

Lawn & Landscape

SERVING THE \$40 BILLION PROFESSIONAL LANDSCAPE CONTRACTING INDUSTRY

MARCH 1997

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Inside:

• Spring Technical Guide

• Irrigation Controls

• Walk-Behind Mowers

• Effective Hiring

Opportunity Found

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Cover Photo

by
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Yardmaster Inc. discovered long ago that profitable opportunities abound for the well managed landscape contracting firm.



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Publisher's Focus



Cindy Code
Group Publisher

The news will make your head spin. Supplier mergers, contractor consolidations, personnel moves into and out of the green industry. As company owners and managers are engrossed with the details of a new season, they're also dealing with the unknowns and changes the new year brings. Marketing new services, bringing in renewals, hiring new employees....the list goes on.

To help industry professionals develop programs and processes, *Lawn & Landscape* magazine has created a one-day School of Management to meet the business management information demands of lawn and landscape contractors in today's marketplace.

The *Lawn & Landscape* School of Management is a unique industry educational event, bringing savvy owners and managers of lawn and landscape firms together for a frank and open exchange of business expertise and creating a positive dialogue.

Lawn & Landscape magazine has led the industry in conducting round tables, contractor forums and synergistically cooperating with contractors and suppliers alike. This unique concept keeps industry suppliers and managers working together to meet the ever-changing needs of the service professional.


Whether you're an owner of a large, full-service company or a manager in a small firm, you'll find a balanced playing field at our School of Management. The sessions will provide practical business information for industry professionals regardless of the size of their business. This attitude allows *Lawn & Landscape's* School of Management to be a true "industry" conference where a premium is placed on learning and sharing information.

The school will feature six topics, including: Hiring Practices that Work, Bringing Out the Best in Your People, Leadership Principles, Increasing Productivity in Landscape Services and Seven Key Factors in Profitable Marketing and Managing Business Growth ...Today and Tomorrow. Presenters will include such well-known industry speakers as: Bill Hoopes, Barefoot Grass; Dick Ott, Orkin; Phil Christian, pdc Consultants; Steve Derrick, Gold-Kist Inc.; and Tracy Morland, Horticultural Business Management Consulting.

The session's one-day format will maximize your available time and provide fresh ideas to run your business. The conference is set for April 28 at the Renvia Crowne Plaza in Atlanta.

The School of Management is held in conjunction with "PCT Dialogue 97...A Business & Technology Conference" created by our sister publication, *Pest Control Technology* magazine.

We believe you'll find the program is one that is valuable to both you and your business. For more details, turn to page 109 in this issue or call Fran Franzak at 800/456-0707.

We hope you decide to come to Atlanta and see for yourself how you can be part of the dialogue. — *Cindy Code* 

Lawn & Landscape

EDITORIAL

Cindy Code Group Publisher
e-mail: ccode@gie.net

Susan Gibson Editor
e-mail: sgibson@gie.net

Paul Schrimpf Managing Editor
e-mail: pschrimpf@gie.net

Bob West Associate Editor
e-mail: bwest@gie.net

GRAPHICS/PRODUCTION

Mark Rook Creative Director
Charlotte Turcotte Art Director
Tracy Green Graphic Designer
Carolyn Antl Graphic Designer
Helen Duerr Production Coordinator
Lori Zachmann Advertising Production Coordinator

Rosalie Slusher Circulation Manager
Fran Franzak Books Manager

ADVERTISING/MARKETING

Maureen Mertz Eastern Sales Manager
1723 South Hill
Milford, Michigan 48381
810/685-2065
Fax: 810/685-2136
e-mail: mmatl@aol.com

Kevin Gilbride Account Representative
e-mail: kgilbride@gie.net

CORPORATE STAFF

Richard J. W. Foster President and CEO

Christopher W. Foster Vice President/General Manager

Jami Childs Production Manager

Heidi Senecoff Director, Market Database Operations

EDITORIAL & SALES OFFICES

4012 Bridge Avenue
Cleveland, Ohio 44113
Phone: 216/961-4130
Fax: 216/961-0364

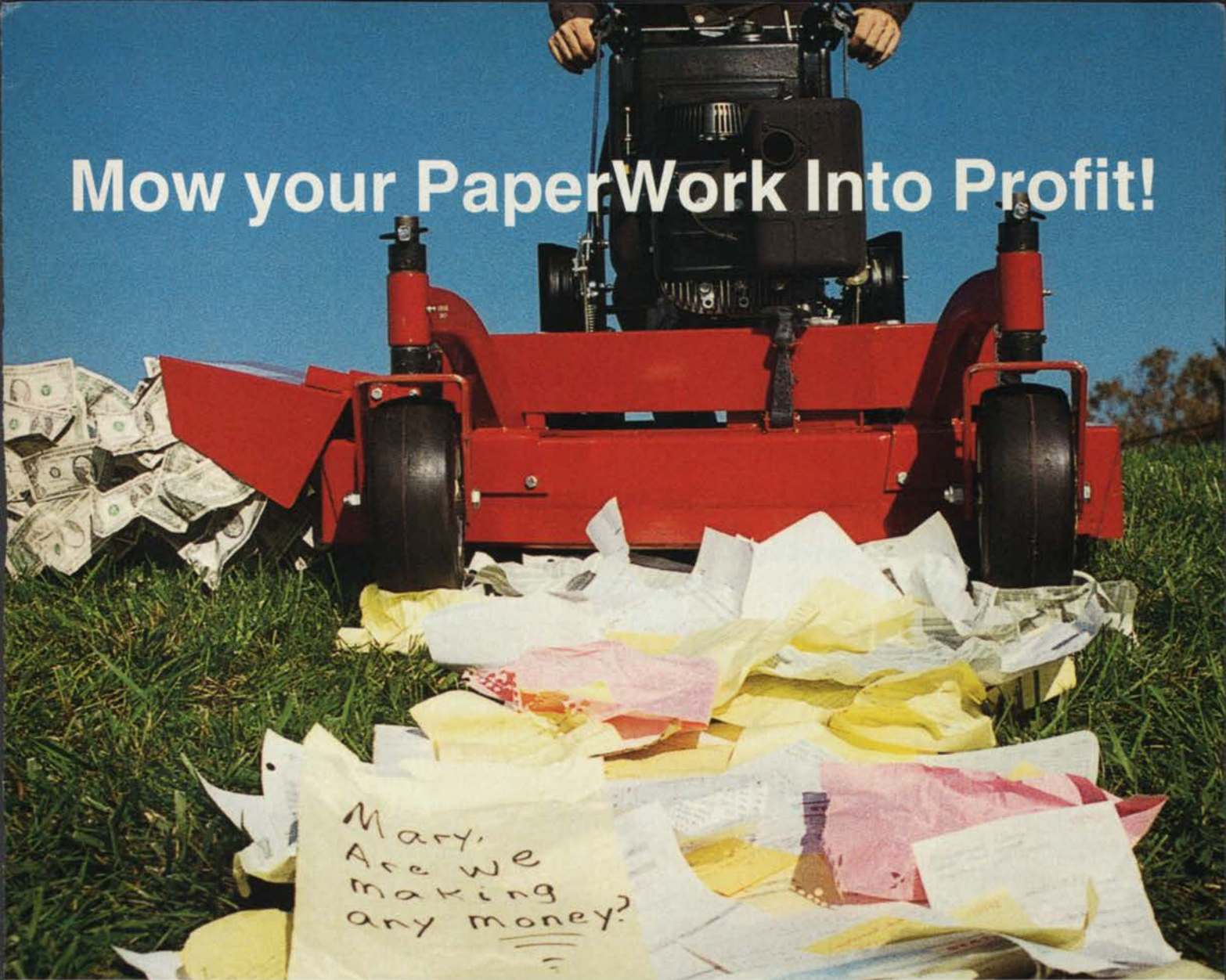
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EQUIPMENT SALES TO GROW

According to a report from The Freedonia Group, Cleveland, shipments of commercial lawn and garden equipment are expected to grow at a rate of about 6.4 percent annually. The report estimated total commercial shipments in 1985 as \$369 million, rising to \$1.08 billion in 1995. Projections show shipments to increase to approximately \$1.475 billion in the year 2000.

The estimates define the commercial market as including golf course, commercial, municipal and other government mowing. Equipment shipments includes mowers, turf tractors and related equipment, vacuums, blowers, sweepers, parts, attachments and miscellaneous equipment. The forecast noted expected increases in prices based on the use of higher powered models using steel and more expensive engines.

EQUIPMENT SALES ON THE MOVE



Source: The Freedonia Group Inc., Cleveland, Ohio

ECHO INC. TO ACQUIRE TECHNIC TOOL

ECHO INC., Lake Zurich, Ill., announced it has signed a letter of intent to purchase Technic Tool, Lewiston, Idaho. Technic Tool manufactures the Power Pruner™ line of telescoping and fixed-length pruning tools along with a full line of accessories.

Robin Pendergrast, president of International Market Exchange and spokesperson for Echo, credited Technic Tool with creating the market for extended pruning equipment over the last 10 years.

"This acquisition is a win-win deal for everyone," he said. "It will allow Echo to continue to dominate the marketplace, and contractors will benefit from even wider distribution of the company's products."

Pendergrast refused to disclose the sale price of

the company and said issues such as whether or not the Technic Tool operations will be moved to Illinois and the long-term future of Technic Tool President Dale Aldridge have not yet been finalized.

STATE PREEMPTION UPHOLD IN OHIO

The battle between the city of Fairview Park, Ohio, and a franchise of Barefoot Grass re-

garding a pesticide ordinance is finally over. The Ohio Supreme Court decided it has no constitutional jurisdiction to hear the case, effectively striking down the city's attempt to regulate pesticide applications within its borders.

The ruling solidified the state "pre-emption" law, which states that no municipality may pass pesticide legislation that is more restrictive than what the state has on the books. The court's decision ends a 19-month legal battle between the city and Barefoot Grass, which received substantial legal and financial support from Ohio Professional Applicators for Responsible Regulation and its members.

The law, originally passed in 1992, was not enforced until June 27, 1995, when a citizen filed a complaint against a Barefoot Grass applicator who had

not complied with the city's notification requirements. The company, with the support of OPARR, challenged the ordinance through a series of lower court decisions before the Supreme Court made its ruling.

SALES IS KEY AT ALCA'S NEW PROGRAM

Doug Trenary of Fast-Track Inc., Atlanta, will train attendees at a new two-day symposium on sales, sponsored by the Associated Landscape Contractors of America. The symposium will be held Aug. 21-24 at the Fairmont Hotel, Dallas, Texas.

This premier event will present topics such as setting and reaching clear sales goals, the art of listening, managing time and energy, techniques to conquer objections and other pertinent subjects. For more information on this program, contact ALCA at 800/395-2522.

(continued on page 10)



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(continued from page 8)

BIOSYS ACQUIRED BY THERMO TRILOGY

Biosys, manufacturer of biological pest control products located in Columbia, Md., was purchased by Thermo Trilogy in January for an estimated \$11 million.

This news comes just a few months after biosys filed for reorganization under Chapter 11 of the U.S. Bankruptcy Code last September. The purchase was subject to and approved by the bankruptcy court on Jan. 7.

"With the biosys acquisition, we will make significant progress in our strategy to pursue the environmental technology business," said Brian Holt, president and chief executive officer of Thermo Ecotek, Thermo Trilogy's parent company. "The biosys products will greatly enhance Thermo Trilogy's line of environmentally friendly alternatives to chemical pesticides."

At this point, there are no plans to discontinue production of any of the biosys lines of products, according to Ramon Georgis, the company's director of research and development. No final decisions have been reached, however.

Georgis noted that the nature of the sale allows Thermo Trilogy to renegotiate its contracts with product distributors, which could result in changes in product distribution and availability. Biosys products included pheromone, neem/azadirachtin, nematode and virus-based biopesticide products.

In addition to the assets of biosys, Thermo Trilogy also

ASSOCIATION NEWS

The **National Foliage Foundation** benefitted from a \$400,000 bequest from the estate of James Davis, founder of the Davis Tree Farm. The gift established the James H. Davis Scholarship Fund which will support education in the foliage industry through annual scholarship awards to students. The gift helped bring the NFF's endowment to nearly \$800,000, with a goal of reaching \$1 million by the year 2000. For more information, call 407/345-8137.

The **Ohio Turfgrass Foundation** elected its new board of trustees during its annual meeting. The new trustees are: Hank Chafin, president; Joe Duncan, president-elect; David Webner, vice president; and Cindy Code, group publisher of *Lawn & Landscape* magazine, treasurer.

The **Golf Course Superintendents Association of America** selected Gerald Faubel, Coleman Wards and Joe Vargas to receive its 1997 Distinguished Service Awards. Faubel is a certified golf course superintendent and past GCSAA president. Ward has spent the past 45 years sharing his research as a professor and agronomist, while Vargas has been extensively involved in teaching, research and extension work for 25 years.

The **Professional Grounds Management Society** opened its membership to physical plant and property managers with grounds responsibilities.

"Both the American Public Works Association and the American Physical Plant Association are very eager to work very closely with PGMS, with us working as the green arm of their groups," said John Gillan, executive director of PGMS.

"One of the greatest benefits that we offer is networking," he continued, "and this will allow us to do that to an even greater degree while we provide even more information with a broader base to the members."

PGMS also reprinted its *Grounds Maintenance*

Estimating Guidelines. The manual is available for \$15 by calling the PGMS at 410/584-9754.

The **Associated Landscape Contractors of America** is accepting entries for its 1996 ALCA Safety Award Contest until April 1. The contest is open to all independent landscape contractors and landscape industry suppliers with three categories: fleet safety, employee safety and combined employee and fleet safety. These categories are then divided into subcategories based on company size. All companies who have had no lost-time accidents or no vehicle accidents will be recognized. For an entry application, call 800/395-2522.

The **Professional Lawn Care Association of America** chose WeisburgerGreen Insurance as the vendor of insurance services to PLCAA members. Coverage options have been tailored specifically to the green industry and include: general liability, umbrella liability, commercial auto, workers' compensation and property.

PLCAA also published a new educational brochure — *Water Quality and Your Lawn* — for members to share with clients. The brochure offers preventive turf care tips and can be ordered from PLCAA. For more information, call 800/458-3466.

The **Sports Turf Managers Association** elected its 1997 officers and board of directors. Re-elected to office for a second term are: Mike Schiller, president; Steve Guise, president-elect; Henry Indyk, vice president (commercial); Eugene Mayer, secretary and Rich Moffitt, treasurer.

The STMA also issued the following awards of special recognition: Greg Petry, STMA Groundskeeper of the Year; Partac Peat Corp., Outstanding Commercial Affiliate Award for 1996; The Colorado Chapter of STMA, the Presidents Award; and Kent Kurtz, the Excellence in Research Award.

The **California Interior Plantscape Association** went on-line with the debut of its website at <http://www.primet.com/cipa>.

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17	37	57	77	97	117	137	157	177	197	217	237	257
18	38	58	78	98	118	138	158	178	198	218	238	258
19	39	59	79	99	119	139	159	179	199	219	239	259
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☐ Landscape Architect
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☐ Trade Association, Library
☐ Others (please describe): _____

3. What were your approximate 1996 revenues?

- ☐ 0 - \$50,000
☐ \$50,001 - \$100,000
☐ \$100,001 - \$250,000
☐ \$250,001 - \$500,000
☐ \$500,001 - \$1 million
☐ + \$1 million

4. How many of your employees are:

- _____ Full time _____ Applicators
 _____ Seasonal _____ Maintenance

5. What percentage of your business is:

- _____ % Commercial/Industrial
 _____ % Residential
 _____ % Gov't/Municipal
 _____ % Golf

6. Circle what percent of your business is:

Lawn Care	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Maint. Serv.	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Irrigation Serv.	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Pest Control	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Installation	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Trees & Ornmtls.	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

7. How much did your company spend in 1996 on?

- Turf Chemicals \$ _____
 Ornamental Chemicals \$ _____
 Equipment \$ _____

8. How many does your business operate?

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☐ 3. Lawn Maintenance Contractor
☐ 4. Ornamental Shrub & Tree Service
☐ 5. Irrigation Contractor
☐ 6. Landscape Architect
☐ 7. Other Contract Services (please describe) _____

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☐ 2. School, College, University
☐ 3. Trade Association, Library
☐ 4. Others (please describe) _____

2. What best describes your title?

- ☐ Owner, Pres., Vice Pres., Corp. Officer
☐ Manager, Director, Supt., Foreman
☐ Agronomist, Horticulturist
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acquired the stock of Agri-Sense BCS Ltd., a wholly owned subsidiary of biosys based in the United Kingdom.

PLCAA SEARCHES FOR EXECUTIVE DIRECTOR

Ann McClure, executive vice president of the Professional Lawn Care Association of America for six years, announced she will leave April 1 to take a position at the Gas Turbine Institute.

PLCAA President Terry Kurth wished her the best of luck, adding, "PLCAA has grown strong under her direction ... her successor will find a strong group to lead." President-elect Larry Messina will chair a search committee; Tom Delaney is interim manager.

CALENDAR

To ensure that your meeting date is published, send an announcement at least 10 to 12 weeks in advance to *Lawn & Landscape*, 4012 Bridge Ave., Cleveland, OH 44113.

MAR. 19-20 Landscape Industry Show, Long Beach, Calif. Contact: 916/448-2522.

MAR. 20 ALCA Tech/Knowledge Interior Plantscape seminar, Long Beach, Calif. Contact: 800/395-2522.

MAR. 20-22 California Interior Plantscape Conference, Long Beach. Contact: 619/723-3878.

MAR. 20-23 ALCA Student Career Days, Dallas. Contact: 800/395-2522.

MAR. 22 Planting Design for Ponds & Wetlands, Millbrook, N.Y. Contact: 914/677-9643.

MAR. 25-26 Urban Pest Management and Entomology Conference,

Riverside, Calif. Contact: 909/787-5326.

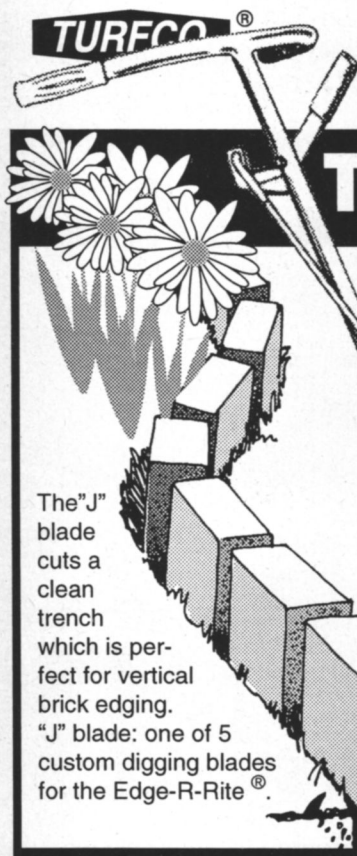
APR. 4-6 Student Society of Arboriculture Conference, Stevens Point, Wis. Contact: 715/346-4192.

APR. 4-6 Boise Flower & Garden Show, Boise, Ida. Contact: 888/888-7631.

APR. 12 Contour Plans field course, Millbrook, N.Y. Contact: 914/677-9643.

APR. 30 - MAY 1 Western Chapter ISA Conference, Anaheim, Calif. Contact: 916/641-2990.

MAY 30 - JUNE 1 Christmas Decorating Seminar, Pittsburgh, Pa. Contact: 412/281-6352.



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MARKET TRENDS

PROPOSED BILLS COULD BRING TAX RELIEF

Two bills introduced in Congress are aimed at reducing estate taxes on family businesses, according to the American Association of Nurserymen. Senate Bill 2, introduced by Majority Leader Trent Lott (R-Miss.) as the "Family Tax Relief Act," would reduce estate taxes and increase effective exemption from \$600,000 to \$1 million over eight years. A second bill, introduced by Jon Kyl (Senate Bill 75), called the "Family Heritage Preservation Act," would repeal estate and gift taxes. AAN supports passage of a bill.

TRANSITION

Gary Curl was appointed business manager for the turf and ornamental products group at American Cyanamid. He was also named to the board of directors of RohMid L.L.C., a joint venture of Rohm and Haas and American Cyanamid.

Robin Chamberlin was named president and CEO of Snapper Inc., following the resignation of Jerry Schweiner Jan. 28. Chamberlin had been the chief financial officer for Snapper.

Dan Teich was named president of Ransomes America Corp.

David Luse, CEO of the Artega Corp., and **Karen Corcoran**, formerly with Rentokil Environmental Services, have teamed up to form The Benchmark Group, a firm designed to provide several landscape and business services to the design and contract services industries.

Richard Weigand joined Medalist America as turf specialist and will be handling sales in the Midwestern U.S. Valent U.S.A. hired **Thomas Parobek** as sales representative for the Midwest territory.

Richard Spies is the new product promoter at PanAmerican Seed Co. for the Western U.S. Husqvarna Forest & Garden named **Don Roop** director of special markets.



Gary Curl



Dan Teich

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EXPO 97 CHANGES WEEKEND DATES

For the first time in years, the International Lawn, Garden and Power Equipment Exposition will move to a Saturday starting date. This year's EXPO will start on Saturday, July 26 and finish on Monday, July 28.

According to EXPO organizers, the new schedule will be more convenient for attendees' business schedules and will also allow visitors to take advantage of weekend airfare discounts. The annual dinner and concert will be held on Sunday evening instead of Monday. For more information about the new format at EXPO '97, call 800/558-8767.



This year's Lawn, Garden and Outdoor Power Equipment Expo will break tradition and open on Saturday in Louisville, Ky.

PLCAA GEARS UP FOR LAWN CARE MONTH

To salute the greening of America's more than 25 million acres of lawn space, the Professional Lawn Care Association of America is preparing to kick off its eighth year of celebrating April as National Lawn Care Month. As part of the campaign, the organization has distributed press releases and videos to a wide range of print and electronic media. The information covers topics critical to the lawn care industry, including the benefits of turfgrass, grasscycling and the proper use and storage of pesticides.

"National Lawn Care Month is a time to recognize the grass plant's contribution to our lifestyle and environment," noted Ann McClure, executive vice president of PLCAA.

IN BUSINESS...

Helena Co., Memphis, purchased the **CoRoN** division of Moyer and Son ... **Zurn Industries Inc.** completed the purchase of **Eljer Industries Inc.**...**Ames Lawn & Garden Tools Inc.**...**Ames Lawn & Garden Tools** acquired **Woodings Verona Tool Works**...**Leslie-Locke** formed an advisory council for fencing... **The Gehl Company** expanded its two South Dakota manufacturing facilities.



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USE READER SERVICE #25

DAY ON THE HILL

PLCAA REMEMBERS U.S. VETERANS

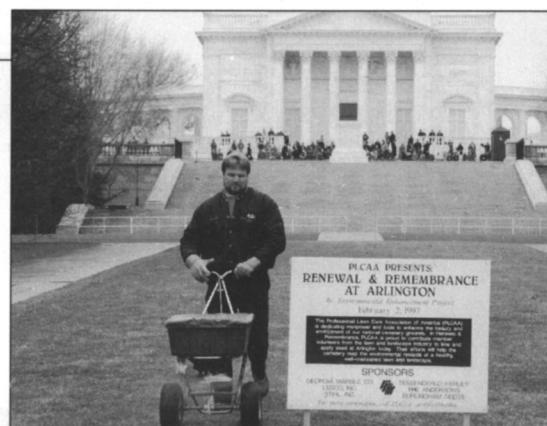
A near-record crowd attended the 1997 Day on the Hill in February, which was sponsored by the Professional Lawn Care Association of America. The group — more than 125 people — learned how to organize efforts at the grassroots level, heard Robert F. Kennedy, Jr. address the group and visited their elected representatives to speak on issues affecting the lawn care industry.

This year's event was special because more than 100 lawn care professionals gathered at Arlington National Cemetery on Feb. 2 to apply lime and seed to the grounds.

11 teams of lawn care applicators, company equipment and donated materials made the Arlington project a success. Credit: PLCAA

"Renewal and Remembrance" brought together 11 teams from companies in several states, numerous trucks and spreaders, plus donated materials. Sponsors Georgia Marble Co., LESCO Inc., Stihl Inc., Tessenlerlo Kerly, The Andersons and Burlingham Seeds provided materials to enable the group to exceed its goal of rejuvenating 120 acres.

Phil Fogarty, president of Crowley's Lawn Service, Cleveland, Ohio, coordinated the event with PLCAA and its Allied Regional Association Committee. Below are excerpts from his dedication address to "Re-



newal and Remembrance."

"I am extremely proud to be a member of this group and I am especially proud of those members here today prepared to give of themselves, their time and their expertise. This shows your commitment to our industry, our environment and our country.

"Renewal and Remembrance — to make new and

strong the recollection of who we are and to who we are grateful. Renewal and Remembrance — a chance for us to do with our actions what is impossible to put into words ... to say thank you to the veterans of every war and armed conflict that has befallen this great nation, especially to the 250,000 men and women who lie here un-

(continued on page 18)

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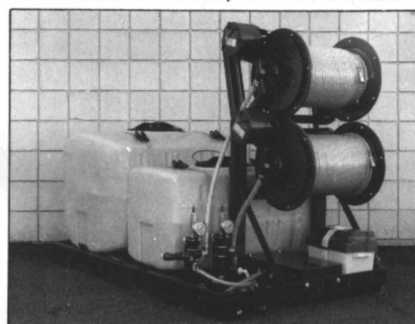
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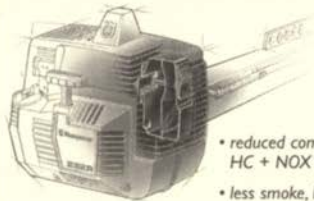
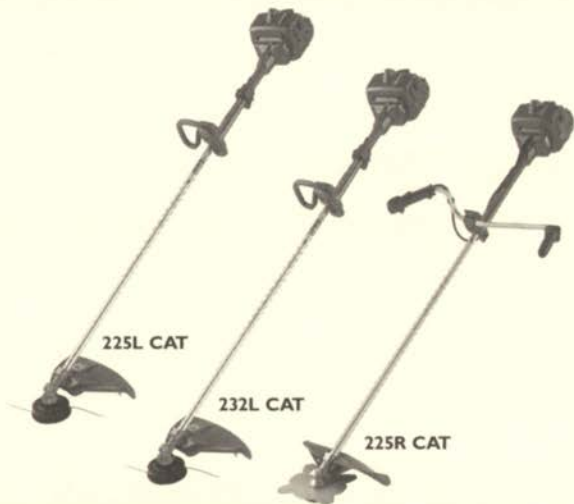
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DAY ON THE HILL

(continued from page 16)

der the shadow of the Capitol, entombed in our nation's love.

"It is in these immortal patriots then than we exalt today by applying the tools and techniques of our trade. By liming and seeding today, we promote the life-giving green expanse before us — the oxygen-creating, water-cleansing lawn that

covers these rolling hills.

"In 1872, Senator John Ingles paid tribute to the crop we grow by these words, 'Next in importance to the divine profusion of water, light and air, those three great physical facts which render existence possible, may be reckoned the universal beneficence of grass. Lying in the sunshine among the buttercups and dandelions of



Participants in PLCAA's Arlington National Cemetery project applied lime and seed to about 120 acres. Credit: PLCAA

May ... our earliest recollections are of grass ... (it) heals over the scars which our descent into the bosom of the earth has made, and the carpet of the infant becomes the blanket of the dead.

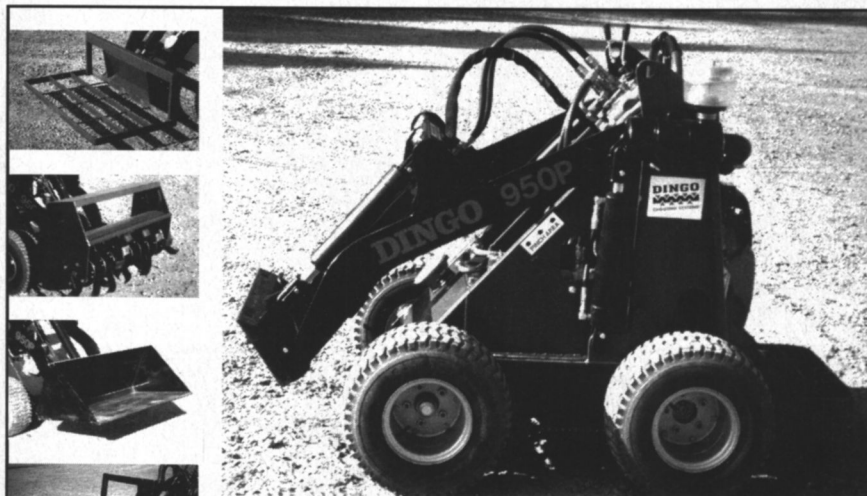
'For grass is the forgiveness of nature, her constant benediction. Fields trampled with battle, saturated with blood, grow green again with grass and carnage is forgotten. Streets abandoned by traffic become grass grown like rural lanes and are obliterated. Forests decay, harvests perish, flowers vanish, but grass is immortal.'

Fogarty continued, "How appropriate then that we help grow better this safe carpet, this immortal blanket, and in doing so on this February morning, pay homage to those who defended our liberty. We work here today to add to the serenity of these grounds — their grounds — and simultaneously renew a higher sense of what this nation truly stands for.

"It is each and every day that we remember these peacekeepers of the world, the men and women who gave us the privileges, the principles and the freedoms of the greatest nation on the face of this earth. We remember today and we will never forget."

After six hours of work, the group had limed more than 120 acres of turf and overseeded seven more acres around such high-profile areas as the Tomb of the Unknown Soldier, the Lee Mansion, the Kennedy grave sites and Memorial Gate. Jack Metzler, superintendent, and Eric Dihle, horticulturist, helped coordinate the event and provided backup support and vehicles. — *Doug Hague*

The author is president of Lawn Classics Inc., Findlay, Ohio.



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MEANS BUSINESS

THE FOUNDATION to a successful landscape installation lies in making sure the design suits the client's needs and objectives. Halquist Stone Retail Center serves as a display garden for more than 200 assorted natural stone materials from its quarry, as well as clay and concrete products and an array of related building materials used in the landscape. The objective was to showcase the materials present, create a positive sales atmosphere and provide an aesthetic and attractive place for customers.

The project was honored in the commercial design/build category by the Associated Landscape Contractors of America.

DESIGN CHALLENGE: The goal was to integrate the vast array of materials the quarry wanted to display into a cohesive landscape that was visually

pleasing and encouraged customers to explore the area and to make a purchase. Functional features (i.e., weigh scale, semi-truck traffic and storage, more than 80 storage bins) had to be integrated along with the retail office, display gardens, outdoor seminar space and parking. The project also had to be flexible enough to offer the client the ability to eliminate and/or replace certain display sections when products were discontinued, while still keeping the site fully operational.

DESIGN SOLUTION: The project was carved into a 25-acre parcel. The perimeter was designated wetlands with some agricultural remnants and juvenile woods, which included sapling oaks, shagbark hickory and basswood. One large maple tree

DESIGN NOTES

PROJECT:	Halquist Stone Retail Center, Franklin, Wis.
LANDSCAPE COMPANY:	David Frank Landscape Contracting, Germantown, Wis.
DESIGNER:	Steven Berg
SIZE OF PROPERTY:	25 acres
MAN-HOURS TO CONSTRUCT:	more than 2,400 hours
PLANTS INSTALLED:	approximately 3,400

was retained inside the construction limit. Although it created additional challenges, it was deemed an asset to the overall design and site.

Difficulties were created because the project site was lower than the adjacent road by 10 to 15 feet. The existing lay of the property did offer some unique design features that would highlight the

quarry's extensive stone offerings, however. The natural grade allowed for a large amount of retaining wall space and the construction of a lined reflecting pond with a waterfall allowed for the display of quarry materials that can be used adjacent to water features.

The storage and back lots were raised between 3 and 5 feet with enormous quantities of stone materials provided and brought in by the owner. More than 250 tons of assorted slab stone were machined and hand placed around the perimeter of the pond. Forty tons of 8- and

10-inch snap lannon stone and more than 100 tons of assorted color and graded riprap and fieldstone were also displayed as a water edge treatment. The recessed nature of the pond furthered the project's effectiveness because visitors aren't aware of the pond's presence until they actually entered the site and approached the gardens. This created visual interest in the site while providing a safety element for casual onlookers and vehicular traffic.

The design intent for the project separated materials into four groups with the creation of unique gardens, which were linked together with stone and paver walkways and had to be designed so they were functional for "how-to" seminars the client offers customers. The various gardens highlighted water, manmade pavers and retaining wall systems, natural stones and granites, with each garden containing a variety of samples.

Visitors to the site have the opportunity to sit in and envision the gardens as possibilities for their own personal properties. Assorted decorative specimen boulders in the

Carefully placed perennial gardens break up expanses of concrete.
Credit: David Frank Landscape Construction



DESIGN NOTEBOOK

paver garden create an indigenous sculpture as well as a sitting respite. The paver garden is outlined with one paver to create uniformity while separating the paving options available. Retaining walls of natural stone and concrete display goods, minimize the impact of the material storage bins in the area and provide depth and interest for plants and assorted ground cover mulches.

Holey boulders and distinctive pocket perennial gardens break up the expanse of decorative flagstone paving and provide for interest. Patterned and irregular flagstone of assorted varieties (Colorado, New York blue stone, Tennessee flagstone and locally quarried gray and natu-

space for viewing materials.

An electronic pump with more than 70 linear feet of 2-inch PVC pipe spun like a web behind the stone continually circulates the pond water and provides a constant wet washing of the holey boulder waterfall. In addition to the visual element the pond provides, audible sounds from the waterfall and two aerating bubblers resonate throughout the garden. Large lannonstone steppers placed in the shallow end of the pond allow guests to experience the water. As customers maneuver the rocks, they can see different stones available for bottom treatments and water features.

Distinctive shrubs, specimen dwarf evergreens and assorted perennials break up the expanse of stone with explosions of color and fragrance. Plantings which normally provide a strong element in any garden space needed to be minimized per the request of the owner. This was to allow for larger expanses of open ground areas that could be covered with natural stone mulches available to customers at the retail center.

This was an ambitious endeavor requiring cooperation between the landscape architect, the contractor and the owner. The owner needed to trust the landscape architect and the contractor to use materials in an efficient and effective manner and to complete the project in an aggressive time frame allowing the center to open on schedule.

— Steven Berg

The author is a senior landscape architect with David Frank Landscape Construction, Germantown, Wis.

The goal was to integrate the vast array of materials the quarry wanted to display into a cohesive landscape.

ral buff colored lannon) offer panoramic views along the natural stone promenade. All material is dry laid with an assortment of grouting to demonstrate color and texture alternatives. A granite retaining wall and assorted color granite paving alternatives separate the granite gallery from vehicular traffic and provide a comfortable sitting



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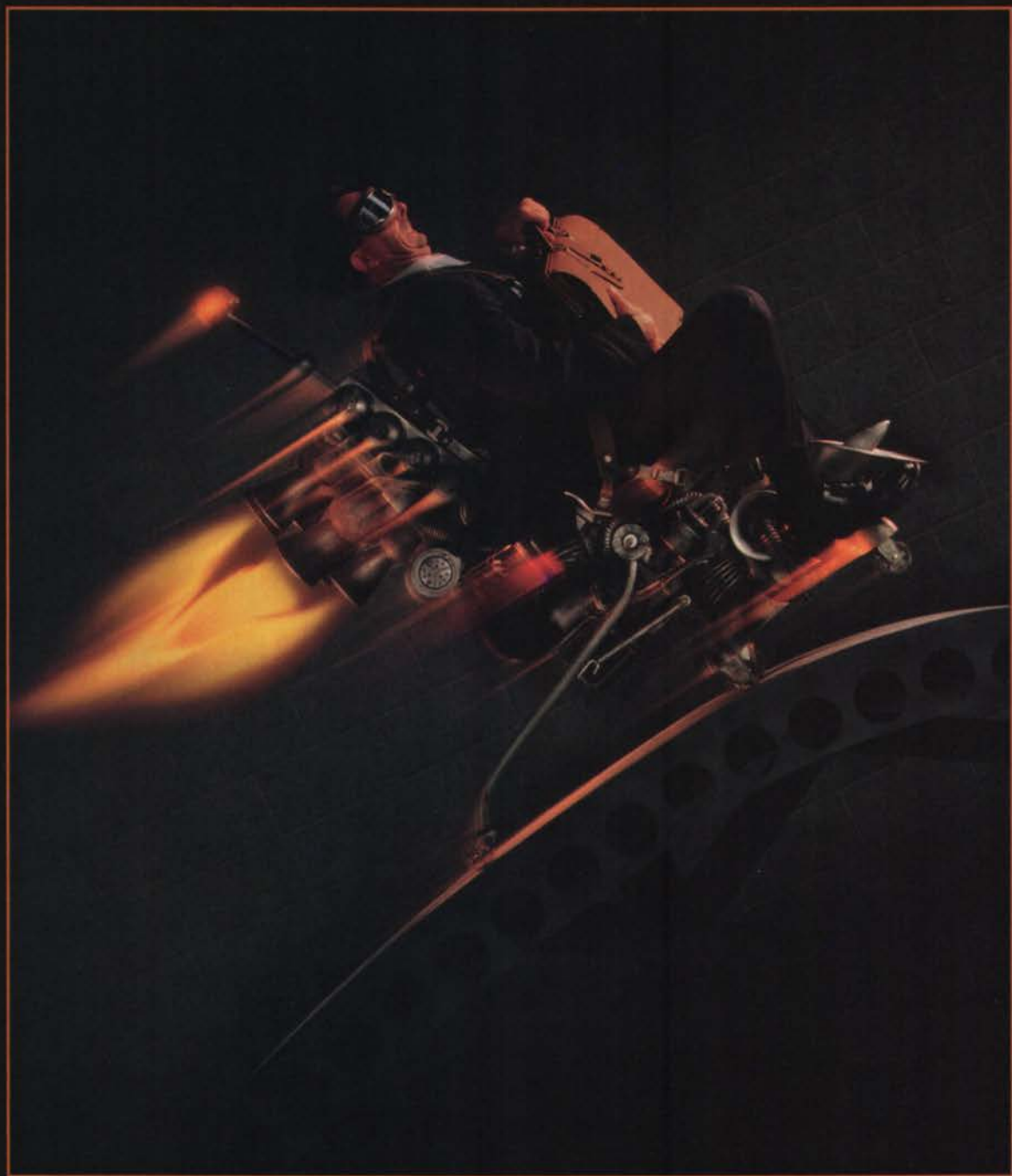
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YARDMASTER INC.

Headquarters: Painesville, Ohio

Branches: Bedford, Avon & Columbus.

Established: 1971

Primary Services: Full-service landscape design/build and installation (46 percent), maintenance (45 percent), lawn care (6 percent) and irrigation (3 percent). Service split is 70 percent commercial and 30 percent residential. Owns and operates a 40-acre nursery.

1996 Sales: \$6.5 million

1997 Projections: \$8.45 million

Number of Employees: 78 full-time, 100 seasonal

Ownership: Kurt Kluznik and Rick Colwell, majority owners; Mikel McLaughlin, minority owner.

EXECUTIVE SUMMARY:

Management Philosophy: Our creative and professional team will enhance the beauty and function of property and exceed all clients' expectations.

Future Challenges: Recruiting in a scarce labor market and becoming experts at exceeding every client's expectations.

MAJORITY OWNERS

KURT KLUZNIK

Age: 43

Background: He is the founder and a registered landscape architect in Ohio, a Charter Certified Landscape Professional and a director of ALCA.

RICK COLWELL

Age: 44

Background: Vice president with Michigan State University horticulture degree. He joined Yardmaster as a partner in 1976 after working in other landscape firms.



ood management isn't rocket science. Ask some of the most successful managers how they succeed and their answers usually are simple—be customer driven, have clear goals, demonstrate respect for employees, and develop workable, manageable systems.

This holds true at Yardmaster Inc., a full-service landscape firm located in Painesville, Ohio, which is entering its 26th year of business. After years of impressive growth, the company is poised for continued expansion within its markets. In fact, President Kurt Kluznik has forecast a 30 percent increase in 1997 revenues, based on the backlog of work.

As it is with many companies, Yardmaster's past has had its share of successes, challenges and solutions. Current initiatives include geographic expansion with branch offices in the Cleveland area, continued growth of its Columbus, Ohio, maintenance business and ongoing efforts to master Total Quality Management. At one time, however, the agenda was merely taking advantage of the opportunities that presented themselves.

EARLY VISION. Landscape installation was a natural outgrowth of the family's nursery business when Kluznik started the company in 1971. New homes built in Cleveland's far-eastern suburbs needed lawns and landscapes planted, and the company was able to grow immediately.

"Originally, I wanted to retire at age 35—that was my vision," explained Kluznik. "Others get into it because they like doing it, but for me, landscape contracting was a means to an end."

Kluznik wanted to grow the landscape contracting business in a big way, and he succeeded. Now, the retirement focus has changed. "I'm not retired yet, and there's no chance of that in sight!" he noted.

His first experience with the larger possibilities of the landscape contracting business came when Kluznik hired a designer. "I hired my first designer in 1974 or '75, when he moved here from New York City. He taught me about landscape design and he changed



Opportu



Rick Colwell, vice president; Kurt Kluznik, president; Tim Hinz, production division manager; and Tom May, maintenance division manager review a new project. Credit: Jim Baron, Cleveland, Ohio

my focus from plants and labor to design." The experience gave Kluznik a taste of what could be possible. "It took the business to a different level and gave us a more profitable mix of work."

Soon after, in 1976, Kluznik became partners with Rick Colwell, who is now vice president. They shared most of the work, with Kluznik handling sales, maintenance and office operations while Colwell handled production, the fleet and the nursery.

Business grew geographically and eco-

nomically when the partners contracted with Sohio (now BP Oil Corp.) to construct planters at numerous gas stations throughout Ohio and Michigan in the late 1970s.

The trend toward growth was a natural for both partners, who Kluznik describes as "workaholics." "We're driven, and most of the time, this has been a relatively fertile market."

When interest rates spiked up in the late 1970s and the housing business slowed, the partners looked for a service that would fit

naturally into Yardmaster's palette. Chemical lawn care fit the bill. "We looked for a business with recurring revenues and saw lawn care as a possibility," Kluznik explained. "We visited five or six companies across the United States before we got into it."

Yardmaster invested in equipment, opened a branch office on Cleveland's west side and set up its lawn care business as a separate profit center for four years. "It was a big business for us, with 3,500 customers, but we decided it was a business we weren't

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cover story

Design/build and installation projects, such as this home's luxury landscape, are part of Yardmaster's successful mix of services.



really interested in." Leisure Lawn bought the business from Yardmaster in the early 1980s and hired the company's employees.

GROWING RELATIONSHIPS. "Our real love is design and installation," Kluznik commented. The partners expanded that business, working at one time for Mikel McLaughlin, a local landscape architect. Ironically, McLaughlin later joined Yardmaster in 1981, becoming a minority partner in 1992. Currently he is vice president with responsibility for landscape design and sales.

When Kluznik became a registered landscape architect in Ohio, Yardmaster was able to use the designation as an edge for marketing and employee recruitment. Currently, Yardmaster relies on eight landscape architects to continue business growth in the design/build area.

The company's nursery business in nearby Perry, Ohio, supplies Yardmaster with a variety of plant materials to enhance the design/build work. "We have control over the plants we use," Kluznik stated. The nursery's drip irrigation system keeps trees and ornamentals thriving during the hottest summers and allows Yardmaster's crews to install them throughout the season. Excess materials are sold to the wholesale nursery market.

"Plant availability was one factor," said Kluznik, "but we really

(continued on page 28)

Yardmaster of Columbus

Headquarters: Columbus, Ohio

Established: 1992

Primary Services: Full service maintenance services, split approximately 70 percent commercial and 30 percent residential.

1996 Sales: \$1.6 million

1997 Projections: \$1.88 million

Number of Employees: 45 full-time, 30 seasonal

Ownership: Yardmaster Inc. and Bob Slingluff, partners

Management: Bob Slingluff, president. He has an agriculture degree from The Ohio State University and spent nearly 20 years in landscape management before starting Yardmaster of Columbus.



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USE READER SERVICE #46

shindaiwa

(continued from page 26)

wanted to be able to provide exceptional quality plant material for our clients. Also, because of the size of our nursery facility, we can have mature sizes of most plants available economically. This makes it possible to match plants in existing landscapes or to provide a mature look in a new installation."

Yardmaster also buys specific plants from growers in Oregon, Pennsylvania and Indiana. Currently, the nursery is in the process of expanding its material palette to include a variety of perennials and container plants.

As the design/build business grew, the partners realized that a natural outgrowth was landscape maintenance. "We started in maintenance the early 1980s and had a

tough time growing it for a while," Kluznik commented. The difficulty came from the different nature of maintenance and the partners' lack of experience in the field. As maintenance grew, it became a separate department with a separate manager.

Now, maintenance accounts for the largest portion of Yardmaster's revenues and is predominantly commercial. Currently, the firm has 14 installation crews based in Painesville and 14 commercial maintenance crews based in Cleveland.

COLUMBUS VENTURE. In 1992, Yardmaster joined with Bob Slingluff to form Yardmaster of Columbus as a landscape maintenance firm. That operation is 70 percent commercial and 30 percent residential maintenance, according to Slingluff, president. "We don't prospect for landscape work—it's a natural growth of our maintenance service." The company manages 10 maintenance crews in the Columbus area.

The Columbus venture grew out of business alliances and relationships that existed with the parent company, said Kluznik. Those alliances (some with subcontractors), led to business referrals and allowed the fledgling firm to hit the ground running. Currently, Yardmaster of Columbus has forecast a 17 percent increase in revenues for 1997.

Slingluff reports that while communication between the firms is continuous, the Columbus operation has autonomy. "Although we share information on everything and meet regularly, there are no dictates that we have to do things a certain way. We do, however, hold the same philosophies regarding customer care, career growth for our employees and results through teamwork.

"We're pretty entrepreneurial and have a unique relationship. The letterhead looks the same, and we take advantage of

'Right now, we have six task forces working and they are getting an amazing level of work done...'

shared resources and knowledge, but we often do things differently," he explained. "We take the best from both operations."

The Columbus operation is smaller and by design, more casual. "I see our challenges as being sensitive to our clients, our employees and our owners," Slingluff explained. "In any business, there is a tension between these three, but it has to be kept equal, like a three-legged stool."

Slingluff described his management style as "nothing is sacred, let's share the information. He noted that his concept of management includes a good concept of respect for employees. "People are our largest cost and it is important that we do a good job with that. It's our product—our people and their labor."

Because it can be hard to attract new employees, Slingluff feels it is important to ensure they are satisfied. "Our work is not always pleasant work and therefore, we have to reward the employees for doing a tough job. We're not afraid to pay people for their worth. In fact, it's important to us that we pay people a living wage first."

His solution to employee retention is based on several steps: Attracting the right employees, training them thoroughly, giving them the opportunity to be more valuable (with a viable career track) and minimizing management. "Our maintenance employees are in front of the clients more than our sales people," Slingluff noted. "One way we can finance the hiring of quality people is by not needing to hire managers to ensure work is done properly."

Kluznik pointed out that participation in the TQM process has given many employees a sense of "ownership" for the programs and ideas that are being developed. Yardmaster provides a variety of employee benefits,

On the Same Page

As the Total Quality Management process continues at Yardmaster, specific business and personal goals become more defined. Employees learn to understand the company's strategies and feel a part of the process. "Values Shared by Yardmaster Employees" sums up many important values:

1. Professional and ethical behavior.
2. Efficiency in all work areas.
3. Personal growth, career satisfaction and job security.
4. Providing high quality and craftsmanship in everything we do.
5. Being well respected by our clients, our peers and the communities where we work.
6. Results through teamwork ("We" not "I").
7. A familial working environment and regard for our personal families.
8. Respecting the roles and contributions of all co-workers.

including a 401K retirement plan, tuition reimbursement, subsidized tool purchase program and cross-training opportunities.

THAT QUALITY THING. The next step at Yardmaster, beyond motivating employees and staying on track for steady growth, is balancing all the pieces and making the company as productive and profitable as possible.

"The challenge is to make our overhead as productive as it can be," Slingluff continued. "We have no problem estimating the work, and typically we are within one percent. We also don't turn over a lot of customers. The question of management becomes one from a sales standpoint — we have to ask, 'How much can we afford to sell and service and do it well?'"

One of the most important developments at Yardmaster has been the evolution of its Total Quality Management program. Kluznik recalled that a 3-month strategic planning project involving an outside facilitator led to a business plan that identified strategies and focused on customer service. From that original business plan, a movement within the company evolved into a process of Total Quality Management.

"We had several employees participate in the process from the start," he recalled. "It was valuable because they got involved. The process was a motivator for them and a big help to us in the planning process because if the managers just did it alone, we wouldn't get as wide a view."

He described the process as "draining," because so many strategies were identified that then had to be prioritized. And the process continues on an annual basis. "We have to realistically estimate what we can do each year, or else it becomes a demotivator. Now, we have six task forces working and they are getting an amazing level of work done, in both quantity and quality. It's a neat process."

No company changes into a TQM firm overnight, and the process has taken Yardmaster four years to get to this point. An independent employee committee evolved into a management-driven committee that makes sure customers are the employees' focus.

Kluznik explained in a recent interview how the on-going process continues to benefit Yardmaster.

Q. How do you make decisions?

A. We have a management team that meets on a regular basis. Each manager has 100 percent responsibility for his department. We plan our work and work our plan. I make sure they never run out of things to do.

I think managing is the controlling func-

tion and leading is the vision function. Leading is motivating people, getting them to excel, helping start new things, pushing and pulling the company forward.

Q. How did you first structure your TQM program?

(continued on page 121)

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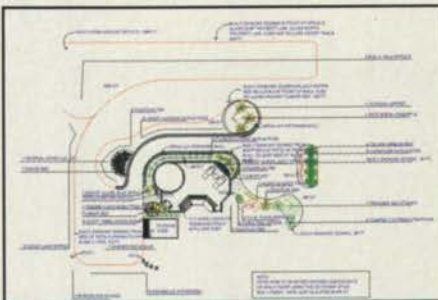


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USE READER SERVICE #18

LAWN & LANDSCAPE • MARCH 1997

29



PHC: Making Plant Health Care Work

*Plant health care
makes your landscape
management plan more
effective — and more profitable.*

by John Ball

By balancing the needs of
plants with those of our
clients, we can create a
landscape that maximizes
the benefits for all.



Plant health care has become the buzzword in the landscape maintenance field. You will hear it discussed in a wide variety of settings from golf course superintendent meetings to gatherings of arborists and lawn care managers. But what is PHC and how does it differ from integrated pest management? And most important, how can PHC make landscape managers' jobs easier and improve client satisfaction?

Plant health care is defined as a program of strategies or treatments to maintain or improve the appearance, structure and vitality of landscape plants within the expectations of the client. The goal of PHC is to keep plants healthy. It is proactive, managed care, with the focus on the plant's and the client's needs. Notice that the definition of plant health care includes the phrase "within the expectations of the client."

Depending upon the landscape manager's position, the client may be defined as specifically as a homeowner who contracts for lawn or tree care or more broadly defined as the people on our multi-family complex or institutional grounds. While plants are our patients, the bills are paid by their owners, our clients. How we manage a prop-



Studies have shown that most clients can detect 4 percent to 5 percent injury in a plant, such as this cottonwood, and would initiate control at about 7 percent injury if asked to manage the problem. Photo: Ball

erty depends upon the expectations of our clients and their confidence in our ability to provide an attractive landscape setting.

Remember, most clients are not interested in pest management. They are not paying landscape managers to control pests but to manage plants. Their expectations are that plants entrusted in our care will be healthy, with an attractive appearance, high vitality and strong structure.

DEFINING PHC. Appearance, structure and vitality are collectively referred to as plant health. Vitality is the ability of a plant to adapt to its environment. A vital plant is one that is able to gather enough resources, solar radiation, water and nutrients to support its many functions.

Plants do more than just grow. They use the products of photosynthesis, called photosynthates, to provide the energy to support many essential functions. These functions are grouped into five major categories: reproduction, maintenance, growth,

storage and defense. However, plants do not have an unlimited supply of resources and must allocate energy to meet higher priority functions first. How we manage plants can alter their allocation of energy to these functions and either increase or decrease their vitality.

The general hierarchy of energy ranks maintenance first in priority. A plant must first allocate its energy resources to maintain the living cells it has already formed. This priority is sometimes forgotten by managers who add luxurious amounts of water and fertilizer to accelerate tree growth. While this increases the tree's canopy, it will also increase the maintenance requirements — more parts for the tree to support.

If this abundant supply of resources is reduced, either through a change in management or environmental stresses such as drought, the tree responds by dying back. It cannot maintain its living cells with the reduced resource pool and will attempt to adjust its size to one it can support.

If the plant has acquired enough energy to support its maintenance needs, it will use the surplus to fuel growth. This growth, in both new leaves and new roots, increases the plant's ability to gather resources, solar radiation, water and nutrients. While this growth increases the maintenance needs of the plant, it also allows the plant to explore new soil for water and minerals and air space for light. As long as growth is balanced, the leaves with the roots,

the plant will gather more resources than are needed for maintenance. Once growth demands are met, surplus energy is allocated for storage.

All plants must have a "rainy day fund." Some energy must be stored, usually in the form of starch, to allow the plant to renew growth in the spring. Plants can also call upon these reserves to survive stress episodes such as defoliation and flooding that can temporarily reduce the plant's ability to meet its needs.

Reserves may also be drawn upon for defense. Plants are not dependent upon humans to protect them from pests. They have a very active defense system. Trees, shrubs and grasses have the ability to defend themselves from a wide array of insects and living pathogens through a variety of strategies. Leaves can become tougher in response to insect feeding. Allelochemicals (secondary plant compounds) can be produced to retard insect feeding or inhibit the development of living pathogens. But plants can only defend

The average person will consider a plant with 10 percent injury to be ruined.

themselves if they acquire sufficient resources to allow them to develop these defenses.

One of the most important plant health care objectives is to ensure plants acquire sufficient resources to adequately meet all of their functions, including defense. However, a fast growth rate should not be equated with a strong defense system. Just as adding luxurious amounts of water and nutrients will increase the plant's maintenance needs, it can also reduce its production of allelochemicals as surplus energy is used to fuel growth rather than storage or defense. Application of fertilizers beyond levels needed to correct deficiencies can increase growth, but can also reduce defenses and increase susceptibility to pest colonization. Again, the point of PHC is to manage the resources to improve the vitality of the plants.

While reproduction has been left last in this discussion, it is the highest priority for the plant. A plant will divert resources to

meet its reproductive needs. Landscape contractors may be familiar with the phenomena of reduced tree growth following a heavy fruit crop. Since reproduction is a periodic event rather than continual, it is usually overshadowed by maintenance. However, the demands that reproduction can place on a plant's resources are considered in a plant health care program.

For example, an interesting strategy proposed for managing Dutch elm disease is to spray elms to prevent a seed crop. The plant can then allocate this surplus energy for other functions, including defense.

LOOKING GOOD. Appearance is an important aspect of PHC and is the primary means by which our clients gauge our success managing the landscape. A plant may be

considered unhealthy if the plant is partially defoliated or discolored. This client focus on appearance is unfortunate since most plants can withstand high levels of defoliation or foliage discoloration without a significant reduction in overall vitality.

If lawn and landscape managers were to concentrate their management on only plant vitality, many pest problems would no longer be considered problems. Appearance is, however, important to our clients, whether they are office building tenants or residential clients.

Surprisingly, most people can detect rather low levels of plant injury. Studies involving a wide variety of ornamental plants from cut flowers to shade trees have all shown similar results. People can generally detect 4 percent to 5 percent plant injury,

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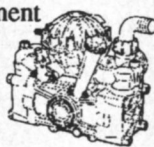
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whether it is discoloration in the lawn, defoliation in a tree or other plant abnormality. They would initiate control at 7 percent injury if they were asked to manage the problem. Most important, the average person will consider a plant with 10 percent injury to be ruined. They would not buy a plant with 10 percent injury from a flower shop or garden center, and they will be dissatisfied with the maintenance service being provided if this level of injury occurs on their lawn or trees.

Thus, an important aspect of the landscape manager's job is to keep plant injury below 10 percent. Obviously this is not always possible, but in these situations managers should be able to explain why the injury was beyond their control.

GOOD BONES. Structure is the third characteristic of plant health. If a tree has a long crack or large cavity that may result in a

tree failure, it cannot be considered healthy even if the appearance and vitality are excellent.

The same is true of a lawn, although the impact is different. Turf grasses that have been cut with a dull blade will have tattered leaves. This makes the lawn appear rough, and it increases susceptibility to several diseases. Managers must be concerned with managing the whole plant — appearance, structure and vitality — not just focusing their attention on pests.

Plant health care puts together all three characteristics and then manages them within the expectations of the clients. Plant health care makes use of a variety of strategies from design to installation to maintenance to fulfill this expectation.

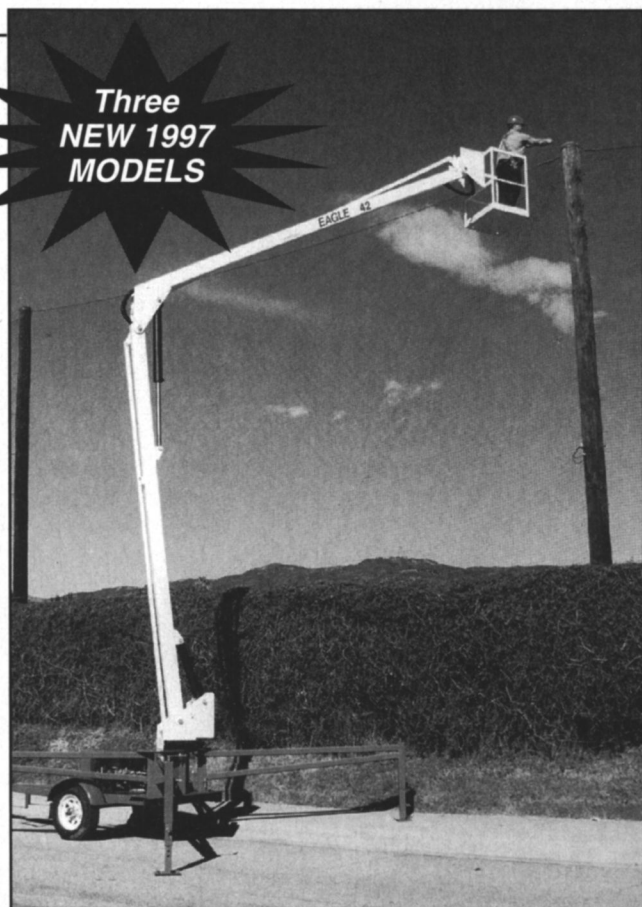
DESIGNING FOR HEALTH. Designing so that the species requirements match site conditions or modifying the site to meet species

requirements is an essential part of PHC. Design, along with installation, is the foundation upon which we conduct our maintenance programs. Many landscape managers, when faced with a declining tree or lawn, complain that the tree is wrong for the site or the site was not properly prepared for the turf. It is difficult to grow quality turf on 3 inches of soil just as it is nearly impossible to grow an attractive pin oak on a soil with a pH of 8.5. Unfortunately, these examples are real situations that managers face. If landscape managers were included in the design process, maintenance would become easier.

While plant health care includes design and installation strategies, the individual responsible for the care of the landscape must focus on maintenance. Clients do not usually take kindly to being told that plant removal and replanting are the only options for problems. They may accept removing a

(continued on page 36)

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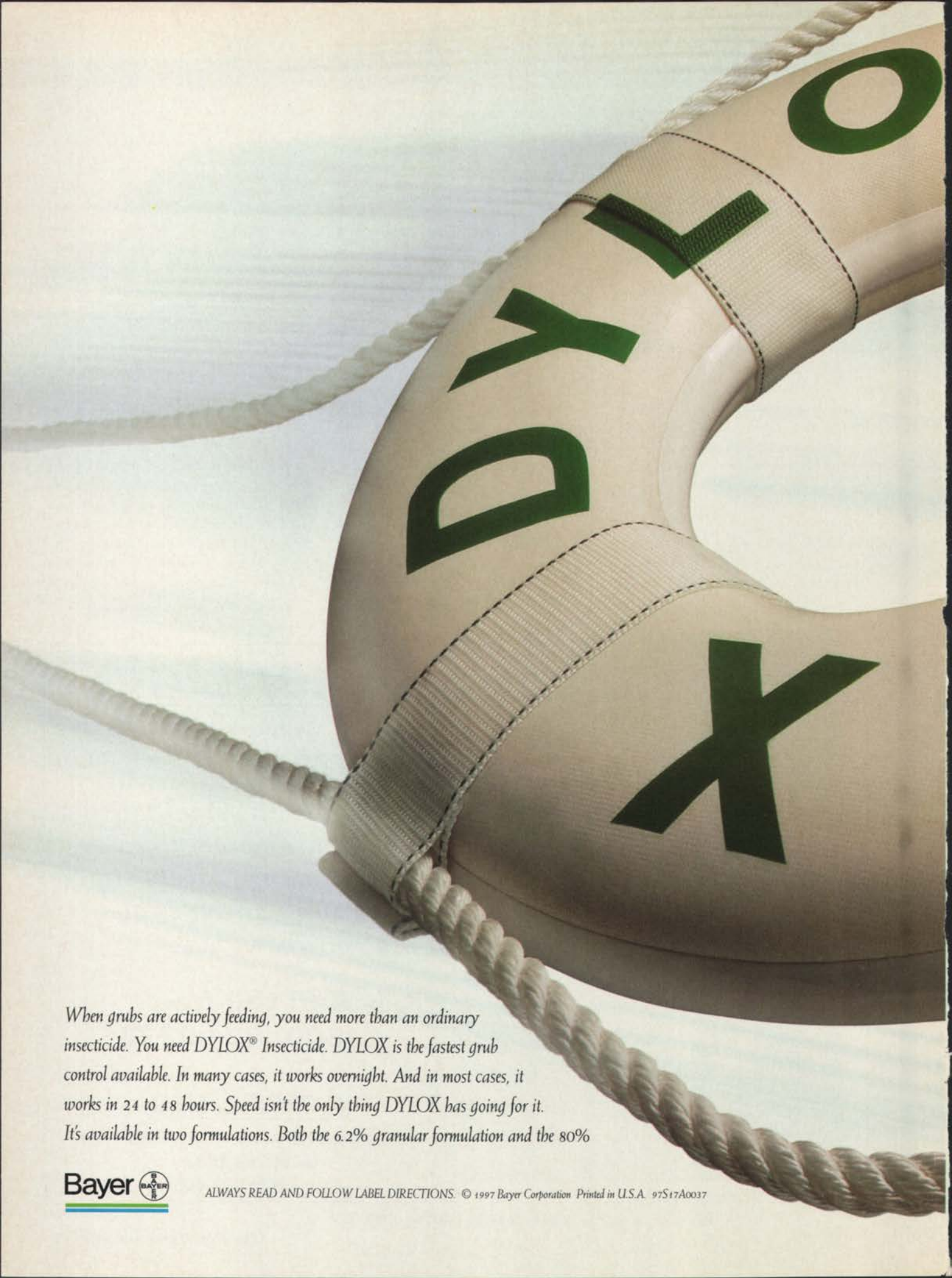
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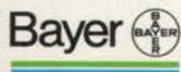
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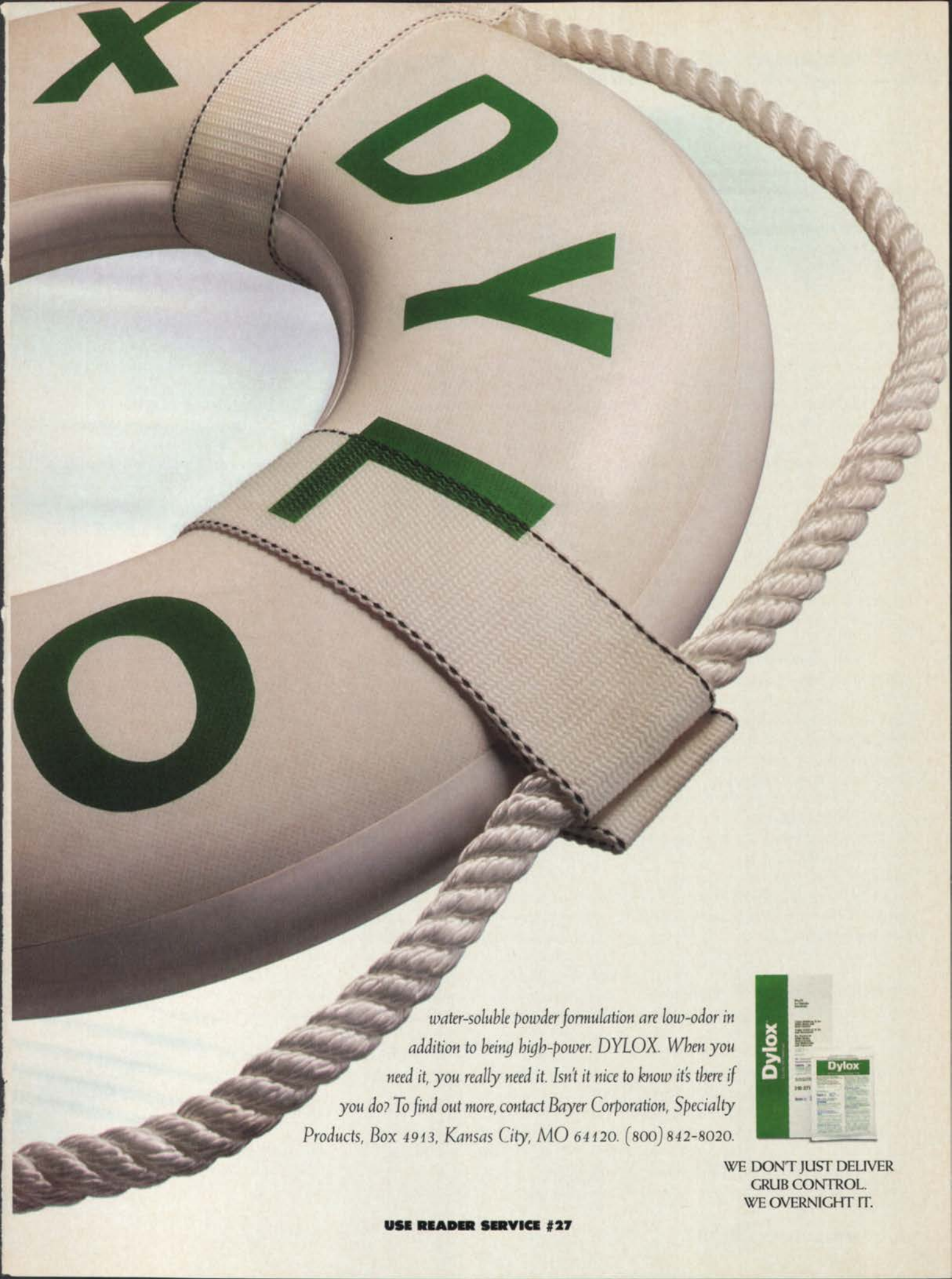
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(continued from page 33)

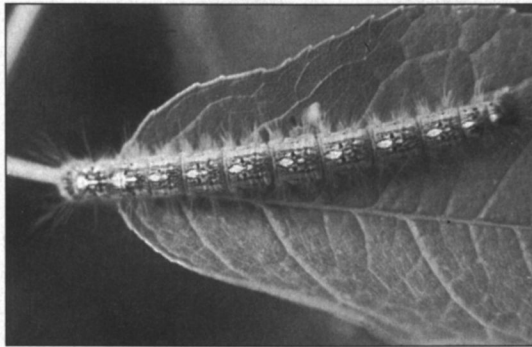
plant or two, but beyond that the landscape manager is expected to work with whatever plant material exists on the property.

The means at the landscape manager's disposal include, but are not limited to, mowing, pruning, fertilizing, core aeration and IPM. Plant health care does not replace IPM, but incorporates it into these strategies to improve the appearance, structure and vitality of ornamental plants.

Treatments that landscape managers have available to them as part of integrated pest management strategies include cultural practices and chemical treatments aimed at managing pest problems. Chemical treatments include foliar applications, bark paint, soil injection and tree injection. In the PHC philosophy, the choice of which method to use is dependent upon three important variables: the plant, the stress and the client. Following is an example of the PHC philosophy for tree injection:

Tree injections are one of the more controversial areas of tree care. There is no question that such practices wound trees and that the chemicals injected into the tree may, in some cases, cause more injury than the injection wound itself. However, injections minimize exposure to nontarget organisms and they limit pesticide exposure to organisms feeding on or in the tree. Injections may also provide effective control of pests for months or longer. There will be situations where injections are appropriate as well as inappropriate. Determining if injection is appropriate in a specific situation requires the manager understands the plant, stress and client.

COMPLEX RELATIONSHIPS. The fundamental objective of PHC is managing the health of plants. But how can a manager care for a plant if he or she cannot identify it? How many people would continue to utilize a veterinarian that could not identify their pet? If the veterinarian confused our prized Chesapeake Bay retriever with a Siamese cat we would probably pack up the dog and walk away in disgust. But that happens every day in the landscape maintenance



profession. There are many landscape managers who cannot identify the tree or turf grasses that are entrusted in their care. I know tree care managers that consider all evergreens as "some type of pine" and broadleaf trees as "some type of ash or maple."

Why is it so important for landscape managers to be able to identify their patients? For the same reason it's important for veterinarians; the patient determines the choice of treatments. Medication and procedures differ among animal species because of their different physiologies. The same is true for trees. Broadleaf trees have differences in their water transportation systems — some are ring-porous, while others are diffuse-porous.

While there are great differences among broadleaf trees, the difference between broadleaf trees and conifers is even more pronounced. Yet many managers view injection procedures as uniform regardless of the species. Using the same procedure to treat a white pine, a sugar maple and a bur oak is the equivalent of treating a dog, a cat and a cow the same way.

The stress must also be evaluated to determine if injection is an appropriate response, because plant problems are rarely related to a single stress agent. Stress may reduce a tree's vitality and increase its susceptibility to colonizations by insects or living pathogens. Managing only one stress will not restore the plant's health.

A good example is the relationship between bronze birch borer and birch dieback. The bronze birch borer is a serious pest of many birch species. It is, however, a secondary pest, only successfully colonizing already stressed trees. In many urban areas the primary stress is high summer temperatures, particularly in the rooting zone. Injecting the birch to kill the borer

Most clients are not interested in pest management, but rather that the plants they entrusted to your care will have a healthy, attractive appearance, high vitality and strong structure. Photo: Ball

larvae, while effective, is not a complete solution to the birch dieback problem. The underlying stress must also be reduced, by mulching a portion of the rooting area or other means.

The client is another important variable in determining whether injection is an appropriate response to a problem. The client's expectations must be clearly understood and given consideration in our treatment decisions. I once had a client who parked his Lamborghini beneath an elm tree in the front yard. The tree was colonized by a large aphid population that was raining honeydew upon the car. Sprays were not an option because of a pool nearby, and soil injections were not practical due to limited accessibility. An alternative at the time was trunk injection. I gave the client all the facts at my disposal, including the risks to the tree's health, and let him make an informed decision.

Obviously one possible solution was to move the car or keep it covered. But if you owned a Lamborghini, would you park it where you could not see it? Of course, not all expectations can, or should, be met. Sometimes clients have unrealistic expectations about the effectiveness of treatments or they are unaware of possible side effects to the plants. In these situations, client education is important.

Plant health care is the basis for our care of the ornamental landscape. By balancing the needs of our patients, the plants, with those who have entrusted us with that care, our clients, we can create a landscape that maximizes the benefits for all. The profession we are in, the care of the landscape that surrounds our homes and provides so many benefits, is truly necessary work. It is up to all of us to see that we do it well for our patients and their owners. **LL**

The author is a professor of horticulture with South Dakota State University, Brookings, N.D.



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6 Turf Diseases and Their Cures

In general, paying attention to the six most common cool-season turf diseases will keep lawns looking good this season.

by Peter Dernoeden

T

here are many diseases of lawn grasses, and nearly all of them are caused by fungi. And although destructive in some grasses in some years, diseases such as rust, smut, powdery mildew, *Pythium* blight, snow molds, anthracnose, fairy ring, etc. are generally not among the major, chronic diseases of turf in most regions of the United States. This article is intended to focus on the most economically important diseases of cool-season lawn grasses.

While there are undoubtedly local exceptions, it is likely that the more chronic, and therefore most economically important, diseases of the cool-season lawn turf would include *Helminthosporium* leaf spot, red thread, dollar spot, brown patch, summer patch and necrotic ring spot. It is important to note that not all of these turf diseases are a problem in all cool-season grasses in all regions. For example, brown patch is perhaps the most destructive disease of tall fescue and perennial ryegrass in humid regions, but it seldom causes significant injury to Kentucky bluegrass.

Furthermore, while brown patch is generally not destructive in semiarid regions such as the Rocky Mountain states, it is considered the bane of tall fescue lawns in humid areas such as the Mid-Atlantic states. Hence, weather conditions, the turfgrass species and cultivars grown are perhaps the most common factors that affect a turfgrass host. Weather conditions most conducive to the onset of each disease, key field diagnostic symptoms and cultural and chemical control measures for these common diseases follow:

1. *HELMINTHOSPORIUM* LEAF SPOT, MELTING-OUT and NETBLITCH

Pathogens: Several species of *Drechslera* and *Bipolaris*.
Primary Hosts: Kentucky bluegrass, creeping red fescue, perennial ryegrass.



Necrotic ring spot patches in a Kentucky bluegrass lawn can give tenacious crabgrass an opening to invade a stand of turf and start an infestation.

Predisposing Conditions: Overcast, rainy weather from early spring to early winter.

Many of the fungi that cause leaf spotting and melting-out diseases once belonged to the taxonomic genus of *Helminthosporium*. Today, these fungi are more appropriately referred to as a species of *Drechslera* or *Bipolaris*, but it will be difficult for most people to recognize names other than "*Helminthosporium*."

Perhaps the most important springtime disease of Kentucky bluegrass is *Helminthosporium* leaf spot caused by *Drechslera poae*. This disease is not as devastating as it once was due to the development and widespread use of resistant bluegrass cultivars. Many "common" types of Kentucky bluegrass are very susceptible to leaf spot, but these cultivars remain frequently used components of bluegrass blends due to their lower retail price to end-users.

D. poae is a cool weather pathogen, and is most active during the spring (especially April and May) and autumn (especially

September and October). *D. poae* causes disease that may occur in two phases: the leaf spot phase and the melting-out phase. Typically, distinct oval-shaped, purplish-brown leaf spot lesions are produced on the leaves and sheaths of affected turfgrass plants. Heavily infected turf appears yellow or red-brown in color from a standing position.

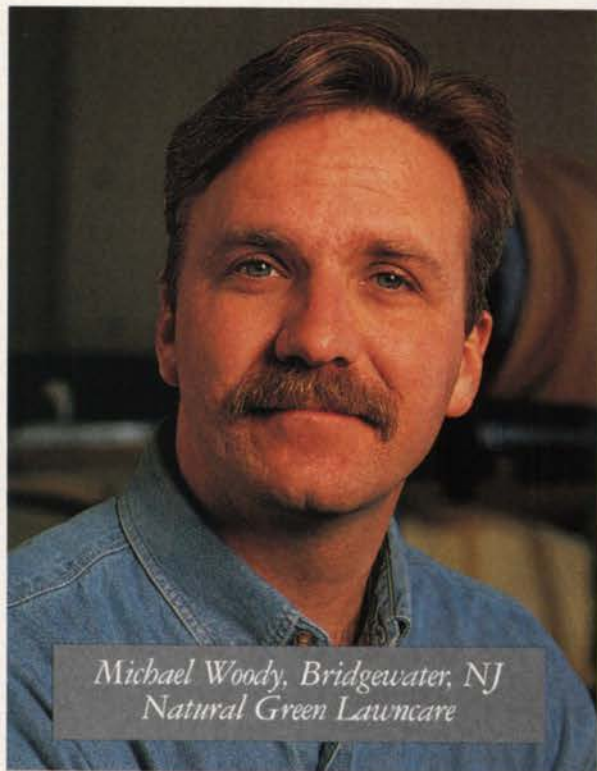
If overcast, cool and drizzling weather continues, successive layers of leaf sheaths are penetrated by the fungus and crowns are invaded. At this point, the disease enters the melting-out phase. During this phase, entire tillers die, and the turf loses density. Hence, it is the melting-out phase of the disease that is most injurious to plants.

As temperatures increase in late spring and early summer, the activity of *D. poae* subsides. *D. poae* may again become active with the advent of cool, moist weather in the fall. Generally, disease severity is greater in the spring than fall. In summer, Kentucky bluegrass, fine leaf fescues and perennial ryegrass may decline due to invasion by

Bipolaris sorokiniana. This fungus also may cause a leaf spot and melting-out phase. *B. sorokiniana* is normally most severe when temperatures exceed 85 F, humidity is high and there is a lot of overcast weather.

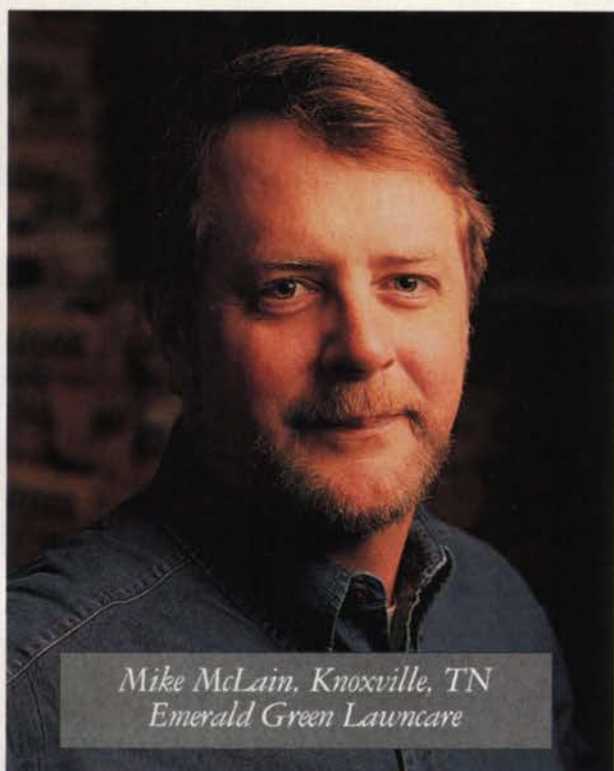
Netblotch is a disease of tall fescue and perennial ryegrass caused by another '*Helminthosporium*,' *Drechslera dictyoides*. *D. dictyoides* also is a cool, wet weather pathogen that attacks turf primarily during spring and fall. Initially, symptoms appear as minute, purple-brown specks on tall fescue leaves. As the disease advances, a dark brown, net-like pattern of necrotic lesions develops on leaves providing a netblotch appearance. These netblotches may coalesce, and leaves turn yellow or brown and die back from the tip.

On leaves of perennial ryegrass, numerous oblong, dark brown lesions are produced. Under ideal environmental conditions, the fungus may invade crowns of perennial ryegrass, causing a melting-out of the stand. Netblotch is a chronic, but relatively nondestructive, disease of mature tall fescue.



*Michael Woody, Bridgewater, NJ
Natural Green Lawncare*

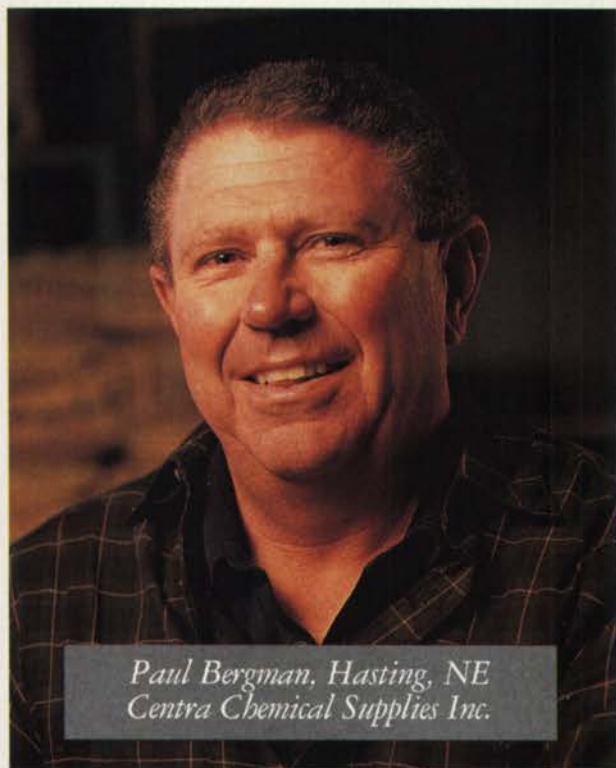
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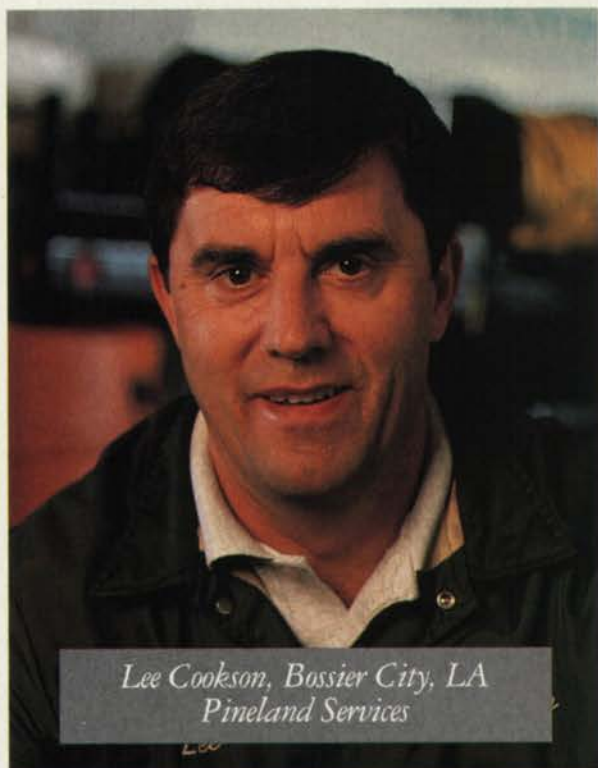
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Cultural Management: Raise the mowing height, avoid spring and summer applications of water soluble nitrogen fertilizers; avoid applying broadleaf herbicides or plant growth regulators when these diseases are active and causing thinning of the stand; and overseed in the fall with resistant cultivars.

Chemical Management: One or two applications of a penetrant such as Chipco™ 26019 or Curalan™, and chlorothalonil (i.e., Daconil™ or Thalonil™) provide the longest residual control.

2. RED THREAD

Pathogen: *Laetisaria fuciformis*.

Primary Hosts: Perennial ryegrass, creeping red fescues, tall fescue, Kentucky bluegrass.

Predisposing Conditions: Overcast rainy periods at any time of year, especially spring.

Red thread has become one of the most common diseases of turfgrass, and it is gen-

erally among the first diseases to appear in early spring. Development of red thread is favored by cool (65-70 F), wet weather in the spring and fall, but may also occur during warm or very cool to cold weather in the presence of plenty of surface moisture or at snow melt in February and March. Occasionally, it occurs during prolonged overcast and drizzling, rainy weather in the summer. It can even become widespread among turfgrass species during mild winters.

The recent and severe outbreaks of red thread can be attributed to the more widespread use of perennial ryegrass. Before 1980, perennial ryegrass was not commonly used as a turf; however, the advent of the improved "turf-type" cultivars has led to its widespread use a turfgrass species. Unfortunately, perennial ryegrass is very susceptible to red thread, as well as brown patch disease.

More recently, red thread even has become a severe problem in tall fescue lawns in

humid regions. This is surprising, as tall fescue was regarded for years as having good thread resistance. Red thread is also quite damaging to the fine leaf fescues and some cultivars of Kentucky bluegrass.

The symptoms and signs of red thread are distinctive and unmistakable. In the presence of morning dew or water from rain, a coral pink or reddish layer of gelatinous fungal growth (mycelium) can easily be seen on leaves and sheaths. Upon closer inspection, the green leaves of invaded plants develop a water-soaked appearance.

When leaves dry, the fungal mycelium becomes pale pink in color and is easily seen on the straw-brown or tan issues of dead leaves and sheaths. During the final phases of disease activity, bright red, hard and brittle strands of fungal mycelium called 'red threads' or *sclerotia* may be seen extending from leaf surfaces, particularly leaf tips.

(continued on page 44)



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FMC

(continued from page 40)

Red thread is often more injurious to poorly nourished turfs, but it is on the rise in professionally maintained lawns. Given the levels of nitrogen used in lawn care, it would appear that the pathogen has adapted and is now a problem in properly nourished turf.

Cultural Management: If turf has not been fertilized in a long time and is not vigorous, an application of 0.5 to 1.0 pounds of N per 1,000 square feet will help stimulate recovery. Rely mostly on fall applied, slow release nitrogen; and apply phosphorus, potassium and limestone per a soil test.

It is important to note that not all of these turf diseases are a problem in all cool-season grasses in all regions.

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Chemical Management: In most situations a single application of a labeled fungicide for red thread would be expected to limit foliar blighting to acceptable levels. Effective fungicides include Banner™ MAXX, Bayleton™, Chipco 26019, Curalan, Eagle™, ProStar™, and Sentinel™, and chlorothalonil-based products (e.g., Daconil and Thalonil).

3. DOLLAR SPOT

Pathogen: *Sclerotinia homeocarpa*.

Primary Hosts: Kentucky bluegrass, fescues, perennial ryegrass, bentgrass.

Predisposing Conditions: Periods of warm days and cool nights from spring to late fall.

Dollar spot is widespread and destructive to most turfgrass species. It has become troublesome in tall fescue, a species thought to be resistant to this disease. The symptomatic pattern of dollar spot varies with turfgrass species and management practices.

Under close mowing, the disease first appears as small, circular, straw colored spots of blighted turf about the size of a silver dollar. With higher mowing and coarser textured grasses such as Kentucky bluegrass, perennial ryegrass or tall fescue, the straw colored blighted areas are 3 to 6 inches in diameter and tend to be irregularly shaped. Affected patches frequently coalesce and involve large areas of turf.

Grass blades often have straw colored or bleached white lesions shaped like an hourglass, with leaves typically dying back from the tip. The hourglass banding on the leaves is often made more obvious by a definite narrow brown band, which borders the bleached sections of the hourglass from the remaining green portions. In tall fescue, however, the pathogen causes a die back

USE READER SERVICE #31

from the tip and produces irregularly shaped leaf lesions with brown borders that are not usually hourglass shaped.

When the fungus is active and moisture is present a fine, cobweb-like mycelium may cover the infected area during early morning hours. Dollar spot tends to be most damaging in poorly nourished turfs, particularly when humidity is high or a heavy dew is present. The disease, however, can be destructive to lawns fertilized in spring with water soluble nitrogen sources. Hence, like red thread, dollar spot is not exclusively a disease of poorly nourished turf.

Cultural Management: An application of 1.0 pound of N per 1,000 square feet to poorly nourished turf stimulates recovery. Use primarily fall applied slow release nitrogen in balance with phosphorous and potassium; apply limestone according to soil test recommendations. Schedule mowing early in the morning to promote the drying of foliage and leave clippings on the lawn. Avoid a drought stress situation, increase mowing height and control thatch and soil compaction.

Chemical Management: An application of penetrant-type fungicide (e.g., Banner MAXX, Bayleton, Chipco 26019, Cleary's 3336™, Curalan, Eagle, Fungo™, Rubigan™, or Sentinel) would be expected to provide from 21 to 28 days of dollar spot control on lawns. Chlorothalonil (i.e., Daconil and Thalonil) also is very effective.

4. BROWN PATCH

Pathogen: *Rhizoctonia solani*.

Primary Hosts: Perennial ryegrass and tall fescue.

Predisposing Conditions: Warm and humid nights from June to September.

Brown patch symptoms vary according to the host species. On closely mown turf such as bentgrass, blighted patches are generally circular and range from three inches to three feet or greater in diameter. When dew is present in early morning, the outer edge of the patch may develop a one- to two-inch wide smoke ring. The smoke ring is blue-gray in color and is caused by *Rhizoctonia* mycelium in the active process of infecting leaves. Smoke rings are not always present and patches may have an irregular rather than circular shape.

Close inspection of leaf blades reveals that the fungus primarily causes a die back from the tip down, giving affected turf its brown color. In tall fescue, perennial ryegrass and Kentucky bluegrass affected areas are frequently irregular in shape and smoke rings are often absent. *R. solani* produces distinc-

tive and often greatly elongated lesions on tall fescue leaves. The lesions are a tan or chocolate brown color, and are bordered by narrow, dark brown bands of tissue.

In perennial ryegrass and Kentucky bluegrass smaller leaf lesions are produced and

(continued on page 48)



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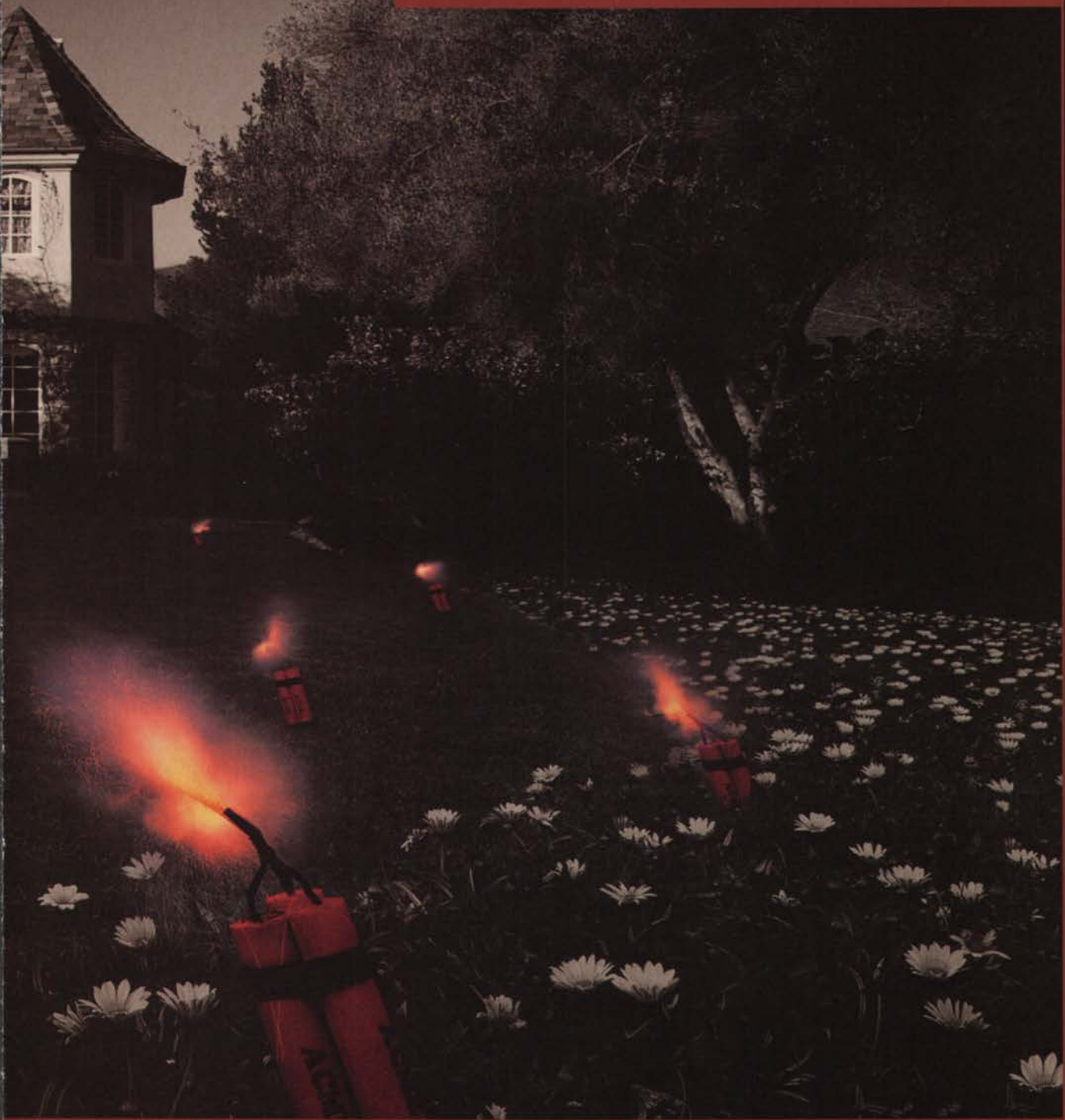
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(continued from page 45)

tip dieback commonly occurs. In the early morning when the disease is active, the mycelium of *R. solani* may be observed on leaves in the presence of a heavy dew.

Environmental conditions that favor disease development in cool-season grasses are day temperatures above 85 F and high relative humidity. A minimum daily temperature above 61 F in combination with either rainfall or relative humidity above 95 percent for more than 8 hours are the most critical environmental requirements for disease development.

Evening or nighttime thunderstorms from mid-June to late September and a minimum air temperature above 68 F are most conducive for severe brown patch. Weather conditions that result in little or no dew formation (i.e., low relative humidity or low soil moisture) or cool nighttime temperatures (i.e., less than 60 F) will result

in a marked reduction in brown patch severity. Late spring and summer applications of nitrogen fertilizer, in particular water soluble nitrogen sources such as urea and ammonium-based products, increase brown patch severity. Evening or nighttime watering or rain showers will greatly increase the potential for disease.

Cultural Management: Apply most of the total annual nitrogen in the fall and rely mostly on slow release fertilizer. Apply phosphorous, potassium and limestone according to a soil test. Maintain turf at a 2 to 3 inch height of cut and remove clippings when the disease is active. Irrigate early in the morning and avoid night irrigation.

Chemical Management: In regions where brown patch is chronically severe, disease control with fungicides may not be practical or economical. Products providing relatively long periods of brown patch control (i.e., 18 to 28 days) would include Heritage™, Senti-

nel and ProStar. Other effective materials include Chipco 26019, Cleary's 3336, Fungo and chlorothalonil (e.g., Daconil, Thalonil).

5. SUMMER PATCH

Pathogen: *Magnaporthe poae*.

Primary Hosts: Kentucky bluegrass and creeping red fescue.

Predisposing Conditions: Sunny days above 90 F and moist or compacted soils.

Summer patch is perhaps the most destructive disease of Kentucky bluegrass and creeping red fescue lawns. Another patch disease of Kentucky bluegrass and creeping red fescue lawns is necrotic ring spot. Summer patch is probably a more common disease than necrotic ring spot. Necrotic ring spot, however, is an important disease, particularly in the more northern regions of the United States, and is discussed below.

Symptoms of summer patch initially ap-

(continued on page 50)

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- * Make sure you don't get a product on the pavement where it can wash off into a water source. If you do, sweep or wash it back onto the lawn.
- * Identify any weed, insect or disease before selecting a treatment method. If using pest control products, consider spot applications.



If you need advice or assistance with proper turf management practices, contact your local county cooperative extension service or a lawn care provider.

Before hiring a professional to help maintain your lawn and landscape, check out the company's credentials and references. To help in your selection, request a free copy of "Tips on Choosing a Lawn Care Service," by sending a self-addressed, stamped envelope to: Professional Lawn Care Association of America, 1000 Johnson Ferry Road, NE, Suite C-135, Marietta, GA 30068-2112.

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Studies at several nationally

recognized universities have documented that well-managed turf has the greatest capacity for absorbing and holding water than any other ground cover. The result is less runoff, and better water quality.

In the pamphlet "Healthy Lawn, Healthy Environment," the Environmental Protection Agency noted turf's environmental qualities:

"Thick grass prevents soil erosion, filters contaminants from rainwater, and absorbs many types of airborne pollutants, like dust and soot. Grass is also highly efficient at converting carbon dioxide to oxygen, a process that helps clean the air."

WHAT CAN YOU DO TO
ENCOURAGE AND NURTURE YOUR
LAWN'S ENVIRONMENTAL
QUALITIES?

Practice preventive turf health care today. Here are a few pointers:

SOIL



Consider having your soil sampled and analyzed. Make sure your soil has the correct pH level and key nutrients for healthy growth.

GRASS



Only use name, improved variety mixtures or blends that grow well in your climate, meet

your quality expectations and can accommodate your lawn activities (like heavy use by children at play).

MOWING



Mow at the highest recommended height and mow often, never removing more than one-third of the leaf surface. Keep lawn mower blades sharp and grasscycle. Grasscycling, or leaving clippings on the lawn when you mow, allows nutrients to return to the soil. Make sure you don't leave clippings on the pavement where they can wash off into a water source and contribute to urban water pollution.



WATERING



Rule of thumb: water deeply but not too often. In general, watering should moisten the soil to a depth of 4 to 6 inches. This requires an application of a half inch of water on coarse, sandy soil, and 1 inch on heavy- or fine-textured soil. Too much water can cause water quality and grass problems, increasing the chance of fungus, or runoff and leaching of nutrients. And, it's a waste of our precious water resources.

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(continued from page 48)

pear as wilted, dark green and roughly circular areas of turf that are 1 to 2 inches in diameter. The affected turf soon turns a straw-brown color, leaving patches that initially resemble the symptoms of dollar spot disease. These patches increase in size and may form crescent shapes, elongated streaks or circular patches. The outer periphery of patches may have a yellow or bronzed appearance, and leaves die back from the tip.

Healthy turf may persist in the center of blighted patches producing rings or "frog-eye" symptoms. The most common are circular, straw-colored patches that range from 3 to 12 inches in diameter. There may be living plants in the center of patches, but distinct frog eyes are not always evident. Circular depressions called "crater pits" are occasionally present. Affected regions may coalesce and large areas of turf can be destroyed within a 7- to 21-day period.

Creeping red fescue turf develops orange or bronze colored patches prior to affected plants turning straw colored. Crater pits are more common in creeping red fescue than Kentucky bluegrass. Summer patch most commonly occurs in Kentucky bluegrass lawns that are 32 years of age or older. The disease may appear in newly sodded lawns because sod is often two or more years of age before it is harvested. Summer patch, however, frequently appears in the summer following a fall seeding of creeping red fescue.

Summer patch is more severe in full sun than in shaded sites. Symptoms generally appear in late June or early July when day time temperatures above 90 F occur. Soil temperatures above 78 F in the root zone and moist soils are critical factors in predisposition of turf to summer patch. The activity of the disease declines with the advent of cooler weather in mid-to-late September. Summer patch is most severe on sunny,

exposed slopes or other very warm areas of a lawn such as those adjacent to walks and driveways. Conversely, it tends to be less severe in shaded sites.

Drought stress following warm and wet periods and compacted soil are other factors that enhance summer patch. Other predisposing factors include: spring applications of high levels of nitrogen fertilizer; accumulation of thatch; and frequent light irrigations or rain storms. Low mowing is the major cultural factor that contributes most to increasing disease severity. Scalping lawns by mowing very low after allowing the turf canopy to grow too high can trigger the appearance of symptoms.

Cultural Management: Avoid excessive nitrogen fertility, especially water soluble, spring applied nitrogen. Use mostly an acidifying, slow release nitrogen source such as sulfur coated urea in the fall. Increase mow-

(continued on page 52)

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(continued from page 50)

ing height to 2.5 inches in the summer. Avoid light and frequent applications of water; irrigate at onset of wilt to wet soil to a depth of 3 inches or deeper if possible. Core cultivate compacted soils and control thatch.

Chemical Management: Cultural control may be more practical for lawns than the use of fungicides. Two to three applications of either Banner MAXX, Bayleton, Eagle or Sentinel once monthly beginning in early to mid-May are effective. Curative applications are less effective than preventive applications.

6. NECROTIC RING SPOT

Pathogen: *Leptosphaeria korrae*.

Primary Hosts: Kentucky bluegrass and creeping red fescue.

Predisposing Conditions: Extended cool and wet periods in the spring and fall.

Necrotic ring spot can occur anywhere Kentucky bluegrass is grown, but is more

Weather conditions, turfgrass species and cultivars grown are perhaps the most common factors that affect a turfgrass host.

prominent in northern regions of the United States and Canada.

The symptoms of both summer patch and NRS are similar. While the greatest injury from NRS may not become evident until summer, the NRS pathogen actively attacks roots during cool and wet weather. Hence, if patch symptoms appear in spring or fall, it is very likely that the disease is NRS and not summer patch.

The initial symptoms of NRS appear as 1 to 2 inch diameter spots, and leaves in affected areas may have a burgundy-red color. These initial spots appear in spring, but tend to be inconspicuous. The advent of warm and dry conditions in late spring or early summer will stress the disfunctioning root system of affected plants in a radial pattern and circular patches begin to expand rapidly. Spots of dead or unthrifty turf can expand from 3 inches in diameter to more than 12 inches in less than 30 days. In chronically affected areas, NRS patches tend to be large, often greater than 18 inches in diameter. Distinct frog-eyes are common.

Sodded lawns in newly cleared woodland lots are most severely affected. Very susceptible cultivars of Kentucky bluegrass, however, can develop large patches in the summer following a fall seeding. The disease is severe in both shaded and full sun areas. On

(continued on page 54)

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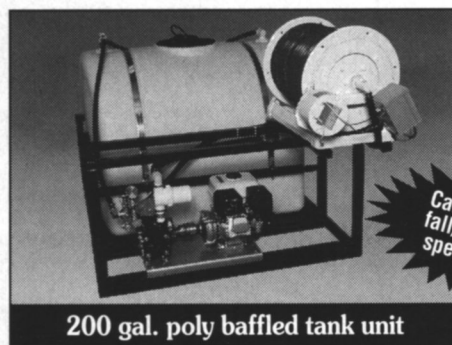
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(continued from page 52)

older lawns, NRS patches can be evident almost year-round in low lying, wet and shaded sites. Once established at a site, the disease normally recurs at the periphery of the last year's patches. Over time, the center of these patches is recognized by either the desirable turf, other resistant grasses or weeds.

Cultural Management: Because the root system of affected plants may be severely diminished by the pathogen, daily and light applications of water to affected lawns may be required during periods of heat or drought stress. Fall applied natural organic fertilizers and acidifying nitrogen (e.g., sulfur coated urea or ammonium sulfate) may reduce NRS severity over time.

Increasing mowing height, improving drainage, controlling thatch and alleviating soil compaction will help to reduce disease severity. In most situations, the disease naturally declines over a period of three to five

years. It can, however, remain a chronic problem where very susceptible cultivars are grown or in wet and shaded sites.

Chemical Management: Two early spring (usually April and May) applications of Cleary's 3336, Fungo or Rubigan reduce NRS severity, but fungicides generally do not completely control this disease. Curative applications are not as effective as preventive fungicide sprays. **LL**

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The author is a professor in the department of agronomy at the University of Maryland, College Park.

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- 1st - Magazine/Overall Design
- 1st - Writing/Ornamental Feature article

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- 3rd - Publication Redesign (National)
- 2nd - New Publication Design (T&O; Central Chapter)
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Managing Plant Health Through Better Root Growth

*Understanding the
basics of root health and
how to manage it is the
first step to gaining
consistent plant growth.*

By C. Neal Howell

Whether it's turf or ornamentals that are being managed, biostimulants have proven to be effective agents for increasing root depth and density, as well as plant health.



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hat's the root of all evil.”

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Root systems generally fall into two classifications: fibrous or tap root. Grasses are classified as having fibrous root systems characterized by a fairly shallow, multibranching arrangement.

Many other plants have a tap root system characterized by a primary root, which remains the largest root of the plant and develops downward with other roots branching from it. Tap root systems are present in large and small plants. The dandelion is an excellent example of a small tap root system.

By knowing about the plant's root system, a lawn or landscape contractor can select the best practices to allow for maximum plant

(continued on page 59)

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(continued from page 56)

growth. Knowing whether the root system will require depth or lots of lateral space, as well as how quickly it will develop, will help you prepare a growing site or select the proper container for that plant.

ENVIRONMENTAL EFFECTS. Various environmental factors affect plant root growth, as well as the direction and extent of root growth. Some of these factors include temperature, light, gravity, salt concentrations, condition or texture of soil or planting medium, oxygen supply and nutrient availability. All of these factors combine to facilitate root growth and, as such, dictate the amount and direction of root growth.

For example, the effect of light on plants is called "phototropism." The light availability causes an imbalance of hormones in some parts of the plant which may cause the plant to grow toward the light (positive phototropism). Some roots will turn away from light (negative phototropism). Gravity causes an imbalance of hormones in roots which causes them to grow downward (positive geotropism). Growth toward moisture is called "positive hydrotropism." Growth toward favorable temperatures is called "positive thermotropism." One landscape manager even claimed that willow trees exhibit special effects he called "septic tanktropism."

At any rate, plant roots do not seek out favorable growing conditions, but they do grow in the direction of the most favorable conditions that they encounter.

GROWTH PATTERNS. Roots grow by cell division and elongation. Basically, new cells are formed behind a tough battering ram called a "root cap." Once formed, these new cells begin to elongate, which accounts for the movement of roots through the soil.

Directly behind the elongation zone is the area where root hair and vascular tissues are formed. This area is primarily responsible for absorbing nutrients and water.

Primary, or seminal roots, develop directly from the seed and are generally short-lived, lasting only about six to eight weeks before being replaced by the adventitious roots. These roots form from underground stems, older roots or aerial plant parts. Ad-

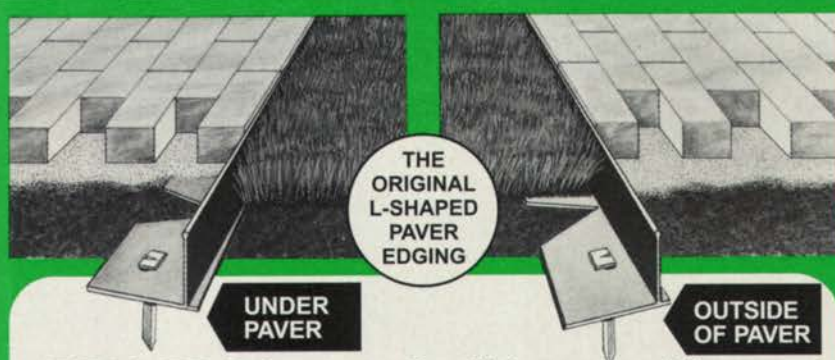
ventitious roots also develop from nodes of rhizomes and stolons of perennial grasses. On more developed, older turf, most of the new roots develop on the outer edges of the original shoots and from nodes of the newest tillers or creeping stems.

Turfgrasses can develop root systems

which can reach a depth of 5 to 7 feet for warm-season grasses like Bermudagrass, St. Augustine or bahiagrass. By contrast, roots of cool-season grasses like bentgrass or Kentucky bluegrass seldom reach below 1½ to 2 feet when turf is maintained at a 2-inch

(continued on page 62)

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(continued from page 59)

cutting height. The root system of a healthy turf plant is usually thick, multibranching and forms a heavy, fibrous net. Newly formed roots appear thick and white, while older roots are thinner and darker in color.

Root longevity depends on a number of factors. Primary roots usually do not live past the first year following seeding or planting. Adventitious roots may last as long as the plants they support. In cases of unfavorable growing or soil conditions, however, these roots may die while the plant shoot will survive. This case is particularly likely for cool-season turfgrasses during the midsummer heat stress periods.

Most cool-season turfgrass root growth occurs in the spring and, to some extent, during fall weather. Warm-season turfgrass root growth will occur mainly in the summer months.

Root replacement will vary with the type of turfgrass. Kentucky bluegrass will retain most of its roots for more than one season and is referred to as a "perennial rooting grass." Other grasses like bentgrass, perennial ryegrasses and rough bluegrass replace most of their roots yearly and are considered annual rooting grasses.

New research is being conducted to see if altering the turfgrass plant's growth habits can aid in root system retention and also increase root growth.

STUNTING GROWTH. What can go wrong for roots? What evil lurks in the soil that can cause their demise? Unfortunately, there are numerous factors that inhibit root growth and longevity. They include pH, salt concentrations, moisture variations (either a lack or a surplus), lack of oxygen, chemical actions, soil compaction and high soil temperatures. In addition, some cultural practices inhibit root growth, including mowing at less-than-recommended heights or with too much frequency, excessive amounts of nitrogen fertilizer and a deficiency of potassium fertilizer.

All of these root-inhibiting conditions can be managed.

BREATHE DEEP. One of the cardinal rules for all living cells is that they must have access to oxygen. Amounts necessary for active growth will vary according to the species, but cutting off the supply through flooding or soil compaction can either reduce or completely eliminate root growth and survival.

"Compaction is the foremost turf problem," stated researcher J.H. Madison, "by causing an overall decline in growth, quality and vigor."

One of the major problems with compaction is that it is seldom recognized as the cause of root decline and, therefore, overall turf demise. Soil compaction's most conspicuous rooting response is altered root distribution. Most times, a decrease in deep rooting will occur, while a substantial in-

Most cool-season turfgrass root growth occurs in the spring and, to some extent, during fall weather. Warm-season turfgrass root growth will occur mainly in the summer months.

crease in surface or lateral rooting is a strong clue that compaction is the culprit.

During summer months, compaction has been shown to increase root dieback, although it could be attributed to increased soil temperatures and less favorable soil oxygen levels. Both of these problems are directly related to soil compaction and both have been proven to hasten root maturity.

Salt Tolerances of Turfgrasses

LOW TOLERANCE	MODERATE TOLERANCE	HIGH TOLERANCE
Kentucky bluegrass	Alta fescue	Common Bermudagrass
Highland bentgrass	Perennial ryegrass	Tiffway
Red fescue		Tiffgreen
Meadow fescue		Sunturf
		Seaside bentgrass
		Zoysia
		St. Augustine

Table 1. (Source: Western Fertilizer Handbook, Horticulture Edition, 1990)

Several studies have borne out the related problems of compaction, low oxygen soil content and reduced water uptake. In one study, compacted Kentucky bluegrass was shown to suffer both root and shoot growth reduction, often exhibiting lack of moisture symptoms even after frequent irrigation. Exercise care on frequently irrigated, high-use recreational turf areas to prevent undue compaction which can result in decreased plant vigor and growth.

MANAGE pH LEVELS. Soil pH can play an important role in plant root growth. Most turfgrass species are adaptable to a fairly wide range of soil pH. Optimum root growth, however, usually exists where the pH is slightly acid to neutral (6.0 to 7.0); problems occur when soil pH fluctuates either lower or higher. Low soil pH (4.0 to 5.9) can cause problems, especially when there are high levels of aluminum present. Under low pH, this element can reach toxic levels for turfgrass. Application of lime can correct excess acidity, but care should be taken to prevent elevating the soil pH above 7.0.

One interesting study found that an application of nitrogen along with lime generally increased root, stolon and top growth as soil pH was raised from 4.7 to 6.1. When lime was applied alone, the study resulted in no increase in growth of roots or top growth.

Elevated soil pH can cause reduced nutrient availability, especially reduced levels of iron. With high pH soils (7.5 to 8.5), applications of sulfur can bring the pH back into

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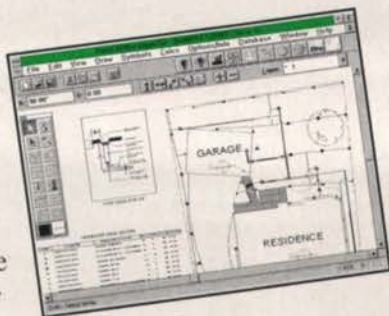
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USE READER SERVICE #53

spring technical guide

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the optimal range. Exercise care in sulfur applications since rates above 5 pounds per 1,000 square feet should be avoided to prevent damage to turf. Sulfur applications should also be limited to cool periods, as high air and soil temperatures can increase the chance of sulfur damage to both roots and shoots.

The effects of lower soil pH are more evident on roots than on shoots. Roots become brown, short and spindly. Thatch levels increase and tolerance to environmental stress decreases. The plant's ability to resist drought is also greatly reduced.

High salt levels in soil or irrigation water can greatly reduce a plant's ability to grow and provide adequate turf coverage. High salt levels in the soil can be a problem because these soils drain poorly and are prone to compaction. Some species like bermudagrass can tolerate high levels of sodium by actually increasing root weight compared to top weight. Cool-season grasses did not fare as well in salinity tolerance tests — both root numbers and weight decreased as salt levels increased.

The best method to avoid salt problems is to select cultivars and species that are salt tolerant.

WATER + HEAT. Turfgrasses absorb water primarily from the soil through the root system. Water absorption can be adversely affected by a number of things: compacted and acidic soils, excessive nitrogen fertilization and overwatering lowers oxygen availability and low soil temperatures.

Optimum root water absorption is achieved by maintaining soil permeability, proper nutrition, optimum pH, temperature and aeration.

Temperature, especially soil temperature, greatly affects root growth. Cool-season grasses maintain their best root growth at soil temperatures between 50 and 64 F. Some cool-season grasses produce their greatest root activity between 75 and 84 F. Many cool-season grasses continue their root growth in the winter until soil freezes. Heat stress to turfgrass roots is usually associated with water stress. As temperatures increase, water availability generally decreases and the turfgrass plant

Killing Time, Temperature and Drought Resistance Among Turfgrass Species

TURF	DROUGHT RESISTANCE	TIME (MINUTES)	TEMPERATURE (F)
Buffalograss	Excellent	> 600	142
Bermudagrass	Excellent	> 600	139.8
Tall fescue	Good	166	131.7
Red fescue	Good	252	132.4
Kentucky bluegrass	Medium	176	94.6
Perennial ryegrass	Fair	240	134.4
Creeping bentgrass	Poor	144	132.6

Table 2.

(Source: Turfgrass, 1992)

can quickly succumb to the combination.

As Table 2 reflects, time exposed to killing temperatures is the greatest variable. Periods of warm and dry cycles can help prepare turfgrass roots to survive high temperatures by allowing them to grow deeper into the soil profile and, thus, escape some of the worst of the high temperatures.

Cool-season turfgrasses can tolerate freezing temperatures from 23 to -31 F, while warm-season grasses can tolerate from 21 to 12 F. As expected, heat stress tolerances are almost the reverse.

SMART MANAGEMENT PRACTICES. Cultural practices that inhibit root growth are quite common. Mowing either too close or too frequently can greatly affect root growth. Turfgrasses depend on a steady, uninterrupted flow of starches and sugars from the shoots to propel root growth. If the flow is stopped or diverted to replacing shoots, root growth will come to a near complete stop.

Excessive nitrogen application can also have a detrimental effect on root growth. Nitrogen is consumed by the plant in greater quantities than any other element, but a lot doesn't necessarily mean a lot of good growth will occur. Studies have shown that root growth increases as nitrogen is first applied, but soon reaches a threshold and subsequently declines as excessive shoot growth is encouraged by large N applications. High N

availability will cause a distinct root suppression.


Potassium is consumed by turfgrass in quantities second only to nitrogen. The nitrogen-potassium balance has been found to be very important and ratios vary depending on the turfgrass species. Studies have also shown incidences of disease reduction and higher drought tolerance when adequate supplies of potassium are available for turf. Cold tolerance has also been improved by adding potassium. Combinations of nitrogen, potassium and

iron are very helpful in increasing root growth, plant tolerance to drought, heat and cold.

How can you help roots? The best way to insure a healthy, vigorous root system under any plant is to provide optimal growing conditions. Make sure that the soil is loose enough to provide a good growing base. This soil will also allow adequate movement of oxygen and moisture and ensure nutrients are available in the correct levels.

Recently, biostimulants have been shown to help plants grow adequate root systems in unfavorable agronomic conditions. For instance, in soils containing 8,000 ppm salt, turfgrass treated with a biostimulant produced a very dramatic increase in root number and size over untreated check samples.

Plant biostimulants perform best when plants are suffering from different kinds of stress. Applying a biostimulant to an actively growing plant (not stressed) will most likely show very little improvement. However, under poor growing conditions, these products help maintain healthy turf and ornamental roots.

Remember that just because roots are out of sight, they shouldn't be out of mind. Consider what they need, provide it and they'll pay you back. 

The author is an industry consultant with Key Solutions, a division of Iris Sales & Solutions Inc., Rocky River, Ohio.

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USE READER SERVICE #54

LAWN & LANDSCAPE • MARCH 1997

65



Biologicals work in the laboratory, but have so far fallen short of expectations in the field. But researchers are not willing to give up yet.

By Paul Schrimpf

R

esearch into the use of biological controls has benefited from the push for natural, less toxic pest control products, but research efforts are by no means new. Universities and manufacturers have been trying to harness the power of nature's pest controls for decades.

Biological control methods work extremely well under ideal, or close to ideal, conditions. The problem has been translating laboratory results into commercially usable recommendations for professional turf managers.

Research programs are testing the mettle of a variety of organisms, including entomopathogenic nematodes, bacteria, fungi, viruses and rickettsias (organisms that have characteristics of both bacteria and viruses) trying to find the best mix of the most desirable characteristics — quick and easy to establish, long lasting and predictable product.

It's a difficult challenge. By their nature, biological controls are more affected by the destabilizing effects of nature — water, sunlight, temperature extremes and other organisms. Scientists have found some products and methods with potential, but there is still much to learn.

BACTERIA FOR GRUBS. A promising biological control for turf insects that is actively being researched is the organism *Bacillus thuringiensis*, known commonly as "Bt." Discovered in Japan at the turn of the century, Bt varieties have been used to control pests such as caterpillars, fly and beetle larvae and other pests, but have not been embraced in the commercial market.

The biggest problems with Bt have been slow activity, short residual and its inability to control larger larvae, said Mike Villani, associate professor in the department of entomology at Cornell University. He also noted that Bt fails to reproduce itself once inside an insect, making it viable only for short-term control.

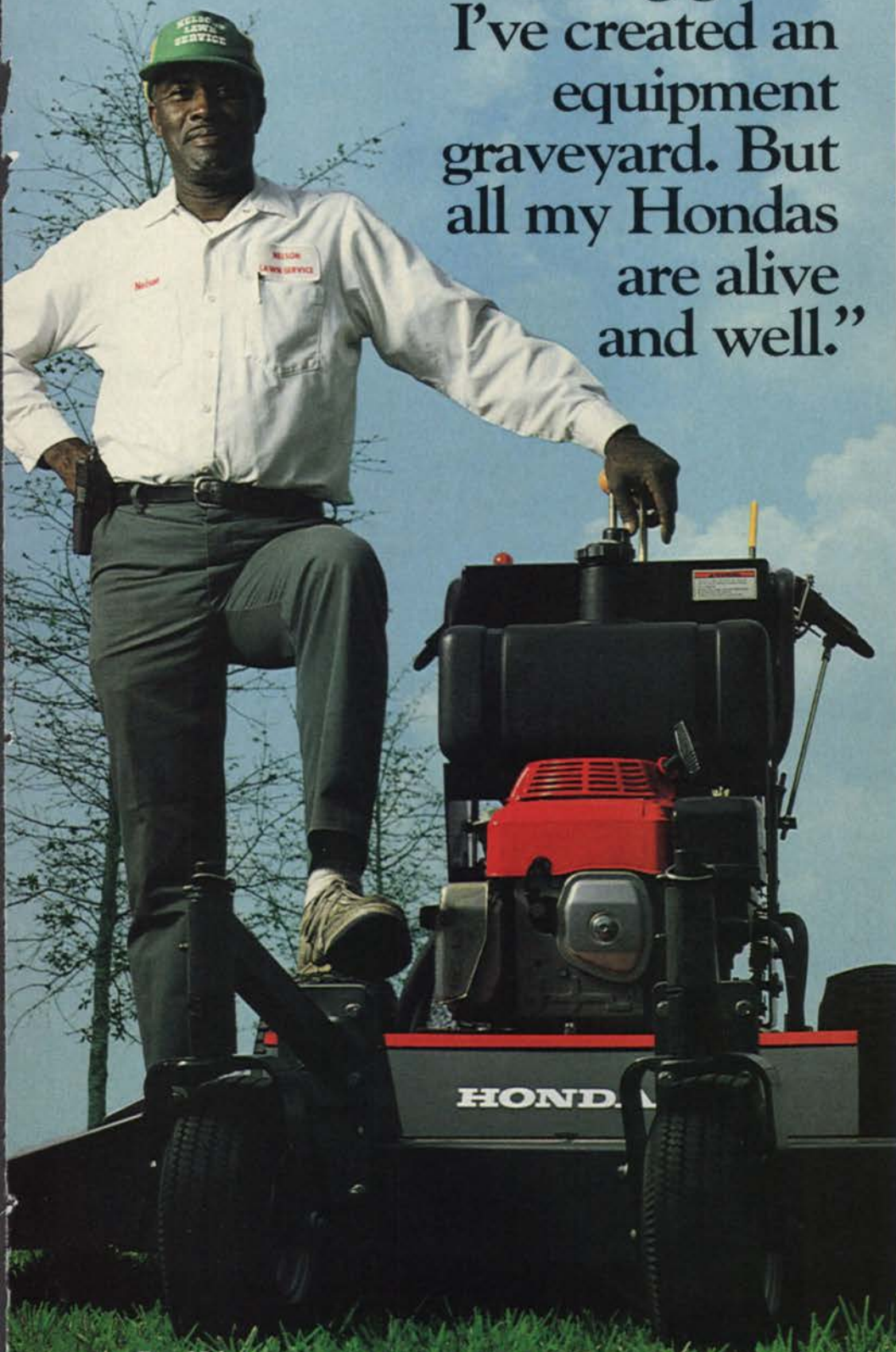
(continued on page 69)



Biological controls that are of greatest interest to researchers are those that are active against important turf pests such as the grub pictured above, as well as caterpillars and mole crickets.

The State of Biologicals

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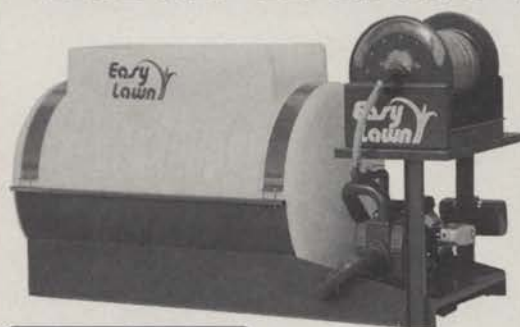
USE READER SERVICE #47

Promising Biological Controls Being Studied

ORGANISM	PESTS CONTROLLED	APPLICATION WINDOW	LIMITATIONS	AVAILABILITY
Nematodes				
<i>Steinernema Carpocapsae</i>	Cutworms, webworms, bugs, fleas	Best when insects are small but feeding.	Highly susceptible to direct sunlight, desiccation, some pesticides.	Very Good
<i>Steinernema glaseri</i>	White grubs	Late summer/Early Fall	Highly susceptible to direct sunlight, desiccation, some pesticides.	Limited
<i>Heterorhabditis Bacteriophora</i>	White grubs	Late summer/early fall	Highly susceptible to direct sunlight, desiccation, some pesticides.	Fair
Bacteria				
<i>Bacillus thuringiensis japonensis</i> , buibui strain	White grubs	Spring and early summer	Only preemergence activity on first and second instar grubs	Not available, expected in 1998
Milky spore disease	Japanese beetle grubs	Any time	Activity inconsistent	Fair/Poor
Fungi				
<i>Beauveria bassiana</i>	Mole crickets, various grubs, caterpillars	Any Time	No university research has been conducted on efficacy	Fair
<i>Metarhizium anisopliae</i>	Mole crickets, various grubs, caterpillars	Any Time	Inconsistent results, commercially expensive to produce	Not yet available

Table 1.

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USE READER SERVICE #56

(continued from page 66)

In ideal conditions, the bacterium will produce a protein crystal that is toxic to the insect, causing the target insect to stop feeding. Villani said that susceptible insects will die two to seven days after ingesting the Bt-produced toxin.

In recent years, researchers turned their attention to a strain of Bt known as *japonensis* variety 'buihui,' due to its activity against grubs. Mike Klein, research entomologist with the U.S. Department of Agriculture Research Service at the Ohio Agricultural Research and Development Center in Wooster, Ohio, said lab tests have shown the organism is effective in the control of Oriental and Japanese beetle grubs. To gain acceptable control, Klein said that the product must be applied in the spring and early summer when first and second instar grubs are feeding.

Still, the buihui strain is limited in the number of grubs it controls, particularly the European chafer that is fast spreading in the Northeast. Klein has been studying 10 other strains of Bt to find one that meets the professional criteria for length of control, activity and control of a broader spectrum of grubs.

SENSITIVE NEMATODES. Entomogenous nematodes, those which feed on insects, have also shown great promise within the confines of the lab in terms of grub and caterpillar control. Villani noted that nematodes have been attractive as a research subject because of their broad range of target hosts that does not include plants or animals and their ease of production.

The effectiveness of nematodes as a biological control is a function of both the nematode used and the conditions and methods used for applying the organisms to turf. Villani noted that the nematodes *Steinernema glaseri* and *Heterorhabditis bacteriophora* are most effective against white grubs due to their ability to move into the soil and search for target insects. The more commonly available *Steinernema carpocapsae* has proven most effective against billbugs, cutworms, webworms and armyworms.

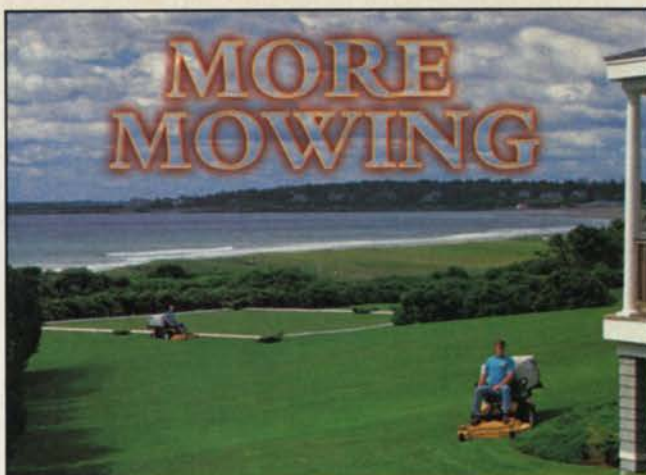
Critical conditions include sunlight, irrigation and storage. Nematodes are highly sensitive to sunlight and will desiccate without proper moisture. Villani suggests that they be applied early or late in the day and irrigated with 1/2 inch of water. It's also critical to follow the storage and application recommendations to make sure the organisms stay as active as possible.

Harry Kaya, professor of entomology at the University of California, Davis, has been trying to increase the efficacy of nematode applications by combining species into a sort of "cocktail." He has also combined Bt strains with nematodes in combination applications, and has had some promising results.

"We've found that the more grubs are stressed, the higher the mortality rates are when nematodes are applied," said Kaya. "We are trying to use the Bt to place additional stress on the grubs to increase the potential for mortality."

Control as high as 80 percent has been achieved, and it appears that mortality is a result of both the individual control products and the combination of each product's activity, he explained.

(continued on page 122)



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USE READER SERVICE #58

Computerized Irrigation Controls: The Wave of the Future?



Manufacturers' philosophies differ in terms of whether or not the systems can be accessed on site. Credit: Rain Bird

For large scale irrigation projects, computerized central control systems are establishing themselves as the choice of the future.

By Bob West

T

he future of irrigation system maintenance may not be here for most irrigation contractors, but it appears to be on its way.

Computerized central control systems have long served the golf industry as tools for simplifying the process of operating a large irrigation system with multiple stations and controllers spread out across a large property. Manufacturers of these systems are now working to adapt the existing technology for use in large scale commercial, municipal and possibly residential applications.

"The message manufacturers have been hearing from state and local agencies is that there's more acreage to irrigate but less people to do it," explained Dave Megeath, field engineering manager for Motorola's radio network solutions group, Fair Oaks, Calif. "Now, we're hearing that same message from contractors as well. They're looking for improved operating efficiency, and that means

being able to send and receive information as quickly as possible."

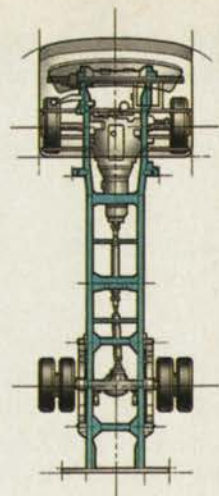
SYSTEM SETUP. The key concept for these systems is that contractors don't actually have to visit the site to monitor, program and maintain the irrigation system. The systems are designed to operate based on information collected by evapotranspiration gauges and a variety of environmental sensors, which constantly collect data such as soil moisture conditions, flow levels and weather factors. This data is communicated back to the centrally located computer, usually at the office of those responsible for system maintenance.

The maintenance contractor can then use this information to gain a clear picture of the irrigation needs of the entire site and can program the system accordingly. All of this takes place without ever leaving the office.

"Once the systems is set up, the contrac-

(continued on page 74)

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USE READER SERVICE #68

(continued from page 72)

tor could conceivably never have to reprogram it for the plants' irrigation needs," mentioned Tom Gentile of Gentile.Murray Associates, Mission Viejo, Calif., manufacturer's agents for Calsense. "The system will reprogram itself daily based on information from the evapotranspiration gauges."

Having such increased capabilities obviously requires a central control system to be specially equipped. Users of a central control system will have to purchase and install a central computer with the operating software, a method of communication between the computer and the system, and some sort of "smart" controller or satellite controller at the system site, in addition to the standard irrigation system requirements.

Manufacturers admit that all of this equipment carries with it a price tag that currently eliminates the possibility of many contractors using these systems. "Depending on the

system, contractors could spend anywhere between \$15,000 and \$30,000 for the office equipment and between \$5,000 and \$15,000 for the system in the field," noted Megeath. The systems can essentially handle an irrigation system of any size, with the only limitation being the range of communication between the job site and the computer.

Matthew Piper, Valcon division manager, a division of Weather-matic, Dallas, Texas, offered comparable price estimations for installing such a system, but said contractors concerned about the expense should analyze it against the potential benefits. "There isn't any one business model for how contractors can sell this service right now," he admitted, "but different contractors have found quite a few different ways to package this as a money saving tool for themselves and the client."

Because of this added cost and the fact that these systems' benefits are particularly

apparent with larger sites, the market for computerized systems presently seems limited to municipal projects and large commercial accounts. "Cities and school districts are the primary users of these systems right now, because most residential and commercial projects haven't shown the need for these systems at their current costs," explained Dave Zoldoske, director at the Center for Irrigation Technology, California State University, Fresno, Calif.

"Any site with at least five or six controllers can justify a central system," noted Gentile.

These additional costs can be particularly prohibitive if the contractor can't convince the customer to actually purchase the equipment. "We had one county purchase the system for its parks department and hire the irrigation contractor on a retainer to maintain the system," Megeath said. "Contractors are obviously concerned about being the owner of the equipment and having

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Simplifying the equipment and eliminating nonessential features allowed manufacturers to reduce the learning curve. Credit: Rain Bird

to go back out to the site and take the system out if they lose the contract after a year."

SENSOR VALUES. Manufacturers strongly encourage contractors installing central systems to use various sensors along with the necessary evapotranspiration gauges to maximize the system's productivity. "The biggest advantage of these systems is having the

power of a personal computer to manage water usage," according to Rick Malkin, product manager for central control systems, Rain Bird Sales Inc., Tucson, Ariz. "The computer can interrogate the sensors and weather stations to track exactly how much moisture is being used from the soil, so when you do irrigate you only apply as much water as you need.

"Right now, too many contractors simply overirrigate to avoid having to go back out to the site and make the necessary adjustments," he continued. "These systems automatically make the adjustments in run times so that's not a problem."

"It doesn't matter how fancy we get with the technology if we don't have the ability to communicate that information to the end user," said Gentile.

Brad Wander, vice president, The Spencer Company, Houston, Texas, said the company has installed two central systems and flow meters have proven valuable to them. "Our systems are programmed that if they detect excessive flow amounts, they monitor that flow level for 60 seconds," he said. "If it remains too high then the system automatically shuts down the specific problem area."

Wander explained that these sensors are important for communicating specific information back to the system operator. "The



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sensors are great for troubleshooting because they tell us exactly what the problem is and where it is in the system," he said, noting that both systems they've installed have resulted in 20 percent to 30 percent reduction in water usage.

Jim Sieminski, vice president of engineering, Rain Master, Simi Valley, Calif, said contractors also enjoy maintenance benefits from central control systems. "Contractors maintaining irrigation systems need to be able to find out immediately when something breaks, and this can be nearly impossible when they're responsible for heads and valves all over a city," he explained. "Now, at the click of a button they can know what's wrong and exactly where the problem is."

This data from the sensors can then be collected by the computer to compile system evaluations and reports. "I can find out daily, weekly or monthly how much water is being used by a system and compare that to the

water budget," Wander added. "Seeing this information is important to the customers who have made the investment in the system and to potential customers who are considering buying a system."

"These records can develop into a database to provide a history of the contractor has treated the site over the long term," added Piper. "The information can also help them develop a strategic plan to lower their water usage by examining what practices are working well and what aren't."

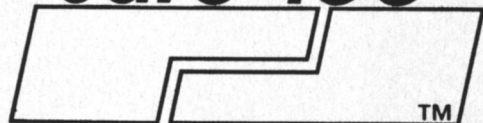
CONTROLLER TYPES. Malkin explained that manufacturers are split between two different philosophies regarding the type of controllers installed with the system. "We use satellite controllers instead of stand-alone controllers to communicate with our central system," Malkin said. "That means the system is completely controlled at the computer in the office. Other systems aren't

central control in this fashion. They're more computer control with smart controllers in the field that allow technicians to access the system on site."

Malkin admitted that some contractors may want to be able to access the system on site. "We believe that central control localizes the control of the system because a lot of contractors don't want field technicians making adjustments in the system's program," he said. "There are pluses and minuses with each method."

Wander said an additional difference between the two units is that having a microprocessor or smart controller on site means the system is constantly being evaluated. "With central command systems using satellite controllers, the system won't react automatically to data from the sensors unless the system is on line," he explained. "And if you want it on line all the time, you have to put in a dedicated modem line."

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CLEAR COMMUNICATION. Contractors have different options available to them for setting up the irrigation system to communicate with the computer. "The technology has become much more flexible," noted Zoldoske. "Systems can operate over hard wire, radio or telephone now."

Megeath said 95 percent of Motorola's sales are radio-based systems, although he attributed part of that to the company's focus on radio technology. "The benefits with radio systems are that you don't have to worry about having extra cable in the ground and it simplifies retrofitting existing projects by eliminating the need to dig up existing plants or hardscapes," he said.

Malkin said that Rain Bird can design a system to meet any type of communication needed, and each method has its own benefits. "The systems can communicate in so many ways now, including trunking radio, spread spectrum and telephone lines," he

The computer interrogates the sensors to tell exactly how much moisture is being used from the soil.

• • • • •

explained. "Using the telephone lines is popular because then the phone company is responsible for taking care of the line for you, although hard wire systems offer the most secure communications. Radio communication is nice because it doesn't require any trenching on site, but it does require the contractor to obtain proper FCC licensing. It all depends on the specific situation."

Using telephone communications also expands the communication range for con-

tractors. "I can dial up our system on my laptop regardless of whether I'm at home in Texas or if I'm in California," added Wander.

Most manufacturers also offer different combinations of the communication possibilities to best suit the specific site needs, and Megeath recommended contractors also consider tying in a paging system to their system. "It's good to have a computer collecting all of the information, but it can be even better if the system sends an alphanumeric page out in the case any alarms are triggered while the operator is in the field," he said.

TRAINING GAME. Unrelated computer technology has reportedly simplified the training needs for any system operators. "Operators don't have to be real experienced working with computers to run one of these systems, although that does help," noted Malkin. "I think we've seen the learning curve come

(continued on page 123)



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Is it realistic to expect to hire and keep productive, long-term employees? These 10 points can put you on the right track.

By Bill Hoopes



his article is written for managers, supervisors or anyone else in the business of achieving planned objectives through ongoing efforts (productivity) of others. I'm sharing the lessons I've learned during the past 12 seasons in the lawn and landscape industry.

As I went about the daily routine of recruiting, hiring and managing the development of front-line employees and supervisors, it almost seemed the human resource world was changing in front of my eyes. Productive recruiting visits seemed to dry up for no discernable reason. Promising candidates vaporized out of existence after giving me their commitment to join the team. New hires disappeared halfway through initial training and workers, once on the job in the real world, simply quit.

What has been going on? Can it be true that no one wants to work anymore? Are there really no good people out there?

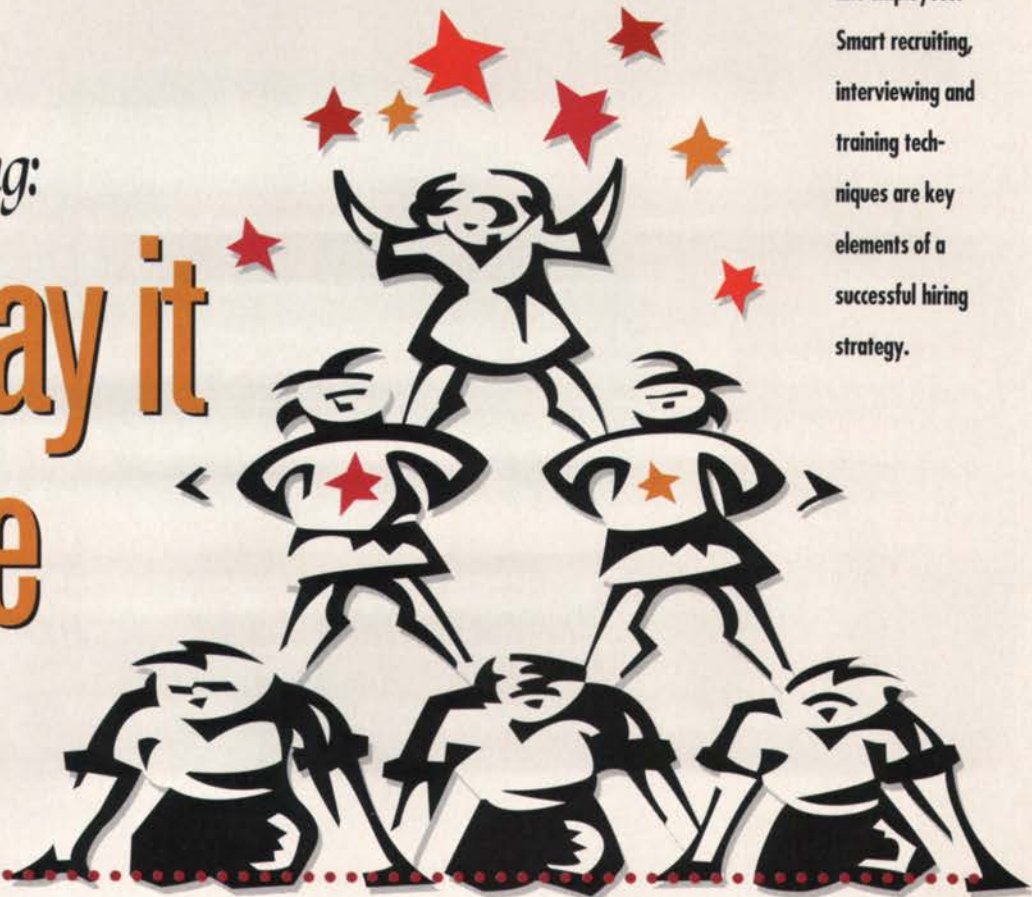
I believe there are good people out there. People who want to work for you do exist. The problem we have is that attracting them, convincing them to join your team, then cementing a productive relationship is now much more involved. You can do it. I've learned how — the hard way — and I'll share my experiences.

I've come to learn that there are 10 controlling factors of hiring and retaining employees. They are, or can be, a guide to help improve your ability to acquire and keep the kind of productive people who care about

(continued on page 82)

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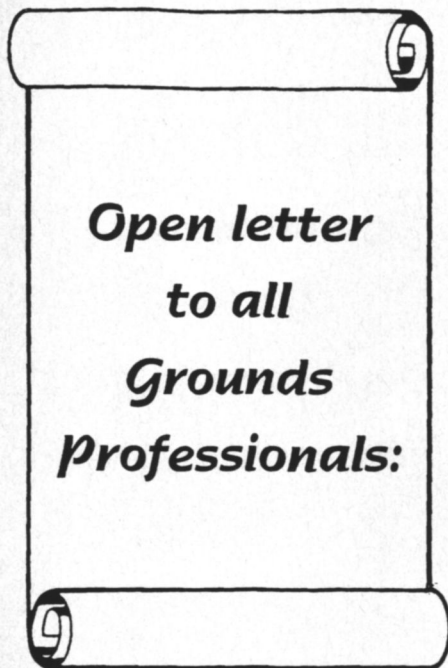


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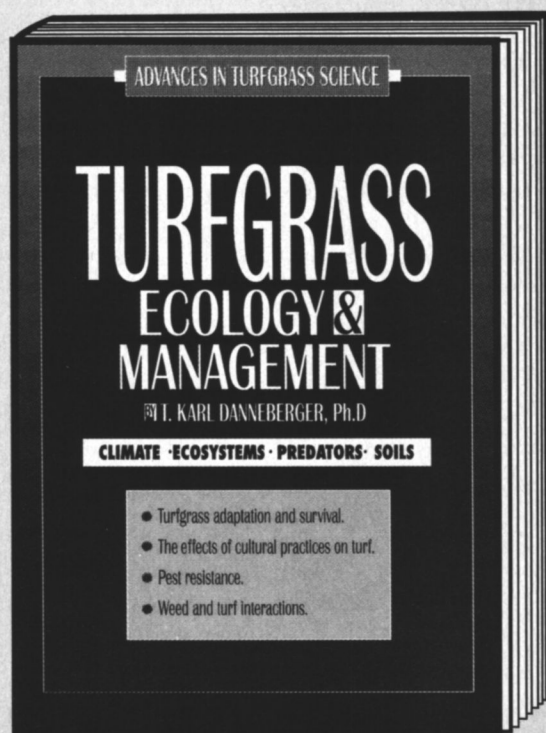
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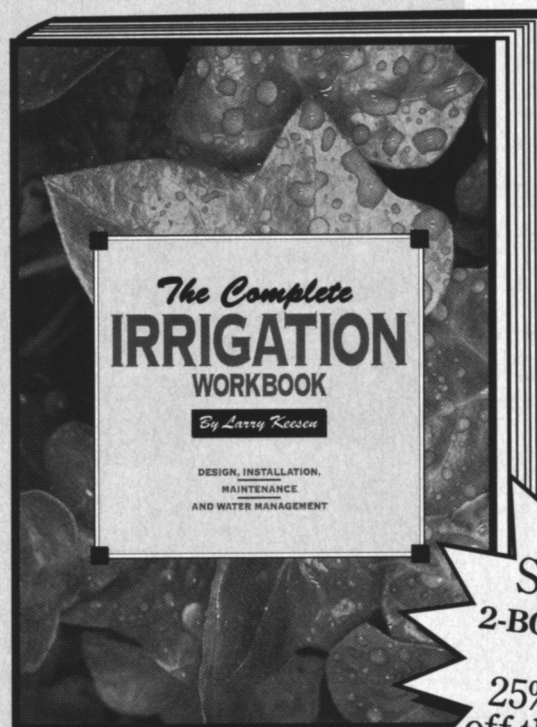
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(continued from page 78)

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1. *Our American culture is changing at a very rapid pace.* In the language of psychologists, sociologists and anthropologists, we're undergoing a "paradigm shift." Wow. Not that! If my paradigm shifts, what's next?

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velop in leaderless, valueless homes, the answer too often is yes. Simply put, the days when the average worker was more than adequate are gone, never to return.

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2. *Develop a 21st Century acquisition plan.* Once you come to grips with the new realities in our changing culture, you'll be able to revise your strategies and tactics for acquiring the staff you need to reach objectives. Start with this premise: The people you need are out there. You

won't be able to run a classified ad and hire the first three average candidates who walk in the door—but the people you need exist.

First, decide how many traditional, full-time employees you will need. With the cost of benefits increasing steadily, all smart business people are at least exploring the realignment of tasks and responsibilities so that temporary workers do a lot more of what full-timers once did. Unless you have a serious problem with the proven benefits of division of labor and specialization, this reassignment of tasks to temporary employees can be a boon to you, as well as an effective employment tool.

Next, revise your recruiting activity plan. Newspaper hiring will always be a factor, but as your only recruiting tool, it's hopelessly inadequate. You will never get the best long-term employees from the classifieds, not in the 21st century.

(continued on page 84)



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USE READER SERVICE #62

(continued from page 82)

Expand your internal hiring. Work harder to develop and promote present employees. Set up an internal recruiter program. Your most reliable recruiters are those people who know you and your business best because they are an integral part of your team. Statistics show that referrals turn out to be the lowest turnover category of new hires.

Recruit wherever you see energetic, enthusiastic people. Pass out cards when the right person comes along. Many service industry employees work on Sundays. In our business, this would not be a requirement. You see, we do have some competitive features and benefits.

I've only scratched the surface. For now, get creative!

3. *You must establish a formal, well-planned and consistent hiring process.* So often, potential new employees are lost be-

(continued on page 88)

What Job Seekers See...

W

hat do your recruiting ads convey to potential candidates? What fish will your bait attract?

When a potential new hire shows up for a personal interview, what image greets them? Does it reflect what you think it does?

How is the hiring interview conducted, and where? Is the candidate exposed to quality and made to feel important? Or do you put him or her on the "grill" with tough questions?

In your interview, do you really learn what the candidate thinks, feels, needs and wants? Or are you going through the motions, hoping for a series of "yes, I will" answers so you can end this unpleasant chore and get back to the "important parts" of running your business?

Hundreds of landscapers, park managers, golf course superintendents, and ground keepers use Banner Mobile Shredders to cut through green waste disposal problems. There's a Banner built for you!

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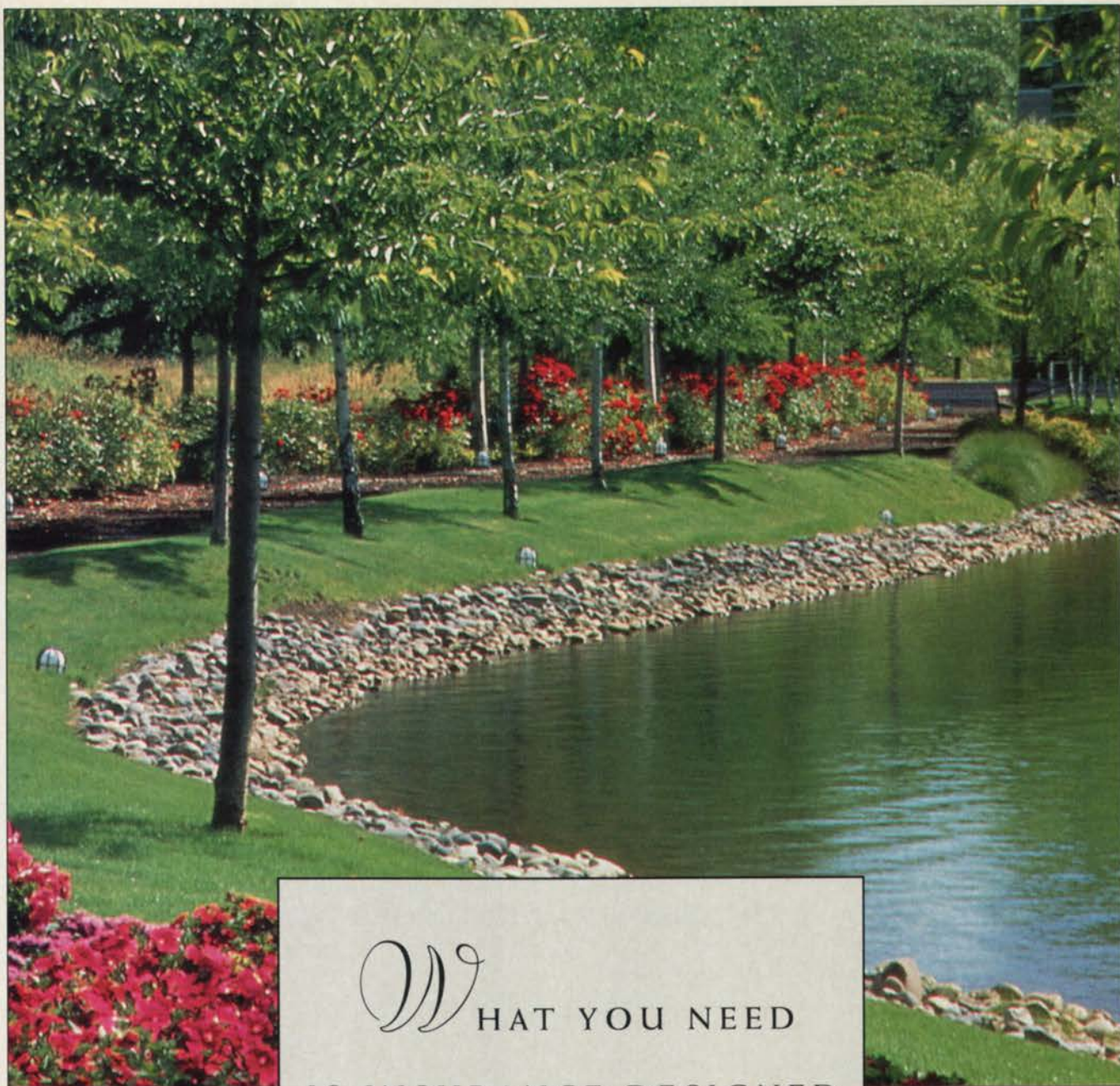
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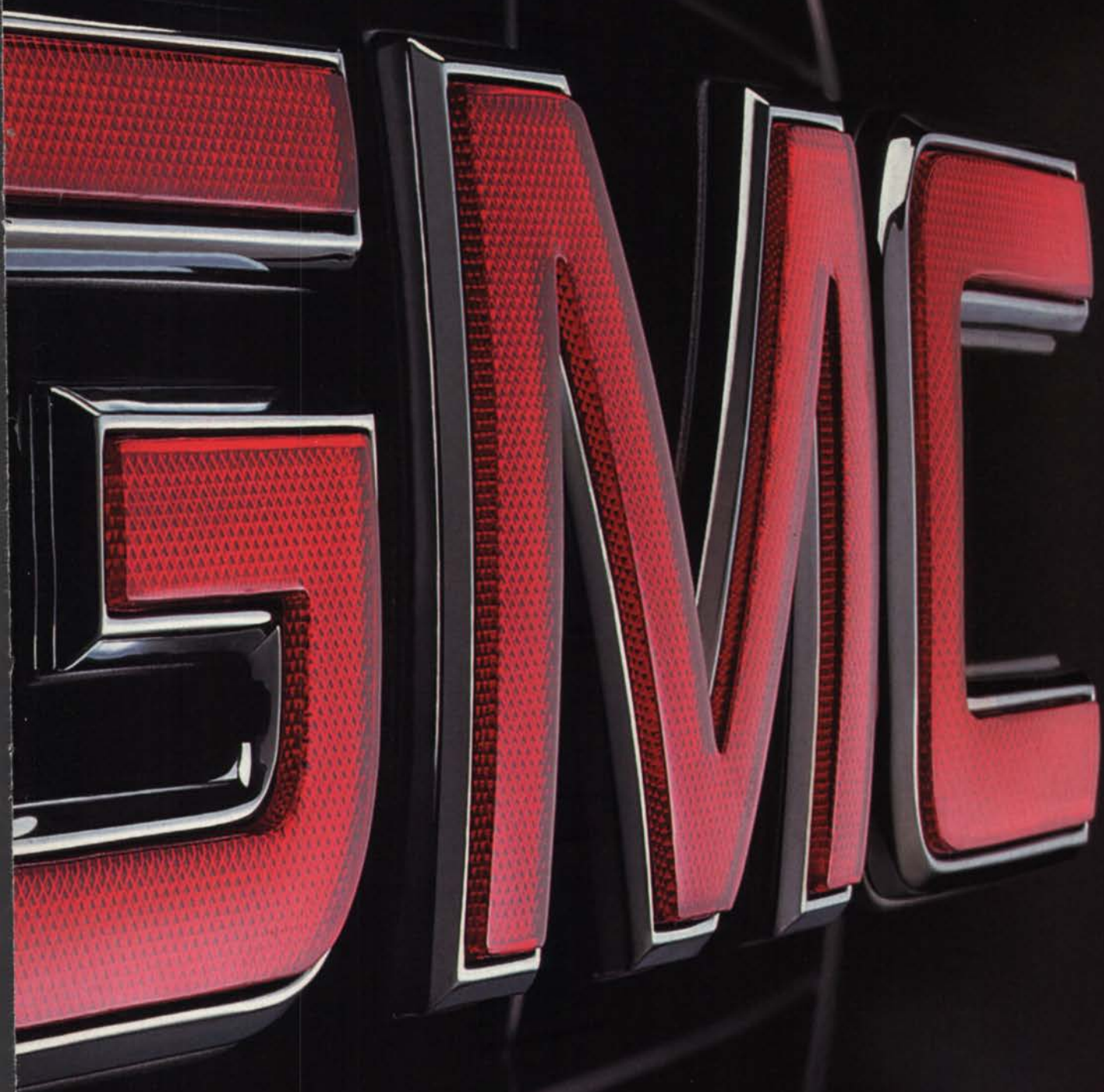
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¹See your owner's manual.

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USE READER SERVICE #70

(continued from page 84)

cause of management inattention to an effective hiring process. I'm not talking about having great interview questions. Effective hiring requires a process. Starting with the initial inquiry, you must set up and maintain a series of 100 percent positive company/

candidate points of contact.

For instance, is your advertisement's message consistent with your company's philosophy? Does the candidate enter your office and find a positive, or negative, atmosphere? Do the other employees project a friendly, professional image or do they act

cold and unprofessional? If you say one thing in an ad and present your company another way, you will lose that job candidate. The candidate was there, but you just let the fish off the hook.

If you succeed, a little spark will ignite at each step in the hiring process. That spark will propel the developing relationship toward a job offer and acceptance.

4. *Far too many hard-to-acquire new employees are lost as a result of a poor start-up or initial orientation period.*

New hires arrive on the first day of employment with two predominant and overriding feelings. First, they are hopeful. New hires want things to work out. They hope you meant what you said about the kind of people you already have on the team — their new "family." They remember your words of encouragement as you assured them they could do the job if they would just give it a chance. Your new people sincerely want that statement to come true.

Second, new people arrive with a fair amount of anxiety. Wouldn't you? Today, we are conditioned to look for the surprise ending, to trust slowly and to be very careful about our associations.

How does your start-up program address these two emotional realities? Are you organized? Is the training program effective? Are the first on-the-job experiences positive or do new hires end their first day on your team thinking, "I'll keep looking around, these people scare me."

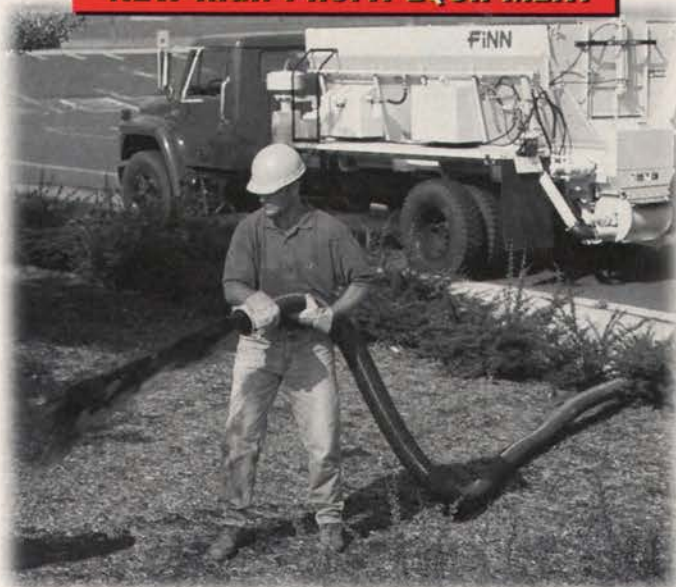
5. *Because of today's staffing realities, you will hire less than perfect candidates.* This fact dictates the requirement for a very effective and ongoing training program. And I don't mean orientation. I'm talking about training people who are at least willing to learn, to accumulate knowledge about you and your competition, then translate that knowledge to the only kind of learning that matters — skill.

Your company, no matter how small, needs to put in place comprehensive learning systems that ensure understanding and acceptance of the following:

- The position requirement in detail.
- The fundamental, basic beliefs that control how each task is to be performed.

(continued on page 90)

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USE READER SERVICE #75

effective hiring

(continued from page 88)

- The expectation levels that must be met daily.
- The procedures under which your team will go about achieving goals.
- The rewards for success.
- The punishment for failure.
- The importance of each member.
- The absolute commitment to succeed,

prosper and grow using the basic company philosophies taught and reinforced daily.

Where, on a scale of 1 to 10, is your training program?

6. *Accept and use the fact that staff turnover can be a friend as well as a foe.* At times, turnover can rid your organization of negative people who drag down your team's performance and morale. When a negative person leaves, celebrate. I don't care how much work the person does, celebrate.

If you glean nothing more from this article, accept this experience-based conclusion: One negative thinker will eventually bring down your team's performance. This applies 100 percent of the time. Do yourself a favor and dump the whiners, complainers and others on your team who do not believe in the principles of your business.

Having made that point, we've also got to accept the fact that too many good people bail out when we need them most. If you think about the fact that there are good reasons for staying, you are on the right track.

I take a job because of the future I see ahead. I leave because the reality is different. You may have the power to create an ongoing, motivational climate in which the people you want to keep will stay. Here are a few basics:

- You must pay at least a minimally acceptable level.
- People take jobs because they believe they can succeed and grow.
- People need a positive, reinforcing work environment.
- People won't do their best and will eventually leave if they don't fit socially on your work teams.
- People deserve a feeling of fairness, appropriate rewards and a bright future as payment for a job well done. They will leave without it.

Are you creating unnecessary turnover?

You cannot afford to do that.

7. *Managers commonly make two huge, costly errors: Misprioritizing tasks and misusing time.* Too many of us do things because they are tasks we feel comfortable doing, can be handled quickly or are not threatening. Misplaced priorities create an enormous cost in management effectiveness and lost productivity.

The problem is not that a manager cannot determine which project or task is most important. The problem lies in our psychological processes. We do what makes us feel good, period. Likewise, we avoid (like the plague) these tasks which bring on headaches and frustration. It's not complicated, it's a matter of discipline.

Every manager I've ever met says, "I want." I want to succeed, to be rewarded, become a star performer and live happily ever after. Few managers say, "I will." I will discipline myself to do what I know it takes to succeed in my business. Because you, the manager in charge, have certain power, you can choose how to spend and prioritize your time. You can make needed improvements. Ask yourself every time: Is this the best use of my time right now?

8. *Managers must be coaches.* At no level do employees cease to require, benefit by or appreciate positive hands-on coaching and reinforcement of important principles and procedures. If you cannot accept this part of your role as a leader, prepare to fail. I guarantee it will happen.

More people leave their employment because of neglect than for any other reason. Money, benefits, reward, punishment, fairness, social fit, growth and all the rest pale in comparison to personal attention as a people management tool. I've watched new hires who are given an encouraging pat on the back and sent off to their fate with an inspiring, "I did it Fred, so can you." This is the biggest people management mistake in American business.

Managers find human interaction not only a challenge but, when coaching follows poor training on the heels of improper hiring, impossible. Picture yourself in the field with a person who didn't really want this job, a person who heard about half of the

(continued on page 92)

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(continued from page 90)

training information and retained about 5 percent. Your job is to coach this person? Obviously, too often, we fail. The management process is at fault. Make each step effective. Then, coaching the right person, someone who wants to succeed will change your view of coaching people.

9. *To succeed as a leader, you must react to employee performance and morale daily.* "If it ain't broke, don't fix it," right? Wrong. Again and again, managers avoid employees who are doing a good job. If we interact, it's to assign more work.

Does that make sense? An employee does everything we ask of him or her and the reward is perceived as a punishment.

The opposite is also found all too frequently: An employee fails to hit a

goal or meet fair expectations and the manager reacts by lightening the load. It's wrong but we hear, "If I crack down, the guy will just quit. And, besides, good old Joe will help me out, he's a great guy." And so it goes, life in the service industry.

I believe the scenario above is neither necessary nor in any way defensible. The true leader reacts to positive performance in a positive, reinforcing manner at every opportunity. This will result in repeated positive results.

Poor performance commands a reaction quickly, as well. The trick in correcting poor performance is to use positive techniques to turn negative performance around. Time after time, a group of low performers who are exposed to positive, hands-on, consistent leadership

becomes a group of winners.

10. *Your best people will leave.* After all the positive, motivating, hands-on leadership, he or she will leave the nest? Yes.

Good people need to grow. Of course, growth within your organization would be the goal. But, where that cannot happen, know that they will go. You've taught these people that they are winners, doers, successful people. They have developed a strong need to achieve.

Your management challenge is to never stop recruiting the people you need to replace the "winners" as they move through your organization. Never try to keep a performer in a restrictive position. Once a person succeeds, they move to the next higher level of achievement. Realizing this, you must be ready. **LL**

The author is a training and management development consultant in Delaware, Ohio.



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Manufacturers and contractors say that maneuverability, versatility and cost advantages will keep walk-behind mowers viable in the commercial market.

By Paul Schrimpf

The Case For

Walk-Behind Mowers

The rise of the zero-turn riding mower in recent years has stolen some of the spotlight from the walk-behind mower market, leaving some in the industry wondering what contractors will be purchasing when it's time to put the old equipment out to pasture.

Will established contractors upgrade directly from the belt-driven walk-behind to the rider, skipping the hydro step altogether? Will entry level contractors skip the walk-behind for the burgeoning, competitive zero-turn rider market?

Manufacturers don't entirely agree on where the walk-behind market is going — some are optimistic that sales growth in the professional market will be steady, while others see a down trend that will correspond with greater rider sales.

"The zero-turn riding units should take over in a few years," predicted Howard Price, president of Howard Price Turf Equipment, Chesterfield, Mo. "Every time a new riding unit comes out it takes a chunk out of the walk-behind market."

John Lally, advertising manager with American Honda Power Equipment Co., Duluth, Ga., has a more optimistic view, saying that the commercial walk-behind mower market is continuing to "grow at a rate proportionate to the growth of the commercial landscaping industry."

Whatever the long-term prospects of the walk-behind market, manufacturers continue to upgrade their lines and contractors value the units as versatile and effective.

(continued on page 96)

Whatever the long-term prospects of the walk-behind mower market, manufacturers are continuing to upgrade their lines, while contractors value the units for their versatility and effectiveness in a variety of landscape maintenance situations.

Credits: (above, Left) Scag; (above) John Deere.

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USE READER SERVICE #45

(continued from page 94)

NO HYDROPHOBIA. When it comes to having a preference for the base design of the walk-behind mower, there seems to be two types of contractors — those with a fleet that is entirely comprised of hydrostatic drive mowers and those who are moving their mower mix in that direction.

"I think everyone would agree that the hydrostatic walk-behind mower market is growing and will continue to grow," asserted John Chick, product manager for Snapper Power Equipment, McDonough, Ga. "We see a lot of interest in hydrostatic walk-behinds now — many dealers have become convinced that the end user is better off using a hydro.

"They are even saying that they are getting more successful in selling entry level contractors on hydros," added Chick, "as well as contractors that are interested in replacing their gear-drive machines. So

much has been said about hydros that it has become almost a cliché — the productivity that comes with using a mid-size walk-behind with hydrostatic drive is so much better. They are less fatiguing and more productive units for operators to use."

As its name implies, the hydrostatic walk-behind machine uses a hydraulic system to drive the wheels. Hydrostatic mowing machines in their truest form have a separate hydraulic pump controlling each of the drive wheels individually for instantaneous steering and drive control.

The result, compared to gear-driven systems, is a machine that provides quicker, truer

*He believes
that walk-
behinds are
better for wet
turf surfaces
because they
are less likely to
leave tracks...*

response to steering commands and more predictable performance. In exchange, the cost is higher, usually between \$700 and \$1,000 per commercial grade unit, depending on the brand name and the types of units that are being compared.

"We are slowly changing the fleet over to hydros," said William Jones, field maintenance manager with Ground Control Landscaping, Orlando, Fla. "It's just a much better machine, and

there is ultimately less money spent on maintenance. They move faster, and they are more reliable than gear-drive units our operators have used."

(continued on page 98)

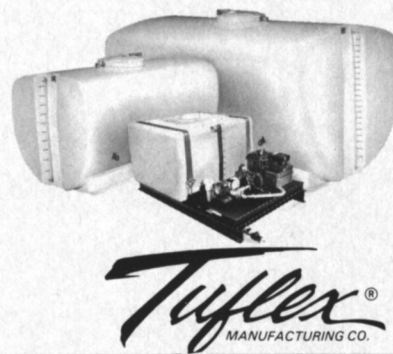
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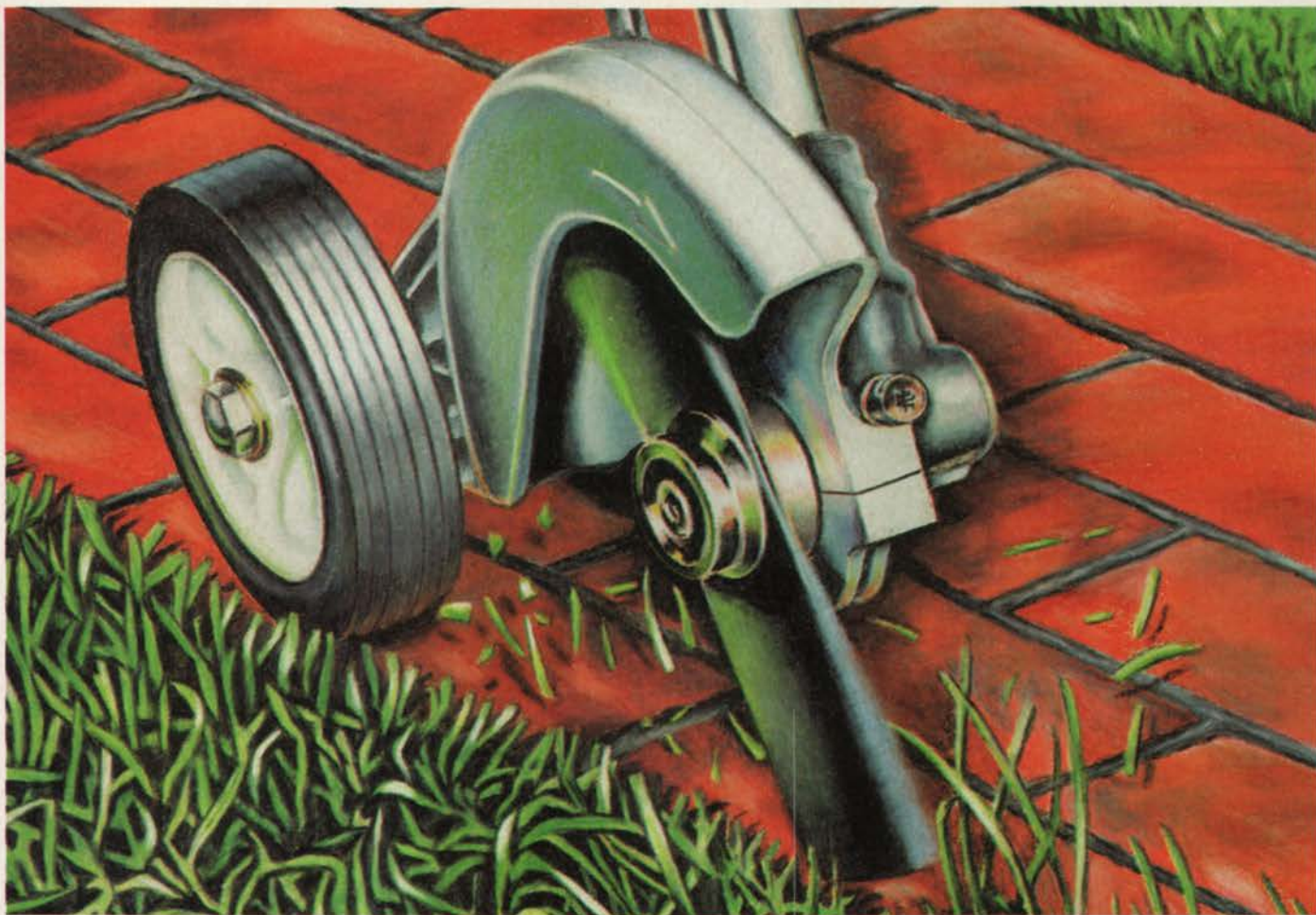
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(continued from page 96)

Jones said that Ground Control has experimented with a variety of machines on large estates and kept them for about three weeks to test the ability of the hydro drive. "With the belt drives, we were getting into a lot of belt slippage on large inclines, especially where it was wet," he explained. "The hydros were just better."

"We are looking for the ability to work in wet conditions," noted Tom Morin, president of Morin's Landscape, Hollis, N.H. Morin crew members were having problems with belt slippage on damp turf. "We are experimenting with hydrostatic mowers for the first time, and if we get the productivity gains we expect we will incorporate them more into our mower mix."

Most contractors also noted that equipment downtime is reduced with hydrostatic units. This advantage is somewhat tempered because the hydro parts that do falter can be



much more expensive than the belts and spindles on a gear machine, but contractors add that the productivity gains have far outweighed any maintenance costs.

"We measure our productivity very closely at Ground Control," said Jones. "The downtime on the hydro walk-behind units we

operate averaged three to four times a year per unit vs. 10 to 15 times on the belt driven units we used."

"For three years we have had a walk-behind line of all-hydro units," said Bill Trimmer, president of Professional

(continued on page 100)

Among the many reasons that contractors prefer to use walk-behind mowers is their ability to tackle landscapes that feature many slopes.

- AT LAST! -

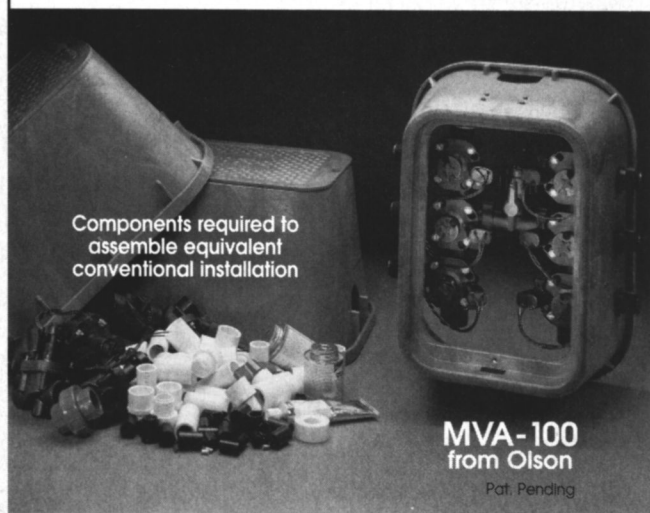
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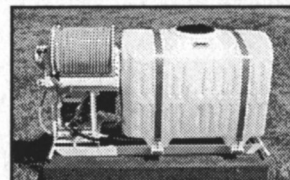
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(continued from page 98)

Grounds Inc., Lorton, Va. "They may be \$800 or more to purchase than a gear-drive machine, but you get more productivity and the employees like them much better. And, we've had no problems with the maintenance. Also, the crew members don't complain about the drive belts slipping like they will with gear machines."

KEEPING TRACK. One of the inherent quirks of the hydro walk-behind is its tendency to lose balanced tracking when one of the hydraulic pumps gets hotter than the other. This is common when the mower is constantly being turned the same direction.

Essentially, the hydrostatic mowers are powered by a hydraulic motor and a pump, which pumps fluid into the wheel driver and makes it go.

"The manufacturers' tolerances for pumps and motors are not exact, and pumps wear at different rates," said Chick. "Either unbalanced wear or uneven heating of the pumps often will cause the mower to want to go to one side or the other."

To get the tracking back in line, the operator has to "feather" the machine, requiring additional hand and wrist exertion to balance out the tracking.

Some manufacturers, however, have developed a device that "resets" the tracking and keeps the machine centered without unnecessary exertion. Chick said it's an important consideration when upgrading to hydro machines.

IN THE FIELD. Walk-behind mowers are providing some contractors with a number of advantages.

Trimmer said that his crews generally carry two walk-behind mowers and a riding unit, along with the miscellaneous portable power equipment. The company's range of equipment includes walk-behinds with deck sizes ranging from 36- to 54-inch cutting widths.

"Walk-behinds do well for us because they work well on hills," noted Trimmer. "In our area, all of the level land has been developed — new construction is taking place on hilly, sloped areas that are difficult

(continued on page 102)

Get A Grip

There's a lot of talk around the industry about ergonomics, the term associated with a work environment that reduces fatigue and the potential for injury to lawn and landscape service technicians due to the prolonged use of equipment.

Manufacturers of walk-behind equipment have been exploring, or have already implemented, design elements to try to make their machines more comfortable to operate.

Some design elements are contained within the unit, such as the floating deck on Howard Price Turf Equipment's hydro walk-behind mower. Along with advantages in quality of cut, President Howard Price said the moving deck absorbs some of the bumps and dips that would normally travel from the deck through the machine and into the arms of the operator.

Most design changes, however, revolve around the "cockpit" area of the machine.

Don Pinto, manager of product planning with Gravely International, Winston-Salem, N.C., said the company has been working on providing the most comfortable grips possible.

"We've looked at incorporating the steering mechanism, the spread of the handles, the brake levers and the feel of the grips themselves into a unit to make it

as easy as possible to use," said Pinto.

Toro's Landscape Contractor Group has added a T-Bar steering system to its walk-behind units, while Snapper Power Equipment has had some success with the loop steering system it introduced six years ago.


"The system allows the operator to pull on the loop and steer the machine, rather than squeezing on the pistol grip type handles," said Sales Manager John Chick. "The way the operator is using his wrists to steer creates less fatigue — you can use your shoulders and arms to steer, rather than having to squeeze handles constantly."

These systems sound great, but getting contractors and technicians to change has been a tremendous challenge, noted Chick.

"The funny thing we've found about paradigms," he said, "is that they are difficult to change. We found that the entry-level people who have never used the pistol grip type mower just love our system. But when we show it to a guy that has been using a pistol grip for a long time, it's a tough sale. They have gotten so accustomed to running pistol grip mowers that it throws them off to use something else. It's a process of education."



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(continued from page 100)

to mow, and walk-behind mowers have become the units of choice.

"Our commercial clientele includes a number of multi-family communities that have landscapes with a variety of obstacles," he continued. "Our walk-behinds are ideal for that situation. From our perspective, they just tend to do more work in a greater variety of areas." In many cases, Trimmer added, the multifamily property clients require that walk-behind mowers are the only equipment to be used on their properties.

Finally, Trimmer said he believes that walk-behinds are better for wet turf surfaces because they are less likely to leave unsightly

'(The hydro drive) is just a much better machine, and there is ultimately less money spent on maintenance.'


tire tracks in the turf. Randy Ferarri, vice president of operations with Minor's Landscape Services, Ft. Worth, Texas, admitted that the company has replaced many of its walk-behind mowers with riding units, and will continue to do so whenever possible. However, many homeowner's associations look upon riding equipment unfavorably. "They see operators zipping around on riding mowers and they think, 'That's too fast,'" said Ferarri. "In those cases, we'll use the walk-behinds exclusively." Minor's crews use the walk-behind mowers universally for tight areas near fences and gates and around trees as well.

tire tracks in the turf.

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Crews working for Schumacher Landscaping, South Natick, Mass., use a variety of walk-behind equipment to handle the unique variety of properties they maintain around Boston.

"The hydro walk-behinds we use are ideal for weaving around trees," said David Schumacher, maintenance manager. "The 36-inch deck mowers seem to be ideal for the tightest areas we cover. They're smaller and more maneuverable, and the crew members feel more comfortable operating with those rather than the larger walk-behinds."

In addition, the walk-behind mowers perform better on hilly properties, Schumacher added. "Operators feel helpless in a seat on some of the slopes we have to deal with in the field — the slopes can make the riding mowers feel very unsteady." 

The author is Managing Editor of Lawn & Landscape magazine.

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USE READER SERVICE #87

USE READER SERVICE #88



There are numerous benefits to a professionally installed and maintained landscape, and here are some examples of how this can be communicated to potential customers.

By Bob West

Looks Aren't Everything

The list of added benefits associated with a healthy, efficiently designed and properly maintained landscape goes on and on. But how much of this information ever makes its way to the eyes and ears of customers and potential customers? Perhaps a better question is how much of this information ever makes its way to the eyes and ears of landscape contractors and maintenance professionals? And how much can this information improve your sales?

* A 25-foot by 25-foot area of turf provides enough oxygen to support one person for an entire day, according to the Professional Lawn Care Association of America.

* Landscape plants reduce undesirable noise levels by 20 to 30 percent, according to The Lawn Institute.

* Deciduous trees placed on the south and west sides of a house provide shade and can lower air conditioning costs by 10 percent to 15 percent, according to the International Society of Arboriculture.

JUST THE FACTS. Lew Bloch, a consulting arborist and landscape architect with the Bloch Consulting Group, Washington, D.C., said landscape contractors don't use this type of information to their advantage as much as they can.

"Surveys of real estate agents have illustrated that professional landscaping can add as much as 15 or 25 percent to the value of a property," he said. "Customers need to realize that a professionally installed landscape is one of the few purchases that appreciates in value if it's well maintained."

Marketing Strategies that Work

Many commercial property owners are finding that having a professionally maintained landscape on their property allows them to charge higher rent and achieve higher occupancy rates than their competitors whose landscape is not maintained.

Additional studies have shown numerous ways in which a professionally installed and properly maintained landscape can benefit the homeowners or property managers beyond the obvious property beautification.

All of the information contained in this story was obtained either via the Internet or by making a few simple telephone calls. (Contact information for any group which provided data for this story can be found in the sidebar.)

This information is readily available to any landscape contractor or maintenance professional who wants it. Some of the groups may charge for the information or offer it only to their members, but these relatively minor costs can be justified as investments in sales and marketing efforts.

Much of the information is presented in thick binders or research studies that may not be suitable for public presentation. However, groups such as the Associated Landscape Contractors of America offer valuable sales information on seasonal color, water features, curb appeal and other services in professional looking, four-color brochures with your own company's name, address and phone number printed on the bottom.

TURF ADDS VALUE. The value of turf alone is only rarely appreciated by consumers. According to PLCAA, the front lawns for eight average homes have the cooling effect of 70 tons of air conditioning. Turf also improves the quality of life for those around it by controlling dust, pollen and other substances in the air and filtering potentially harmful particles and substances from water as it recharges groundwater supplies. It also helps retard the spread of fire.



The ABCs of Lawn & Turf Benefits from PLCAA notes that grassy slopes can reduce noise created by automobiles by as much as 8 to 10 decibels.

Properly maintaining any property is a must if the homeowner or property manager wants to get the most value from that property. "People are better off putting in a simple landscape and paying to have it maintained properly than they are if they spend all of their money to put in a great landscape and don't maintain it," noted Bloch.

MONEY TREES. How many customers realize that insurance companies recognize the value of trees and generally allow claims up to \$500 for a lost or damaged tree?

Trees can be an especially valuable part of a landscape because of their size. In the winter, deciduous trees on the south and

west sides of a house can obstruct or deflect the chilling winds that drive up heating bills, while allowing the sun's rays to warm the house. Meanwhile, in the summer, these healthy trees and their leaves can block the warm rays of sunshine that require the use of an air conditioner. One study noted in an ALCA brochure reports that when a city loses 20 percent of its trees, the temperature in that city rises an average of 4 degrees.

In the book, *Growing Green Cities — A Tree-Planting Handbook*, by Gary Moll and Stanley Young, an American Forestry Association study is cited that illustrates how one tree provides the following economic benefits to a property annually:

Air conditioning	\$73
Controlling erosion and storm water	\$75
Wildlife shelter	\$75

Controlling air pollution \$50

If that cost is compounded over a 50-year lifespan for the tree with normal cost adjustments factored in, that tree becomes worth \$57,151 to the property owner.

These same trees have been found to add between 5 percent and 7 percent to the value of a house lot and contribute to a quicker sale. Bloch cited a study of 1,350 real estate agents where 84 percent of those agents indicated that a house on a lot with trees was 20 percent more salable than the same house on a comparable lot without trees.

COMMERCIAL APPEAL. The key for so much commercial property is curb appeal. Owners of shopping plazas or companies with their own office building care deeply about the first impression visitors or passing traffic gets of their company. If a quality landscape is installed and maintained at these properties, that can translate into added business for the property owner.

According to ALCA, a shopping center owner in San Diego credits the property's landscaping for the high occupancy rate and the ability to charge higher rental rates. Specifically, strategically placed trees and plantings block street noise and create a more desirable setting for the structure.

Additional studies have shown that landscaping has the highest correlation to increased occupancy in commercial buildings of any other variable. "Large projects, such as commercial sites, are the ones where landscaping can really make a difference in the value of the property," noted David Peabody, president, Peabody Landscape Construction, Columbus, Ohio.

This doesn't even take into account the positive effects of reducing stress and raising productivity that a quality commercial landscape can have on employees who work at the office.

WORK AT HOME. Homeowners interested in installing a professional landscape obviously care a great deal about their property, but they probably don't realize how much value they're adding to that property. A study by *Money* magazine found homeowners who have added an interior room to their house can expect to recoup 75 percent of the room's cost in selling the house. Those same homeowners can expect to recover between 100 and 200 percent of the cost of a landscape installation in selling the house.

"We really emphasize the fact that real estate values change with landscaping," said Peabody. "Customers have to realize this can be an investment for them."

SELL, SELL, SELL. This information presents a pretty convincing case for the benefits of

a professionally installed and maintained landscape. The information is worthless, however, if green industry professionals don't use it to sell the public on the benefits they can enjoy from their landscape.

Peabody noted that this can be a difficult part of selling your services, however. "We have to push and push and push to get potential customers to realize these added values," he admitted. "It's not something that is already in their mind."

He said that only when the entire industry begins collectively marketing itself and the environmental and societal benefits of its work will the public appreciate the value of the service provided. "It needs to be branded into people's brains," he said. ■

The author is Associate Editor of Lawn & Landscape magazine.

Where to Get It

The vast majority of the information and empirical data in the accompanying story is just a fraction of what is available to anyone in the industry who will take the time to discover and use these potentially powerful sales tools.

The national associations proved to be valuable resources because of the financial support they receive to conduct such research studies. The Associated Landscape Contractors of America, the Professional Lawn Care Association of America, the International Society of Arboriculture, the Lawn Institute and the Council of Tree & Landscape Appraisers all provided material for this story which is also available to their respective members.

To obtain your own copies, contact them at the following locations:

ALCA — 12200 Sunrise Valley Drive, Suite 150, Reston, Va., 22091.

Phone: 800/395-2522.

PLCAA — 1000 Johnson Ferry Road, N.E., Suite C-135, Marietta, Ga.,

30068. Phone: 800/458-3466. Internet: <http://www.plcaa.org>.

ISA — P.O. Box GG, Savoy, Ill., 51874. Phone: 217/355-9411. Internet:

<http://www.ag.uiuc.edu/~isa>

Lawn Institute — 1501 Johnson Ferry Road, N.E., Suite 200, Marietta,

Ga., 30062. Phone: 770/977-5492.

CTLA — 15245 Shady Grove Road, Suite 130, Rockville, MD 20850.

Phone: 301/947-0487.

EQUIPMENT FOCUS

MANAGING EQUIPMENT MAINTENANCE

ANYONE with any experience in the green industry knows that a company can work only when its equipment works. Downtime is a curse.

As their companies grow, many managers decide that the equipment and the maintenance of that equipment is too important to let someone else care for, so they hire a mechanic and bring the maintenance in-house. It doesn't take long before companies realize there are additional benefits to doing their own equipment

maintenance, such as reduced expenses, less time before equipment is repaired and operating again and even fewer instances of downtime.

PREVENT THE PROBLEM. Each of the companies interviewed pointed to an emphasis on preventive maintenance as the primary reason for doing their own equipment maintenance. "If we're not here doing regular maintenance and it's left to the equipment operators to do, then things are going to get overlooked," noted Bob Zucaro, head mechanic, Western Dupage Landscaping Inc., Naperville, Ill. "Equipment is out in the field getting wet

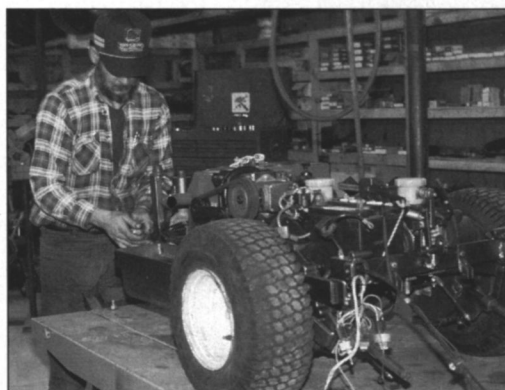
and muddy, and no one's going to take the time to check over all of the hoses and filters."

Steve Katz, president, Sunset Hills Foliage Inc., Laurel, Md., said the costs created through preventive maintenance have to be measured against the possible costs from equipment damage. "It's ridiculous to wait until the brake pads on a truck are gone and you're wearing against the rivets," he explained. "Then, the repairs are going to cost you three or four times as much."

The key to successful preventive maintenance is adhering to a regimented schedule. "You can't waver from your schedule at all," Katz said. "That way, you know exactly

(continued on page 108)

Setting up an in-house maintenance operation will mean additional costs, but it can save the company money in the long run.

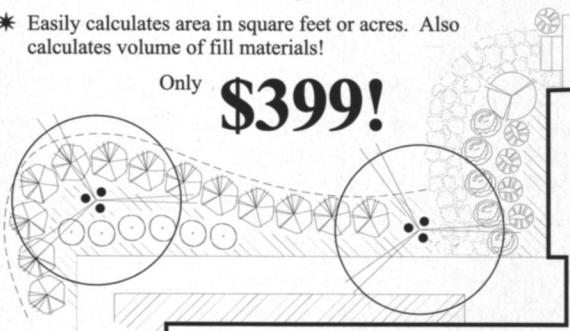


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Dayton, Ohio- Are you frustrated by advertising that never makes the phone ring? By being beat out of good jobs by cheap bidders? Feeling like you're starting your business all over again every season? Stuck at a certain level?

A million dollar per year "entrepreneur of the year" says that most of his peers' and competitors' marketing is anemic, me-too-istic, dull, full of costly waste, and ineffective. Arrogant? Egotistical? Marty Grunder says: "React to me any way you like—but one thing is for sure, if you are in the landscaping business or maintenance business, whether you are small or large, my marketing methods can easily double or triple your business in just one year, provide better customers, help you target and get exactly the kind of business you want, increase profitability and stability, and absolutely mystify and trump your competitors."

Big talk? Yes, it is, but this Grunder wiseacre has been showing off—and blowing sceptics away—his entire life. As a freckle-faced, red headed Dennis-the-Menace type kid, he started his business with nothing more than a "push" lawn mower and chutzpah. That little business went to 75 regular customers almost overnight. As a full-time student at the University of Dayton, while his buddies drove to school in old "beater" cars and flipped burgers for pocket money, Marty arrived in his Grunder Landscaping Company truck and, at age 21, did over \$300,000.00 in business. Last year he was named Young Entrepreneur of the Year by the Small Business Administration's Midwest Region, in the 1 to 25 employees category. Currently, Marty oversees a staff of 30, 18 trucks, a backhoe, an assortment of other equipment, and a diversified business doing everything from basic residential lawn maintenance to complicated commercial landscaping projects—and, this year, breaking \$1.5 million in annual sales. He's also investing in land, lecturing from time to time, and working with other landscapers as their "marketing coach."

Million Dollar Marketing Secrets Revealed In A Free Report—If You Qualify!

Grunder DOES have "secrets" for building these types of businesses, too. Here are just a few examples:

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6. Forget wasteful "name recognition" or "getting your name out there"—learn to "target," create and deliver a "market-matched" message, and **attract exactly the type and size of clients you really want.**
7. Why your "service" should never be the #1 focus of your marketing.
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9. The "secret" borrowed from the **fad-diet business that sells high-priced, high-profit landscaping work like crazy.**
10. How to get people working for you and with you to really contribute like a championship team!
11. How to use "automated, autopilot marketing" to bring in new business without you or anyone else even talking with prospects on the phone!
12. Even "poor boy" dirt cheap marketing strategies, like what to write on a simple postcard to bring in a flood of new customers.

13. The "4-Page" marketing tool used **6 to 10x a year that is guaranteed to increase your business by at least 30% year after year...automatically!**

14. How to position yourself as a "famous expert" in your area, get a ton of free advertising and "fry" the competition.

And there's a whole lot more. At the urging of a big-time, nationally respected direct marketing consultant and professional speaker who discovered and was "blown away" by everything Marty was doing, Marty prepared an easy-to-read but very complete, provocative Special Report—"How To Re-Invent Your Lawn-Garden/Landscaping Business With Million Dollar Marketing Secrets"—and you may be able to obtain a copy at absolutely no cost whatsoever.

Who Should Get Marty Grunder's Special Report?

Marty asks that you call for his free Report ONLY if: (1) you own your own business or are the President, CEO, manager or marketing manager for the business; (2) you make the decisions about advertising, marketing, and customer service investments; (3) you are currently unhappy with some aspect(s) of your business; (4) you recognize that in today's competitive environment, just "doing a great job" isn't enough to sustain a business; and (5) you are willing to make progressive innovative changes in your business if convinced, even reasonably assured that doing so will dramatically improve sales, profits, customer satisfaction, referrals, growth, and community prominence. (Please do NOT waste your time or Marty's money getting this Special Report if you are close-minded, change resistance, fully satisfied with your income, or just a curiosity-seeker without sincere interest in changing your business for the better.)

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EQUIPMENT FOCUS

(continued from page 106)

which piece of equipment needs work on a given day.

"Sticking to a regular schedule also helps us budget our time and our money," he continued. "We don't let our maintenance work get bunched up on us, so we're going to have time to handle any unexpected situations that occur. Sticking to the schedule also helps us control costs."

"We make sure every piece of equipment gets in here every 90 to 120 days for routine service," Zuccaro said. "Even if it's just changing the oil, the oil filter and making sure it's properly greased — that can go a long way."

SCHEDULING STAFF. The staffing requirements for an equip-

ment maintenance operation will obviously vary based on the needs of each company, but special attention should be paid to two areas: finding a qualified small engine mechanic and efficient scheduling.

"We have three mechanics, one of whom is a small engine mechanic," said Zuccaro of his staff which cares for more than 300 pieces of equipment. "We work on two shifts — the day shift handles regular maintenance and the night shift takes care of repair work so the equipment is ready for the next morning."

Matthew Stano, president, Stano Landscaping Inc., Milwaukee, Wis., said he employs three mechanics and one trainee for small engines, and that staff handles nearly all of

his equipment concerns. "The ability to have your own shop is really a mixed blessing," he said. "Sometimes repairs will take longer because of a lack of expertise or a heavy work load, but we appreciate the convenience of having an internal staff to address small problems and having them available on the spot for general repairs and troubleshooting."

Equipment maintenance is certainly expensive. Stano said it's a \$500,000 department for his company. "It's a large

*'You can't
waver from
your schedule...
That way, you
know exactly
what piece of
equipment
needs work...'*

overhead area, but we'd be spending even more if we sent the work out because then we'd be paying not only for labor but also for that company's overhead costs," he added.

"Some companies may be concerned be-

cause doing your own maintenance does require stocking parts and supplies that you wouldn't need to have otherwise, but the alternative is to have more pieces of equipment than you actually need on site so you can always be working." — Bob West



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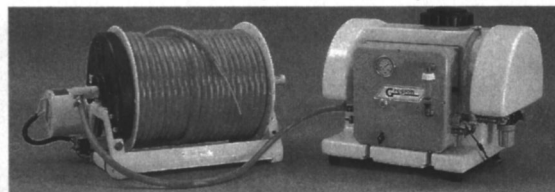


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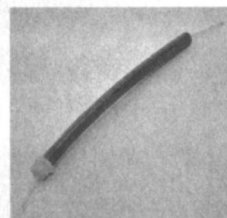


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Dick Ott, Orkin, Knoxville, Tenn.

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When the day is done, do you know if the work was worthwhile? Determining your profitability is not easy, but this session will show you where you're succeeding and where you can be earning even more money.

Steve Derrick, Gold Kist Distributors, Atlanta, Ga.

Hiring Practices That Work

Your competitor just hired the guy you interviewed last week, and the last guy you hired isn't working out. Isn't it time to make sure the only people you hire are the ones who will take your company forward?

Bill Hoopes, Barefoot Grass, Worthington, Ohio.

Increasing Productivity In Landscape Services

As the competition grows more fierce, it becomes imperative that you maximize the value of the contracts you have. This veteran of the green industry will show you strategies on how to do just that.

Phil Christian, pdc Associates, Marble Hill, Ga.

Managing Business Growth

Growth is good — as long as you're prepared to handle it. This presentation focuses on helping companies learn to anticipate growth, deal with it effectively and guarantee it continues.

T.D. Morland, Horticultural Business Management, Blanchardville, Wis.

Leadership Principles

Leadership — few buzzwords are so vague. This industry leader will discuss exactly what makes a person an effective leader and how you can be that person.

Gary Clayton, All Green Corp., Marietta, Ga.

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Hotel Accommodations

A

block of rooms has been reserved for Lawn & Landscape School of Management attendees at the Crowne Plaza Ravinia Hotel. Participants should make their reservations directly with the hotel. Be sure to mention the Lawn & Landscape School of Management when making your reservation to receive the special room rate of \$129 single/double. The phone number for the Crowne Plaza is 800/554-0055. Reservations must be made with the hotel on or before April 11, 1997 to receive the special group rate.

Call Fran Franzak

Lawn & Landscape

at 800/456-0707

NEW PRODUCTS

The Pro Cut Z zero-turn rider from **Ferris Industries** has a dual-point floating front end with two mounting joints in the front axle for vertical travel at each wheel. A low center of gravity provides hill-side stability and a comfortable ride. A foot pedal raises



and lowers the deck in 1/4-inch intervals between 1 1/2 and 5 inches.

Circle 204 on reader service card

Subdue® Maxx® from **Novartis Turf & Ornamental Products** provides disease control at half the recommended rate of the original Subdue fungicide. Subdue Maxx features a new active ingredient, mefenoxam, that is an isomer of metalaxyl and a more biologically active chemical compound. The product is available in an emulsifiable concentrate formulation that mixes completely with water so petroleum solvents aren't necessary.

Circle 205 on reader service card

The X-2250 hydraulic earth auger drive unit from the **McMillen Division of States Engi-**

neering is designed for high flow skid steer hydraulic systems. The auger attachment adapts to any high flow skid



steer loader equipped with 20-30 gpm auxiliary hydraulics and a maximum 3000 psi. The unit's in-line design eliminates chain and sprocket

reductions and is capable of reverse rotation for quick backout.

Circle 207 on reader service card

Dissolve® and Triplet Water Soluble® are a pair of dry, totally soluble broadleaf herbicides from **Riverdale Chemical** available in water soluble packages sized for backpack and pump sprayer spot treatments. Each packet for a 2- to 4-gallon sprayer will treat between 3,000 and 4,000 square feet.

Circle 208 on reader service card

Service First™ software for irrigation management from **KRS Enterprises** is sold by module and runs in DOS, Windows and Windows95 op-

plain the company's computer assisted design program and *Guide to Decorative Landscape Projects*. **Circle 201 on reader service card**

An 8-page brochure from **Spectrum Products** illustrates the uses for the Treegator® drip irrigation system for trees. Along with actual photos of the product in use, the brochure includes informational charts comparing this method of drip irrigation with traditional hose irrigation.

Circle 202 on reader service card

A 40-page, four-color booklet from **Kichler Landscape Lighting** presents a variety of diagrams and photographs of lighting models, posts, transformers and accessories. It also includes explanations of each type of lighting application and common design strategies.

Circle 203 on reader service card

erating systems and over various networks. Available modules include accounts receivable and payable, inventory, job costing, payroll and general ledger transactions.

Circle 209 on reader service card

The **Big Squeeze®** Mist n' Pour is a plant spray bottle that includes a spout for misting or watering plants in interior applications. The extra long trigger on the sprayer allows easier squeezing, and a wide platform base keeps the unit steady and resists tipping. The container holds up to 40 ounces of fluid and has both metric and ounce calibrations for mixing inside the bottle.

Circle 210 on reader service card

Stens Power Equipment Parts' tire changing kit changes tires from 4- to 12-inches in less than 5 minutes and comes with all of the necessary tools

Pond Saver™ is available from **Plant Health Care** in water soluble packs to clean, clarify and deodorize ponds and lakes without harming any animals or fish. The product contains a proprietary blend of 17 bacterial strains that quickly biodegrade nutrients, organic matter and hydrocarbons in water. The 1/2-pound packs can be tossed in the water at a rate of 3 pounds per acre of foot of water at two week intervals.

Circle 206 on reader service card

for mounting and demounting. Optional inflation straps assist with inflating tires.

Circle 211 on reader service card

The RAMfirst interactive paging service from **RAM Mobile Data** lets users receive messages/pages, respond to them, initiate customized messages and pages, access databases and send to and receive from the Internet and intranet. The service includes full-featured gateway with access software, an application development tool and RAM's nationwide wireless data network.

Circle 212 on reader service card

Tioga's Easy Auger® SP is a self-propelled walk-behind earth auger with a variable speed hydrostatic drive for

powering up hills and over rough terrain. The hydraulically powered auger has variable speeds in forward and reverse and eliminates dangerous kickbacks. Standard features include a 9-hp Briggs & Stratton Vanguard OHV engine, extra-wide pneumatic tires and augers and exten-



The Heftee XL3600 service lift from **McCanse Engineering** provides easy and safe service access for an array of vehicles and machines. The unit lifts machines up to 87 inches wide and 3,600 pounds to 6 feet high. Forks and reversible wheel cups adjust easily without tools for underside access to front- or mid-mount mowers. Various attachments assist with lifting of axles, engines, front floating decks and other equipment on the lift.

Circle 213 on reader service card

sions from 2 to 18 inches.

Circle 214 on reader service card

Excel's Extra Hi-Lift Bac-Vac™ collection system for the

Hustler 3000-series tractors mounts directly behind the operator to avoid reducing mower maneuverability and has a 75-inch dump height. The rust resistant hopper has a



10-bushel capacity and is made from vinyl-coated nylon and polyethylene.

Circle 215 on reader service card

Maxi Products' Maxi-Short dump body will fit in any

COMING NEXT MONTH

The April focus of *Lawn & Landscape* covers several topics:

* *Seed Research & Development* traces the development of one seed variety from discovery to the end-user.

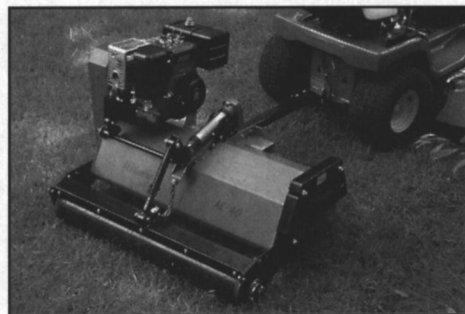
* *Recommended Mower Heights* explores why turf height is so important and how to achieve the right height with your mowing equipment.

* *Drip Irrigation Options* considers new technology improvements.

* *Marketing Strategies that Work (Part 4)* details how to penetrate a new service market.

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The AE-40E AERA-vator is the best tool I've ever used to prepare a seedbed in heavy clay soils. Since the early 1970s we have used dozens of aerators in our lawn care business. We have aerated and seeded thousand of lawns. Nature Select purchased the AERA-vator AE-40E in the fall of 1996. It has out performed all others. We experienced no downtime in three months of continuous use on hundreds of lawns. We also found the AE-40E to be extremely maneuverable when attached to a zero-turning radius (ZTR) mower.



Bill Hildebolt & P.J. Lenihan
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NEW PRODUCTS

short box pickup truck with fleet sides and a hauling capacity of 1/2, 3/4 or 1 ton. The unit installs in the bed easily with four clamp-down bolts and one battery cable running off of the existing 12-volt battery in the truck. The payload capacity is 2 1/2 cubic



yards with 5,000 and 10,000 pound lifting capacities available.

Circle 216 on reader service card

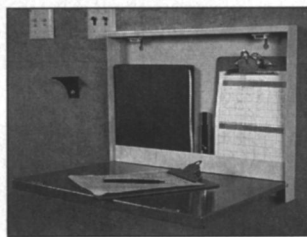
Gro-Macs computerized environmental control system from **ASOMA-WTC Engineering**

uses Windows point-and-click interface on standard IBM-compatible PCs to display current environmental conditions, control operations and alarms. The programmable system monitors sensors for temperature, precipitation, sunlight, water pressure and flow, soil moisture and other variable conditions.

Circle 217 on reader service card

Gempler's industrial grade wall-mount desk offers additional writing space and storage but still folds out of the way when not in use. Made of 16-gauge steel, the outside of

the desk is nearly 18 inches long and 23 inches wide, and the writing surface supports up to 50 pounds of weight. The storage area holds two 1-inch binders or clipboards,



Presto Geosystems® integral polymeric tendons are used to anchor Geoweb® sections on embankments, slopes or when a geomembrane underlay or naturally hard soil/rock prevents anchoring with stakes. The polyester tendons are incorporated into the Geoweb through predrilled holes, and optional polyethylene-coated tendons are available with high tensile strengths.

Circle 218 on reader service card

and the unit can be bolted to the wall.

Circle 219 on reader service card

PRS Materials' Fibre Mat™ is a component-based bonded fibre matrix system for use in erosion control applications requiring temporary soil stabilization. Fibre Mat uses a high grade tackifier and a synthetic fiber with quality 100 percent virgin wood mulch.

Circle 220 on reader service card

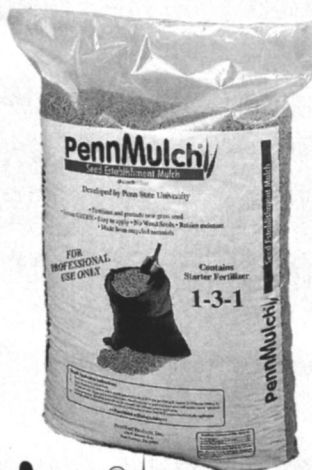
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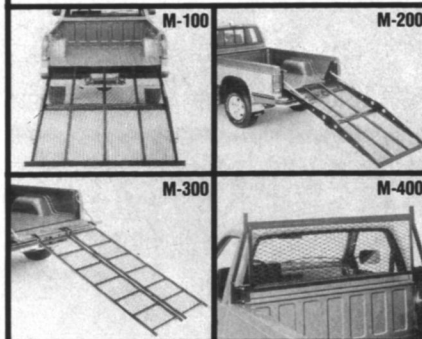
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USE READER SERVICE #97

Duratech's HD 10-P Tornado industrial tub grinder has a 10-foot tub and a 44-inch long grinding hammer mill. The diesel powered unit weighs 24,500 pounds, can be towed with its pintle hitch and offers horsepower capacities ranging from 275 to 400 hp. The discharge conveyor is 22 feet long to stack material up to 18 feet high.

Circle 221 on reader service card

Rain Bird's Unik® battery operated irrigation controller is designed for areas where AC power is not a feasible option. The Unik mounts in a buried valve box for protection and has three independent programs. Each program, based on a seven-day calendar, allows eight start times per day



with run times from 1 minute to 12 hours in 1-minute increments. Independent station operations offer simultaneous or sequential start times, and the unit includes a hand-held transmitter.

Circle 222 on reader service card

The TGS 2000 swing away spreader from **Grotech** mounts to any pickup and swings away to allow full tail-gate access with-

out removing the spreader. The TGS 2000 handles salt, sand and ice melting materials in its 10.6-cubic-foot capacity thermoplastic hopper. An enlarged 10-inch spreader distributes material from 3 to 50 feet, and a safety guard protects the spinner. The 1/3-hp 12-volt motor is completely sealed.

Circle 223 on reader service card

Pro Pelleted™ pelletized calcitic limestone from **Lime Crest**

is crushed into fine particles for optimal spreading, bioavailability and pH-neutralizing effect. The product combines maximum pH-neutralizing particles with a biodegradable wood sap binder to form the spherical pellets. Pro Pelleted starts with calcitic limestone for faster green up, and it's available in two sizes for general applications and for fine turf applications.

Circle 225 on reader service card

Available from **Terrabiotics**, Hydretain is a root zone moisture management product for the microscopic moisture in the soil. Hydretain is designed for use with overseeding, sprigging and sodding projects by keeping new turf establishments from drying out, and is applied by overhead spray or through a fertigation system at a rate of 4 gallons per acre.

Circle 224 on reader service card

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Larry Zimmer, Oak Shade Nursery, Medford, NJ

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NEW PRODUCTS

The T-300 spraying system from **Hydro Turf** is available with complete electronic controls for on-the-go metering and adjustments. The controls can display the travel speed for the sprayer, target spray rate and system pressure and can also indicate actual application rates, field area covered and volume of fluid remaining in the tank. The sprayer has a 300-gallon tank with a 16-inch fill well, a hose reel, 300 feet of 1/2-inch spraying hose and a trigger operated spray wand. Controls can also be used to operate the optional 20-foot-wide spray boom.

Circle 226 on reader service card

Structron's Pull & Prune™ is a ropeless pruner with an inter-



nal steel cable eliminating the need for the standard rope-pulley system. The pruner has a Power Slide™ handle and a steel head with a compound action cutting blade at the end of the 72-inch lightweight fiberglass handle.

Circle 227 on reader service card

Tanaka's ECV-4501 mid-size chain saw weighs 9 pounds with a 43-cc, 2.6-hp engine featuring a vertical cylinder for maximum power and an air infiltration system which removes particles from the air intake for longer engine life.



The saw's automatic decompression system reduces pulling force for easier starting.

ing, and an inertia activated chain brake stops the chain immediately to eliminate kickback.

Circle 229 on reader service card

A portable hand tool rack from **TrimmerTrap** has a quick-release design enabling users to remove the entire rack and tools from the vehicle and move them in the shop for safe storage without taking the tools off of the rack. Users unhook the heavy gauge steel rack by pulling one quick-release pin and sliding the rack from the coupler. The rack also holds "D" handle type tools.

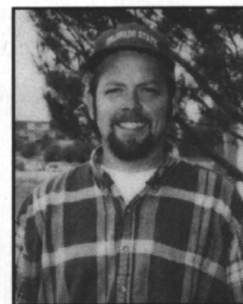
Circle 228 on reader service card

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John Deere introduced a new line of professional walk-behind tillers with three models suited for applications from small gardens to heavy duty projects. The 820R model for professionals is an 8-hp, two speed, rear-tine tiller with a 20-inch tiller width. The unit has a belt shaft, gear drive system and forward tine rotations, up-down and side-to-side adjustable handlebars,



one forward and two reverse speeds.

Circle 230 on reader service card

Heritage™ fungicide from Zeneca Professional Products controls brown patch, Pythium, take-all patch, summer patch, anthracnose and snow mold. The product enters the turfgrass plant through the blade, stem or root system to keep diseases from occurring and offer curative disease control. Heritage is a 50 percent active ingredient, water-dispersible granular formulation, and it is available in 1-pound containers.

Circle 231 on reader service card

The GX22 and GX31 are 360-degree, universally inclin-

Safety glasses from the **DRL Company** combine function and fashion. The glasses consist of impact resistant polycarbonate lenses offering more than 180 degrees of vision, and they are available with clear lenses for use inside or with dark lenses for work in the sun. The precision engineered T-bar nose piece was engineered for comfort, and temple adjustments guarantee the proper fit.

Circle 232 on reader service card

able, 4-stroke engines designed for hand-held power tools by **American Honda Motor Co.** New designs on the 22- and 31-cc engines reduce hydrocarbon emissions by 85 percent and cut down on engine noise. A mechanical decompressor simplifies starting.

Circle 233 on reader service card

IMC Vigoro developed easy-to-open fertilizer pinch bag pack-

aging for Par ex® and Woodace® products. The bags makes opening products easier and allow users to close partially used bags. IMC Vigoro also added pallet skirts of corrugated cardboard for cleaner storage of large quantities of products. The preformed sides are 16 inches high to protect the first three tiers of product.

Circle 234 on reader service card

Who's Who at



Cindy Code
Group Publisher
ccode@gie.net



Bob West
Associate Editor
bwest@gie.net



Susan Gibson
Editor
sgibson@gie.net



Maureen Mertz
Eastern Sales Manager
1723 South Hill
Milford, MI 48381
810/685-2065
mmatl@aol.com



Paul Schrimpf
Managing Editor
pschrimpf@gie.net



Kevin Gilbride
Account Representative
kgilbride@gie.net

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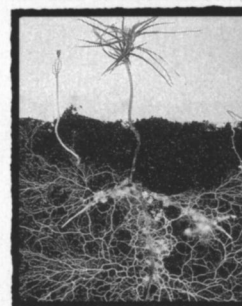


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NEW PRODUCTS

Bobcat® pallet forks from **Melroe Company** fit skid-steer loaders in the 500 through 800 size classes. While the re-designed fork frame offers better visibility and the addition of fork teeth, users will also benefit from an extended upper screen covering the entire back of the frame and enlarged holes in the screen for more viewing area. The fork



teeth allow the skid-steer to hold more materials such as trees and shrubs.

Circle 235 on reader service card

Satellite Screens' Series 50 screening plants are designed for nurseries, landscapers and compost operations looking to separate unwanted materials and debris out of usable soil or other product. The Series 50 includes five models with 5-foot diameter hoppers ranging from a skid-mount unit to a unit fully equipped with conveyors.

Circle 236 on reader service card

The Logic 1 controller from **HIT Products** connects to the

valves of an entire irrigation system with just two common wires. The controller can support between one and 42 stations with eight independent programs and eight start times per program. Non-volatile memory retains program memory without battery backup and water budgeting is available from zero to 250 percent.

Circle 238 on reader service card

Accelerator Industries' new line of grass catchers features a catcher for mid-size

walk-behind mowers and John Deere and Honda 21-inch commercial mowers. The mid-size catchers have a 4-cubic-foot capacity, welded aluminum construction and large I-beam handle. The 21-inch mower catchers are also constructed of welded aluminum with a 3-cubic-foot capacity.

Circle 239 on reader service card



Bandit Industries' Knife Saver™ puts a sharp edge on a dull drum or brush chipper knife without having to remove the knife from the chipper. The diamond honed tungsten carbide sharpener restores the knife's cutting efficiency with a preset angle that centers itself on the knife edge. The kit includes protective gloves, the Knife Saver™ and mill file.

Circle 237 on reader service card

The theft deterrent for trailers from **Fulton Performance Products** prevents wheel rotation so a trailer can't move. The Trailer Keeper is a steel locking device attaching to lug latches on a case-hardened steel rod which is threaded through the wheel and tire. The lug latches are secured to the wheel lock bar with a special brass padlock. This versatile device fits wheels up to 15 inches diameter and attaches in seconds.

Circle 240 on reader service card

The **Bunton Division of Jacobsen Textron's Twister** zero-turn rotary mower has fingertip, electric deck height adjustment ranging from 1 to 5 inches with a numeric indicator. The contoured seat and ergonomically designed controls provide maximum visibility of the cutting deck



and tires, and the 12-gallon fuel tank allows for continuous all-day mowing. Options of three engines and three deck sizes allow users to

customize power needs to mowing applications.

Circle 241 on reader service card

The **Swinger Model 2000** wheel loader lifts 2,000 pounds, has a 10-foot high

pin height and a 95-inch dump height. The 17-gpm auxiliary hydraulic system powers brooms, mowers, log splitters and other tools. A 66-hp engine drives the Model 2000 through all terrains with 4-wheel drive traction.

Circle 242 on reader service card

Barenbrug USA's Premier II turf-type perennial ryegrass is said to feature rapid establishment, outstanding shade tolerance for a perennial rye and a very dark green color. Endophyte enhancement is built into Premier II, which was created as an aggressive variety for restricting unwanted *Poa annua* and crabgrass intrusion.

Circle 243 on reader service card

Lasico's 1282 Model digitizer/planimeter is used for measuring area, length, volume or determining X/Y coordinates on drawings, blueprints, maps and photographs. The 1282 Model can be used as a stand-alone system or with different computer systems. The unit can be set up on any table and preprogrammed for scale compensated area and length measurements.

Circle 244 on reader service card

The **Al-La-Cart** aluminum trailer from **Aluma Ltd.** can be used to haul a variety of supplies on the 100 percent extruded aluminum bed, four-ply tires and torsion axles. Bed sizes range from 54 by 96 inches to 63 by 120 inches with a GVWR of 1,800 pounds with a full width aluminum tailgate.

Circle 245 on reader service card

LANDSCAPING CREATES WYOMING OASIS

PEOPLE EXPECT to see lush grass and professional landscape plantings in city parks, around business centers and on suburban estates.

It would surprise most, however, to see such manicured landscape beauty on a northern Wyoming ranch. But that's exactly what visitors see when they drive into the yard at the IXL Ranch, nestled at the base of the Big Horn Mountains outside Dayton, Wyo.

The grounds at the IXL are as attractive and appealing as any you might find on a Southern plantation. Except, of course, the IXL has a dis-



tinctive western flavor. For example, the pens near the ranch buildings enclose a small herd of buffalo. Other pens house llamas and goats. Three man-made ponds on the property are stocked with trout and largemouth bass. Deer, wild turkeys and waterfowl frequent the grounds.

The IXL Ranch tells the history of its owners in many ways, tracing to its original

Maintaining the grounds at the IXL ranch in Wyoming requires the services of two full-time groundskeepers and six temporary employees. The mowing alone takes two days.

homesteaders in 1891. Captain Frank Grissell, a former mem-

ber of the Ninth Bengal Lancers, a British regiment raised in India in the early 19th century, established a small ranch in 1891 and registered the IXL brand in 1892. The "IXL" name commemorated his old regiment.

Another former Ninth Lancer, Captain Jack Milward, homesteaded the area where the ranch headquarters are now located in

the 1890s. In 1899, he acquired the it from Grissell.

Today, the sign at the entrance to the ranch still reads "IXL Ranch." The intervening years, however, saw many changes. Captain Milward established a dude ranch in the early 1900s. Later, it was owned and expanded in size by the descendent of two U. S. presidents, who later become a Wyoming congressman.

The IXL continued as a dude ranch for several years. Finally, in 1974, it was purchased by oilman John Ellbogen. Under his owner-

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PRODUCT PROFILE

ship, the IXL has undergone perhaps its most striking changes since those early frontier settlement days.

WYOMING LAWN. The previous owners built a 9,000-square-foot ranch house when Ellbogen took over. He added a greenhouse on the south end, an arboretum with a sauna and spa off the master bedroom, more than seven acres of lawn around the main buildings, hundreds of trees, a swimming pool and a waterfall from rock quarried on the ranch. The landscaping includes an English walking garden 120 feet long and 30 feet wide with stone paths.

Maintaining the grounds is a full-time job for two ranch employees, Brian Paxiao, ranch

manager/caretaker and Gill Sutherland, gardener. During the summer, Paxiao hires up to six local high school students to help with mowing, landscaping, edging, painting and other work. Maintaining the property is a six-day per week effort, he said.

"The owner does a lot of entertaining in the summer, and he wants the grounds in tip-top shape," Paxiao explained. Lawn mowing generally begins in late March and continues through October. "We mow every day, six days a week. One of our riding mowers is going all the time, and sometimes both of them are working."

Paxiao noted when both mowers are working, it takes two days to mow the nearly 11

acres of bluegrass lawn around the ranch buildings. "When I got here, we had one rider. We bought a second one in 1993, so we could keep the lawns manicured better." Both riding mowers are 16-hp compact Walker models.

MANEUVERABLE MACHINES. The mowers' maneuverability is important because of the drives, trees and landscape plantings. "These mowers are so easy to use for close-in mowing around trees and beds," he added. "We have a mulching deck we sometimes use, but most of the time we pick up clippings. The mower's grass handling system is ideal for picking up leaves in the fall, too."

Annual precipitation in this area averages 15 to 18 inches,

but much of that comes as snow. All lawn areas are watered with an underground sprinkler system. "We have three systems, each with its own pump pulling water out of our ponds for watering the lawns," said Paxiao. "We typically water every day, seven days a week, from morning until dark during the summer."

Ellbogen makes the IXL Ranch facilities available to garden clubs and other interested groups. The grounds are thus enjoyed by many who often express surprise at the oasis-like setting in the heart of what once was the "Old West."
— Gary Burchfield

The author is a free-lance writer based in Lincoln, Neb.

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(continued from page 29)

A. Some training in TQM was provided at the beginning and we created a cross-functional steering committee of employees. In some ways, that structure was inefficient because we had added another layer. Now, we have managers involved in the committee, which gives us management commitment to the committee's initiatives.

Q. How do you measure results?

A. We're all more customer focused. We established baselines for our customers and can now respond to those baselines. For instance, our landscape installation service response is that a problem must be resolved within seven days. This is something we never measured before.

We're making measurement an ongoing process. We're a company with a lot of employee involvement and a strong focus on the customer. Everybody here knows that the customers never, ever get the short end of the stick. We know it has improved our marketing, as well as our referral and return customer business.

Client communication is so important — they don't want surprises. They trust us, and we want everyone in the company to be committed to maintaining that trust.

Another measure of progress is how we've cut employee turnover in half during the last four years.

Q. What are some of the critical things you've learned as your company has grown that others in the industry should consider?

A. Our market is fertile. Growth is not as challenging as profitable growth. I think the average landscape contractor needs to know about balance sheets and recovering his or her overhead. Owners have to understand budgeting and job costing — whether or not they're making money.

There is plenty of opportunity out there for anyone who wants it. And there is a benefit to having competition from strong, capable companies delivering good work. Part of the challenge is in establishing a level of quality the market demands. If more companies are providing it, it's easier for the client to recognize and then require it.

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The author is Editor of Lawn & Landscape magazine.

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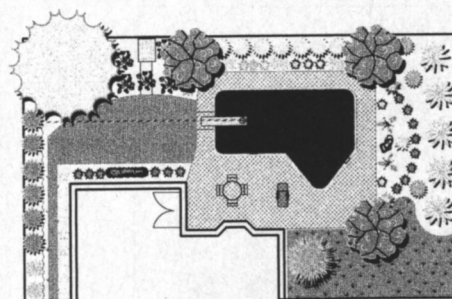
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USE READER SERVICE #107

(continued from page 69)

Kaya is also looking at the behavioral aspects of nematodes. Some species display the ability to jump, and he is trying to determine if this ability is linked to the nematode's search for insect pests. Theoretically, this would make them better grub predators.

MILKY SPORE RESULTS. The use of milky spore disease against the Japanese beetle grub has been the subject of research and debate for decades. Klein has been looking at it for a quarter century.

Milky spore disease, first researched in Virginia, provided some amazing results in initial testing after its discovery. Part of the reason for its high activity back then, said Klein, was that it was tested on highly infested plots. Unfortunately, the disease has not been nearly as effective in controlling smaller levels of infestation that still damage turf. In addition, keeping populations of

milky spore disease significant and viable has also been a challenge.

Despite the difficulties, Klein said that work will continue on finding the best fit for milky spore disease as a Japanese beetle grub control product.

FUNGUS AMONG US. One of the most effective pest controls in nature is the fungus. Nearly every group of turfgrass pest is susceptible to some form of fungus, according to Villani.

Lab tests have reproduced the natural pest control effect of the organisms, but producing a commercially viable fungal pathogen has been a different challenge altogether.

Two promising organisms, *Beauveria balliana* and *Metarhizium anisopliae*, are among the most extensively researched. *Beauveria* has good activity on chinch bugs, while certain isolates of *Metarhizium*

anisopliae have been tested against Japanese beetle grubs.

Fungi are different, Villani said, because they do not need to be ingested by a target pest to be effective. A fungal spore attaches itself to its target and penetrates the circulatory system of the insect. Then, it uses the host as an incubator to reproduce within the insect, causing the insect to die. The resulting spores are then released to infect other target pests.

It's too soon to tell whether fungi can be reproduced effectively and cost efficiently, or whether they can be used with the confidence that they will work consistently. More varieties and strains of fungi are being analyzed to get a better grasp on their potential as a natural pest control product, noted Villani. **LL**

The author is Managing Editor of Lawn & Landscape magazine.

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(continued from page 77)

down from three or four months to about one week to be comfortable running the system efficiently."

Megeath noted installing central control systems will require the operating contractor have a thorough understanding of irrigation systems and proper design. "These systems highlight all of the areas where a system isn't operating up to par," he warned. "The operator needs to understand things like hydraulics and pressure problems. It can be a pain because of all the errors contractors will encounter, but it can also generate new business if the company bills system repairs as an extra cost."

CRYSTAL BALL. While no one's ready at this point to predict that every irrigation system will operate on some type of central control in the future, manufacturers and contractors alike see a growing role in the industry for these systems, even for smaller projects.

"A lot of contractors managing residential or small commercial systems have the problem of staying on top of repairs," noted Megeath. "Having a central system with flow sensors doesn't entirely eliminate the need to check on sprinklers, but it probably eliminates 80 percent of that time with the information reporting. The only thing these sensors can't do right now is tell the operator if a rotating head is actually rotating."

"Our system allows users to program for microclimates," noted Sieminski. "This means projects can be 10 miles apart but with the controllers on each site grouped into a microclimate and still be managed by one system."

"The combination of smaller projects is really what we're pushing for right now," agreed Gentile. "This is perfect for someone handling multiple homeowners associations or similar accounts."

Piper said these systems will really penetrate the residential and smaller commercial

market when the cost issues are addressed by the manufacturers. "Contractors are telling us what they want in these systems, and they're telling us that the costs for items like the controllers have to come down closer to a level of parity with what they would otherwise use on the job," he said. "And they're willing to make some trade-offs in terms of fewer features for a less expensive product."

Wander said he's finding potential customers more receptive to discussions about central control systems as water costs continue to rise. "Because water is a limited resource in our area, I think the trend towards using these systems for water use management will only continue," he said. "Building managers and property owners are finally realizing how much more expensive irrigating is than it has to be." **LL**

The author is Associate Editor of Lawn & Landscape magazine.

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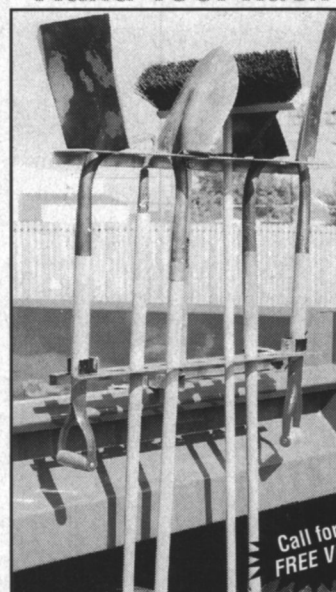
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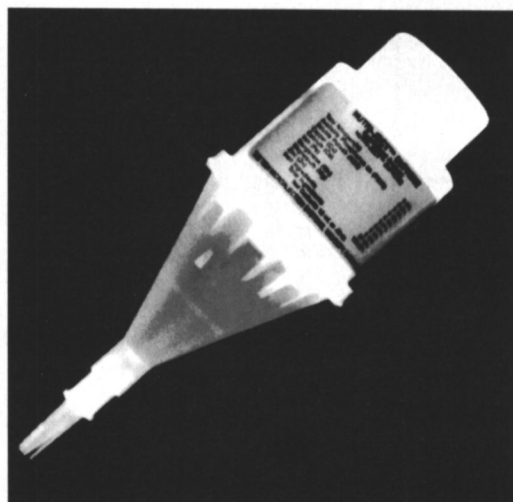
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