooding may linger for years after flood waters recede. Monitor tree health annually and alter care levels in response to plant vitality, until conditions in the landscape stabilize.

In the long term, planting flood tolerant trees is the most reasonable landscape management tool for flood-prone areas. Vigorously growing, healthy trees will be more resistant and able to rebound from flooding with minimal impacts. It is wise to invest in a routine plant health care program

prior to flooding to ensure maximum survival of any landscape trees in susceptible areas.

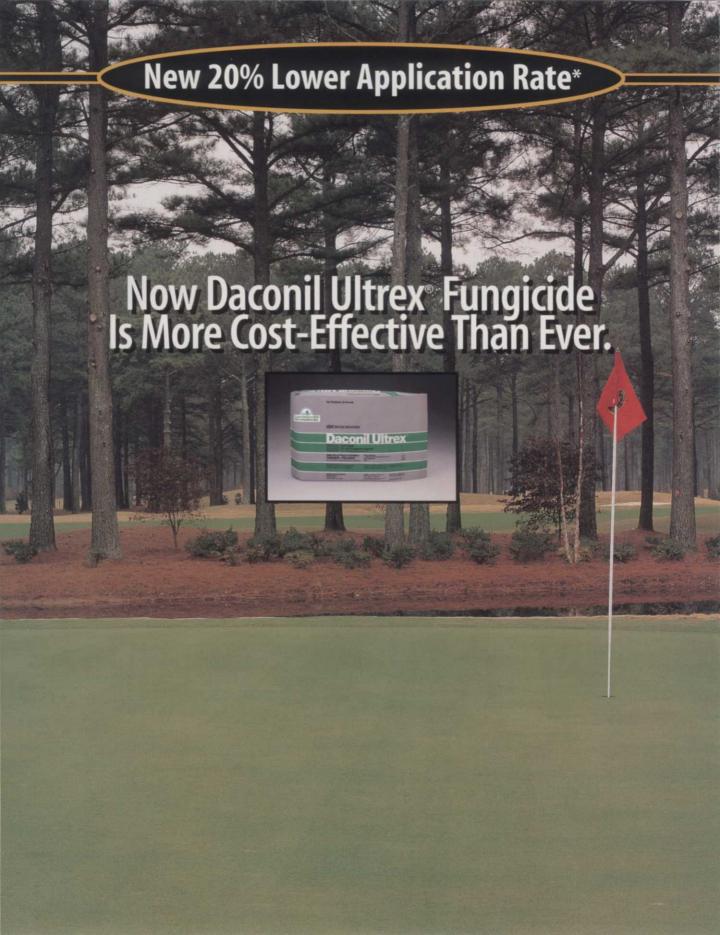
Planning to mitigate flooding Engineered solutions to

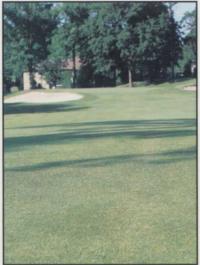
flood problems have traditionally included dikes, levees and dams. Alternative ecological solutions should also be considered under certain situations. When possible, natural plant communities in undeveloped parts of the watershed and along riparian corridors should be preserved or restored to maintain a more natural hydrological regime. This biological approach should be considered along with engineering solutions when landscaping large grounds adjacent to wetlands, lakes, streams, or rivers.

Wide natural buffers, floodtolerant tree species and natural understory plants can be aesthetically pleasing and ecologically sound. LM

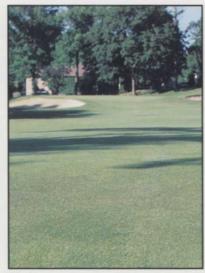
The authors are plant science specialists at the Dave Tree Expert Company in Kent, Ohio. Photographs courtesy of Jeff Iles, Ph.D., Department of Horticulture, Iowa State University.



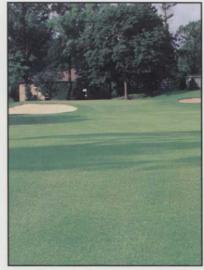




Week 1



Week 2



Week 3



Week 7



Week 8



Week 9

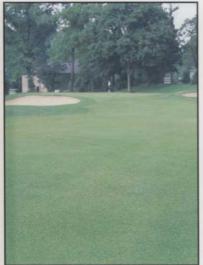
### Now You Can Use Daconil U For A Great Looking Course Week

What could make spray-dry Daconil Ultrex® fungicide even better? How about a new, enhanced Super Weather Stik™ formulation? Testing shows you can get exceptional results with this new formulation at application rates 20% lower than before. That means you can now tighten your schedule for even better disease control without a significant increase in overall cost.

You could even use Daconil Ultrex <u>every</u> time you spray, either alone or tank mixed, and actually cut your costs by reducing your use of expensive systemic fungicides.

A special free offer to try an even better approach.

Because Super Weather Stik Daconil Ultrex fungicide is so effective at these new low rates, we've been able to



Week 4



Week 5



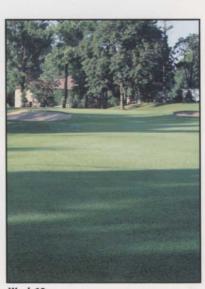
Week 6



Week 10



Week 1

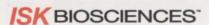


Week 12

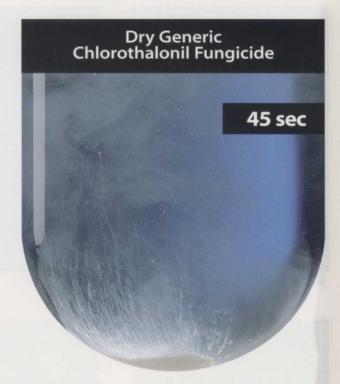
### Itrex Every Time You Spray After Week After Week.

develop a whole new spraying program using it at regular seven day intervals. As the photos above show, this program has been getting great results at courses like Shaker Heights Country Club, near Cleveland, Ohio, and it can do the same for you, giving you better disease resistance management and a healthier, greener course than you've ever had before, while still supporting

your cost containment efforts. And to prove that to you, we've created the Daconil Ultrex Challenge — with enough free product for you to test this program on one green or fairway all season long. Ask your distributor for all the details. It could change your whole approach to disease control.







With its breakthrough Stable Suspension Technology™, Daconil Ultrex fungicide goes into suspension in less than a minute and stays in suspension even after six hours.

# And You Still Get Fast, Thorough Mixing Plus Easier Disposal, Too.

There's a lot more to like about Super Weather Stik Daconil Ultrex than its new reduced rate. Like the way it goes into suspension faster and stays in suspension for consistent spraying from start to finish with less settling out and fewer problems with clogged nozzles. Or how it pours so completely out of the bag that it eliminates all need for rinsing to make disposal easier, too. Plus the superior sticking and staying power of our Super Weather Stik formulation for exceptional broad-spectrum control of some 70 diseases that attack turf, ornamentals, and trees. And the fact that there's never been a documented case

of disease resistance to a Daconil\* brand fungicide in over 25 years. More good reasons Super Weather Stik Daconil Ultrex is a great choice for you. ISK Biosciences Corporation, Turf & Specialty Products, 1523 Johnson Ferry Rd., Suite 250, Marietta, GA 30062.

ISK BIOSCIENCES

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he unrepaired golf club divot has long been a thorn in the side of the golf course superintendent.

It's a nagging, persistent problem. Like a squashed bug on a shiny clean window, or coffee spilled on a crisp white shirt.

Golfers have never been fully behind divot repair, as much as they would support, let's say, free golf or fewer sand traps.

Solutions have included bottles with seed mix attached to golf cars to boxes filled with the stuff right there on the tee. Signs don't work because the golfers don't want to be bothered. They must

figure they don't come to the course to work, or that "it doesn't matter."

A new compost/seed blend has given Dan Dinelli, CGCS, superintendent at North Shore Country Club, Glenview, Ill., a new strategy for divot repair.

The new blend, from GreenCycle, Inc., Northfield, Ill., is very dark-colored. The repaired divot stands out, and makes golfers aware of the need

to do likewise when their golf clubs scar the turf.

"They could see we were out there repairing divots and that they were leaving them behind. It's changed their attitudes, and helped with our maintenance," says Dinelli.

Golfers started being more careful about gouging the turf, and more of them began to replace and patch their divots during play, says Dinelli.

The crew had long used a sand/peat topdressing in the divot mix. The repair process is the same, but the compost helps turf fill divots faster than sand-based material.

Superintendent Dinelli seeks other new ways to use the compost in turf-repair, such as to fill in after hydraulic leaks from equipment.

It's all about finding more common sense, practical ways to use compost, beyond filling in PAGE 4 G
Scotland on Lake Erie

PAGE 8G

Greens need 'clean' sand

PAGE 10G

Shoreline grasses for aquascapes

PAGE 14G

New spreader available

PAGE 20G

Biological market bubbles

around trees and shrubs. It's a superior divot-fill product, says the superintendent, because of nutrients and moisture. Unlike sand, says Dinelli, compost contains nutrients plants need. It holds moisture when it is needed by the roots of established plants and the delicate seedlings that burst out of the Providence bentgrass seed used at North Shore.

"With a sand-based mix," explains Dinelli, you have only about 20 percent peat, so there's not much organic material to hold moisture. That old sand probably gave very little seed germination and plant survival. The seeds need moisture, but we are under pressure to keep fairways firm and dry for the sake of playability. How much chance does a seedling have in that little sandy pocket in a dry fairway?" Dinelli asks.

"With compost, you can see that the seeds are really germinating and taking hold. A week after you make repairs, you see the underlying dark color covered by green peach fuzz. You know the seedlings are definitely growing. That means you're getting a quick recovery. You're not wasting seed, and you're getting those divots filled fast."

Does the darker compost absorb heat better than light-colored sand? Probably, says Dinelli. It helps to accelerate germination during cool weather. **LM** 

### Divot repair long a super's handicap



TERRY McIVER
Editor-in-chief

# The Winning Edg

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winning edge you need in your grounds
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you'll see results on weeds in as little as one day. At last, you get the kind of fast control that other herbicides—like Roundup—can't even begin to deliver.

use with confidence on trimming and edging anywhere on your course. Since it binds quickly to the soil, REWARD doesn't leave biologically active soil residue, making it ideal for edging around trees, shrubs, flower beds and other ornamental plantings. Or apply it along cart paths, around sprinkler heads or other areas where translocating herbicides, such as Roundup, just aren't desirable.





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Take your best shot against broadleaf and grass weeds with REWARD. And give your course the winning edge.

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Superintendent Bruce
Dodenhoff enjoys the
challenge of putting
the finishing touches on
the "links-style"
Maumee Bay State
Park golf course.

### ON LAKE ERIE

BY RON HALL/ Managing Editor

flat stretch of shoreline on the far western
end of Lake Erie contains a 180-acre slice of
Scotland. It's the Maumee Bay State Park
Resort Golf Course, east along the shoreline
of the busy port city of Toledo, Ohio.

The most distinguishing feature of the course designed by Toledo native and respected golf course architect Arthur Hills, is what it doesn't have—trees. It has none.

What it does have—and plenty of them—are grass-covered, man-made mounds and dunes. Many have sand bunkers tucked in behind them. And it has ponds.

When a blustery Nor'easter churns shallow Lake Erie, the storm-driven rain roils the ponds, bends the course's tall grasses flat, and lashes the narrow, rolling fairways as mercilessly as any storm off the North Sea.

Fortunately for the continued improvement of the 18-hole Maumee Bay course, it has an experienced superintendent, Bruce Dodenhoff, who is tickled to be a part of the course's, indeed the park's, growing popularity. And, while Dodenhoff says he's no fan of the location's "Scottish Links weather", particularly each fall and what's sometimes referred to as spring in Northwest Ohio, he's happy as can be to be tending the Scottish Links-style course. Particularly, the "no trees" part.

After years caring for more traditional northern courses, including nearby Brandywine Country Club, Dodenhoff says it's mighty nice for him and his staff (11 in season; 4, including himself, in winter) to be able to focus so completely on grass.

"There are a lot of advantages to not having trees on a golf course," says Dodenhoff who, as the sec-



Cooperation among Park Manager Jim Browers, left, Dodenhoff, and Golf Pro Brad Calloway, right, is crucial to the successful operation of the Maumee Bay State Park GC.

ond superintendent at the state resort, is entrusted with "finishing off" off the 6vear-old course.

"Without trees, of course, we don't have tree roots growing into the fairways or the tees. We don't have to trim around trees when we mow. We don't have leaf cleanup. And, we have nothing to stop the wind here," says Dodenhoff. The wind, however, is both a blessing and a curse.

On the negative side, says Dodenhoff, the wind creates waves on the course's 10 holding ponds (nine of them come into play). The waves erode the ponds' clay banks in spite of attempts to establish protective wetlands plants there.

To remedy this, the state park installed a 15,000 gallon-per-minute pump to lower pond water levels whenever they get too high. Dodenhoff's crew also has been collecting big pieces of driftwood that wash up on the park's beach. They're staked in the water in front of eroding pond banks. The driftwood buffers the banks against wave action and, hopefully, will give wetlands plants a chance to dig in, says Dodenhoff.

But, the wind, which generally blows from the northwest, brings benefits too. Dodenhoff says that the wind lessens the occurrence and severity of turfgrass diseases. So far the biggest disease problem has been sporadic incidences of dollar spot. "But, I have to see it coming up a little bit before we'll spray," he says.

(The same goes for control of insect pests. He used Oftanol to knock down a problem with black ataenius two summers ago. Last summer, the course experienced some damage from cutworms but the superintendent decided not to treat.)

The almost-constant wind, combined with excellent drainage on most of the course, makes it playable even after heavy rains. When officials visited Maumee Bay to determine its suitability as a qualifying course for the 1997 U.S. Open, Dodenhoff told them if it should rain hard enough to cause unplayable conditions "you guys aren't going to want to be playing anyway." They selected the course.

"Out on the course there is no shade. It's usually windy and when the conditions are dry, you can have a two-hour shower at night, and by the next afternoon, the course can be totally dry," the superintendent says.

#### Plenty of water

A modified, double-row Toro system irrigates the course's Pennway tees (3 acres) and fairways (28 acres), and Penncross greens (4 acres). Three pumps draw water from the retention ponds which are, themselves, supplied by nearby Lake Erie. "Usually the lake level is higher

than the ponds and if we need water, we just have to open a gate," says Dodenhoff.

In finishing off the course, Dodenhoff says he and his crew have made progress in ridding the course, particularly the tops of dunes, of Canadian thistle with a program of spot treatment. To encourage root growth and seedhead formation of tall grasses which replace the thistle, he's been applying an all mineral 8-32-16 analysis at 1.5 pounds of phosphorus per 1000 square feet.

"The seedheads of these grasses are what give us the look we want, the Scottish

links look," says the superintendent who got his formal turf training at Ohio State's ATI campus in Wooster, Ohio.

#### Pheasants and other wildlife

Conditions at the course lend themselves to wildlife enhancement. Man-made nesting boxes attracted colorful wood ducks to ponds on the course this past spring. And, the organization known as Pheasants Forever began creating suitable pheasant habitat in an adjacent 30 acres of the park.

This particular corner of Ohio, with much of its wetlands remaining in the form of hunting, and state and national wildlife preserves, has long been known as one of the nation's top waterfowling locations. It remains a major migratory route for ducks, geese, songbirds and, even, monarch butterflies.

Dodenhoff acknowledges that being a superintendent at a state resort golf course is different from what he's experienced as a superintendent elsewhere.

His fulltime crew members are unionized. This has its advantages, he insists. They're paid well and have good benefits (at least compared to private courses), and there's little turnover. Also he has no



Superintendent Bruce Dodenhoff likes the links-style course but not the links-type weather.

greens committee to answer to. His immediate supervisor is Park Manager Jim Browers, who was at the park long before the golf course or its adjoining resort lodge and cabins were built.

Dodenhoff and his golf course crew know that they answer to all Ohio golfers. The park and the golf course are public facilities. The park was financed by revenueproducing bonds, not taxes.

"I try to remind my crew that we're building our security by improving this course," he says.

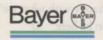
"If the public is happy with what we're doing, we're going to be here." □

# Ceep these guys off your course.



MERIT® Insecticide is remarkably
effective. Both on the course. And off. An
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provide excellent residual grub control through the fall. Under

normal conditions, MERIT can give you residual soil insect control up to four months or longer in turf. In short, it controls grubs and keeps controlling them. If that was all it did, that might be enough to make it your insecticide of choice.



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But when you add in its low application rate of only 0.3 pound of active ingredient per acre, you have a pretty remarkable product that presents less exposure than current insecticides to birds and fish. A product so good, even the

Greens Committee will love it. To find out more, contact

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Circle No. 106 on Reader Inquiry Card



If the organic materials used in green construction have a low 'ash content,' a high amount of fine material will plug it up.

n the past, native top soils were frequently used for putting green construction. In some cases, this is still being done.

Native soil greens can survive, but it's a matter of traffic. Native soils contain varying amounts of clay and silt, which tend to slow drainage. Clay will plug up a green and, of course, greens that drain poorly don't tolerate high traffic, and usually have more disease problems.

Most agree that a washed sand in the 0.25 to 0.5 mm particle size range works best. Some may put the bottom of the range at 0.10 mm. Adding a decomposed organic material to the sand adds some degree of water and nutrient retention.

The percentage of organic material may be based on experience, as much as anything. The range seems to be from 20 percent to as little as 5 percent. And, I emphasize the word 'decomposed.' I've seen new greens fail due to fresh organic material.

Fresh organic matter uses nitrogen in the decomposition process. A severe nitro-

# Dirty ponds, dirty sand, dead greens

Use clean sand, and install the irrigation system inlet where it won't pull material out of the bottom of the pond.

By BILL KNOOP, Ph.D. / Technical Editor

gen deficiency can occur if the organic material in the greens mix is not decomposed.

#### About washed sand

New greens fail because the sand used to build them was not washed. Sand size quality can be evaluated by passing it through a set of sieves. The problem is that the sand can be dirty; that is, coated with clay. And this dirty sand can pass the sieve test easily. But as the new green is irrigated, the very fine clay particles can wash off the sand, and they may slowly accumulate to form a layer. This layer reduces internal drainage, restricts root growth, and may support increased disease activity.

Even though the sand is of proper size, the "dirt" that covers it significantly lowers the quality of the green and may force reconstruction. The use of dirty sand in top-dressing will end up creating the same problem. Put a sand sample in a glass container with water, swirl it around and see how dirty the water becomes. Whatever is floating in the water is going into the green. Dirty sand used for green construction and for topdressing can be a major source of future problems.

#### Intake pipes a problem

Many golf courses get their irrigation water from ponds. If, during construction, soil is allowed to erode into these ponds, the water becomes "dirty." The fine particles may be carried through the irrigation system to the greens. Dirty irrigation water

may be caused simply because the irrigation system intake pipe is too close to the bottom of the pond.

I've seen large holes or depressions in the bottom of ponds just under the intake pipe. All that very fine soil material had been sucked up through the system and deposited on the greens. In some parts of the country, water is hard to get and very expensive. Golf courses pay thousands of dollars a month for city water, only to store it in "dirty" ponds.

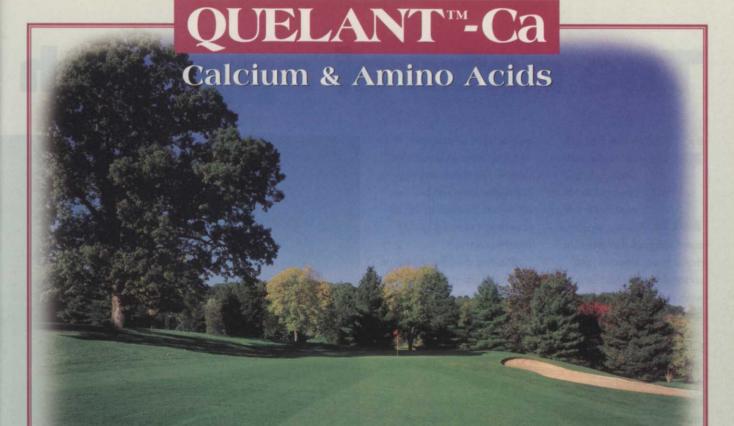
#### Burn to learn ash content

One other smaller problem area to be concerned about is the source of any organic material used in construction or used for topdressing. There is a test used in the evaluation of organic material which simply involves burning the sample to determine the "ash content." This tells us just how much of the sample is truly organic and how much is "dirt."

A low "ash content," it means that a lot of fine material will remain. This just becomes another source of fine particles that can plug up a green.

Use "washed" sand of the proper size, get the "dirt" out of the irrigation system, and use organic material with the highest "ash content" possible.

These suggestions will help prolong the life of any green.  $\hfill\Box$ 



### CALCIUM DEFICIENCY CORRECTOR

Addition of calcium to the soil by traditional means is not usually efficient or effective in treating the calcium deficiency of turfgrass. Once applied, the common forms of liming materials can rapidly change to compounds that are insoluble in water and not readily available to the plant. Continuous applications over long time periods are necessary to effect even modest improvements in calcium uptake.

Quelant\*\*-Ca is a newly available amino acid chelated calcium product that corrects calcium deficiencies in turfgrass upon application. Quelant\*-Ca provides readily available calcium chelated with amino acids so that it is easily absorbed by the leaves and/or the roots of

absorbed by the leaves and/or the roots of the plant regardless of most soil and water conditions. The unique formulation of amino acids used for chelation was



developed not only to facilitate absorption by the leaves and roots, but to increase mobility of the calcium within the plant as well.

Quelant\*-Ca is normally applied as a foliar spray and may also be applied through fertigation. Either way, it is tank-mix compatible with herbicides, soluble fertilizers, insecticides, fungicides and plant growth regulators. It will even help improve the efficiency of most of these treatments by increasing their absorption and translocation within the plant.

Best of all, Quelant"-Ca is economical to use and it protects the environment.

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AGRICULTURE DIVISION Baltimore, Maryland



# The natural approach

By STEVE BEEMAN

istorically, water hazards on golf courses have been open bodies of water, with manicured turfgrass shorelines. In recent years, however, golf course designers have begun to work more with the natural features on new construction sites and to incorporate native habitats into their designs.

Shoreline grasses stabilize slopes and control erosion. Emergent aquatic plant communities along the banks pro-



vide habitat, nesting sites, cover and food for a wide variety of animals. Wetlands and vegetated shorelines also have an important function in the improvement of water quality.

#### **Erosion control**

Planting shoreline grasses on slopes and emergent aquatic plants below the water line can effectively control erosion. The roots stabilize the substrate and the plant stems in the water column act as wave buffers. Establishing native shorelines also eliminates the requirements for expensive hand maintenance on slopes that are too steep for conventional mowers. While it may not be practical to have wetlands along shorelines that regularly come into play, planted slopes and littoral zones can provide efficient and cost-effective erosion control around tees. greens and in out-of-play areas. Wildlife habitat

Natural areas created by planting shoreline grasses, rushes and trees serve as habitat and shelter for a variety of upland creatures that live or forage near water. An extensive shoreline community may provide corridors for animals traveling between areas of natural cover. Marsh rabbits, raccoons, foxes, birds, reptiles and amphibians use these low-growing canopy areas.

The shallow water littoral

◀ Steve Beeman started Ecoshores, Inc., in May 1978. Based in Port Orange, Fla. His firm promotes proper wetland management systems.



Planted shorelines enhance the beauty of a golf course in the same way up land landscaping does.

zone provides room and board for a diverse array of birds, fish, crustaceans, reptiles, amphibians and mammals. As aquatic plants die off, they produce soluble carbon compounds that feed plankton and microbial populations in the water body. Plant production is the basis of the aquatic food web.

Shallow water plants provide shelter from predation for small animals, including the juvenile forms of some species that will grow up to become predators. Because wetland fringes provide cover for prey species, predators feed along the edges. Wading birds patrol the shoreline, stalking and spearing. Carnivorous fish species cruise the borders in

search of smaller animals which may stray from the protective screen of emergent plants.

#### Water purification

Perhaps the most important but least understood or appreciated function of vegetated wetlands is their role in water quality improvement. This feature can be beneficially exploited in lakes around golf courses. Ponds and lakes that don't have vegetated shorelines or wetlands associated with them frequently experience problems with floating algae mats or blooms which can inhibit water clarity and are unsightly. Rooted aquatic plants assist in the removal of nutrients from the water column. In fact. constructed and natural wetlands are now commonly used

# to water features



by water treatment facilities to treat waste water effluent.

When nutrients such as nitrogen and phosphorus occur in excessive quantities they fuel population explosions among several species of algae. Wetland plants help control these nutrients. One way that nitrogen (and phosphorus to a lesser degree) is taken out of the water is through assimilation into plant tissues by vascular plants and the microbes which adhere to them. Microbes (bacteria, fungi, algae and protozoa) that are attached to the underwater portions of aquatic plants and on submerged soils, account for a substantial reduction in dissolved phosphorus and nitrogen. The more attachment surfaces for microbial populations, the more potential there is for nutrient removal. As the vegetation slows water flow, sedimentation occurs, trapping phosphorus in layers of fine mineral soils where it is immobilized by metallic ions like calcium, aluminum and iron.

The principle pathway for the removal of nitrogen from aquatic ecosystems is a process called denitrification, which is dependent upon rooted aquatic plants. Most submerged soils are oxygen poor (anaerobic), but the area surrounding the roots of aquatic plants (the rhizosphere) is rich in oxygen (aerobic). Dissolved nitrogen is converted to nitrate in the aerobic rhizosphere and then changed by microbes in the adjacent anaerobic soils to nitrogen gas, which rises to the surface and leaves the water column permanently.

Wetlands along can't completely purify a water body that is receiving excessive nutrient runoff, but they can help maintain a balance, especially if incorporated into an integrated plant management (IPM) program for the surrounding golf course.

#### Aquascaping for aesthetics

Aside from the benefits to wildlife and the aquatic environment, planted shorelines enhance the beauty of a golf course in the same way upland landscaping does. Waving fields of cordgrass (Spartina bakeri), blending into shoreline hedges of rushes (Juncus or Eleocharis) form native plant savannahs that bridge the aquatic and terrestrial zones. Flowering herbs like duck potato (Sagittaria),

pickerelweed (*Pontederia*), canna lily (*Canna*) and blue flag (*Iris*) provide bright colors at different times of the year, framed by variable shades of green foliage. Tall plants like bulrish (*Scirpus*) or fire flag (*Thalia*) can be used as accents

or to warn golfers of hidden hazards.  $\square$ 

The author is President of Ecoshores, Inc., Port Orange, Fla., and spoke at the Southeastern Turf Conference in Tifton, Ga., in May



Shoreline grasses and trees give shelter to upland creatures that live or forage near water.

Shoreline grasses on slopes can effectively control erosion.





# Put the power of EAGLE®

Superintendents tell why they rely on Eagle to prevent stubborn turf diseases.



Mike Jones Valley High Country Club Elk Grove, CA

"We go into the season with really nice greens," says Mike Jones, superintendent at Valley High Country Club in Elk Grove, CA.

"Then about July, the decline starts and it's a constant battle all through September."

Mike's solution was to intensify his preventative fungicide program with Eagle,\* while raising fertility levels. Mike's experience was no surprise to us. We've been saying all along that Eagle provides dependable, long-lasting protection against 14 major turf diseases—protection unmatched by any other systemic fungicide. Better yet, Eagle is now registered to control summer patch and spring

dead patch.



Rich Hardebeck Eagle Lake Golf Club Farmington, MO

### Tackling dollar spot and brown patch

Rich Hardebeck is superintendent at Eagle Lake Golf Club in Farmington, MO. When he first came to Eagle Lake, he experienced extremely heavy dollar spot on his ryegrass and bluegrass fairways.

"Last year," says Rich, "I applied Eagle preventatively in April and again in September and didn't see dollar spot all summer."



Dave Anderson Evergreen Country Club Haymarket, VA

Dollar spot was also Dave Anderson's problem, as well as brown patch on his ryegrass fairways.



### to work for you.

Dave is superintendent at Evergreen Country Club in Haymarket, VA.

"I used Eagle exclusively on the fairways," he says, "and they were the best fairways I've ever had, especially considering the extreme heat."

"Late in the year," Dave continues, "I alternated Eagle with a contact fungicide to control gray leaf spot and got excellent results overall."

### Effectiveness is just the beginning.

In addition to the long-lasting protection of Eagle, superintendents

appreciated its outstanding turf safety, low-use rates and watersoluble packaging.

"I don't have the safety concerns with Eagle that I do with other sterol inhibitors," says Mike Jones. "And rates are so low, I have the flexibility of using it in the fall if I need to."

The flexibility of Eagle is further enhanced by the new extended spray schedule—now up to 28 days.

Those are powerful reasons for using Eagle. Dave Anderson gives the final word.

"Considering its length of control, low-use rates and cost,"

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he says, "Eagle offers the best of both worlds."

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10-160

2/97

# More precise apps with new spreader?

by BILL KNOOP, Ph.D.

includes periodic fertilizer and pesticide applications.

Now, more than ever, it's vital that these materials be applied at correct rates, and on target.

very turf maintenance program

Most pesticides are applied as liquids. Assuming that the sprayer is properly calibrated, the greatest environmental concern is probably the threat of spray drift. Spraying equipment must be designed to completely control drift.

It is fair to say that a cyclone spreader can't produce an absolutely accurate application of some fertilizer or seed mixes. Also, if a cyclone seeder is used on a windy day, the wind could seriously distort the application pattern. Again, environmental concerns may dictate that materials not go beyond the target areas.

#### The ideal applicator

If we were designing an ideal liquid and dry material applicator, it might have the following characteristics:

- Able to apply liquids in any concentration, including low-volume liquids; able to apply dry materials at rates from a few pounds per acre to several hundred pounds per acre.
- 2) It would produce an even application from one tip of the spray boom to the other of a dry material, with no 'ballistic separation' of particles.
- It would permit liquid or dry applications in wind or rain.
- 4) It would have a folding, self-leveling boom, so the spreader can get through gates and still offer a reasonably wide application pattern.
  - It would prevent any spray drift.

#### Air-controlled spreader

The Course Air, is an original product that uses a technology new to turf, but that has been used in agriculture.

Robert Wicker of Southeastern Turfgrass Supply, Inc., Jacksonville, Fla., is using a Course Air for custom applications of seed and fertilizer on golf courses and athletic fields. According to Wicker, the

#### ACCURACY OF DROP AND CYCLONE SPREADERS

#### **Drop spreaders**

- Fairly precise application pattern.
  Width of application limited by width of gates; distance between trees, other objects.
- Agitation might harm coatings of some nitrogen products.

#### Cyclone spreaders

Wider, perhaps less precise pattern cause 'ballistic segregation' of materials.

Nutrient particles or seed are thrown different distances, based on weight; uneven applications may result.

Course Air is more precise and accurate than other spreaders, says Wicker.

John Mills, superintendent of Dancing Rabbit Golf Club, Philadelphia, Miss., says the spreader has reduced labor costs, reduced material waste, and has provided more accurate applications of materials.

Most important, says Mills, environmentally sensitive areas can be avoided.

Robert Mange, assistant golf course superintendent at The Bridges Golf Resort, St. Louis, says the Course Air is easier on turns, stays set at a steady seed output, is easy to calibrate, and can be pulled by any vehicle.

This machine may well present a new level in spreader technology. We need spreaders like this, that help us protect the environment while we make the necessary fertilizer and pesticide applications.

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The author is LANDSCAPE MANAGEMENT technical editor.



The Course Air has reportedly reduced labor costs and material waste.



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### **Common sense control**

Pest mole cricket and fire ant control can be achieved more economically with a program based on proper identification and regular mapping.

By PAT COBB, Ph. D.

ommon sense is the foundation of any effective management program for turf and landscape pests. A few



Observing fire ant foraging activity before bait applications can directly influence control.

important steps in imported fire ant and pest mole cricket management listed below illustrate this point.

#### **Know the problem**

It is not only important to identify the source of the problem, but also to know as much about the causal agent as possible. Vulnerable stages or time intervals can be identified by knowing life cycles, periods of pest activity and feeding, and other behavioral patterns.

For example, the fact that adult imported fire ant workers cannot eat solids plays a big part in control strategies that include the use of bait formulations. Peak mole cricket activity just after dark and just before daylight impacts directly on application timing of many controls. Knowledge of imported fire ants and pest mole crickets is also useful in identification of control options.

Monitoring for pest presence is important. However, continued monitoring is important in timing controls and in control evaluation. Observing fire ant foraging activity before bait applications can directly influence control. If worker ants are not actively foraging on the turf surface, bait applications should be delayed. Monitoring mole cricket development is important to application timing of controls.

Mapping spring tawny mole cricket activity for treatment of nymphs later in the season saves money. Mapping imported fire ant infestations can also save money and provide valuable information about reinfestation potential. Mapping and monitoring are important practices that can often determine the success of ongoing control strategies.

#### **Develop strategies**

Imported fire ant management in larger landscapes such as on golf courses can be very expensive in labor costs. Broadcast insecticide treatments can eliminate imported fire ants in an area. However, detrimental effects of this practice include the elimination of all fire ants as predators on new, incoming fire ant queens and the subsequent resurgence of fire ant colonies in the area, and/or the movement into these areas of other pest ant species.

Combined mapping of existing heavily infested areas, priority-setting and perimeter or spot treatment with baits and contact insecticides has reduced control costs and resulted in better ongoing control of imported fire ants.

Tawny mole cricket activity can be mapped in early spring, and mapped areas treated later when young nymphs are present. This practice, along with monitoring life stages, saves money by reducing the area treated and the amount of pesticide used.

# Here's One Birdie You Don't Want To See On Your Course.



#### Golf was never meant to be a water sport.

But standing water, poor drainage and water waste are all symptoms of a larger problem—compacted soil. Water can't move through it. Roots can't grow in it. And surface moisture evaporates too quickly to do your turf any good.

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Invisorate of Blazer of Blazer

Spartanburg, SC 29304 www.millikenturf.com If treatments are timed properly, more effective control usually results. Although new insecticides provide long-term mole cricket control, continued mapping and monitoring are essential to provide early-season information about mole cricket populations before serious turf damage occurs.

Control strategies for imported fire ants and mole cricket s are site-specific. Although general guidelines are available and helpful, specific measures must be devised to fit specific situations. Where budgets are

Map and monitor to determine the success of fire ant and mole cricket control strategies.

limited, this probably means identifying priority areas and working with these most extensively.

Development of money-saving practices such as mapping are often the result of limited resources. In addition, identification of available control op-

tions before treatment is necessary and can save time and money. Knowledge of various "weak link" stages or periods in the life history or behavior of pests as related to identified control options can add purpose and meaning to monitoring.

Finally, there is no "silver bullet" for controlling imported fire ants and pest mole crickets. Both these pests were imported from South America and have few naturally-occurring biological controls in the Southeastern U.S. These highly mobile insects that live mostly in the soil are difficult to control. Regardless of available resources, common sense is still the most valuable asset in devising control strategies for these serious pests.

—The author, an entomologist at Auburn University, spoke about pest insect control at the Southeastern Turf Conference in May.

# Slit application of fipronil demonstrated

Turfgrass managers at the Southeastern Turfgrass Conference in Tifton, Ga., last month learned about one of the latest weapons against pest mole crickets. John C. Wicker of Turf Solutions, Jacksonville, Fla., demonstrated a custom application of Chipco Choice (a.i. fipronil).

The product can only be applied by certified applicators trained and approved by Rhone Poulenc. They use specially designed machinery to make slit applications of the dry granular material into soil/thatch interface, about ½ inch below the soil surface. The product is deposited on 1 ½-2 inch centers which, considering the mobility of pest mole crickets, should bring them in contact with the fipronil. These machines are inspected and certified by the product manufacturer.

The machine that Wicker demonstrated in Tifton, Ga., was considerably smaller than those typically used on golf course fairways. Those machines can be 8-feet wide.



This machine makes slit applications at about a half inch below the soil surface.

Regardless of the size of the application apparatus, the product can be applied as low as 0.0125 lb. active ingredient per acre. Wicker, responding to questions from the turf managers, said the cost of an application is \$315 per acre (in four acre lots).

Clyde Gorsuch from Clemson University spoke briefly about fipronil at the conference and reminded turf managers that the product is, so far, labeled for golf courses and around commercial buildings, but not for home lawns.

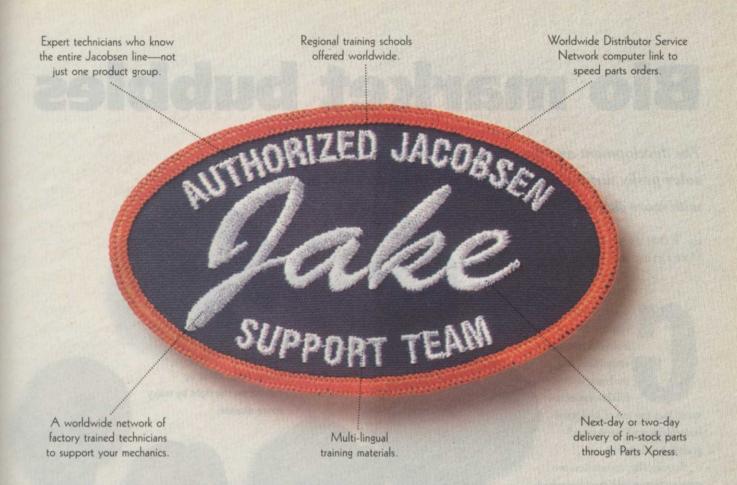
Because of the technology needed to apply the product, it's unlikely an entire golf course could be treated. Therefore, said Gorsuch, it

would be wise to monitor for mole crickets in the areas that don't receive treatment.

Fipronil does not control white grubs, said Gorsuch. "Don't forget to get off the cart and get down on your hands and knees and look what's going on in the turf," he advised.

Dr. Pat Cobb of Auburn University also advised the golf course superintendents to keep mapping and monitoring for insect pests and not rely on any single "silver bullet."

-Ron Hall



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you are in the world. For world-class support on a first-name basis, see your Jacobsen distributor.

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### **Bio market bubbles**

The development and promise of new biological products to solve pesky turfgrass problems is providing the green industry with more choices.

by RON HALL/ Managing Editor

one is much—but not all—of the hype. It left with too many unfulfilled and, perhaps, unfulfillable expectations. But the use of biological controls in professional turfgrass is accelerating.

Specifically, researchers are starting to sort and discover which biological products work, and against which pests. Equally important, they're finding out why. Promising new biological agents are being targeted against insects, diseases and, surprisingly, weeds too.

Even so, the amount of biological product used by turfgrass managers remains miniscule, particularly compared to chemical controls. But it's growing, 300 golf course superintendents learned from four researchers at the North Central Turfgrass Expo near Chicago this past December.

#### Bios and chemicals as partners

What they learned was that most turfgrass managers will use biological agents along with, or perhaps in conjunction with, chemicals. The use of biologicals will allow managers to use chemical products less frequently or at lower use rates.

Speaking at St. Charles, Ill., were Dr. Hank Wilkinson, plant pathologist at the University of Illinois; Dr. Nick Christians, professor of horticulture at Iowa State University (see article in Feb. '97 LM); Dr. Gary Harman, plant pathologist at New York State Agriculture Experiment Station

The grubs,
top, are healthy;
those on the left have been killed by
nematodes and those on the right by milky
spore disease.

(Cornell); and
Dr. Fred Baxendale, professor and
extension entomology
specialist at University of Nebraska.

Wilkinson offered a working definition of a biological control as "one organism suppressing another." (His colleagues later expanded that to include by-products of organisms also.)

A severe outbreak of a turfgrass disease is "an imbalance of a turfgrass ecosystem," explained Wilkinson. The disease proliferates in the absence of other micro-organisms that, given sufficient time and the right conditions, keep disease in check. The soil contains thousands of micro-organisms. Some control harmful fungi.

However, turfgrass managers rarely have time to wait for the micro-organisms to re-establish themselves or this balance. Managers must use fungicides to reduce disease.

Meanwhile they must keep turfgrass growing and healthy to replace the damage caused by the disease.

The other researchers built on this concept which they indicated is key to understanding how biological agents work in the complex turfgrass bio system.

#### **Develop a strategy**

"There is no single activity to manage or control disease," said Wilkinson. "Biological controls need to be integrated with other practices." Biologicals are most effective when used in a multi-step process involving:

- ► Forecasting. "If you wait till you see it (a disease), generally it's too late," said Wilkinson.
- ▶ Using disease-resistant turfgrass varieties. The composition of a stand of turf can be changed over time by slit-seeding or overseeding with disease-resistant cultivars or varieties of turfgrass.
- ► Cultural practices that promote grass growth and also the health, diversity and activity of micro-organisms around the turf.

Harman discussed three biological sys-

tems that turfgrass managers can already use to reduce turfgrass disease: composts, the Bioject System and Bio-Trek 22.

Composts can be made of almost any organic matter. They vary significantly in quality, said Harman who commented on research by Dr. Eric Nelson at Cornell that demonstrated that applications of some composts suppress turfgrass diseases. These composts contain high levels of the types of micro-organisms that prey on harmful fungi.

Soon, turf managers will be able to purchase composts fortified with beneficial fungi and bacteria. Harman credited Dr. Harry Hoitink at Ohio State University with developing the fortified compost which, because of its fungicidal claims will have to be registered as a pesticide. It will likely be introduced into the greenhouse market first, said Harman.

"You begin to tilt the population of the soil in favor of a healthier situation," he added, describing the use of fortified compost as an example of "a complex biological control."

#### Bio-Trek 22G

Harman briefly described one biological systems to control disease that is already available to turfgrass managers: Bio-Trek 22G.

Bio-Trek 22G is a granular formulation that has been available for two years. It uses a single fungus known as trichoderma that colonizes turfgrass roots. Trichoderma occurs naturally in the soil but not, usually, in sufficient numbers to suppress disease. Bio-Trek 22G increases the microbe's population manyfold and is superior to wild strains in its ability to colonize roots and suppress diseases.

"Here, more is indeed better. The more we apply, the more disease suppression we will have." said Harman.

The summer of 1996, Harman tested the compatibility of the product with popular fungicides. Products like Rubigan, Aliette, Chipco 26019, and Bayleton among others did not harm it. Also, tests of the product's use as a foliar spray indicated promise. Bio-Trek 22G could be applied either by itself or in combination with re-

duced rates of fungicides. Harman said he's hopeful that the product will become available as a spray by early 1998.

"These results certainly suggest that, at least with an integrated and maybe with a pure biological we can get good disease control, at least with some diseases," said Harman.

#### Insect pathogens

Nebraska's Dr. Fred Baxendale described three types of biological control agents of pest insects: predators like lady beetles and ground beetles, parasitoids including species of tiny wasps and flies, and insect pathogens.

"There is more activity going on in this area (insect pathogens) than any other aspect of biological control of turf insects," said Baxendale. Pathogens include bacteria, viruses, fungi and nematodes. "In many cases these naturally occurring organisms come in and reduce insect populations, but

we often don't have time to wait," he said. "They're not going to help us before the turf has been damaged."

Turfgrass managers are already familiar with bacteria like *Bacillus thuringiensis* (Bt) that attacks caterpillars. There are many Bt products. *Bacillus popillae* which causes milky disease in Japanese beetle grubs is also relatively well known and marketed under several trade names.

Work to improve the effectiveness on these pathogens continues at an encouraging pace.

Baxendale said he is encouraged by what he's seeing. The entomologist said researchers at Cornell and Kentucky are looking at fungi for insect control. One commercial product, Naturalist, using Beauveria bassiana shows promise against



Beneficial predators like this big-eyed bug often provide unseen control of turfgrass insect pests.

chinch bugs and billbugs.

Nematodes? "I'm still a proponent of nematodes," said Baxendale. "I think there is potential, but there is still a lot of work that needs to be done."

Conserve from DowElanco represents a class of control products derived from

> naturally occurring metabolites of micro-organisms. In turfgrass, it provides excellent control of armyworms, sod webworms and cutworms. It should be available soon.

Two new chemical products, while they aren't biologicals, are noteworthy also, said Baxendale. Merit from Bayer and RohMid's MACH 2 are effective against target pests, particularly grubs, but are less toxic to beneficials in the soil.

Baxendale seemed to be speaking for his colleagues too when he described how a good turfgrass manager attempts to

maintain and conserve the balance of organisms in the soil and turfgrass.

"We want to preserve the existing natural enemies," he said. "We want to minimize our insecticide applications. We can use our insecticides selectively." □



Dr. Fred Baxendale says certain strains of Bt and fungi show promise against turfgrass insect pests.

#### **Industry inventor Tom Mascaro dies at 81**



Tom Mascaro: invented the turf aerator, other tools.

Thomas Mascaro, whose lifetime of contributions to green industry technology helped modernize turf management, died May 6 at the age of 81.

Mascaro held many patents for golf course maintenance equipment. His inventions include the West Point aerifier, the first such tool to be used for cultivating turfgrass; the verticut mower for removing thatch; and the green industry's first battery-powered mower.

Mascaro was past president of West Point Products, West Point, Pa., and former president of Turf-Tec International, Oakland Park, Fla.

"We've lost a pioneer," said Dr. Eliot Roberts, of Rosehall Associates, Sparta, Tenn., and past executive director of The Lawn Institute. "Tom had a keen sense of observation. Over the years, he took thousands of color slides of turfgrass conditions to use in educational programs all over the world.

"He was a wonderful person, with a great sense of humor," said Roberts. "Whenever Tom was around, he stood tall. It was a pleasure to be included with him on conference programs."

Mascaro is survived by his wife Dorothy; sons John and Bobby; daughters Tammy Shackleford, Linda Owens and Stella Churchill; nine grandchildren and six great-grandchildren.

Donations may be made in Mascaro's name to the Golf Course Superintendents Association Foundation's Historical Preservation Fund, 1421 Research Park Dr., Lawrence, KS, 66049.

#### GCSAA reports on EPA activity

The Golf Course Superintendents Association of America reports a strategic action plan on wetlands conservation has been drafted by the Environmental Protection Agency water office. The agency intends to reduce the complexity of wetlands regulations, increase integration of wetlands into watershed management planning, and pursue technical outreach efforts.

The agency may also rely less on voluntary initiatives and more on enforcement.

According to Environmental Policy Alert, industry representatives expect increased oversight of development projects and tougher penalties for violations.

The plan has been circulated to EPA regional offices for review.

#### **Endocrine disruptor debate**

The GCSAA also says that an interim report from the EPA's Office of Research and Development has found limited evidence exists that traces human illness to chemicals called "endocrine disruptors."

The report, according to GCSAA, says the effects of certain industrial chemicals on human endocrine or hormonal systems are unclear and that further investigation on the human and wildlife connection is essential.

For a copy of the report via the World Wide Web, dial up: http://www.epa.gov/ORD/whatsnew.htm.

#### USGA awards Rieke for service

The United States
Golf Association Green
Section has given its 1997
Green Section award to
Dr. Paul Rieke of Michigan State University.

Rieke, a researcher,

teacher and state turfgrass extension specialist at MSU for the past 35 years, was chosen for his service to the game of golf through his work in turfgrass science.

Nominators noted Rieke's achievements as a teacher. More than 1,000 turfgrass and soil science undergraduates have studied under Dr. Rieke, many of whom later worked their ways into prominent posts in a variety of green industry professions, from academia to golf course management.

#### Musser Foundation names award winner

The Musser International Turfgrass Foundation has given Robert C. Golembiewski its 1997 Award of Excellence.

Golembiewski earned a Bachelor of Science degree in Crop and Soil Science at Michigan State University. He also earned his Master of Science degree in Botany and PlantPathology from MSU.

Golembiewski is currently working on his doctorate in Horticulture and Crop Science at The Ohio State University. His thesis is titled Characterization of Creeping Bentgrass Using Randomly Amplified Polymorphic DNA (RAPD) Markers.

Over the past nine years, the Musser Foundation has awarded \$79,000 to graduate students at 11 different universities around the United States of America. These questions came straight from the customers of lawn care operators, pest control operators and other professional pesticide applicators across the country—and probably reflect the concerns of your customers. The more your customers know about the products you use, how you use them and how much is used, the more confident they will be in you and your service.

#### Communicate With Your Customers

Your customers expect you and your employees to be credible and knowledgeable sources of information about your products. Take time to talk with them about your safe and responsible use of pesticides.

Studies show that most people don't know that pesticide products are among the most highly tested products sold. The U.S. Environmental Protection Agency (EPA) registers only those uses of pesticide products that pose minimal risks.

 Emphasize that pesticide products must undergo stringent government-monitored testing before they can

be sold. It is a long and costly process. For example:

- It takes a chemical manufacturer eight to 10 years to test and register a product, at an average cost of \$30 million to \$50 million.

- As many as 120 tests or more are performed, many specific to health, safety and the environment.
- Only one potential pesticide in 20,000 makes it from the research lab to the market.
- Explain Integrated Pest Management (IPM) to your customers. Most do not fully understand the concept. Point out that a successful IPM program stresses prevention, pest identification and selection of the best method of pest control, which may require the use of pesticides. Tell how you incorporate IPM into your pest management practices.
- Identify the specific pesticides you use and the pests they control.
- Indicate that professionals use an array of products, many the same as those used by homeowners.
- Assure customers of the benefits pesticides provide for turf, trees and ornamentals, and in the home. For example:
  - Termites cause over \$1 billion in structural damage each year.

"Are the pesticides you use safe?"

"Are the pesticides that professionals use stronger and more toxic?"

"When is it safe for my children and pets to return to an area after a pesticide application?"



- One large, pest- and diseasefree tree has the same cooling effect as 15 room-size air conditioners.
- A well-maintained lawn and landscape adds as much as 15 percent to a home's value.
- Discuss your safe and responsible use of pesticides as a professional applicator. Note the many steps you take to ensure that the pesticides you use are used properly.
- Advise your customers that you closely follow label instructions. The label contains instructions for only those uses approved by EPA.
- Outline the extensive training that is mandatory for professional applicators in order to apply specialty pesticides. Applicators are required by law to undergo training, certification and licensing, as well as to keep records of each job performed.
- Explain what happens to pesticide containers once a job has been completed. Note that containers are disposed of properly.

#### What Else Can You Do?

Provide your customers with materials such as newsletters, brochures, fact sheets and bill stuffers that communicate these messages. Be sure that someone at your company, who has a basic knowledge of the products and application methods your company uses, is available to answer questions.

#### RISE Is A Resource

RISE is the voice for the specialty pesticide industry. Its members include manufacturers, formulators, distributors and other industry leaders.

RISE works in cooperation with your national, state and local user/applicator associations and is an additional source of information regarding issues facing pesticide users. We can help you in your role as a knowledgeable and credible information source to customers and to the

public. A brochure on communicating about pesticides with your customers is available. Contact RISE to receive your copy.

We urge you to take an active part in your state and national association(s). We work together to support your business.



#### GCSAA warns of unionizing

The Golf Course Superintendents Association of America has expressed concern recently over an apparent threat of unionizing in light of increased AFL/CIO activity, "its most ambitious organizing effort in decades."

The AFL/CIO, reports the Association, is "funnelling significant dollars into union organizing activities, and endorsing research to increase its knowledge about workers and employers and ways to garner community support."

Golf courses may be ripe for union organizing, says the Association because workers usually aren't well-paid; they don't

# Super Jones wins for writing

The Greater Detroit Golf Course Superintendents Association has presented the John Walter Award to Mike Jones, superintendent at the Lochmoor Club.

The award is given to a superintendent who writes what is judged to be the best article written by a superintendent and which is published in the Association's Patch of Green magazine.

Jones' article is entitled, "Producing Quality Putting Surfaces Through Overseeding." receive significant benefits; and often are not treated with respect by customers and employers.

To maintain union-free status the Association suggests the following:

- ▶ Review personnel policies and practices for potential discrimination and violations of federal and state wage/hour laws.
- ► Foster an environment of trust and respect. Involve employees in planning, set goals together, communicate in person often and recognize employee achievements.
- ► Educate golfers that employees deserve respect. Be a role model for the way employees should be treated by customers and by their peers.
- ► Know your own rights as an employer. If your employees are discussing unionizing, you have the right to speak to your employees and give your views, under the national Labor Relations Act.

### USGA, Wildlife Foundation discuss golf & environment

The United States Golf Association and the National Fish and Wildlife Foundation met at the headquarters of the National Geographic Society in Washington, D.C. May 16 for a day-long summit on "Golf Environments of the 21st Century: Integrating Wildlife Conservation into Golf Courses of the Future."

The summit was held to find common bonds between green industry recreational groups and environmental organizations.

"The idea of partnerships is what brought us together today," said Kimberly Erusha, Ph.D., USGA director of education.

"There have been many excellent partnerships that have been established between organizations in the golf and the environmental community that are working towards the common goal of protecting our environment," said Erusha.

Reg Murphy, president of the National Geographic Society, urged involvement in environmental issues to end the extinction of various plants and animals.

"Unless people like you take a great interest in the environmental subjects that we are going to talk about today, this [extinction] will continue," said Murphy, who said control product applicators must be aware of "what is damaging to the environment and what is healthy for the environment."

Catherine Waterhouse, an expert on environmental enhancement, spoke of golf course involvement in the Audubon Cooperative Sanctuary Program as a positive force in golf.

"Environmentally dedicated superintendents abound both here in the United States and in Canada," said Waterhouse.

—Look for a full report on the symposium in the July issue of LANDSCAPE MANAGEMENT. Thanks to Saul Keeton, USGA media relations, for preliminary information-ed.

#### **COURSE CORRECTIONS**

Thank you very much for featuring the Golf Club at Eagle Mountain in your April issue. If I may, please allow me to clarify a few issues that perhaps were not entirely clear.

Our unusually warm location caused our bermudagrass fairways to resist dormancy—not excessive overseeding. As a result, our fairway stand appears very strong leading into the summer.

The AERA-vator enhances permeability. Obviously, the accompanying amendments improve moisture retention. With our various treatments we are attempting to improve the carbon to nitrogen ratio, not change carbon to nitrogen.

The product being used on heavily-trafficked areas, such as cart path edges, is called Athletic Mix, and is produced by Redi-Play, Inc. We have no plans to utilize the material on our fairway surfaces.

> Sincerely, Kevin P. Smith, CGCS

We apologize for the errors, Kevin, and wish you and the Golf Club at Eagle Mountain a successful summer, at what is indeed a fine golf course!—ed. he most dangerous product that you or your employees will ever use in the lawn/landscape industry isn't a pesticide. It's not a mower or chain saw.

It's your service vehicle.

Think about it. You the driver, or occupant, are strapped inside of a shell of steel, plastic and glass. You and this mass of molded sheet metal hurdle along a narrow ribbon of pavement, almost always at potentially lethal speeds.

That's scary enough even without the hundreds, perhaps thousands, of other cars and trucks that you'll be sharing that pavement with.

Don't even think about the condition of your

vehicle. Or, the condition of the other cars and trucks. What about your condition? How about the mental or emotional condition of the operators of the other vehicles? Sleepy? Angry? Hung over?

There's real risk in just getting our lawn care and landscape to our customers.

Every day we should remind ourselves and our employees about road safety because, it seems to me anyway, that this risk

is growing. Traffic on our roads is multiplying, especially in the suburbs and surrounding areas where demand for our services still is greatest. Can you think of a road in your service area that used to be a snap to drive, but you now avoid when you can? Getting to job sites is even tougher now that road construction season is here.

But, it's not unsafe roads or unsafe vehicles that cause most road accidents. It's unsafe drivers. Aggressive driving is epidemic. Many drivers see nothing at all wrong with speeding and tailgating.

Never mind that the speed limit on most highways has been bumped up from 55 mph to 65 mph; it's still not fast enough for some drivers, perhaps even for some of your employees.

Considering the added difficulty and liability in operating vehicles that deliver chemical products

THAN LANDSCAPE our tion

PAGE 4L

**Build a Plant Health Care program** 

PAGE 8L

A simple way to rate landscapes

PAGE 10L

NFL Cardinals tackle poa

PAGE 14L

Preview of Expo 97 in Louisville

PAGE 16L

Straight talk gets funding results

PAGE 20L

Hardscaping is a profitable add-on

or pull trailers containing construction and maintenance equipment, the responsibility to make sure your vehicles are both properly maintained and safely operated is great.

Many of us, of course, check the driving records of potential employees. Many of us have drug testing programs in our companies. But neither addresses the problem of aggressive, unsafe driving.

Constant reminders about defensive drivingperhaps driver training for those who don't understand the concept--belong in our training programs. **LM** 

Comments? Phone Ron at (216) 891-2683; fax him at (216) 891-2683, or E-Mail him at rhall@advanstar.com.

# Are we driving ourselves too fast?



Rontfall

RON HALL Senior Editor

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herbicides. Once it's applied, you'll see results
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day. Nothing works faster than REWARD LS
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REWARD LS binds quickly to the soil and leaves no biologically active soil residue. It works well around sidewalks, mulched areas, driveways and curbs—and is ideal for edging around trees, shrubs, flower beds and ornamental plantings. REWARD LS even allows you to plant new beds soon after it's applied.



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REWARD LS

Landscape Herbicide

Always read and follow label directions carefully.

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# Sell clients on concept of Plant Health Care

PHC is a system to allow the original design intent of any landscape to develop by improving overall plant health and vigor.

The focus is not solely on pests.

By TOM SMITH

M

any landscape professionals practice the concept known as Integrated Pest Management (IPM), but I believe that a system of Plant Health Care (PHC) is a better approach to proper landscape management. That's because PHC encompasses all management practices, and doesn't focus solely

on "pests".

PHC is a complete system to allow the original design intent of any landscape to develop by improving overall plant health and vigor. The building blocks of PHC are:

- proper design and site placement
- proper site preparation and establishment
- ➤ species and cultivar adaptability and resistance to pest problems
- ▶ proper cultural practices (irrigation, pruning, fertilization, mowing, mulching)
  - pest management

All are combined to establish and maintain healthy, vigorous landscape plants. No one strategy is necessarily more important than any other. All are needed in a PHC operating system. But, recognize that as you go down the above list of strategies, flexibility decreases.

Poor decisions during design and site placement, or during site preparation and establishment, or in plant selection severely restrict later management options.

### It's a pyramid

Visualize the landscaping process as a pyramid. The base of the pyramid is design, site placement, site preparation and establishment. The stronger the base, the stronger the overall landscape. At the peak of the pyramid is the use of pesticides.

As landscape managers we often inherit the mistakes of others. These include poorly prepared and compacted subsoils. Inappropriate species or cultivar selection. Poor establishment practices and/or timing. Any of these mistakes compli-

The effects of these mistakes can't be corrected solely by the use of pesticides. Pesticides are not a quick fix at the expense of sound management practices. Relying too much on pesticides is careless. Pesticides are too valuable to lose through carelessness.

cate long-term manage-

ment success.

### A system

Rather than relying on a product-based management system, develop a PHC knowledgebased system. Use these steps:

1) Initial inspection. Make the initial inspection as detailed as possible. Include information like species and cultivars; cultural practices; soil profile and texture; drainage; soil test information; weed, insect or disease activity; date of establishment.

Don't forget to note the expectations of the owner or property manager.

Use the the information you develop during the inspection to build a management plan containing appropriate specifications and recommendations. This is also the stage to predict pest problems and devise control strategies.



A median strip offers special challenges in picking site-adapted landscape plants.



Tom Smith, president of Grass Roots, Inc., East Lansing, Mich.

2) Develop a management plan. While the process may seem involved, a lot of the information gathered during an inspection will be common to many sites. Generally it's a matter of deciding what specific information applies to a specific landscape. On smaller sites, write the plan at the time of inspection, or supply a management sheet with the appropriate items marked. Larger sites may require more input and a lengthier report done separate from the inspection visit.

Obviously, the customer or property manager must agree with you on the need for the plan, and accept it. That's where your skills as a communicator are tested.

3) Monitoring and care based on the management plan. Care of the landscape is accomplished through a series of visits to the site. In essence, each visit becomes an inspection. At times, no treatment may be needed but the site would still be monitored and inspected. Target pesticides to high risk areas or areas where pest activity is present. Spray systems that inject materials at the gun or allow small quantity mixing on the vehicle are well suited to a PHC operation.

4) Evaluation and modification of the management plan. This step is easily neglected. But it's critical. Proper management requires evaluation and adjustment.

Certain sites will require little modification while others will require considerable change. This is almost always good change as problem sites respond to proper management and inputs decrease.



A properly designed landscape consisting of a combination of trees, shrubs, perennials and turf not only looks attractive but can also be maintained with a minimum input of chemical control products.

#### You must communicate

Even so, the need to communicate with the property owner or property manager continues. This often is what makes or breaks a sound plan. Keep clients informed of the management plan, the monitoring and care visits and the subsequent evaluation of the program. Help the customer develop realistic expectations.

The technician that conducts site visits and provides services should be a good communicator too, in addition to being knowledgeable about turf and landscapes. If possible, the technician should be involved at all stages of the process.

A mistake often made in marketing PHC is to offer a traditional product-based plant care option and a PHC option. It's better to implement proper management principles in a gradual transition away from a product-based management approach.

Practices such as targeting pesticides, offering additional fertilizer recommendations and developing fact sheets detailing cultural practices and pest problems are simple ways to ease into a PHC system. If you look closely at your current operation you will likely recognize many PHC principles at work.

Based on knowledge

Our industry has always talked about service but a large segment of it does not make any money unless it sells and applies a product. This is wrong. A doctor, dentist, or lawyer all charge for their expertise. So does a plumber or even an auto mechanic. Try talking the repairman for your washer out of his service charge.

With a PHC approach, doing nothing is a viable option in certain cases. What makes it viable in these certain cases is that it is also a good option horticulturally or environmentally. Unless we charge for our ability to make this type of management decision, we can not operate with a PHC approach profitably.

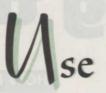
Money well spent is a powerful inducement to a consumer. PHC eliminates unnecessary treatments and manages the landscape as a unique entity and not just as another stop in a tanker truck's route.

PHC does not eliminate pesticides. Instead, it personalizes service and meets the needs of consumers, making pesticides one of many valuable management tools available for a particular landscape.

Tom Smith spoke about PHC at the 1997 Metropolitan Detroit Landscape Association Conference in Novi, Mich.







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# Rating the 'scapes

Ever wonder how your projects might hold up under someone else's rating system? Give this one a try to see how you're doing.

he accompanying tally sheet allows you to "grade" your landscape projects.

It may give you a good idea of what is missing or what needs to be enhanced in a particular plan.

Landscape professional Frederick Campbell of Gnome Landscapes, Design & Masonry, Gloucester, Maine, has co-written *Landscaping Makes Cents* with Richard L. Dubé of Environmental Information & Design, Inc., Lexington, SC. Dubé devised the rating system.

"There is a great deal of value to a landscape," says Campbell. "We put together a model and scale that makes sense, based on our experience."

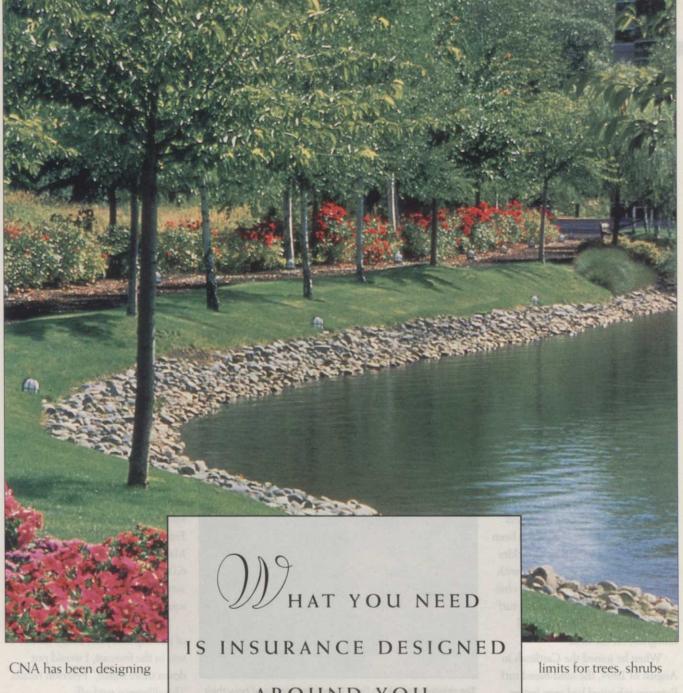
Evaluate elements (based on your own feelings and the definition of each term) on a scale of 1 to 10. Take that number multiplied by the ranking (provided) and you have your score for that criterion. Then, add the scores together:

0-260 = poor
261-440 = fair
441-540 = good
541-620 = very good
621-660 = excellent □
Excerpted from Landscaping Makes
Cents, copyright 1996 by Frederick C.
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|                  | Formula: Rat  | ing x W | Veighting Factor | = Score |         |
|------------------|---|---------|------------------|---------|---------|
| Element          | Your rating (0-10)  |         | Weighting factor |         | Score   |
| First impression |   | x       | 11               | = 101   |         |
| Sustainability   | -   | x       | 10               | =       | 4 31    |
| Function         |   | ×       | 9                | =       |         |
| Visual flow      |   | ×       | 8                | =       | 1 10 10 |
| Context          |   | ×       | 7                | =       |         |
| to architecture  |   |         |                  |         |         |
| Context to site  | The latest | x       | 6                | =       |         |
| Balance          |   | ×       | 5                | =       |         |
| Depth            |   | x       | 4                | -       | 1       |
| Color            |   | ×       | 3                | -       |         |
| Framing          |   | x       | 2                | =       | 1       |
| Contrast         |   | x       | 1                | = (1)   | 1       |

|               | Formula: Rati        | ing x W | eighting Factor  | = Score |       |
|---------------|----------------------|---------|------------------|---------|-------|
| ement         | Sample rating (0-10) |         | Weighting factor |         | Score |
| st impression | 9                    | ×       | 11               |         | 99    |
| stainability  | 9                    | ×       | 10               | =       | 90    |
| nction        | 7                    | ×       | 9                | =       | 63    |
| sual flow     | 9                    | ×       | 8                | =       | 72    |
| ntext to      | 7                    | ×       | 7                | =       | 49    |
| chitecture    |                      |         |                  |         |       |
| ntext to site | 8                    | ×       | 6                | =       | 48    |
| lance         | 9                    | ×       | 5                | =       | 45    |
| pth           | 8                    | ×       | 4                | =       | 32    |
| lor           | 9                    | ×       | 3                | =       | 27    |
| aming         | 8                    | ×       | 2                | =       | 16    |
| ntrast        | 8                    | x       | 1                | =       | 8     |

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# Tackling poa annua in the Cardinal's turf

Soil tests, sulfur and a control product help manager get Arizona bermudagrass practice fields healthy again.

im Peterson likes to ask questions. "I've always had a tendency to dissect things," says the sports field manager for the NFL's Arizona Cardinals. "I'm not satisfied just knowing that something works. I want to know how it works."

Peterson has asked lots of questions during his careers in air conditioning and cooling, to owning his own lawn care and landscape management firm, to membership in the fraternity of athletic field managers.

Peterson's analytical bent has been especially useful to him as he tackles numerous challenges associated with his Cardinals post. Two of those challenges have been restoring ailing turf to controlling *poa annua* (annual bluegrass) on the field.

When he joined the Cardinals in August of 1994, the sand-based turf Peterson inherited had seen better days. "Our 419 Tiff Bermudagrass fields were yellow and stunted," he says. "The grass was practically dead at a time when it should have been thriving."

"To put it in perspective," Peterson explains, "you have to cut healthy turf just about every day. When I first came here, I mowed the fields about once every four weeks."

So he started asking questions. He found some interesting answers:

➤ soil probes showed a pH as high as 8.5



The sideline area along Field 1 is representative of how thick the poa annua was on Fields 2 and 3 prior to treatment.

- ▶ sodium content was 337 parts per million
- exchangeable sodium was at 12.5 percent, well above the normal 5 percent level.

#### Sulfur-based product helps

"My job is basically about creating and maintaining a viable soil environment that allows the necessary interactions and exchanges to take place between soil, water and nutrients that allow grass to grow," says Peterson, who explains that the high pH levels increased the sodium levels, which caused salts to bind on the soil colloids. These salts prevented the water from penetrating and dissolving nutrients so they could be absorbed into plant roots.

"I knew that before I could accomplish anything else with this turf, the first thing I had to do was bring pH levels and the total soil chemistry back in line."

He did this through numerous applications of a water-soluble, sulfur-based product called Disper-Sul. From November 1994 through March 1995, he applied a total of 6,000 lbs. of the product over 6.4 acres, at a rate of 5 lbs. per 1000 square feet.

"We were fortunate to have a lot of rain my first year, Every time it was in the forecast, I would put down more sulfur," Peterson recalls. This diligence paid off:

- ▶ By August 1995, soil from the different fields tested anywhere from
- 6.9 to 7.3 on the pH scale;
- Sodium levels dropped dramatically, too, from 337 parts per million to a low of 98 parts per million.
- ➤ Exchangeable sodium checked in at 3.5 percent, well under the acceptable limit of 5 percent.

#### Saving money

When Peterson lowered the soil pH and sodium content, he had better looking fields and a better looking budget.

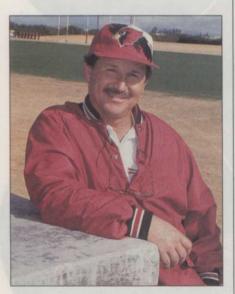
"When pH and sodium are out of line, you have to increase the amount of fertilizer and herbicide you use just to get the same response," says Peterson. "You're wasting money."

"Our turf wasn't healthy. It was anemic, and as a result, it didn't provide as much competition against weeds and problem grasses as a healthy turf would. That may have helped the *poa annua* get started."

The annual bluegrass burst through the turf once the bermudagrass fields went dormant in the winter of 1994-95.

"Our turf wasn't healthy. It was anemic, and as a result, it didn't provide as much competition against weeds and problem grasses as a healthy turf would. That may have helped the poa annua get started."

—Tim Peterson



The number 2 and 3 fields at the Cardinal's training facility are now completely bermudagrass, with not a blade of Poa in sight, says Tim Peterson.

Field 3 showed the most Poa, says Peterson, with eight or nine large patches of about 15 square feet showing.

Don Follett, facility manager for Arizona State's Sun Devil Stadium suggested Peterson try Kerb herbicide. The product is used as a preemergent and postemergent herbicide to control annual bluegrass, quackgrass and orchardgrass, among others. Peterson applied the product—in water

soluble packets— at the recommended rate of 1.5-2 pounds per acre.

"The second week, the *poa annua* started yellowing a bit. In the third week, I forgot I had ever sprayed it; it actually looked like Kerb had caused the *poa annua* to disintegrate."

Peterson says the control lasted all season.  $\Box$ 



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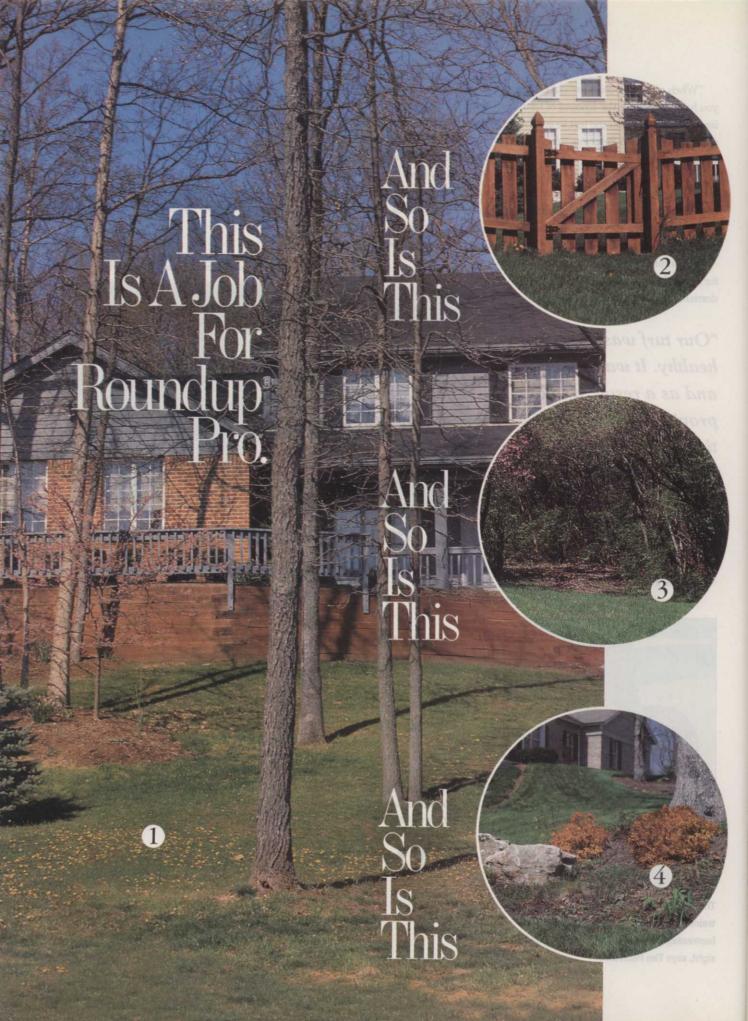
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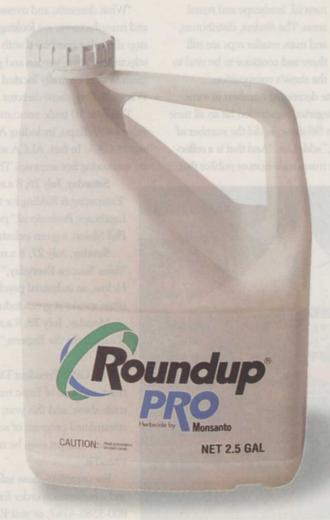
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# Expo set for Louisville

The outdoor demonstration area continues to be a top draw at International Lawn, Garden and Power Equipment Expo 97 set for July 26-28.

he Outdoor
Demonstration
Area makes the
14th Annual International Lawn,
Garden and Power Equipment
Expo 97 unique. Expo 97 is
being held July 26-28 at the
Kentucky Exposition Center
in Louisville, Ky.

Expo opens one day earlier this year as the show's traditional Sunday start has been moved up to Saturday in order to:

provide more weekend time for servicing dealers to attend,

▶ better accommodate domestic and international airline schedules, and

▶ take better advantage of the City of Louisville's weekend social activities.

Even so, most of the action on the last weekend in July in Louisville is going to be at the Kentucky Exposition Center grounds with its combination of showroom product exhibits inside and nearby outdoor demonstrations.

Dennis Dix, president and CEO of the Outdoor Power Equipment Institute (OPEI), recalls that prior to the first show in July 1984 some people didn't see a need for the outdoor demonstration area.

"As soon as we had our first show, everybody headed out to the demo area, and the demonstration area has been a valuable part of the Expo ever since," Dix says.

Expo has grown significantly since 1984. It's also evolved as the industry's evolved. "While we are a mature industry, we are experiencing a growth



Dix: growth in Expo's commercial segment.

segment which is commercial," says Dix. "The landscape aspect is also taking on an added dimension. So, we've shifted from primarily a dealer/distributor and mass merchandiser show to one which is really even more broadbased encompassing the commercial, landscape and rental areas. The dealers, distributors, and mass retailer reps are still there and continue to be vital to the show's composition.

"Despite decreasing numbers in some buying categories, registration hit an all time high in the '96 show, as did the number of exhibitors," adds Dix. "And that is a reflection of the many audiences or publics that

The Expo show combines showroom product exhibits and outdoor equipment demonstrations.

we are trying to attract. It is sort of a 'Heinz 57' varieties, so when they do come to Louisville, synergism will take place and they benefit from interacting with each other."

In 1996, more than 30,000 people from 51 countries roamed the 500,000 square feet of indoor exhibit space as well as the 20-plus-acre outside demonstration area.

"What domestic and overseas buyers and manufacturers are looking for is onestop shopping combined with the broadest selection of lawn, garden and power equipment in one, centrally located show," says Warren Sellers, show director.

This year 10 trade associations are involved with Expo, including AAN, ALCA and PLCAA. In fact, ALCA and PLCAA are sponsoring free seminars. They are:

Saturday, July 26, 8 a.m.-10 a.m., "Estimating & Bidding for the Lawn & Landscape Professional," presented by Phil Nisson, a green industry consultant.

Sunday, July 27, 8 a.m.-10 a.m., "Sales Success Everyday," by Dr. Larry Helms, an industrial psychologist who often speaks at green industry events.

Monday, July 28, 8 a.m.-9 a.m., "Learn from the Experts," discussion panel.

But OPEI President Dix says the heart and soul of Expo remains the trade show, and this year, with a streamlined program of seminars, Expogoers will get even be more time to attend it.

For complete show information and a registration order form, call 1-800-5588-8767, or visit Expo on the internet at http://EXPO.mow.org.



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# Funding fields: straight talk works

Plan for big ticket items and future projects. Establish funding partnerships. Ask for the money. These are all ways to establish a cushion of cash to maintain heavily-used fields.

By BILL WHIRTY

ive years ago the City of
Fort Collins, Colo., growing
by more than 5,000 people
a year, faced a budget challenge.

Park use and demands on its athletic fields were soaring. But its parks were aging. They needed lots of renovation, including shelter structures, restrooms, electrical and irrigation systems, athletic field fencing, pathways and parking areas.

A heavy hit on the general parks maintenance budget of \$200,000 for the asphalt to repair trails and about \$40,000 to replace the fence system for a large baseball diamond drastically reduced funding available for standard maintenance.

#### 'Lifecycle' items get attention

Our Parks Maintenance Department assessed the facilities of each park and developed a master listing of current and pending renovation and replacement needs, including upgrading facilities to meet ADA requirements. This "Lifecycle Book" lists the item, the projected timetable for its renovation or replacement, and the projected cost of each project.

We presented this information to the city council and requested the establishment of a separate budget to supply appropriate funding.

Because quality of life is a major factor



Mark Razum, manager of Coors Field, left, meets with representatives of field user groups. Communication with the various user groups is an educational process.

in our population growth, and our city council recognizes and appreciates the role city parks play in this, they authorized a yearly funding mechanism for these "Lifecycle" items. The people support our parks as well and passed the referendum. This solved one segment of our budgeting problem.

As each new park facility is built, future "big ticket" needs are assessed and added to the Lifecycle Book. For example, we'll estimate that the pumping system for the water supply of the new park will need renovation at 10-year intervals, and that it will have to be replaced in 40 years.

### Ask for the money

If you don't take the time to plan, essentially you plan to fail. Do your homework. Join your industry's major organizations, become active and attend meetings. This opportunity to interact with your peers and find out how they've handled situations similar to yours may give you insight into what works or what doesn't

work. Once your planning is completed, you need to take it one step further by asking for the funding to implement the plans.

Along with the Lifecycle Fund, Parks Maintenance submits a general account annual budget to the city council for approval for the next year's funding. The major portion of our general maintenance is funded through this General Funds account.

An additional quarter cent assessment is collected through the Natural Resource Department. Parks Maintenance requests and receives funds from that assessment for maintenance of some of the natural areas.

Three new referendums were recently approved by the people, each for one-quarter cent sales tax assessments. One referendum was for improvements of city streets and buildings. Another referendum was for capital improvements throughout the city and includes funding for development of shelters and restrooms at existing parks, adding athletic fields to existing

parks and the construction of a new horticultural center. The third referendum was for the land acquisition and construction of a 60 to 70 acre community park which will include an athletic field complex, shelters, a lake and a district parks maintenance building.

### **Green space in developments**

Green space in new housing areas also is pre-planned and pre-funded. When a developer purchases a block of farm land or other property to convert to residential units, he or she is required to set aside a specified segment of land (approximately 10 acres in the average development) for a small neighborhood park. In addition, the developer must contribute a set fee per each house built to a fund for development of that park.

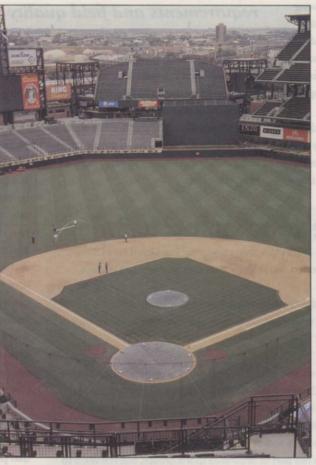
#### Where's the pain?

Problems still remained. With the population growth and more interest in sports participation, requests for use of the park's athletic fields outnumbered existing resources. Increased use of existing fields would have resulted in excessive wear and deterioration of field integrity and usability.

We believe it's vital to the parks program to know who is using your facilities and for what. We had already established good communications with our various user groups. The next step was to find the pain.

We attended board meetings of our key groups — the Youth Soccer Club, the Youth Baseball Club, and the Poudre School District — and met with them at their sites and ours to determine their feelings about existing conditions and to learn what they needed and wanted to improve the situation.

We then compared the expectations of the various user groups with the reality of current conditions. Armed with the fact-



Coors Field in Denver is managed by Mark Razum. It is the home field of the Colorado Rockies professional baseball team.

finding results, we began working together to develop realistic solutions to our problems.

### Strategic partnerships

Strategic partnerships became the basis to accomplish goals that no individual department or group could manage alone. Some of these partnerships are relatively simple and involve our Parks Maintenance Department and one of our user groups. For example, the Youth Soccer Club wanted more fields painted but we had no funds for that in our budget. The Soccer Club offered to purchase the paint machine and cover one-half the costs of the paint if our department would do the painting.

Under this arrangement, our department paints all the fields used by the Soccer Club, including all those park fields we were painting before plus some fields at off-city sites on school district and church properties. We're doing a little more painting, but because of the more efficient tool, the paint machine, and the additional funds, it's within our budget.

#### **Everyone wins**

Some partnerships are complex, involving our department, other city departments and multiple user groups. For example, more athletic fields were needed to attempt to accommodate the increasing number of players. The city had allocated some funds for field development, but not enough for multiple fields. The school district had some usable undeveloped land, but no funds for development. We proposed a joint project to build three soccer fields and two baseball/softball diamonds on the site. Then, together, we approached the Youth Soccer Club and Youth Baseball Club, who would be the primary field users

after the School District, to ask for their assistance.

Parks Maintenance already had been working within Quality Improvement (QI) groups with the Park Planning and Development Departments. The development of this successful cooperative project required: the School District to supply the ten acres of land and the irrigation system that was already in place on one-half of the site; the Parks Planning Department to develop the field and irrigation system designs; the Parks Maintenance Department to provide the earth work, irrigation installation, seeding and fertilization; the Youth Soccer Club to fund the remaining half of the irrigation system; and the Youth Baseball Club to supply the backdrops for the

baseball/softball fields and to supply additional financial support through fund raising and donations.

The partnership continues following the construction of the multi-field site. Parks Maintenance maintains the infields of the ball fields and handles fertilization, overseeding and sodding of all the fields. The School District handles mowing and irrigation.

This does necessitate some coordination. For example, if we need to lay sod in the soccer goal mouths we must work with the school district to communicate irrigaAthletes and other field user-groups have developed a better understanding of basic field maintenance requirements and field quality standards.

tion needs. But it would have taken five years for either the Parks Department or the school district to swing a project of this size individually. The partnership allowed us to get the fields and more young athletes to have the opportunity to play. Again, everyone wins.

The city is working on further cooperative projects with the school district for the future. As new schools are developed, we're building parks next to the school property. This minimizes costs by requiring only one set of such infrastructure development as roadways and walkways and by cooperating in such areas as the installation of a single water system large enough to accommodate both facilities.

#### The benefits

Open communication with the various user groups serves as an educational process for all of us. Parks Maintenance has become more sensitive and more responsive to their needs. Field users have a better understanding of basic field maintenance requirements and quality standards. If we cancel soccer games on all fields following an inch of heavy rain they'll understand that the safety of the athletes was the prime consideration. They'll also recognize that play in those conditions could cause enough damage within the goal mouths and other heavy use areas that they would lose accessibility to some of those field for a much longer period.

While it's not easy to reschedule the 3,000 young athletes who were ready to play soccer that Saturday morning, the reasons why it had to be done is understood, and is an accepted part of providing safe, playable conditions for as our athletes.

Once again, everyone wins! □

The author is parks supervisor for the City of Fort Collins, Colo., and a member and former board member of the national Sports
Turf Managers Association (STMA).
Photos by Steve Trusty, Trusty & Associates.

# Communicate to match schedules

Even with new fields, demands are greater than resources. The City of Fort Collins had to set priorities on field use and focused primary attention on the youth in three areas.

- ▶ Sports coordinated through the City Recreation Department programs.
- ➤ Youth sports groups and the school groups, such as girls competitive soccer, that require park facilities.
  - ► Adult competitive groups.

The city and school district partner here as well. We share joint project fields, with the school district needs coming first. On other sites, the school district uses park fields as they "fit" into the scheduling. During the winter months, the city recreational basketball leagues use the school district courts as we "fit" into their scheduling.

The Parks Department must also leave some non-scheduled playing time on the various fields for those people who are not part of organized sports groups, but still want to use the fields occasionally. Communication makes this all possible. Representative of all the organizations involved meet quarterly to coordinate scheduling for that quarter's athletic events.

A typical meeting would include:

- ▶ the school district;
- ▶ the city recreation department,
- ▶ the youth soccer club,
- ▶ the youth baseball club,
- ▶ five church-run high schools,
- coordinators for sport tournaments other than those connected with the organizations already represented,
  - parks maintenance.

While we try to schedule the more intensive maintenance and renovation procedures during the "off play" periods for the various sports, that isn't always possible. We'll inform all the groups of changes in field availability during these meetings. For example, two fields were out of use this past spring; one for major fence replacement, the other for outfield sod installation and establishment. We'll also identify and schedule maintenance requirements to accommodate the various use demands.

Parks maintenance personnel talk directly with the athletic directors of the various schools and with the various groups to coordinate scheduling changes.

# If There's a Twister Heading Your Way, You Should:



- A. Crouch next to an interior wall with your hands over your head.
- B. Ask for a demo.

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Circle No. 129 on Reader Inquiry Card

# HARDSCAPING an easy add-on service

Concrete pavers can add a new dimension to your scope of work and a great new source of income for your company.

by DOUG WILBRANDT

eing in a competitive industry like landscaping, we're constantly looking for new ways to expand our customer base and new services. And I think we've found a good way with hardscaping.

Using concrete paving brick for patios, driveways and sidewalks has proven to be an excellent and profitable sideline for our landscape business. It doesn't need to be in a new housing project either. More than half of the sidewalks we install are replacements for existing, broken concrete walks.

The International Concrete Paver Institute (ICPI) states that less than two per-

cent of the potential market for paving stones has been tapped. Scott Swierad, sales manager for Unilock, the largest paving stone manufacturer in the U.S. agrees.

"Although our growth has been 15-

20 percent a year, I feel we are just seeing the tip of the iceberg," says Swierad.

Jot down on a piece of paper all your customers with broken concrete sidewalks or patios and remember, they are already your customers!



Many supply houses also have seminars and hands-on demonstrations. This helps with doing the design layout, choosing which shape paver to use and getting the proper base down.

#### Quality pavers, local sources

Concrete pavers are available from a variety of sources, but your best bet is to buy from your local landscape supply dealer, brickyards, or even directly from manufacturers. Avoid thin, flimsy concrete blocks that crack easily and are hard to level.

Quality pavers are made with highstrength concrete and are uniform in shape. The color is blended throughout the paver and isn't sprayed on. Look for the manufacturer's guarantee. Quality producers usually offer a lifetime guarantee on the paver's integrity.

#### **Equipment and installation**

Most of the equipment you will need to install concrete pavers is already in your garage. Two things you will need to use are a power plate compactor (a lawn roller isn't heavy enough) and a brick saw or cutter.

I recommend renting these from the rental yard until you have enough work to warrant purchasing them.

As far as installing the pavers, talk to your local supplier or call the manufacturer



Don't be afraid to ask questions of suppliers. Start with some small, simple jobs and work your way up to larger, more intricate installations.



TURF. SHRUBS. ORNAMENTALS. PROTECT THEM ALL WITH JUST ONE TREATMENT EVERY 28 DAYS. COMPLIMENTS OF BANNER® MAXX® FUNGICIDE. IT CONTROLS 56 DISEASES AND CAN BE TANK MIXED AND APPLIED WITH OTHER PRODUCTS IN ONE STEP. PLUS, IT'S ODOR-FREE. SO IT NOT ONLY FITS INTO YOUR SCHEDULE, BUT INTO ANY LANDSCAPE AS WELL. OBVIOUSLY, IT'S NOT YOUR TYPICAL GARDEN VARIETY FUNGICIDE. BANNER MAXX. MAXXIMUM VALUE. (1) NOVARTIS



for more information. Most offer help and helpful literature.

"If the installation is bad, it gives the whole industry a black eye," says Swierad. "We offer detailed installation manuals, videos and design aids to ensure the con-

Paving stone work is quite simple to get into, and doesn't require a big investment.

tractor is educated on the process and the end results are professional."

Many supply houses also have seminars and hands-on demonstrations. This helps with doing the design layout, choosing which shape paver to use and getting the proper base down.

#### Pricing is easy!

When pricing paver work, use the same formulas you use for your other jobs. It may take a few jobs to get the man hours down, but by attending a few seminars and talking to your suppliers, you'll get a handle on it.

# Don't forget to include equipment rental costs in your bid price.

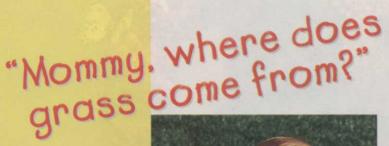
Don't be afraid to ask questions. Start with some small, simple jobs and work your way up to larger, more intricate installations.

A quick tip: have the materials delivered to the job site. They'll unload it for you and save a lot of time. And don't forget to include any equipment rental costs in your bid price.

Getting into this line of work is quite simple and doesn't require a lot of new investment. It also fits nicely with what you're already doing. Put a line in your Yellow Pages listing that mentions paver installation. Run a few ads in the newspaper, especially during the summer months, when your other work is slowing down.

And don't be afraid to approach your existing customers.  $\Box$ 

The author is owner/operator of C.B.D.
Landscaping, Inc., Woodstock, Ill. He has
been honored by the Illinois Landscape
Contractors Association, and in 1986 was
named U.S. Small Business Administration
"Entrepreneur of the Year."



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# Flat land, color green present challenges

rainage issues and a client's desire to use lots of green in the landscape were the major challenges which faced Scott Byron & Company during a project on Chicago's North Shore.

"This is a very flat property, located within a hundred-year flood plain," says Byron, owner of the Lake Bluff, Ill. design/build firm.

> "The residence was constructed six feet above the flood plain, which put

the entire location out of proportion. We needed to create a grade that would make the house look as though it had al-

ways been there."

Byron engineered a series of gently rolling hills to serve as a temporary water retention system in times of heavy rain and quick-thawing snow. The hills serve as small ponds in about one-third of the property. hold so much water," says Byron. "With this technique, water collected during a heavy rain is gone within a couple of hours; half a day at most. Across the street, they've had two feet of standing water for weeks at a time."

#### Lots of hardscaping

The client wanted minimal color, so

Byron's L/A team designed, coordinated and supervised installation of a gently-sloped circle drive court and parking. Privacy was also important, as well as the ability to enjoy long views from the house without using evergreens.

Design elements included:

- ▶ bluestone front walk and rear terrace;
- swimming pool with a terrace overlook:
- ▶ pool deck and access to an existing tennis court.

"This property is unusual because about 50 percent of the work is hardscape," says Byron. "The drive was paved in black asphalt, to contrast the bright white house. White concrete with minimum wood accents was used on the pool deck and walkways."

#### 'Shotcrete' for pool

The swimming pool design required an excavation to a depth of only three feet. Two 18-inch drainage culverts leading to storm sewer inlets were installed underneath, by using a shotcrete process, a dense mixture of 8 ½ to 9 bags of cement per cubic yard of concrete. **LM** 

Open views from the house were achieved by using low planting areas for a greater sense of yard depth. Perimeter planting was designed to reflect the neighborhood's wooded, seduded character.

# Plant selections

Byron's design team chose a wide variety of trees and shrubs to meet the client's demands including: Kentucky coffee tree; American beech; ginko biloba; burning bush and red bud.

White accents were provided by hosta; white bud; white crabapple; and viburnum. For a hint of the exotic, quince was used for its delicate pink flowers.

"The natural paradigm is to relate a garden to colors," says Scott Byron. "But by using only shades of green and different leaf textures, we create a more honest perspective. It really has to look good from all angles. You can't cheat by 'throwing in' color."



Swimming pool with a terrace overlook, pool deck and access to an existing tennis court were hardscaping elements used in the project.

# **AMTOP** reports victory in Montana

The Association of Montana Turf and Ornamental Professionals, Inc. reports that Gov. Marc Racicot has signed HB489, which requires local governments to conform to state rules if they decide to adopt a local posting ordinance.

The legislation had been proposed by AMTOP and the Montana Agra Business Association. Both groups had been working for three months to stymie excessive regulations on the local level.

"AMTOP lobbyist Pam Langley worked long and hard to secure passage of this important piece of legislation," says Mike Voeller editor of the Association newsletter. "We owe here our deepest gratitude for a job well done.

AMTOP reports that environmentalist had tried to exempt the cities of Missoula and Helena from the legislation.

"Missoulians for a Clean Environment have not given up on trying to make it difficult to use pesticides in the "Garden City," reports Langley.

# New address for ALCA

The Associated Landscapers Contractors of America has moved to new offices, at: 150 Elden St. Suite 270, Herndon, Va. 20170. Phone numbers remain: (703) 736-9666; fax: (730) 736-9668.

# Vander Kooi kicks off PLCAA session

Business consultant and author Charles Vander Kooi will deliver the keynote address at the Professional Lawn Care Association of America's Annual Conference Opening Session, Nov. 15, from 1 to 3 p.m. at the Charlotte Convention Center, Charlotte, N.C.

PLCAA's Annual Conference is held in conjunction with the Green Industry Expo, Nov. 14-18, 1997. Vander Kooi will also lead a seminar on staff building.

Vander Kooi, long one of the most respected of industry professionals, is known for his no-nonsense, down-to-earth, tell-it-like-it is approach to the realities of running a business successfully.

His address is titled, "No Limits, No Boundaries to Building Your Business."

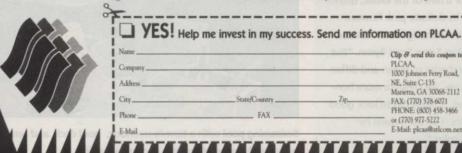
# PLCAAGROWING LEADERS FOR SUCCESS

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- ➤ Comprehensive Benefits Package Including Insurance & Retirement Planning
- > Discounts on Educational Products, Conferences & Workshops
- > Discounts on Green Industry Expo Booth Space for Suppliers
- > Legislative Support and Updates on the Issues
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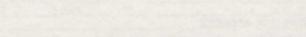
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# LANDSCAPE management

## June 1997

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| I would like to receive (continue receiving) LANDSCAPE   | MANAGEMENT free each month: 🗆 Yes 🗆 no   | 4a. Do you specify, purchase or influence the selection of landscape products?   |  |  |
| Signature:   | Date:  |  |  |  |
| 1. My primary business at this location is: (check (   | NE only)   | 4b. If yes, check which products you buy or specify: (check ALL that apply)  |  |  |
| CONTRACTORS/SER  | ICE COMPANIES  | 46 🗆 1 Aerators 56 🗀 11 Mowers (reel/rotary)   |  |  |
| 02 □ 255 Landscape Contractors (installation and maintenance 06 □ 275 Landscape Architects 07 □ 280 Land Reclamation and Erosion Control 08 □ 285 Landscape Architects 07 □ 280 Land Reclamation and Erosion Control 08 □ 285 Irrigation Contractors □ 07 □ 285 Irrigation Contractors □ Other (please specify) □ INSTITUTIONAL FACILITIES |  | 47 □ 2 Blowers 57 □ 12 Snow Removal Equipment 48 □ 3 Chain Saws 58 □ 13 Sprayers 49 □ 4 Chipper-Shredders 59 □ 14 Spreaders 50 □ 5 De-icers 60 □ 15 Sweepers 51 □ 6 Fertilizers 61 □ 16 Tractors |  |  |
| 09 290 Sports Complexes  | 16   325 Condos/Apartments/Housing   | 52 ☐ 7 Fungicides 62 ☐ 17 Truck Trailers/Attachments 53 ☐ 8 Herbicides 63 ☐ 18 Trucks  |  |  |
| 10 295 Parks   | Developments/Hotels/Resorts  | 54 9 Insecticides 64 19 Turfseed   |  |  |
| 11 300 Right-of-Way Maintenance for Highways,  | 17 330 Cemeteries/Memorial Gardens   | 55 🗆 10 Line Trimmers 65 🗆 20 Utility Vehicles   |  |  |
| Railroads or Utilities  12 305 Schools, Colleges, Universities   | 18 ☐ 335 Hospitals/Health Care Institutions 19 ☐ 340 Military Installations or Prisons | 5. Do you have a modem? Yes No   |  |  |
| 13 ☐ 310 Industrial or Office Parks/Plants   | 20 345 Airports  |  |  |  |
| 14 ☐ 315 Shopping Centers, Plazas or Malls<br>15 ☐ 320 Private/Public Estates or Museums   | 21 350 Multiple Government Municipal Facilities  | 6. Do you subscribe to an on-line service?   Yes   |  |  |
| 15   320 Private/Public Estates or Museums   | Other (please specify)   | 7. Is CD-ROM available in your workplace?   Yes   N  |  |  |
| SUPPLIERS & CO   |  |  |  |  |
| 22 355 Extension Agents/Consultants for Horticulture 23 360 Sod Growers/Turf Seed Growers/Nurseries 24 365 Dealers/Distributors/Formulators/Brokers  | 25 ☐ 370 Manufacturers<br>26 ☐ Other (please specify)                                  | 101 119 137 155 173 191 209 227 245 263 281 299 102 120 138 156 174 192 210 228 246 264 282 300  |  |  |
| 2. Which of the following best describes your title?   | (check ONE only)   | 103 121 139 157 175 193 211 229 247 265 283 301  |  |  |
| 27 10 Executive/Administrator- President, Owner, Partner   |  | 104 122 140 158 176 194 212 230 248 266 284 302<br>105 123 141 159 177 195 213 231 249 267 285 303   |  |  |
| Purchasing Agent, Director of Physical Plant   | and and the managery and man or and a deady  | 105 123 141 159 177 195 213 231 249 267 285 303 106 124 142 160 178 196 214 232 250 268 286 304  |  |  |
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| 29 30 Government Official- Government Commissioner, A  |  | 108 126 144 162 180 198 216 234 252 270 288 306<br>109 127 145 163 181 199 217 235 253 271 289 307   |  |  |
| <ul> <li>30 ☐ 40 Specialist- Forester, Consultant, Agronomist, Pilot, Ir</li> <li>31 ☐ Other Titled and Non-Titled personnel (please specify)</li> </ul>   | structor, Hesearcher, Horriculturist, Certified Specialist                             | 110 128 146 164 182 200 218 236 254 272 290 308  |  |  |
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| 31 ☐ A Mowing 36 ☐ F Turf Fertilization 32 ☐ B Turf Insect Control 37 ☐ G Turf Disease Control   | 41 ☐ K Paving, Deck & Patio Installation<br>42 ☐ L Pond/Lake Care                      | 114 132 150 168 186 204 222 240 258 276 294 312  |  |  |
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| 34 □ D Turf Aeration 39 □ I Landscape/Golf Design  |  | 117 135 153 171 189 207 225 243 261 279 297 315  |  |  |
| 35 ☐ E Irrigation Services 40 ☐ J Turf Weed Control  | 45 O Other (please specify)  | 118 136 154 172 190 208 226 244 262 280 298 316  |  |  |



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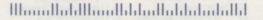
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| CONTRACTORS/SERVICE COMPANIES  02  |  | 47  |
| O9  ☐ 290 Sports Complexes  10  ☐ 295 Parks  11  ☐ 300 Right-of-Way Maintenance for Highwa Railroads or Utilities  12  ☐ 305 Schools, Colleges, Universities  13  ☐ 310 Industrial or Office Parks/Plants  14  ☐ 315 Shopping Centers, Plazas or Malls  15  ☐ 320 Private/Public Estates or Museums  | 18 ☐ 335 Hospitals/Health Care Institution 19 ☐ 340 Military Installations or Prisons  | 53  |
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| Purchasing Agent, Director of Physical 28  | eries 26 Other (please specify) s your title? (check ONE only) wher, Partner, Director, General Manager, Chairman of the Plant itect, Landscape/Grounds Manager, Superintendent, Foreman milissioner, Agent, Other Government Official omist, Pilot, Instructor, Researcher, Horticulturist, Certified S | 106 124 142 160 178 196 214 232 250 268 286 304<br>1, Supervisor 107 125 143 161 179 197 215 233 251 269 287 305<br>108 126 144 162 180 198 216 234 252 270 288 306 |
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Announcing: the second annual LANDSCAPE MAN-AGEMENT "Emerald Awards". LANDSCAPE MANAGE-MENT magazine is offering a \$500 first prize to the winner of a random drawing to

Second prize is \$300 and third prize is \$200 in cash. To be eligible for the

drawing, simply fill out the questionnaire at right and return it to LM's editorial offices.



Answers to the questions will determine our "1997 Emerald Awards" winners, to be revealed—along with the contest winner in our August issue.

> CONTEST REQUIREMENTS: Contestants must be owners or employees of landscape maintenance companies or lawn care companies; or mainte-

nance employees of a golf course or country club, including superintendents and assistant superintendents; or an athletic field manager or member of an athletic field maintenance crew; or manager or member of a facility landscape management crew. Employees of Advanstar Communications and their families are not eligible.

All questions on this entry form must be completed, and all blanks filled. One entry per person. No more

than five entries from any one employer will be allowed. Entry forms will appear in the February-June, 1997 issues of LANDSCAPE MANAGEMENT.

Completed questionnaires should be mailed to: Emerald Awards, LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, OH 44130. They must be received by noon, July 1, 1997.

A random drawing of all eligible entry forms will be held the afternoon of July 1, 1997. Winners will be notified within 24 hours.

# OFFICIAL ENTRY FORM

### **OUESTION:**

| What is your favorite brand name of | CHECK HERE<br>IF YOU<br>DO NOT USE |
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| riding mower?                       |                                    |
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| turf aerator?                       |                                    |
| pick-up truck?                      |                                    |
| leaf blower?                        |                                    |
| line trimmer?                       |                                    |
| chain saw?                          |                                    |
| Kentucky bluegrass?                 |                                    |
| perennial ryegrass?                 |                                    |
| turf-type tall fescue?              |                                    |
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## Hunter's hand-held unit saves time, \$\$\$

The SRR, a new remote control unit that manually activates irrigation systems, is now available from Hunter Industries. The SRR is a companion component to the Hunter SRC controller and is designed for use on residential and light commercial sites.

The hand-held device can access up to 48 stations and has an operational range of 450 feet. It features a large LCD display and simple push buttons to select the desired station or program. Contrac-



tors can use a single SRR remote control to activate various customers' irrigation systems by simply re-configuring the transmitter to the appropriate "address code."

The Hunter SRR offers a range of conveniences for both contractors and homeowners that save time and costs during installation or maintenance. For example, the SRR can trim installation time because the installer can run the system and flush out new pipe without walking back and forth to the controller. It also saves labor costs when winterizing because one person with a hand-held remote can drain the irrigation lines and complete the job.

See your local Hunter distributor or contact Hunter at 619/744-5240.

Circle No. 260

# Autoscape just right for residential systems

The Autoscape Controller from Buckner Turf Irrigation is perfect for large residential and small- to medium-sized commercial irrigation systems. It is available in 6, 9, 12, 16, 18 and 24-station configurations. Features advanced programming options, allowing you to tailor-fit your system to handle virtually any irrigation need. Protected by a tough outer cabinet made of high-impact plastic resins, ideal for outdoor mounting. Buckner's number is 800/328-4469, or

Circle No. 261

# FloBoy pumps simple to maintain

Flowtronex PSI's FloBoy pumps range in size from 2 -10 hp, pumping between 43-210 gpm. Each low-profile-design model is simple to start and maintain, featuring industrial-grade, cast-iron pumps to reduce energy consumption and increase service life.

The company's newest division, Commercial Pump of Swanton,



Ohio, also offers a line of self-contained single pump systems in a range of sizes. This line of pump stations, called RCTT (for Residential/Commercial Turf Tender) is powered with motors up to 30 hp with capacities reaching 300 gpm.

Flowtronex PSI is also bringing variable frequency drive (VFD) technology to irrigation ap-

plications. VFD has long been in use on golf courses and other heavy water usage sites.

Learn more about Flowtronex PSI's offerings by calling 614/442-5850, telling them LM let you know, or,

Circle No. 262

# Push of finger starts Piggy-Back timer

The PiggyBack from Transitional Systems Mfg. Co. is a state-of-the-art timer for sprinkler systems. It can be started by push button or trigger wire and has 4 outputs with timing from 1 minute to 4 hours. PiggyBack's push button water is a great convenience to users who find themselves reprogramming their controllers every few days because of changes in the weather. Also, power outages, dead batteries and watering in the rain are never a problem with push button watering ability.

The trigger wire can be used to start PiggyBack automatically when connected to the last station of a controller. PiggyBack senses when the station is on, but doesn't start until the station turns off. This adds 4 more stations to the controller. PiggyBack is also used to provide long drip system timing for mechanical controllers.

Call TSM at 916/751-2610 and mention LAND-SCAPE MANAGEMENT, Or



### Air-conditioned cab from Toro

The Toro Company offers the first air-conditioned cab for golf course sprayers. Designed for Toro's Multi Pro 5500, the cab also contains an activated charcoal filtering system that removes most pesticides and allows cleaner air to circulate throughout.

The cab may be purchased separately and attached to existing Multi Pro 5500s. Toro's Multi Pro 5500, introduced early in 1996, is a dedicated sprayer offering application precision and consistency. The new cab unit will be greatly appreciated by sprayer operators in golf's warmer, all-

# The Pump Starter a versatile unit

The Pump Starter from Remote Control Technology is a single station receiver used to control pumps, solenoids or any other equipment operated with 24 volts AC. Unit comes with a 500ma (1/2 amp) transformer for use in activating external relays common to pumps. Unit has only two connections for required power and common, both have spade lug connections for permanently attaching to pump start relay.

Operates with standard
Sidekick transmitter up to a
total of 9 Pump Starter Receivers. Pump number must
be specified at time of purchase, and numbers 1-9 are
available. Turn on the Pump
Starter, and it runs in "Continuous Mode" until you
switch it off.

Contact Remote Control Technology at 800/275-8558, and tell them you read about their products in LM, or

Circle No. 265

# TouchNet as simple to use as an ATM

The Toro Company's Irrigation Division's touchscreen centralized water management system has features found in its higherend controllers. The Touch-Net's solid-state design incorporates an ultra-userfriendly interface similar to that of many bank ATMs. Other TouchNet features include: manages up to 35 OSMAC RDR satellites (up to 48 stations per satellite, 1680 total); handles up to 12 irrigation programs; system adjust for all stations; up to 20 flow zones; protects the hydraulic system; optimizes the irrigation cycle.

The Toro Company-Irrigation Division can be reached at 909/688-9221, or,

Circle No. 266

year southern states as well as at all courses using sprayers.

Receive additional information on the cab and the Multi Pro 5500 by calling a local Toro distributor at 800/803-8676, or,

Circle No. 264

# No wiring needed for Dayni system

The battery-operated Automatic Sprinkler Control System from Dayni Controls comes in 1 and 5 station controllers. Simple, 2-dial programming is built-in. Solid state quartz reliability eliminates the need for electrical wiring. Users can program long watering cycles for gardens, land-scaping and trees, or short watering cycles for flower pots, hanging baskets and greenhouses.

Dayni has a complete line of irrigation products for industrial buildings, highways, parks and agriculture. Contact Dayni Controls at 818/349-8367 and tell them LM informed you, or



# Crumb rubber puts bounce in turf

Rebound is a patented blend of crumb rubber and organic compost that provides a foundation for safer, high-performance turf. It is designed for use under turf that is routinely subjected to heavy traffic—athletic fields, golf courses and public parks.

Using Rebound in turfgrass reduces soil compaction, reduces turf injury due to traffic, improves drainage and, in general, provides turfgrass with better growing conditions.

A related product is Rebound Turf Dressing, a topdressing made of crumb rubber. Available in a grass-green color, the product is non-abrasive and protects the turfgrass by cushioning and supporting the sensitive turf crown.

For more information about Rebound, contact American Tire Recyclers, Inc. at (800) 741-5201 and tell them you read it in LANDSCAPE MANAGEMENT, or,

Circle No. 268

# NaturaLawn of America offers fertilizers to golf course market

NaturaLawn of America, a professional lawn care provider, now offers organic-based fertilizers to the golf course industry.

"We have developed natural, organic-based fertilizers that are uniquely different from what is available to the marketplace," says Philip Catron, company president.

Each of the proprietary fertilizer blends contains Ryzin, a homogeneous blend of amendments containing over a dozen natural soil enhancers and organisms which not only help build the soil and feed the turf, but also allow for reduced pesticide use, says Catron. To learn more about the fertilizers, contact Randy Loeb at (800) 989-5444 and mention LM. Or,

Circle No. 269

# Daconil Zn kills algae too

ISK Biosciences Corporation's new Daconil Zn fungicide gives greens superintendents a new preventive option in algae-susceptible situations. Algae (primarily bluegreen or cyanobacteria) shows itself often in low-cut areas and can explode in those areas during periods of wet or cloudy weather. Daconil has long been a popular preventive product for many turf diseases, but under an expanded label accepted by the U.S. EPA, Daconil Zn also

has been labeled for control of algae. The product is packaged in a convenient flowable formulation. It is effective on a wide spectrum of turf diseases, and because it is a preventive contact product it makes an outstanding resistance management tool, says ISK Biosciences. To learn more about Daconil Zn, contact ISK Biosciences at 216/357-4610 and tell them LM let you know, or



Circle No. 271

## This irrigation filter inhibits roots

The Netafim Techfilter is an irrigation filter that protects against roots invading the system. Here's how it works: Trifluex is incorporated into the replaceable disk ring assembly inside the filter housing. When water passes through the filter, a very low concentration of

trifluralin (ppb) is transmitted throughout the system and effectively inhibits root growth into the dripper outlets. Techfilter is for use only with a Techline system which itself is designed with a physical root barrier. The Trifluex provides "extra" protection. Contact Netafim Irrigation at 800/777-6541 to learn more about the Techfilter, or

Circle No. 272

# Rain Bird controllers with lots of features

Rain Bird Sales, Inc.'s, ESP-LX Plus Series controllers offer four independent programs with four-day cycle modes (day-of-week custom, 1-31 cyclical, odd or even) that accommodate various irrigation requirements, including low volume drip applications.

The ESP-LX Plus offers a program memory that maintains the user's program during power outages in



the absence of any battery backup. It ships with a rechargeable NiMH battery that allows the removable panel to be programmed prior to installation. Other features include: event-day-off; water budgeting to 300 percent; rain delay; diagnostic circuitry for skipping shorted stations; station timing from 0-12 hours; master valve/pump start control by station24 start times (6 per program); and robust surge protection.

It is offered in indoor/outdoor (6, 8, 12, 16, or 24 stations) and indoor-only (8, 12, 16 stations) models.

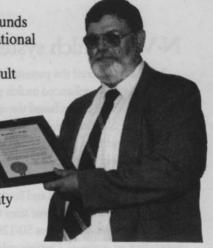
Contact Rain Bird at 818/963-9311 and tell them that you read about the ESP-LX Plus in LANDSCAPE MANAGEMENT, or

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Randy Willis, CGM **Grounds Supervisor** NW Missouri State University



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                - awards
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                    - in addition, insurance programs now being developed.

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| Telephone  | ERMOSEAPE MANAGEMENT HEE ESST   |                                |
| City/State/Zip   | LENDSCAFE MANAGEMENT 1886 1897  |                                |

# N-Viro Mulch system is colorful

Morbark acquired the patented N-Viro Mulch system for creating color-enhanced mulch products from shredded wood waste. It purchased the rights from The Craig Group. The N-Viro Mulch Coloring Systems uses rich, organic pigments to transform shredded wood waste into a premium decorative mulch. The simple system includes a coloring metering system with auger and conveyor, an electric or gas pump stand and feed conveyor with infeed hopper. It is available in three sizes to fit individual applications. The unit can process 50-120 cu. yds. per hour, depending on material. Organic colorants available in red, gold, brown, rose and black. Learn more about the system from Morbark at 517/866-2381, and let them know that LM informed you, or,

Circle No. 273





# Drop spreader good for topdressing

The Earth & Turf ET54D drop spreader is an economically priced alternative for topdressing dry flowable materials on greens and lawn. Its ground-driven agitator and drop cylinder applies topdressing in an even spread pattern. Adjustable flow rate gate allows materials to be applied with a uniform depth of 16-34 inch. On-the-go engagement/disengagement the spreading mechanism can be done while seated on the pulling unit. Towbehind unit attaches to small tractors and utility trucks. Spreading system is tolerant of various particle sizes. Jaw clutch design automatically disengages the spreading/agitator mechanisms when unit is pushed in reverse.

Contact Earth & Turf toll free at 888/693-2638, and let them know that LM gave you the word, or,

Circle No. 274

## Aeration plus additive equals clear water

The Water Weasel Aquatic Clarifier combines aeration with an environmentally safe additive that is fed to a pond via a metering pump. The additive, combined with aeration and unique mixing, effectively transforms a murky, dirty pond into a crystal clear pool of water. In northern climates, in winter months, the surface turbulence of the Water Weasel keeps much of the pond surface from freezing. To learn more, call Water Weasel Company at 417/866-0235 and mention LAND-SCAPE MANAGEMENT, or,



# Microbial product for ponds

Pond Saver Water Soluble Paks, a concentrated microbial product,



cleans, clarifies and deodorizes ponds and lakes. The product contains a proprietary blend of 17 Bacillus bacterial strains that quickly biodegrade nutrients, organic matter and hydrocarbons in water to reduce algae, scum, sludge and foul odors. Contact Plant Health Care, Inc., 800/421-9051 and tell them that LM sent you, or

Circle No. 276

# Going solar-powered with irrigation controller

The Trope Organic is a solar powered, vandal resistant irrigation controller. These controllers have a Type 304 stainless steel pedestal with the controller built into the pedestal enclosure. The time of day, day of the week, month and year are preset into the digital perpetual clock. The preset start time is 12:05 a.m.

To program, just set two analog knows: WATERING DAYS from a menu of i.d. choices, and TIME ON from a choice of nine popular times. If your preferred "time" is not one of the settings, then you can use the digital display to choose any time from one minute up to 17.8

hours. You can even select different times for each valve.

For more information, call (800) 552-8838 and tell them you read it in LM. or

Circle No. 279

# PBI/Gordon's new pond products available

PBI/Gordon Corp. introduces AquaCure Aquatic Algaecide and AquaCure Aquatic Herbicide. AquaCure Aquatic Algaecide contains a formulation derived from copper-triethanolamine complex with copper hydroxide and containing 8 percent elemental copper. It provides effective

control on both planktonic and filamentous algae species, and over 60 species of which are included on the label.

AquaCure Aquatic Herbicide is a stable, non-corrosive formulation derived from copper-ethylenediamin complex with copper sulfate pentahydrate containing 8 percent elemental copper. It provides effective



control of many prevalent aquatic weed pests, including American pondweed (*Potamogeton nodusus*), Hydrilla (*Hydrilla verticillata*) and Brazilian Elodea (*egeria densa*).

Pond and lake water is available for irrigation of greens, tees, fairways and other fine turf sites immediately after treatment, says PBI/Gordon. Both products are labeled for use in golf course, ornamental, fish and fire ponds as well as potable water reservoirs, fresh water lakes and fish hatcheries. Contact PBI/Gordon at 800/821-7925 and mention LM, or

Circle No. 277

# T & O contact fungicide approved for California

Sostram Corporation's Echo 720 Turf and Ornamental Chlorothalonil Fungicide has received final EPA registration and approval for use in California.

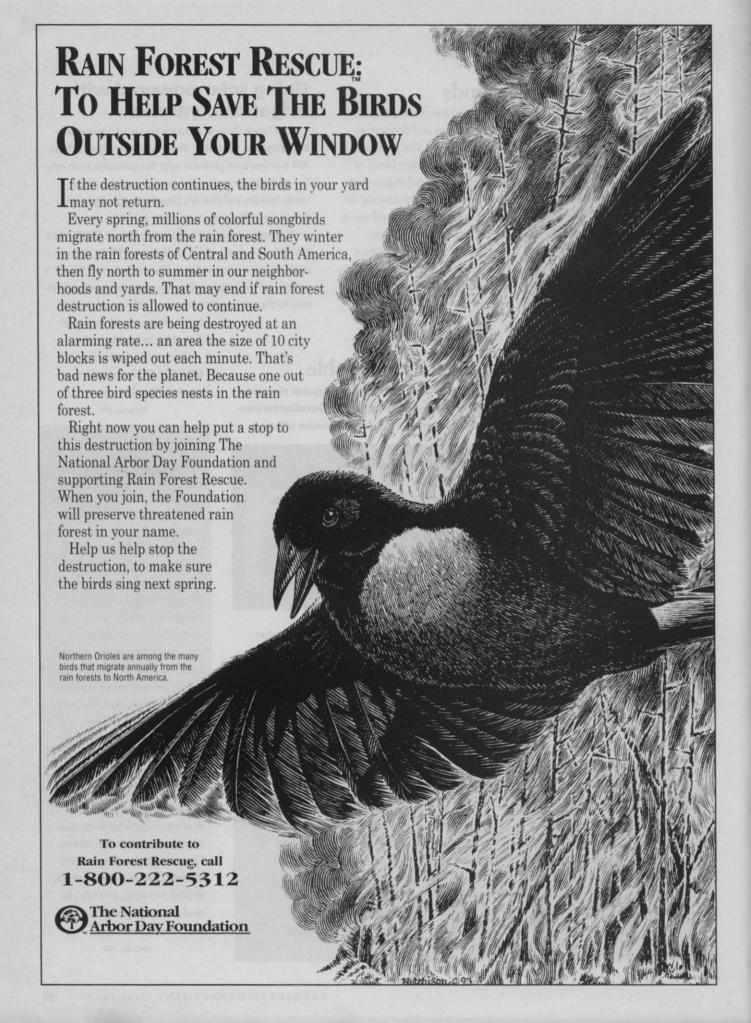
Echo 720 is a broad-spectrum contact fungicide for disease control on a wide variety of turfgrass and ornamental plantings. Turf diseases controlled include: dollar spot; leafspot; brown patch' anthracnose and red thread. Ornamental diseases controlled include: leaf blotch, anthracnose; rust; web blight; black spot; powdery mildew. Other turf and ornamental diseases are controlled by this product. To obtain more use and distribution information about Echo 720, contact Sostram at (770) 587-1032 and tell them you read about it in LM, or

Circle No. 278

# A product to 'Invigorate' soil

Milliken Chemical's Invigorate Soil Conditioner is a liquid polymer system that restores soil to optimal condition. Soils treated regularly with Invigorate provide an excellent environment for growing vibrant turfgrass, and help put an end to standing water, poor drainage, hardpan and day layers. It works on the soil, not on the water, to improve drainage.

A related product, Invigorate ST Sand Trap Conditioner, is a formulation to improve sand trap drainage. It works in much the same was as Invigorate. It is applied directly to sand traps and bunkers, and opens drainage outlets for water previously trapped on the surface. For more information, contact Milliken Chemical Turf Products at (800) 845-8502, and say you read about Invigorate in LAND-SCAPE MANAGEMENT, or,



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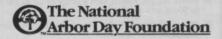


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time, you'll make a personal, positive contribution to a better environment.

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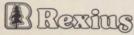
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# **Grab Bag**

# Inefficiency snowballs

The Oregon Statesman Journal reports a lawn care company was fined more than \$5000 for destroying a client's lawn. On top of that, a company official lied to investigators and falsified reports to cover up the mistake. The employee who made the application wasn't licensed, and no one knew exactly what was sprayed on the lawn. Chemical barrels at the hg weren't labeled, either, and record-keeping was a mystery. The company is appealing.

# Beware phony timbers!

The Western Wood Preservers Institute of Vancouver, Wash. warns against buying fake pressure-treated wood products. Most buyers believe they are purchasing a treated wood product that will last many years in clients' landscapes. However, what they may be buying are squared-off, peeler cores (what's left of logs after being "peeled" for veneer in the manufacturing of plywood). The cores are then dipped in stain so as to have the appearance of a pressuretreated, wood product.

# 'BIG BUGS' FORMED FROM TREE MATERIAL...

This giant spider and web is one of the "BIG BUGS" displays seen in an exhibit of giant-sized insects made from twigs and branches, now showing at the National Wildflower Research Center, Austin, Texas. The display and sculptures are designed by David G. Rogers of Glenwood Landing, N.Y., and have been seen at the New York Botanical Gardens. Callaway Gardens, the Dallas Arboretum and Disney World's Epcot Center. Rogers has sculpted everything from dinosaurs to dragons to ornate lawn furniture. Each sculpture is created from various forest materials such as whole trees, dried branches, vines, barks and green saplings.



Wilt-less flowers

David Clark, environmental horticulturist at the University of Florida, and others are growing "ethylene-sensitive" flowers that could last up to four times longer than common flowers. After pollination, some varieites give off ethylene gas that causes petals to fall. Clark says a gene can be implanted so the flower does not recognize the presence of ethylene. The process could work on carnations, orchids, delphinium, baby's breath, and possibly geraniums. The key is whether or not the flower is sensitive to ethylene.

GRAB BAG FEATURES
BRIEF OBSERVATIONS
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## 'Perennial of the Year'

The Perennial Plant Association has named the Salvia 'May Night' the 1997 "Perennial Plant of the Year." It's described as a "wonderful latespring blooming perennial."

Rigid spikes of dark blue-black flowers appear over aromatic blue-grey leaves in May and June. The Saliva does best in sun, in average to dry soil, and will withstand drought once established, says the Association, based in Hilliard, Ohio.

PHOTO BY RICHARD CARTER, COURTESY NWRC.



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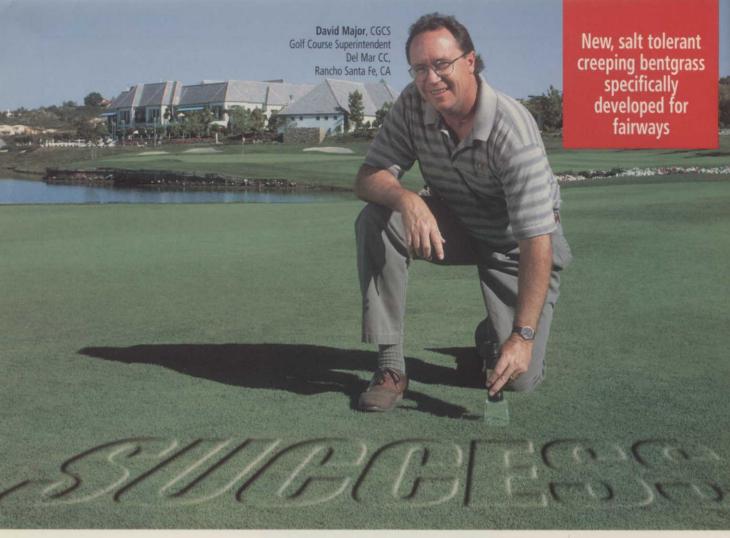
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Ninth hole, Del Mar CC; Joe Lee, architect

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