

Lawn & Landscape MAINTENANCE

MORE THAN 43,000 SUBSCRIBERS MONTHLY

APRIL 1993 • \$2.50

A PASSION FOR TEAMWORK

Because each division of Smallwood Landscape is equally vital to the firm's success, JoAnn Smallwood instills a sense of mutual respect among co-workers.

*****FIRM 48824
A 179474 03930093 353
PAUL E RIEKE AGENT
MICHIGAN STATE UNIVERSITY
CROP AND SOIL SCIENCES
E LANSING MI 48824

In this issue:
The Perennial Advantage
**Measuring Insecticide
Performance**
**Irrigating
with Reclaimed Water**
Reaping Atlanta's Riches



Call Hardie

And Get The Fax

**700 Ultraflow Series
Valves...**

Now in purple for
reclaimed water
"RW" applications.

EXTENSION 135



**Total
Control...**
Totally
awesome!

EXTENSION 110



MC Plus...

The Industry Standard

EXTENSION 120

Rain Dial...
Modular design allows
for easy upgrades,
remote programming.

EXTENSION 115



Rotor...
Innovative design
leads the pack in
ease of adjustment.

EXTENSION 125



Hardie Irrigation

A James Hardie Company



Emitters...
Dependable,
precise, accurate
drip irrigation.

EXTENSION 145



Call Hardie anytime -
24 hours a day - give us
the extension numbers
of the products you are
interested in and we'll
instantly fax you complete
information on those products.
1-800-572-2500

2400 Series Valve...
An industry leader and
the contractor's choice.

EXTENSION 140



Sprayheads...

Reliable pop-down, heads available
in 2", 3", 4", 6" and 12" models.

EXTENSION 130



COMPLETE INDEX.....	200	400 SERIES CONTROLLERS	190	200 SERIES VALVES	210
MC PLUS CONTROLLERS	120	HR-6100 CONTROLLER	195	700 SERIES ULTRA FLOW VALVES	135
DIAL CONTROLLERS	100	RVC RADIO VALVE CONTROL	185	CENTURY SERIES VALVES	180
TOUCH COMMAND CONTROLLERS.....	150	2400/2600 SERIES VALVES	140	RECLAIMED WATER PRODUCTS	215
IBOC CONTROLLERS.....	105	205 SERIES VALVES	175	530PR ROTOR	125
TOTAL CONTROL CONTROLLERS	110	HR SERIES VALVES	170	100 SERIES SPRAYHEADS.....	130
RAIN DIAL CONTROLLERS.....	115	700 SERIES A.S. VALVES	160	MICRO IRRIGATION PRODUCTS	145
500 SERIES HYBRID CONTROLLERS.....	155	300 SERIES A.S. VALVES	165	WARRANTY INFORMATION.....	230

USE READER SERVICE #90

Same Crew. Same Weather. Same Clients. Fewer Clippings.



Introducing Primo.

Who would have thought, just a few years ago, that worry about what to do with grass clippings could keep a self-respecting landscaper awake nights? Well, we did.

So we developed Primo™ turf growth regulator.

Primo makes grass grow healthier, greener, denser, and shorter. In most cases, it will reduce the number of mowings you do for each client. In every case, it will cut your clippings in half.

That should make for very pleasant dreams.

It Makes The Best Grass Even Better.

©1993 CIBA-GEIGY Corporation, Turf and Ornamental Products, Greensboro, NC 27419. Always read and follow label directions.

USE READER SERVICE #63

Lawn & Landscape MAINTENANCE

VOLUME 14, NUMBER 4

APRIL 1993

FEATURES.....

Cover Photo:
Oscar Thompson,
North Fort Myers, Fla.

28 Cover Story: A Passion For Teamwork

JoAnn Smallwood built her design/build/maintain firm to a \$3.3 million enterprise through a commitment to quality landscapes.

34 Irrigating with Reclaimed Water: Not Just For Large Turf Anymore

Cities are beginning to provide avenues for the use of reclaimed water on landscaped turf.

39 Realizing The Future Of Irrigation Maintenance

Time and financial demands are forcing landscape and irrigation contractors to seriously consider centralized control options.



p. 28



p. 54

42 Regional Market Report: Reaping Atlanta's Riches

Atlanta has earned its reputation as a pro-business city, but the lawn and landscape maintenance market is already feeling the growing pains.

49 Computing Mowing Costs

Calculating mowing costs should be more than a shot in the dark. Increased profitability will result from taking the time to understand all the costs of providing a mowing maintenance service.

54 The Perennial Advantage

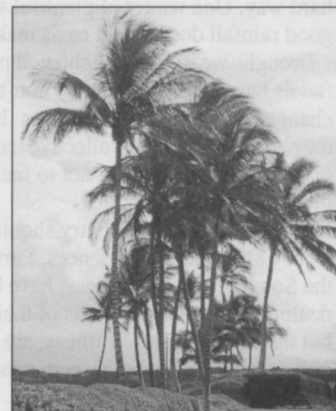
These herbaceous plants can be used to guide pedestrians through a variety of landscape designs.

56 Measuring Insecticide Performance in Turf

Failure to control an insect infestation is often blamed on the insecticide. In many cases, however, fault can result from circumstances such as unreasonable expectations.

65 Safely Sizing The Irrigation System

Poorly sized irrigation systems can result in problems for years to come; difficulties which can be avoided with attention to detail.



p. 65

DEPARTMENTS.....

90
Advertisers' Index

86
Calendar

23
Irrigation News

77
People

17
Association News

88
Classifieds

10
News in Brief
EPA moves forward with
plans for state guidelines
regulating pesticides.

78
Products

8
Business Watch

6
Editor's Focus

74
Seed News

LAWN & LANDSCAPE MAINTENANCE (USPS 657-470 ISSN 1046-154X) is published 12 times per year. Copyright 1993 G.I.E., Inc. Publishers, 4012 Bridge Ave., Cleveland, Ohio 44113. All rights reserved. No part of this publication may be reproduced or transmitted by any means without written permission from the publisher. One year subscription rates, \$25 in the United States, \$29 in Canada and \$82 in other foreign countries. One year foreign airmail rate: \$182. Two year subscription rate: \$35. Subscriptions and classified advertising should be addressed to the Cleveland office. Second class postage paid at Cleveland, Ohio, and additional mailing offices. Postmaster: Return form 3579 to LAWN & LANDSCAPE MAINTENANCE, 4012 Bridge Ave., Cleveland, Ohio 44113.

Editor's Focus

THE HEADLINE READ: Stormy months may ease years of drought in the West. Forgive me if I found this hard to believe. After reporting drought news, irrigation restrictions and water rationing for a number of years I wasn't going to fall for that line very easily. So I read on.

"Two months of storms in the West have left nearly twice the average amount of snowpack — swelling reservoirs and hopes of an end to six dry years."

Maybe it was true. Legitimate sources were claiming that the snowpack in the Sierras was looking good. Pacific Gas & Electric Co. scientists said the snowpack was four to five times the water content it had in early 1992, and above normal for a full year. It was so good that California expected to have enough water to meet 40 percent of the requests from local water agencies. Late last year the state's Department of Water Resources projected it could deliver only about 10 percent of demand.

Renewed water sources is certainly worth clamoring about. But before I could get too comfortable with the news, the murmurs started. "We aren't saying the drought is over." "Reservoir storage is not high enough." "One year of good rainfall won't do it."

Californians have learned their lesson the hard way. One winter of plentiful snow and good rainfall does not an oasis make.

Drought-weary but enlightened public officials have already said they don't plan to change current water restrictions. Instead, they're focusing their collective experiences on the future in an effort not to feel the pinch of the 1980s again.

And the rest of the country should learn from California's experiences. Portions of the Southwest and Southeast have been dealing with water concerns of their own, but the Midwest and Northeast are fairly oblivious to the hardships water shortages can bring.

Some of that is changing, however, as lawn and landscape professionals are approaching the business of irrigation installation and maintenance with acknowledged concern. Our ongoing irrigation training series is proof of that.

The irrigation training series, authored by industry consultant Larry Keesen, has been running for nearly a year now and we regularly receive phone calls from landscapers who are using the lessons as they were intended — as in-house training guides for companies who want to know more about the design, installation, maintenance and troubleshooting of irrigation systems.

The articles have touched on a variety of



subjects including the holding capacity and infiltration rate of soils, water audits, water pressure, equipment selection and head layout. And there's much more to come.

Since the series is far from over, we want to hear from you. We would like to hear your suggestions for future discussion topics. Maybe there's a problem you keep running into in the field, or maybe you can't figure out why water isn't evenly distributed to all locations of a property.

Let us know. Chances are if you're having a specific problem, so are some of your peers. Send your suggestions to Larry Keesen and/or me. We would also like to know about your training programs. If you have an innovative method of using the irrigation training lessons, please let us know. With your permission, we'll share it with all of our readers.

On the subject of irrigation, you'll also find some new ideas in this month's issue including stories on subsurface irrigation, centralized irrigation control and even irrigating with reclaimed water.

These uses have been practiced with success in agriculture and large turf properties and are now making the jump to lawn and landscape care. All three applications are potential water savers, and the concept of centralized control will also save in reduced labor costs.

Additionally, Larry Keesen takes a look at accurately and safely sizing the irrigation system in this month's training lesson.

Hopefully, this will help educate professionals and, in turn, educate the general public on the need for more prudent use of one of our greatest natural resources. — *Cindy Code*

EDITORIAL

Cindy Code
Editor/Co-Publisher

Cathy Hoehn
Associate Editor

Julie A. Evans
Bob Gitlin
Contributing Editors

GRAPHICS/PRODUCTION

Charlotte Turcotte
Art Director

Jami Childs
Production Manager

Helen Duerr O'Halloran
Tracy Green
Carolyn Badger

Richard J. W. Foster
President

Christopher W. Foster
General Manager

John Roddy
Controller

Rosalie Slusher
Circulation Manager

Mark Fosse
Market Research Manager

Fran Franzak
Books Manager

ADVERTISING/MARKETING

Maureen Mertz
Co-Publisher/National Sales Manager

1723 South Hill
Milford, Michigan 48381
313/685-2065
Fax: 313/685-2136

Tim Yedinak
Midwest Sales Manager

Dave Miethke
West Coast Sales Manager
4012 Bridge Avenue
Cleveland, Ohio 44113
216/961-4130
Fax: 216/961-0364

ADVISORY BOARD
Karl Danneberger, Tom Garber
Joe Vargas, Patricia Vittum
Richard White

EDITORIAL OFFICES

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

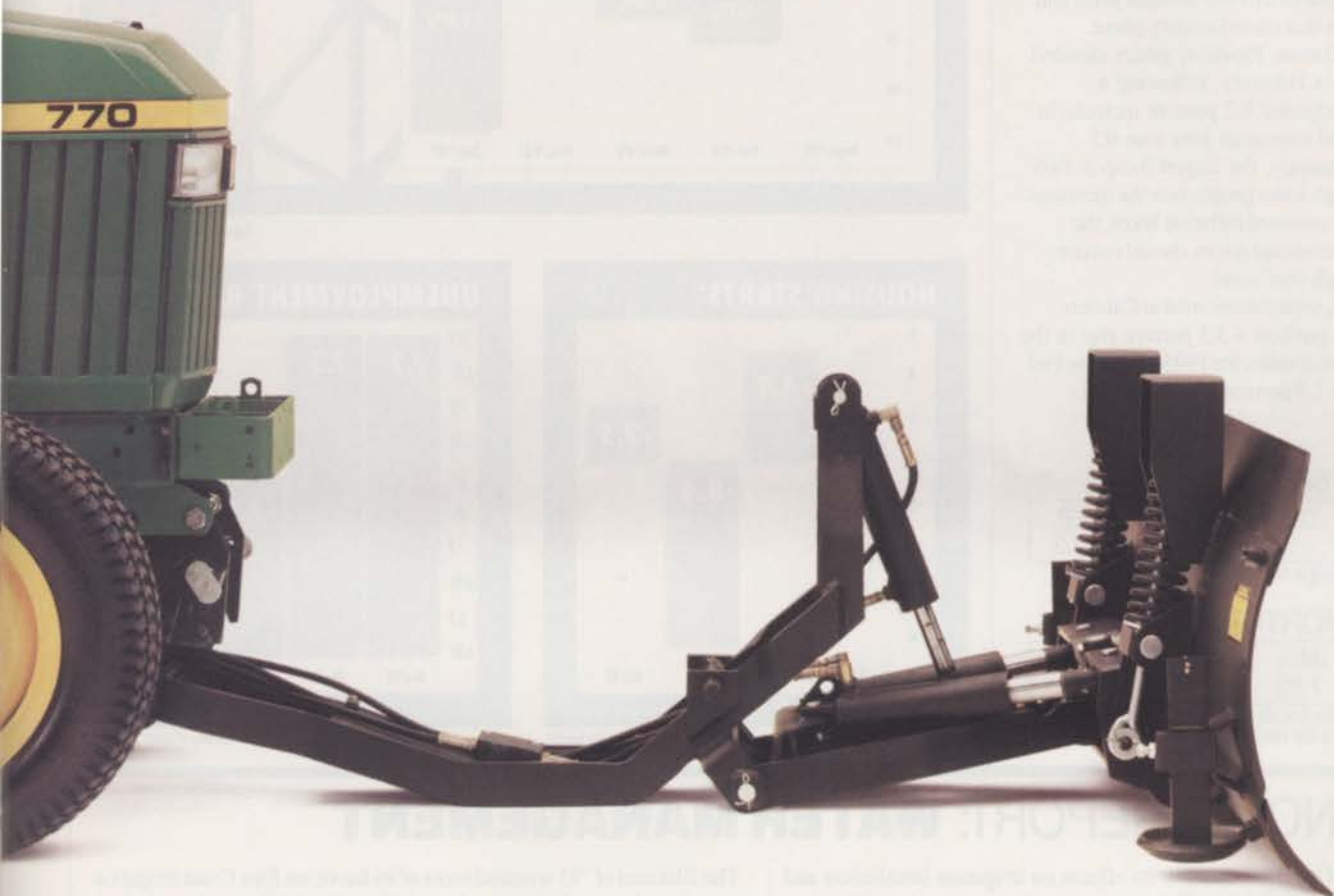
Subscriptions and Classifieds:
216/961-4130

LLM is a member of:
The Professional Lawn Care Association of America
The Associated Landscape Contractors of America
The Irrigation Association
Responsible Industry for a Sound Environment
Turf & Ornamental Communicators Association
The Ohio Turfgrass Foundation

*Cindy Code is on the
board of trustees of the
Ohio Turfgrass Foundation.*



Watch closely.



We're about to
show you how easy
it is to hook up
a John Deere.

USE READER SERVICE #62

Business Watch

ALTHOUGH THE economy experienced its strongest growth spurt in five years during 1992's fourth quarter, economists aren't putting on their party hats yet.

The gross domestic product expanded at an annual rate of 4.8 percent in the last three months of 1992, the highest growth rate since the fourth quarter of 1987. The surge failed to spur development of new jobs, however, and economists caution that growth may continue at a snail's pace.

The first quarter of 1993 brought price and job increases that stirred anxiety about renewed inflation. Producer prices climbed 0.4 percent in February, following a seasonally adjusted 0.2 percent increase in January. And consumer jobs rose 0.5 percent in January, the largest jump in two years. Though some people fear the increases will spawn continued inflation hikes, the Federal Reserve said prices should remain stable through year's end.

Bill Wood, senior economist at Cahners Economics, predicts a 3.5 percent rise in the consumer price index for 1993, while the Fed anticipates a 2.5 percent to 2.75 percent increase.

RETAIL SALES

NOV.	DEC.	JAN.	FEB.
-0.1	+1.1	0.0	+0.3

*Percent change from preceeding month.

FIXED MORTGAGE RATES*

DEC.	JAN.	FEB.	MAR.
8.02	7.83	7.56	7.20

*Posted yields on 30-year mortgage commitments for delivery within 30 days.

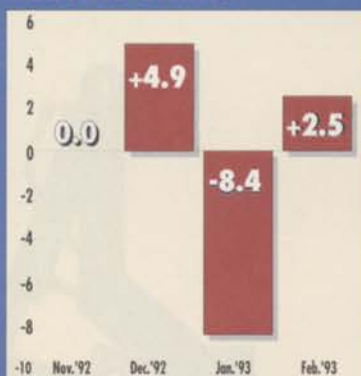
IT'S A ROLLER COASTER RIDE!

It's been a wild ride for sales of new homes over the last five months.



Source: Bureau of the Census

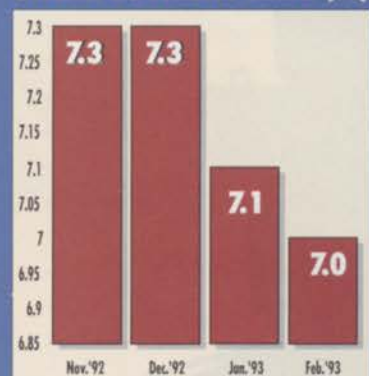
HOUSING STARTS*



*Thousands of homes, seasonally adjusted

Source: Bureau of the Census

UNEMPLOYMENT RATE (%)



Source: Bureau of Labor Statistics

ECONOMIC REPORT: WATER MANAGEMENT

WINTER MAY BE over, but its effects on irrigation installation and general water availability linger on.

Heavy precipitation filled water reservoirs in the West, flooded areas of the Central region, delayed irrigation installation in the Midwest and East and damaged plants in the Southeast.

In California and nearby desert states, extensive rainfall finally ended the longstanding drought that had gripped the region. Though the excess precipitation replenished water supplies, it didn't completely solve water shortage problems.

"One year of good rainfall won't do it," said Keith O'Neil, chief estimator for Valley Crest Landscape, Calabasas, Calif. "Water storage facilities are not adequate to retain water for an extended period of time."

The Blizzard of '93 that ravaged about 20 states in mid-March destroyed some plant materials in northern Florida, while southern locales experienced frost damage.

The storm also wiped out two main waterlines in Lincoln, Neb., causing major flooding and reducing the city's water supply, said Judson Byleen, president of Lincoln-based Judson Irrigation. "There's only one pipe left. It would greatly impact us if they don't get the other two back on-line supplying water."

The Blizzard of '93 wreaked most of its havoc on East Coast irrigation companies. Storms there caused up to a four-week delay on installation, according to Bob Healey, irrigation consultant for I.M.S., Natick, Mass. "The delay hurt contractors who anticipated starting the season about March 15. The delay will hurt their cash flow."

Distributors in the East and Midwest are forced to sit on inventory since contractors are holding back orders. Greg McNeely, parts supervisor for North Coast Distributing Inc., Warrensville, Ohio, said orders are about six weeks behind normal. "We're about 75 percent behind for this time of year. Everyone's being cautious, waiting to see what the weather will be," he said. "If we get some good, dry weather, we'll do OK. If it stays rainy and wet, it could hurt us."

Winter didn't actually hit New Jersey until February, said George McCarthy of Spring Irrigation, N.J. "The biggest effect the snow storms had is that they elongated winter in everyone's minds. People will be less ready to act on springtime projects."

McCarthy said an early streak of hot weather on top of the extended winter would be detrimental. "We really run into problems if we get hot weather early on. The season gets compressed into a short period of time. We won't be able to find the people to hire. If we can't get to it, people will turn to other companies to get the work done," he said. ■

Too late... you missed it.



Heard enough fast talk about implement hookup that really isn't fast? Then you've come to the right place.

Because John Deere 70 Series Tractors have the quickest connecting times in the business.

Case in point, the 770 and front blade. A true "drive into the implement" system. With a total hookup time of less than one minute.

But it's not just our blades that mate so quickly. Every implement you see here can

be hooked up without tools in 5 minutes or less.

See your dealer and get attached to a 70 Series in record time. Or for more information, call 1-800-544-2122.



**NOTHING RUNS
LIKE A DEERE®**



USE READER SERVICE #64

NEWS DIGEST

RISE Unleashes Publicity Campaign

The Responsible Industry for a Sound Environment sent out a series of news releases focusing on the benefits of turf, landscaping and pest control. RISE distributed the releases to more than 1,600 daily and 8,400 weekly newspapers.

The releases, based on RISE's "Pesticides in Your Environment" publication, cover topics such as taking care of turf and unlocking the value of landscapes.

Encore Doubles Nebraska Facilities

Encore Manufacturing plans to double the size of its manufacturing plant in Beatrice, Neb., by mid-June. The company, which celebrates its fifth year of production, expects a 22 percent increase in sales over last fiscal year. The company ships product to all states and 11 foreign countries.

Fiatallis Sells Woods Division

A management team at Fiatallis North America and a private investment group acquired Fiatallis' Woods Division. Headquartered in Oregon, Ill., Woods manufactures tractor-powered accessory equipment and other specialty mowing products.

PGMS Moves Offices; Appoints Acting Director

Effective this month, the Professional Grounds Management Society can be found in larger offices in the same suburban Baltimore community. The new address is: PGMS, 120 Cockeysville Road, Suite 104, Hunt Valley, MD 21031; 410/584-9754; FAX: 410/584-9756.

In addition, John Gillan was named acting executive director. He replaces former executive director Allan Shulder whose contract expired this month. For the past year, Gillan was PGMS marketing director.

Sandoz Sells NK Lawn & Garden

The Garden Companies Inc. acquired NK Lawn & Garden Co. from Sandoz Corp. The new owners include current NK Lawn & Garden management and several financial institutions.

The sale of NK Lawn & Garden Co. is said to be consistent with Sandoz's plan to focus its efforts on providing plant genetics to the professional/agricultural seed market.

EPA Drafts State Guidelines For Pesticide Use

THE U.S. ENVIRONMENTAL Protection Agency will move ahead with plans to establish state guidelines for lawn care pesticide issues, despite Sen. Joseph Lieberman's, D-CT, proposed lawn care bill and pending budget cuts, said an EPA spokeswoman.

In response to findings by the EPA's Lawn Care Pesticide Advisory Committee, the Agency will establish guidelines for states on three pesticide application issues — posting, notification and registries — pending further input from committee members. The group's findings were summarized in a White Paper released in March.

"We're going to move along in the process and Sen. Lieberman's bill will move along," said Linda Murray, an EPA communications representative. "Since there's no legislation pending, that forces us to take the White Paper a step further. If there comes a time to develop regulations, we'll take action," she said.

For now, the EPA is gathering background information for the guidelines.

"We'll have a draft probably in a few months...A group will meet in April with Victor Kimm, the acting assistant administrator," she said.

The guidelines will include model programs for posting, notification and possibly registries. The main emphasis will be on posting, Murray said. "We feel we can move more quickly on posting. Notification and registries are a little more involved," she said. "The end result hopefully will be that if states adopt the program, there will be more uniformity nationally."

More than 25 states have already passed and/or considered posting legislation.

Despite the group's plans, the lawn care advisory committee faces possible disbandment since President Bill Clinton marked such committees as dead wood in his budget cut proposals. "We're not sure yet what will happen with this committee," Murray said. "The agency hierarchy would have to decide which advisory committees they would want to continue to maintain."

Regardless, the committee, made up of 30 members representing various groups and agencies, continues making recommendations to the EPA on pesticide-related issues. "There are other ways to receive comments on the guidelines. We would continue to seek comment from committee members and others," Murray said.

Committee members include Tom Delaney, director of governmental affairs for the Professional Lawn Care Association of America, Norm Goldenberg, vice president of government and environmental affairs for TruGreen/Chemlawn, Allen James, executive director of the Responsible Industry For a Sound Environment, and Jay Feldman, executive director of the National Coalition Against the Misuse of Pesticides.

The committee met twice last year and though no consensus was ever achieved, it identified five lawn care pesticide issues the EPA needs to address — posting and notification; registries; communication, education and outreach; advertising; and preemption. The White Paper provides background information and summarizes committee discussions related to those issues.

(continued on page 14)

Orkin, FTC, Settle Advertising Claim

Orkin Lawn Care agreed to settle Federal Trade Commission charges that it made unsubstantiated advertising claims about the safety of pesticides used in its residential lawn care service programs.

Orkin allegedly used literature claiming its products were rated "practically non-toxic" and had "a lower toxicity rating than many common household products like

suntan lotion or shaving cream."

Orkin claims the two brochures in question belonged to a company it acquired in the mid-1980s, and had not been used since prior to the FTC's initial request for information in January 1990, according to Judy Donner, Orkin's manager of public affairs. "We haven't been using the language discussed since the 1980s," she said. "This is old news, as far as Orkin is concerned."

(continued on page 14)





WATER

Water...it is precious and in great demand. Without it, we would have no food...no shelter...no life. But, the use of water must be managed effectively.

If you want to create the most efficient irrigation system using the latest techniques and practices, contact your local **Certified** Irrigation Manager, Designer or Contractor. You'll be confident the job will be done right.

THE IRRIGATION ASSOCIATION

1911 N. Fort Myer Drive, Suite 1009
Arlington, Virginia 22209-1630



Phone: (703) 524-1200
Fax: (703) 524-9544

USE READER SERVICE #58

News

(continued from page 10)

Donner conceded Orkin settled the claim. "We were fully cooperative during the process. It was in everybody's best interest to work together on this."

FTC spokesman Howard Shapiro said Donner's claim that Orkin has not used the language in the brochures since the 1980s was news to him. "I had not heard that before," he said. "At the time the investigation began, Orkin was disseminating the information."

He declined to say when the investigation began, but said it was after the mid-1980s.

The settlement agreement prohibits Orkin from advertising its pesticides as safer than some common household goods or as posing no significant risk to human health or the environment, without scientific evidence to substantiate the claims, Shapiro said.

California Firm Donates Mobile Medical Clinic

Environmental Industries designed, built and donated Los Angeles' first mobile medical clinic to provide free medical services to the

city's homeless and impoverished. The clinic includes three examining rooms, built-in equipment, laboratory and a bathroom with shower.

"Environmental Industries spearheaded the concept and built this mobile clinic in response to a growing population of

(continued on page 16)

News

(continued from page 10)

According to the paper, committee members generally support posting and notification as a means of communicating to interested persons that a lawn has been treated with pesticides. A few members strongly believe there is a lack of scientific data to support the need for posting and notification.

On the issue of whether the EPA should develop enforceable posting and notification standards or simply develop guidelines, some argued that standards would simplify state regulations, while others said guidelines would allow states and communities to implement policy based on potential risks, degree of local concern and availability of enforcement resources.

Discussions pinpointed several key advertising issues, such as misleading use of terms such as "green" and "EPA registered," definitions of misleading terms and the misuse of safety claims. The EPA's current regulations under the Federal Insecticide, Fungicide and Rodenticide Act explicitly prohibit health and safety claims on pesticide labels or any safety claims that differ substantially from claims made at the time of product registration.

Members failed to reach consensus on preemption during the committee's last meeting in May. The issue of preemption hangs on whether a federal standard is enacted. Members took four conflicting stances on the issue: allow preemption and mandate a national standard, don't enforce preemption but still mandate a federal standard, promote preemption but allow states to opt out of adopting a national standard or don't have preemption and allow states to opt out.

TO ECONOMICALLY RECYCLE TREES, BRUSH & PRUNINGS



THE 9" DIAMETER CAPACITY MODEL 90

SMALL CHIPS ARE IDEAL FOR MULCH AND COMPOST

Bandit's 6" and 9" chippers produce finely ground 1/4" length or 3/8" length chips, and Bandit's 12" machines can be purchased with extra knives and knife pockets to produce small chips.



Isn't it time that you tried the most popular chippers in the tree care industry. Call or write for free brochures, price sheets and video tapes:

BANDIT INDUSTRIES, INC.

6750 MILLBROOK ROAD • REMUS, MI 49340
PHONE: (517) 561-2270 • FAX: (517) 561-2273

USE READER SERVICE #40

CHOOSE A BANDIT CHIPPER

Select one of Bandit's 6", 9", or 12" diameter capacity, horizontal-feed chippers or Bandit's 5" gravity-feed chipper. All are hydraulic-feed, disc-style chippers. See how quickly and effortlessly these machines turn tree and shrubbery waste into dimensional, recyclable wood chips.

SOFTWARE

Mr. Accountant the ultimate landscapers business management system

Accounts Receivable • Invoices • Statements • Sales Tax/Finance Charge Computation • Aging Reports • Truck Routes • Chemical Application Reports • Plant List • Plant Inventory • Lead Tracking • Proposals • Accounts Payable • Payroll • Check Writer • General Ledger • Mailing List • Equipment Maintenance • Completely Menu Driven • Simple to Use • Customization and Multi-user Version Available

- Designed for landscape construction, irrigation, chemical & maintenance companies.
- We will setup the software for ANY type of form.
- Complete program \$695.00.
- Demo available.



SPS Consulting
1032 Raritan Road
Cranford, NJ 07016
(908)272-1398

USE READER SERVICE #41



GROUND IVY



OXALIS



CRABGRASS



NUTSEGE



SPURGE



CLOVER

Dependable, economical post-emergent control

Crabgrass, Nutsedge

Plus the truly hard-to-control broadleaves

Read how Trimec® Plus, with its unparalleled broad spectrum control, fast action, and gentleness to desirable grass, is helping turf professionals improve their environmental stewardship and reduce their chemical costs.



Everett Mealman
Chairman and
Chief Executive Officer
PBI/Gordon Corporation

The environmental age weed control program being used by Roger Albrecht is typical of progressive turf professionals.

Albrecht is president of Nitro-Green Corporation, which has 38 lawn care franchisees scattered over 15 different states, and he manages two locations in California for his own hands-on experience.

"Our goal is to eliminate all broadcast spraying of herbicides on the ornamental turf we manage, and replace it with spot treatment as necessary," says Albrecht. "We want to be proactive on environmental issues and be able to assure our customers that we are using the absolute minimum requirement of chemicals."

Albrecht goes on to explain that such a program takes time to implement because

the turf needs to be so healthy and thick that weeds cannot easily germinate.

"The elimination of the broadcast applications of pre-emergent herbicides is the critical step," says Albrecht, "because, no matter what, some crabgrass is going to appear, and since crabgrass is a major cause of complaints, we must be able to eliminate it fast with no discoloration."

Trimec Plus provides the safety net that enables Albrecht to eventually eliminate broadcast applications of pre-emergent herbicides. "We have absolute confidence in Trimec Plus to handle any crabgrass or nutsedge that shows up," says Albrecht.

And, of course, the same spot sprayer filled with Trimec Plus that Albrecht uses to control crabgrass and nutsedge also controls the other grassy and broadleaf weeds that can germinate throughout the year. "Having one herbicide for all of our spot treatments is a major factor in our program," says Albrecht.

But if Trimec Plus is ideal for spot treatments, it is also unsurpassed for broadcast applications when the need exists. Listen to George Toma, the executive turf consultant for the Royals, Chiefs, and NFL:

"My son, Chip, the groundskeeper for the Truman Sports Complex, used broadcast applications of Trimec Plus on the out-of-sight, unirrigated perimeters of the complex which was loaded with every conceivable weed, and Trimec Plus

absolutely took out everything except the bluegrass."

According to Toma, it would have taken four different selective herbicides to do the job that Trimec Plus was able to do . . . but even more important, Toma says that Trimec Plus did a better job on all of the individual species than a narrow spectrum selective could have done.

Now also approved for use
in zoysia and tall fescue

Trimec Plus is a unique formulation of Trimec Broadleaf Herbicide and MSMA in a stable, uniform suspension that is as easy to work with as any other Trimec Complex.

And now it is labeled for use in turf-type tall fescues and zoysiagrass, as well as established bluegrass and bermudagrass.

So, by all means, give Trimec Plus a trial this season . . . especially on crabgrass, nutsedge and clover. We assure you that your experience with Trimec Plus will give you the confidence you need to start working toward the elimination of broadcasting.



1217 W. 12th Street • P.O. Box 4090
Kansas City, MO 64101 • 816-421-4070

TRIMEC® PLUS

Trimec® is a registered trademark of PBI/Gordon Corporation.

© PBI/Gordon Corporation, 1993

HERBICIDE 771-293

USE READER SERVICE #60

News

(continued from page 14)

homeless and indigent families, particularly those with children," said Burton Sperber, Environmental Industries' president and chief executive officer. "The clinic will focus on the city's children and prenatal care."

Originally the mobile clinic was a cooperative venture between Environmental Industries, the city of Los Angeles, Family Housing Corp. and a major hospital. The hospital withdrew funds, which almost aborted the project. Hollywood Sunset Free Clinic, an organization providing health care to the homeless, stepped in to replace the hospital's funds and services.

PLCAA Calls For Persistent Lobbying

The Professional Lawn Care Association of America urges members to keep state legislators and their staff informed of industry needs and viewpoints on specific issues, following the association's Legislative Day on the Hill in Washington D.C.

More than 100 members attended the

February event to lobby against proposed legislation that would regulate applicators.

Particularly pressing is Sen. Joseph Lieberman's, D-CT, Notification of Chemical Application Act that would, among other things, require commercial applicators to notify customers 24 hours to seven days prior to the first application; provide supplemental notification if using materials different than those specified in the notification; post signs at each entrance of the application site and at an undetermined distance around the site if it is unfenced; and provide 24 to 72 hours in advance, written or oral notification to adjacent property owners and chemically sensitive neighbors listed on a registry.

The proposed bill was shelved last year, but has returned to the spotlight since Sen. Lieberman can now presumably draw support from Sen. Max Baucus, D-MT, the new chairman of the U.S. Senate's Environment and Public Works Committee. Baucus, who replaced Sen. Daniel Moynihan, D-NY, is said to be more likely than his predecessors to support strict environmental regulations.

Sen. Lieberman hopes to have the bill in legislative language by June. It remains uncertain if hearings will be held.

EPA Cancels Survey Due To Budget Cuts

The U.S. Environmental Protection Agency canceled plans to survey records of certified commercial pesticide applicators due to budget cuts. The Agency may reinstate the program next year.

Mandated by the 1990 Food, Agriculture, Conservation and Trade Act, the Agency was to survey certified commercial applicators of non-agricultural pesticides and report its findings to Congress.

"Our budget was cut significantly this year, forcing us to eliminate or postpone some projects. That was one of them," said Arty Williams, chief of the EPA's certification and training branch. The program will return in 1994 "if we have the money," she added.

The EPA planned to analyze applicator's use patterns and conduct benefit and exposure analyses for special reviews and re-registrations. The program would entail collecting identification of each pesticide used by product name formulation and EPA registration number; quantity of each product by type of use and principal target pest; counts of individual applications, sites and target pests; and rates of application. ■

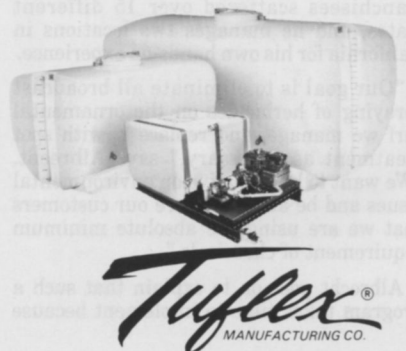
OUR STANDARDS:

TUFF TUFFER TUFLEX!

Some spray tanks are tuff. Others are tuffer. Tuflex-built tanks are the toughest because of our uncompromising standards in design, materials and craftsmanship.

Tuflex is the only manufacturer that specializes in hand-crafted seamless fiberglass tanks and spray systems for the pest control and lawn care industry. Our 10 to 1200 gallon tanks won't leak, rust or pit, so they can handle your toughest jobs with little or no future maintenance. And we stand behind our tanks with a full five-year warranty.

After 20 years of servicing the world's leading lawn care companies, we've proven that nothing compares to Tuflex because nothing is tougher than our standards.



Call toll-free 1-800-327-9005 for prices on our complete line of tanks.
In Florida, call collect (305) 785-6402.
1406 S.W. 8th St., Pompano Beach, FL 33060

USE READER SERVICE #79

Association News

THE **Professional Grounds Management Society** is co-sponsoring the second Midwest Grounds Management Conference at Miami University in Oxford, Ohio. The event is set for July 14-15.

PGMS anticipates increased participation over last year's convention since its annual conference and trade show will be held in Baltimore this year. Both events landed in the Midwest last year, possibly detracting from overall attendance of each, said John Gallin, PGMS' acting executive director.

Although the agenda was not finalized at press time, the list of expected presentations includes Bill Hendricks of Klyn Nursery on plant material; Dr. Bill Pound, The Ohio State University, on turf selection and new products; Rob McCartney, horticulturalist at Sea World, Ohio, on landscaping with maintenance in mind; Dave Nutini, RNK Environmentals, on practical yard waste reduction; and Jim Sharp, Century Equipment, on irrigation systems.

The conference, also co-sponsored by the Midwest Association of Physical Plant Administrators, will include nine educational sessions. Highlights include an exhibitors' tradeshow and tours of the university.

For more information...



PGMS

120 Cockeysville Road
Suite 104
Hunt Valley, MD 21031
410/584-9754

PLCAA

1000 Johnson Ferry Road, N.E.
Suite C-135
Marietta, GA 30068
404/977-5222

ALCA

12200 Sunrise Valley Drive
Suite 150
Reston, VA 22090
703/620-6363

LCA

9053 Shady Grove Court
Gaithersburg, MD 20877
301/948-0810

PAPA

P.O. Box 414
Wickenburg, AZ 85358
602/684-7308

A recent poll indicated environmental concerns are not among the top issues pressing the 103rd Congress, according to Tom Delaney, director of government affairs for the **Professional Lawn Care Association of America**.

The poll, taken by Bonner & Associates, ranked jobs, the national deficit and health care as top priorities, but placed foreign policy lower than environmental concerns.

Delaney also reflected on the possibility of Senate lawn care hearings being held prior to

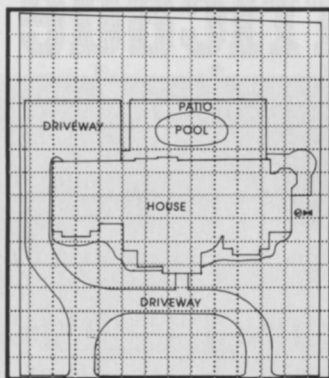
the introduction of pesticide legislation. Such hearings would likely serve to motivate legislation enactment, he said.

Sen. Joseph Lieberman, D-CT, seems determined to keep his lawn care bill under the Emergency Planning Community Right to Know Act, which means hearings, if held, would probably take place in the Senate's Superfund, Ocean and Water Protection subcommittee chaired by Sen. Frank Lautenberg, D-NJ.

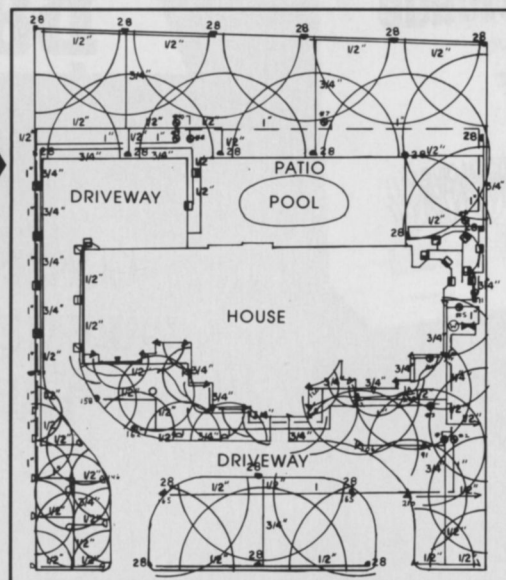
(continued on page 20)

HYDROCAD PC Irrigation Design

In as little as **15 minutes** have your parts list!



Input Diagram:
Fax, Scanner, Digitizer



Output Diagram: Color or Black & White

- FRIENDLY
- AFFORDABLE
- FAST
- ACCURATE
- POWERFUL
- PROFESSIONAL



**EAGLE
DESIGN**

SOFTWARE
SPECIALISTS

13918 WESTHEIMER, SUITE 504
HOUSTON, TX 77077

JOHN PRUTZMAN (713) 531-9804

Write or call for a FREE demo disk, 5 1/4" or 3 1/2"
Distributors Wanted

English/Metric Versions
ALSO
MAC Version July '93

USE READER SERVICE #66

WEED OUT CRABGRASS CANCELLATI



WITH

Barricade

HERBICIDE

THE MOST
CONSISTENT CRABGRASS
PREEMERGENCE HERBICIDE
IN THE INDUSTRY TODAY.

SANDOZ Use pesticides effectively. Read and follow label directions carefully.
Barricade® 65WG preemergence herbicide is a registered trademark of Sandoz Ltd. © 1992 Sandoz Agro, Inc.

Distributed by:

AGRA TURF
SEARCY, AR
501/268-7036

AGRI TURF
HATFIELD, MA
413/247-5687

CANNON TURF
INDIANAPOLIS, IN
317/845-1987

ESTES CHEMICAL
WICHITA, TX
817/766-0163

GEORGE W. HILL CO., INC.
FLORENCE, KY
606/371-8423

AG. RESOURCES, INC.
BRANDON, FL
813/684-3306

BENHAM CHEMICAL
FARMINGTON HILLS, MI
313/474-7474

E.H. GRIFFITH, INC.
PITTSBURGH, PA
412-271-3365

FISHER & SON, INC.
MALVERN, PA
215/644-3300

LEA'S GREEN MEADOWS
TEMPLE HILLS, MD
301/899-3535

ONS

Solve one of the greatest causes of customer complaints and lost business with a spring treatment of Barricade® WG. It's the only preemergence herbicide that consistently fights crabgrass, spurge, foxtail, goose grass and other weeds through the entire season—even in long-growing southern climates. With its launch this season, Barricade was successfully proven on over 45,000 acres.

Its low solubility binds it in the soil right at the point where weeds germinate. It stays where you apply it and lasts

just as long as needed. That's why you can oversee in the fall with confidence. Barricade's performance reduces costly re-treat expenses including labor, materials and lost management time. Plus, handy water soluble packs make Barricade easy to use and applicator-friendly.

Keep more customers and keep customers more satisfied with Barricade. Call your selected distributor today and ask about their Barricade Performance Assurance Plan. And make next year more profitable.

LEBANON TURF PRODUCTS
LEBANON, PA
717/273-1687

PROFESSIONAL TURF SPECIALTIES
CHAMPAIGN, IL
217/352-0591

TURF INDUSTRIES, INC.
HOUSTON, TX
713/952-4488

TURF SUPPLY
EAGAN, MN
612/454-3106

WILBUR ELLIS
KENT, WA
206/351-6591

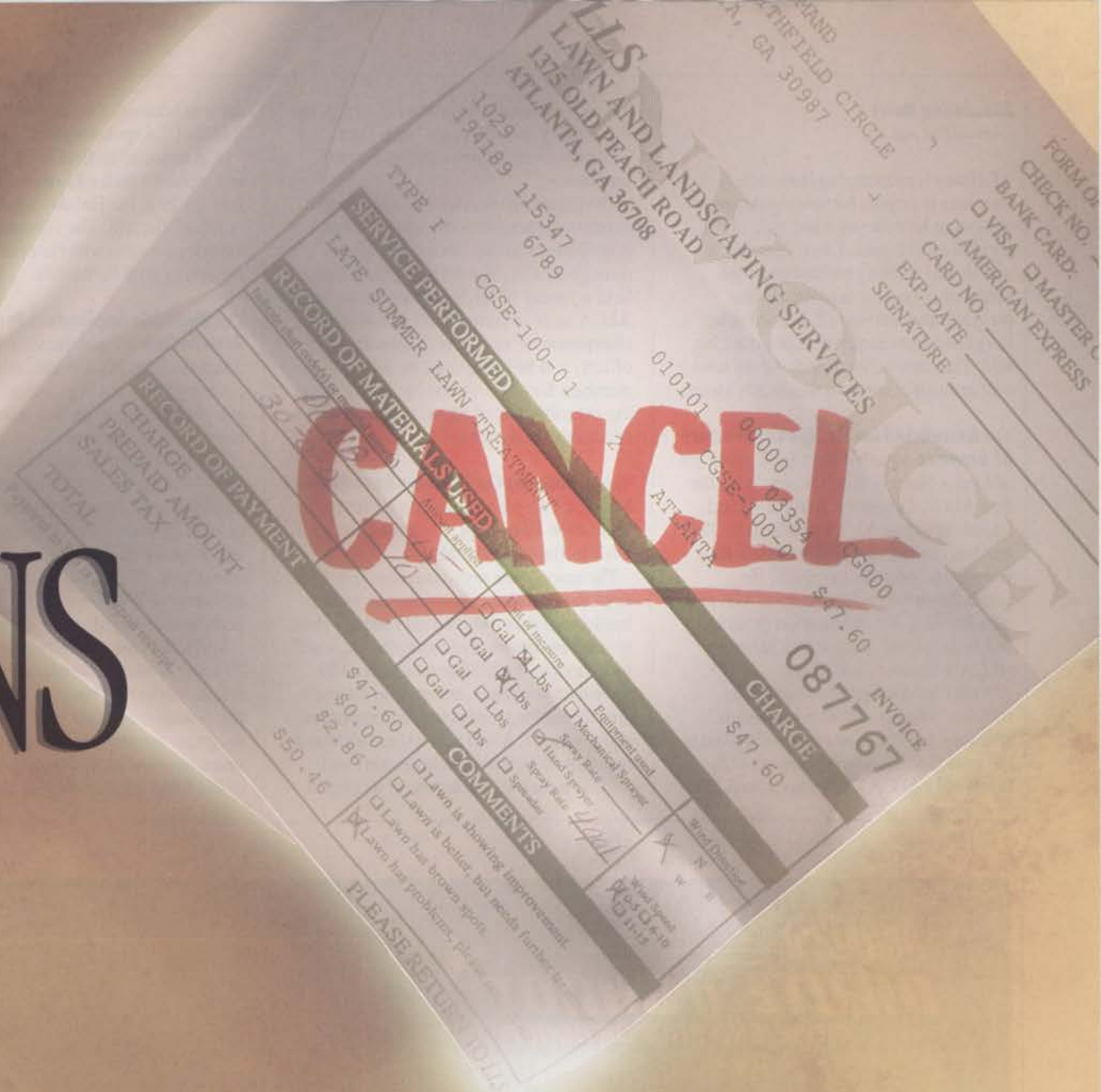
PENAGRO TURF & ORN. PRODUCTS
BOONE, NC
704/264-6045

REGAL CHEMICAL COMPANY
ALPHARETTA, GA
404/475-4837

TURF PRODUCTS LTD., INC.
CHICAGO, IL
708/668-5537

VIGORO INDUSTRIES
WINTERHAVEN, FL
813/293-3147

USE READER SERVICE #89



Association News

(continued from page 17)

Delaney is encouraging lawn care operators to prepare for new regulations, indicating he believes some type of legislation will pass. Lawn care companies should at least give customers the option of an organic or pesticide-free program, alternatives to 2,4-D and strict integrated pest management practices, he said. This shows clients professional lawn care companies are environmentally aware.

The **Associated Landscape Contractors of America** awarded Tom Lied, president of Lied's Nursery Co., Sussex, Wis., the first ALCA Landscape Service Award.

Lied served as ALCA president in 1969 and has chaired the ALCA Crystal Ball Committee since its inception. He currently serves on the Board of Governors for ALCA's certification program and is an annual sponsor and judge at ALCA's Student Field Days.

"Tom Lied distinguished himself as someone who has served in leadership positions, has continued to stay involved in the work and has gotten his employees involved in ALCA leadership as well. He

has been extremely supportive of ALCA and the industry over the years," said Tom Garber, the association's immediate past president.

The Landscape Service Award is given based on a member's commitment and contributions to the landscape industry through ALCA. The recipient must have held a variety of leadership positions in ALCA such as committee head, division chairperson or executive committee officer, and be recognized by fellow members for years of service and outstanding contributions of ideas, programs and/or educational endeavors.

The **Landscape Contractors Association**, MD-VA-DC, plans to launch its first Landscape Expo Sept. 23 at the Lion's Club in Burtonsville, Md.

The association previously combined its field day and trade show into one event, but decided the exhibition held enough clout to stand on its own. The expanded show will include more than 150 booths, at least 50 more than last year's, and include a demo area for mowing, lawn care and excavation equipment. LCA will hold a silent auction to benefit its Educational Scholarship Fund.

"This is the only tradeshow of its kind in

the area because of the demos," said Jean Rankin, LCA spokeswoman.

LCA canceled its field day this year, and will replace it with a Summer Conference July 28-29 at the Holiday Inn Crown Plaza in Rockville, Md. The educational program includes a session with Pam Harper, author of *Designing With Perennials*.

The **Pesticide Applicators Professional Association** plans to provide 43 educational seminars in California this year covering laws and regulations, spray equipment calibration and safety equipment, among other topics.

The 5,000-member association formed in 1985 in response to state mandates requiring applicators to undergo a certain number of hours of continuing education to renew qualified applicator licenses and certificates. More than 13,000 applicators will receive PAPA-sponsored education this year, spokesman Manuel Gonzales said.

Applicators are generally required to obtain 20 hours of continuing education in California, including four hours of laws and regulations every two years. PAPA's programs are structured to provide at least seven hours of accreditation and two hours of laws and regulations instruction. ■

AquaGro® DILUTE 'n SHOOT™ HOSE-END PROPORTIONER™

The No Water-In Alternative For Applying AquaGro®•L Safely, Accurately And Conveniently.

Now you can apply AquaGro®•L concentrate to problem areas at maximum strength without a spray rig and without watering it in. Simply attach Dilute 'n Shoot™ to the end of a hose and get the penetrating power of AquaGro•L, the most widely used soil wetting agent, whenever and wherever you need it.

Safe & Accurate

The heart of the Dilute 'n Shoot is its precision tooled Venturi siphon, which accurately meters AquaGro•L and mixes it with the proper amount of water to ensure turf safety — even during the most stressful weather. The Dilute 'n Shoot, supplied with a 5 quart reusable bottle, allows you to cover up to 20,000 sq. ft. at a rate of 8 ounces per 1000 sq. ft., without refilling.

Dilute 'n Shoot and 5 quart AquaGro•L refills are available from your Aquatrols Turf Products Distributor. Call for a FREE product information sheet.



AQUATROLS
Making Water Work Efficiently

5 North Olney Ave., Cherry Hill, NJ USA 08003
800-257-7797 from anywhere in the U.S. and Canada
609-751-0309 • Fax: 609-751-3859

© 1993 Aquatrols Corp. of America, Inc.

USE READER SERVICE #15

Irrigation News

TECHNOLOGY BRINGS SUBSURFACE IRRIGATION TO TURF

ACCORDING TO A growing number of green industry experts, subsurface irrigation — used successfully in commercial agriculture for more than 15 years — is making the transition to landscape and turf.

"I think this is the future trend. I can have a picnic on my lawn while it's being irrigated. Subsurface won't disturb anything. The same goes for a golf course and other public landscape and turf areas," said Claude Phene, research leader of the USDA Water Management Laboratory in Fresno.

In potentially sensitive areas, subsurface irrigation can eliminate a number of negatives associated with irrigation such as wet, unusable land; overspray, safety and liability issues; potential weeds, disease and aeration problems; and runoff, erosion and water waste. By placing water directly at the root zone on a consistent schedule, subsurface irrigation is gaining momentum and acceptance among landscape/irrigation designers, municipalities, developers and managers of sports facilities.



Subsurface irrigation is being considered for landscape use. Photo: Geoflow

Subsurface irrigation is specialized drip tubing buried 6 to 8 inches below ground with 12 to 24 inches between drip lines. It provides plants, turfgrass and trees with a consistent amount of water and nutrients where they are needed the most — at the root zone. The drip tubing contains its own emitters or water outlets, and the rate of precipitation is determined by the specific products selected and the design of the system.

Subsurface technology and equipment has been the subject of intensive experimentation at the Center for Irrigation Technology in Fresno. In 1989 CIT installed numerous turf plots to study the effects of subsurface irrigation and to compare the performance of the products on the market. Some turf plots failed because of the type of product used and were removed from the study, but other subsurface brands appeared to be passing all tests. (Greg Jorgenson at CIT is the leader of this ongoing project.)

Tom Bressan, a drip irrigation expert at

Switch to
Subsurface Drip Irrigation

Switch to

GEOFLOW

The only subsurface irrigation with
guaranteed ROOTGUARD® Protection.

Now available with pressure compensating emitters

For more information phone (800) 828-3388

GEOFLOW

USE READER SERVICE #21

USER FRIENDLY WEED CONTROL

Dissolve™ - Water Soluble Three-Way In A Water Soluble Bag.

In today's regulatory environment, you have enough concerns running your business. Relieve yourself of some of the worry by using **Dissolve™** in your weed control program.

Just toss the bag in the tank and go.

- NO MIXING
- NO POURING
- NO FREEZING
- NO MEASURING
- NO TRIPLE RINSING
- NO CONTAINER DISPOSAL
- NO EXPOSURE TO CONCENTRATES
- PACKAGED IN RECYCLABLE CARTONS

DISSOLVE™

Call us at 1-800-345-3330

Riverdale

USE READER SERVICE #23

the Urban Farmer Store in San Francisco, said that as the industry becomes more concerned about water efficiency, waste and legal accountability, researchers will need to take a second look at subsurface agriculture products that are adaptable to general landscape, sports turf and residential irrigation.

SUBSURFACE AND SPORTS FIELDS.

Bill Johnson, maintenance supervisor for the parks department, city of Novato, talks about Hammon Field at Olive Park, one of the city's most intensely used baseball fields. "We've been trying to improve our water conservation methods in Novato and decided to put in an underground drip system to experiment."

Hammon Field was already seeded with polymer before their subsurface system was installed.

"We feel that together with the polymer, the total system works very well. We're also getting better use out of the field with subsurface," Johnson said. "The baseball field could probably be played on while being irrigated, but we don't recommend it because we have bare patches at the pitching mound and plates. But with a football field or a plain grass field, you

could play on it during irrigation."

Originally the field had some dry areas which produced striping, and crews had to learn how much water was needed to run the system by first flooding the field and then backing off to the proper level.

"I would not hesitate recommending subsurface irrigation to another city," he said. "I also want to put in another system somewhere else based on what we've learned with this initial project."

Another subsurface irrigated sports field is underway in Milpitas. A new football field for the Unified School District will be completed by the end of September. For Francois M. Van der Spuy, president of Crop Production Engineering in Napa and consultant to the school district, his involvement with subsurface irrigation on this sports field is a first.

"This will be a great experiment for me to see it work in a large turf area. I've already seen it work well in agriculture," Van der Spuy said. "My biggest fear is that there are not enough guidelines for people to know when to turn subsurface on or off, unlike the obvious visual clues with overhead sprays. It's all underground, out of sight. I'm apprehensive about the level of management skills in the industry

concerning subsurface. But, maintenance is almost negligible."

Subsurface equipment with a root control product was specified for the football field. "Many years ago the concept of impregnating plastic hoses with Treflan, a premergent, was developed by Battelle for nuclear reactors so they could deter root intrusion in their pipelines. This technology was transferred to the ag industry and subsequently to the landscape and turf market."

RESIDENTIAL APPLICATIONS.

Is subsurface homeowner friendly? "It should be because of the water savings," said Phene, "but installing it is a bit more complicated." Phene installed subsurface two years ago for his lawn.

The only negatives are flushing the line two to four times each year and paying higher installation costs. If a break occurs you have to dig up a part to make the repair, but it's not difficult. Phene emphasized that the reason it has been so successful for him is that his lawn has an automatic fertilizer injector system.

"It's one of the key factors. We have no evidence of color striping or streaking," he said. "It's often a fertility problem more than

(continued on page 90)

DEPENDABLE, LOW COST BROADLEAF WEED CONTROL

Your Choice Of Two Proven Three-Way Products.

Riverdale offers you a choice in the proven effectiveness of three-way broadleaf herbicides. **Triplet™** or **Triamine™**. **Triplet™** combines 2,4-D, Mecoprop and Dicamba and **Triamine™** combines 2,4-D, Mecoprop and Dichlorprop.

ECONOMICAL
UNIVERSITY TESTED
USER PROVEN
BROAD SPECTRUM
CLEARED FOR USE ON COOL AND
WARM SEASON TURF

Triplet™ **Triamine™**

Call us at 1-800-345-3330

Riverdale

FINALLY, DRIP IRRIGATION MADE EASY!

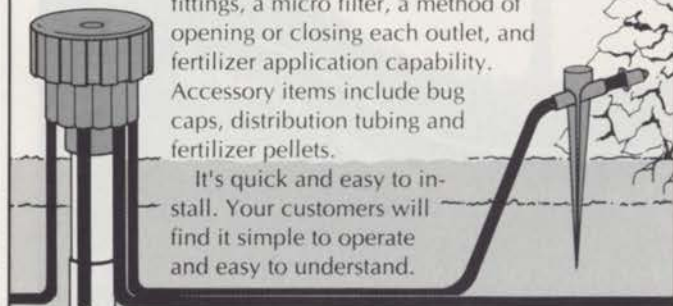
With the VIBRA-CLEAN EH-12 System:

- All the necessary drip components are in the head.
- Simply screw the EH-12 onto any 1/2 inch riser*.
- Lay out the distribution tubing to the area to be watered.
- Install the stakes and bug caps.
- Turn on the water!

* Back flow prevention required in compliance with local code.

The OLSON EH-12 contains 12 individually flow-regulated outlets with micro-tubing fittings, a micro filter, a method of opening or closing each outlet, and fertilizer application capability. Accessory items include bug caps, distribution tubing and fertilizer pellets.

It's quick and easy to install. Your customers will find it simple to operate and easy to understand.



**OLSON
IRRIGATION
SYSTEMS**

when water counts®

10910 Wheatlands Ave.
Santee, CA 92071
(619) 562-3100
(800) 776-5766
FAX (619) 562-2724

USE READER SERVICE #53

USE READER SERVICE #54



There are a lot of commercials out there that make some big claims. But there's only one commercial with the quality and innovation you're looking for – **Scag Commercial Mowers.**

Each Scag mower, from our new SSZ Zero-Turn Rider to our popular SWZ Zero-Turn Walk-Behind, is built with the commercial cutter in mind, giving you the **productivity, profitability and performance** your business requires.

**THE COMMERCIAL
EVERYONE
IS WATCHING.**



And we back our commercials up with leading-edge design and high quality manufacturing.

Since its founding, Scag has been committed to the commercial cutting business and to the success of our customers. Customer profitability and loyalty have made Scag Power Equipment the largest independent manufacturer of commercial mowers.

So if you're looking for the best in commercial mid-size mowers, it's time to take a closer look at Scag. If you don't, your competition will.



SIMPLY THE BEST

SCAG[®]
POWER EQUIPMENT

DIVISION OF METALCRAFT OF MAYVILLE, INC.
1000 Metalcraft Drive, Mayville, WI 53050
© 1992, Scag Power Equipment

93-02

USE READER SERVICE #17

GREEN INDUSTRY EXPO/93

NOVEMBER 15-18, 1993
BALTIMORE CONVENTION CENTER
BALTIMORE, MARYLAND



THE lawn and landscape show of the year!

On November 15-18, thousands of green industry buyers and decision makers will gather in Baltimore to see the latest industry products and services...

Don't miss your opportunity to sell to 3 industries at once: lawn, landscape and grounds management.

"The GIE in 1992 was the best yet. So many qualified buyers—it was phenomenal."
Exmark Mfg. Co., Inc.
Beatrice, NE

"The quality of the floor traffic at GIE is excellent—you get to talk to a lot of decision makers."
Uniroyal Chemicals
Middlebury, CT

"The diversity of the crowd provides great exposure for your products or services. GIE is definitely a show you shouldn't miss."
Wade Micro-Irrigation
Fresno, CA

The Expo runs in conjunction with three dynamic educational conferences sponsored by:

- Associated Landscape Contractors of America
- Professional Lawn Care Association of America
- Professional Grounds Management Society

Yes! Send me more information on exhibiting at GIE/93

NAME _____

COMPANY _____

ADDRESS _____

CITY/STATE/ZIP _____

PHONE _____

FAX _____

Send to GIE, 1000 Johnson Ferry Rd., NE, Suite C-135, Marietta, GA 30068-2112/FAX (404) 578-6071. Or call GIE at (404) 973-2019.



Explosion of Opportunities at the *All-New* EXPO 93!

★ *Special 10th anniversary features and entertainment*

★ *New, "user-friendly" floor plan with direct access to the outdoor demo areas*

★ *Introductions of manufacturers' newest innovations at what promises to be the biggest, most dynamic event of the decade*

One-stop shopping

★ *550 key manufacturers of lawn, garden & power equipment — all under one roof!*

Try before you buy

★ *Outdoor demonstration area the size of 14 football fields open throughout the show.*

Ignite your business

★ *Free seminars.*

★ *Face-to-face interaction with manufacturers and technicians.*

Save money

★ *Free shuttles between the airport, hotels and EXPO 93.*

★ *Pre-negotiated room rates in a very reasonably priced city.*

Visit the 10th anniversary celebration of the International Lawn, Garden & Power Equipment Expo!

July 25-27, 1993

Kentucky Exposition Center

Louisville, KY USA

Call today for free brochure
502-473-1992 or 800-558-8767
Fax 502-473-1999

Maintaining the quality of life is essential to JoAnn Smallwood. As a result, she encouraged government leaders to buy into her environmental improvement concepts. Photo: Oscar Thompson.



A Passion for Teamwork

JoAnn Smallwood built her design/build/maintain firm to a \$3.3 million enterprise through a commitment to quality and her focus on customer service, team building and Total Quality Management.

By Julie A. Evans

JOANN SMALLWOOD HAS seen a lot of changes in her Naples, Fla., community since she opened for business 20 years ago. The once-sleepy town has evolved into a sophisticated and bustling haven for devoted golfers and wealthy retirees. Fortunately, Smallwood's design/build/maintain firm has kept pace with those changes. Through quality landscape designs and a commitment to customer service, she has grown her company to \$3.3 million in 1992, with projected sales of \$3.5 million in 1993.

"At the time I started, Naples had one landscape architect," she said. "Now we have more landscape architects listed in the phone book than somewhere like Orlando."

Smallwood Landscape was established in 1973 by Smallwood, who discovered a gap in the Naples' market for quality landscape architecture. Her love for the environment and appreciation for its art form were inspired by her family, she said. Her father was a world-renowned environmental and water law specialist; her mother and aunt were artists.

"The sensitivity of water quality and its availability

probably guided my thoughts into protecting the environment," she said. "When I moved to Naples, I saw the opportunity to provide a higher degree of art to landscape architecture."

For the first seven years, she worked solo, offering design/build services to residential and commercial clientele. Her business grew through referrals, and she incorporated the business in 1976. In the early 1980s, Smallwood hired her first landscape architect (the company now employs five landscape architects with appropriate registration), and opened a horticultural management division.

According to Smallwood, the decision to add a landscape management division was largely influenced by the sudden increase in "mow and go" companies. Smallwood didn't want disreputable firms maintaining the designs her company created. "We started the division to protect our reputation and our clients' investments," she said.

Today, Smallwood Landscape is comprised of three divisions: landscape architecture and planning, landscape contracting and landscape horticultural management. De-

sign/build/maintain, or what Smallwood terms "one-point accountability," defines the overall direction of the company, but each division now bids projects separately, as well. The new sales strategy was introduced two years ago primarily to counteract the economic effects of the recession, which forced a constriction in consumer spending and new construction.

"Up until two years ago, we were basically providing one-point accountability. We have strategically changed that process," Smallwood said. "We have increased the goals and budgeted revenues of the horticulture management division at a higher rate than the other divisions."

A name change accompanied the structural change. The landscape architecture division has been incorporated as Smallwood Design Group. Landscape construction and horticultural management fall under Smallwood Landscape Inc.

The company strives to maintain a balance between residential, commercial and community/civic projects. "That way, the company is not segmented into any one area — we're recognized for work in all three areas," Smallwood said.

SMALLWOOD DESIGN GROUP SMALLWOOD LANDSCAPE INC.

HEADQUARTERS: Naples, Fla.

SCOPE OF OPERATIONS: Sarasota to Marco Island, Fla.; satellite operations

FOUNDED: 1973 by JoAnn M. Smallwood; Incorporated 1976

SOLE OWNER: JoAnn M. Smallwood, president and CEO

PRIMARY SERVICES: Landscape architecture, construction, installation, horticultural management. Subcontract all aspects of exterior hardscape construction including pavement, pools, decks, elaborate waterscapes, patios, fountains, walls, structures, lighting, etc.

EMPLOYEES: 55 full time, seasonal help as required

1992 SALES: \$3.3 million

EXECUTIVE SUMMARY

CORPORATE PHILOSOPHY: Provide superior quality products and services in landscape architecture, construction operations and horticultural management for client use and enjoyment in a manner that will ensure future growth.

PROJECTIONS: Increase revenue to \$3.5 million in 1993.

OBJECTIVES: Implement Total Quality Management throughout corporate fabric; pursue alternative location for future growth.

THE OWNER

JOANN M. SMALLWOOD

FAMILY: Married, one son

EQUITY HELD: 100 percent

WORK WEEK: About 60 to 70 hours including networking and entertaining clients.

EDUCATION: University of Miami, bachelor's degree in education 1970.

OTHER COMPANIES STARTED: Smallwood Nurseries Ltd., wholesale operation began in 1981, phased out in July 1990 due to severe freeze and change in market conditions.

BELIEFS: The art form of landscape architecture. That the key to a successful design/build/maintain firm is the close relationship of the employees working as a team.

HARD LESSONS. As a business owner, Smallwood has had her share of disappointments. In 1981, she opened Smallwood Nurseries Limited, a wholesale operation that reached sales of \$1 million and employed 40 people before it folded eight years later. Changing market conditions and a severe winter freeze sealed the fate of the venture.

"I had envisioned a wholesale operation where we could grow consistent, quality container product and provide ourselves with a better product at a better price. But it was an entirely different market back then," she said.

Smallwood said the advent of the chain store concept contributed to the beginning of the end of her nursery business. "The retail market has changed dramatically

in our country, and the nursery industry has felt the effects," she said. "Price points plummeted because of the pressures from the chain markets like Wal-Mart and Kmart. Our margins were less in 1989 than they were when we started."

A severe freeze in the winter of 1989 was the final proof Smallwood needed to sell the nursery business.

Nowadays, Smallwood shops the state for nursery stock and often buys quality product for less money than her nursery business could supply. Clients are encouraged to hand select nursery stock, and she sometimes flies them from one end of the state to another to assist in the selection process.

Smallwood maintains a healthy attitude toward the failed nursery, which she said taught her a great deal about herself and her company.

"I learned the importance of focusing on the business without spreading myself in too many directions," she said. "Our philosophy has always been to provide

superior quality products and services in landscape architecture, landscape construction and horticultural management. Now we can truly focus on that philosophy."

The company strives to balance residential, commercial and community/civic projects.

ENVIRONMENTAL CONCERNS.

As Naples continues its steady growth, new construction and a swelling population threaten to disturb the quality of life, Smallwood said. She advocates striking a balance between the environment and built space.

Last year, the company's efforts toward environmental improvement landed the firm the coveted National Landscape Design Award from the American

Association of Nurserymen. Smallwood accepted the award from Barbara Bush at the White House.

The award resulted from Naplescape '90s, Smallwood's ongoing project to improve the quality and appearance of the environment in Collier County. The project began in 1985, when the Chamber of Commerce asked Smallwood to select one area in which to improve Naples' environment. She selected the green space on medians.

"At that time, the community started to grow rapidly. We were seeing great growth of strip centers and the equality was diminishing because the green space wasn't being maintained along with the development," she said.

Smallwood encouraged leaders in government and business to join together with private developers to buy into the concept of maintaining the quality of life.

"The outcome of that project is that it is the only project in Naples where we have a high level of cooperation between city and county. The result is that develop-

ers are now donating capital funds to develop medians, and the county is committing capital to maintain them."

TEAMWORK. Just as she encouraged civic and business leaders to work together, Smallwood expects her own employees to embrace the teamwork concept. In fact, no profile of Smallwood Landscape would be complete without a discussion of the owner's passion for company "team building."

Smallwood firmly believes that each division is equally vital to the company's success. The three divisions work closely together throughout all stages of the design/build/maintain process. Her philosophy is simple but effective: With involvement from each discipline at the conceptual level, potential problems and site opportunities can be identified and addressed, eliminating the need to backtrack at a later stage. Smallwood terms this system of teamwork "checks and balances."

New designs begin with idea-



HD8 INDUSTRIAL GRINDER

Manufactured by Haybuster

Affordable! Heavy Duty Cylinder Easily Handles Tree Limbs, Yard Waste, Pallets & Demolition Lumber

- The Haybuster HD8 is completely portable and self-contained. It is easily pulled with a half-ton pickup.
- The HD8 features a variety of screen sizes to provide the desired size of end product. A heavy-duty 26" long cylinder with half-inch A.B. hardened hammers easily processes yard waste, pallets, wood chips, bark and other demolition lumber into a compact, consistently-sized end product.
- The HD8 has clearance and directional lights as standard equipment.
- The tub can be loaded with any skid steer loader and the end product is delivered on a conveyor which is 8' 2" long and 24" wide.
- The HD8 is powered by 110 hp diesel engine. An electro-hydraulic sensing governor maximizes grinding efficiency and prevents clogging.
- Wide, 8 ft. tub makes it easy to feed tree limbs and pallets.
- Ten and twelve-foot diameter models also available.

Grinds Wide Variety of Organic Matter into Valuable End Products

Ideal size to grind tree limbs up to 6" in diameter into valuable compost, landscape mulch, wood fuel or a variety of organic products.

\$30,650
M.S.R.P.

Includes 110 H.P. John Deere engine. Does not include freight, tax, or dealer set-up.

For more information see your Haybuster dealer or call or write:



P.O. Box 1940
Jamestown, ND 58402-1940
Phone: 701-252-4601 • FAX: 701-252-0502

Specimen Canary Island Date Palms being craned into holes at Smallwood Landscaping's Quail West project.

sharing or "checks." Designers hash out ideas in a "charette" or brainstorming session. During this stage, client needs and goals are incorporated into the site specifics of the design.

Next come the "balances," or principles that reinforce the functionality of the project. To ensure that a design can evolve from a two-dimensional illustration to a three-dimensional art form, all projects are evaluated and critiqued by the three divisions.

The goal is to balance the function and aesthetic components of design.

"All of our projects go through balances or critiques for feasibility and cost. They go through the purchasing department for availability and quality, and the horticultural management division reviews each plan to ensure that horticulture practices are implemented. This equates into a unique and



outstanding design process, and the client is the winner," she said. The entire system of checks and

balances is guided by the project manager to provide the client with one-point accountability.

"Each component is equally important," she said. "Segments of the industry don't understand that completely, and it's our job to educate and create awareness," Smallwood said.

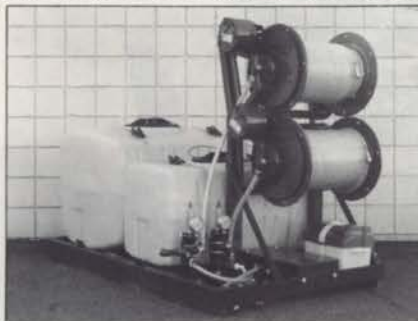
"I see that as the most pressing need in our industry. How do you respect each other's entities and stay open to respecting each other's ideas?" she said. "There must be respect and shared knowledge for each entity in order to create the art form we desire."

Members of the Smallwood Landscape "team" say that teamwork is simple to establish, because employees share mutual respect.

"With regard to the team concept, JoAnn views two customers. Internally we're focused on the team and externally we're focused on the client," said Paul Drummond, director of business development. "JoAnn gives equal weight to both. I think that is key. If we're not happy, the customers will pick up on that."

According to Drummond, the team concept is not a difficult

C & S TURF CARE EQUIPMENT, INC.
BUILDING QUALITY EQUIPMENT
FOR PROFESSIONALS, BY PROFESSIONALS



C & S Protank[®] Sprayers

- ELECTRIC AND GAS UNITS
- DESIGNED TO FIT IN A WIDE RANGE OF VEHICLES
- FIBERGLASS AND POLY TANKS AVAILABLE
- DIAPHRAGM, PISTON, OR ROLLER PUMPS

Complete Sprayers...Ready to work

(216) 966-4511 (800)872-7050

6207 Dressler Rd., N. W., N. Canton, OH 44720

Custom Orders Welcome!

BROADLEAF WEED CONTROL WITHOUT 2,4-D

If You Choose Not To Use 2,4-D In Your Weed Control Program, You Still Have A Choice Without Giving Up Performance.

Riverdale offers **Tri-Power™** and **Triamine II™**. **Tri-Power™**, our premium 2,4-D Free three-way combines MCPA, Mecoprop and Dicamba in the most highly concentrated three-way available.

Triamine II™ combines MCPA, Mecoprop and Dichlorprop to satisfy 2,4-D Free, Dicamba Free needs. It's your choice.

Tri-Power™ Triamine II™

Call us at 1-800-345-3330

Riverdale

USE READER SERVICE #70

USE READER SERVICE #72

concept to buy into because all employees "care a lot about each other and that's an understatement," he said.

Company meetings are essential to the team-building concept. They provide staff members with the opportunity to discuss company and client issues and address any problems.

"The benefit is that no one walks around carrying a grudge because everyone has a forum for getting their feelings out into the open," Drummond said.

Smallwood leads group discussions and pulls employees together if she senses a need, Drummond added. "She's very keen to the day-to-day pressures each one of us has concerning our jobs, so if she senses a problem, she is there to work it out."

The company also benefits from its design/build/maintain structure, Drummond said. "We have one financial statement that is depending on all three components. If one of us fail, we all fail, so that sense of camaraderie is built into the company."

Christian Andrea, director of the landscape architecture division, added that Smallwood's hands-on/hands-off leadership style enables employees to succeed. "She is hands-on to the extent of making sure that team interactions are strongly understood. But on a day-to-day basis, she lets each manager run their divisions as best they can."

Smallwood's teamwork approach has earned the company industry respect. Last year, the company won 11 local, state and national awards.

Smallwood actively promotes team building, customer service and Total Quality Management through her industry involvement. In the following question and answer session, she explains how those concepts have strengthened her company and enabled it to succeed.

Q. How do you define team building?

A. Team building is creating a high functioning group of indi-

viduals through improved honest and direct communications — on a caring and feeling basis. Team building is everything to business. It's benefited our business through increased repeat

The entire system of checks and balances is guided by the project manager to provide the client with one-point accountability.

business by means of improved client relationships, improved client satisfaction, increased profitability and increased enjoyment in the work place.

Q. Explain the team concept as it relates to your business.

A. Team building starts with finding and retaining quality people who want to grow with your company. We begin with the hiring and recruiting process which includes a number of interviews for every prospective employee.

Once we decide to hire someone, I meet with them and present what our company is all about. I explain that even though we focus on the technical aspect of what we do, people come to us because they want to make sure their communicated needs are met.

We also focus on attitude and how they approach communicating with the client. Customer complaints belong to all employees, and each employee is responsible for following through with a complaint.

Q. How has Total Quality Management changed the way you do business?

A. It's strengthened our focus on understanding clients' wants, needs and expectations. TQM has changed our method of communi-



Some tools require a lot of time and manpower ...

cations, both internally with employees and externally with clients.

I believe TQM is a permanent commitment. It's also changed our focus on the importance of recognizing, rewarding and celebrating success, rather than just focusing on problems.

One of the things we have done is institute TQM's 14 points into our business. Driving out employees' fears is one of those points. Many employees are afraid to ask questions or take a position. The economic loss is appalling. The only way to increase productivity and quality is to make our employees feel secure in their jobs.

Q. How has your philosophy on customer service evolved?

A. My philosophy on customer service has changed since attending this year's ALCA (Associated Landscape Contractors of America) conference. I went into that conference with the focus that I believed in knowing the customer intimately. I felt that was what we

did, but I came away knowing that customers perceive service in their own unique way, and that perception is everything. Focusing on the customer's perception of service and quality is all that really counts.

I also believe that you can't pay too much attention to your customers. The goal is to delight your customer, not just satisfy their expectations. Something else I learned at the conference: Every complaint is an opportunity. We now look at a mistake as an opportunity to bond with the client. If you exceed their expectations in the timeliness and efficiency of your response, you have the opportunity to establish a greater bond. The client has to be delighted with how you satisfied them and fixed their problem.

Q. Do you test your employees for substance abuse?

A. Yes. We offer a drug-free work place program. We let employees know during the hiring process that they're going to be

tested for drug or alcohol use. If there is an accident, they will be tested again. We also have the option of random testing if we choose.

The benefits include lower insurance rates, fewer sick days and quality employees. We also offer an employee assistance program. If an employee has a problem, we'll provide a certain level of counseling or assistance, and it doesn't have to be drug-related. It can be any issue that affects teamwork.

Q. How has industry competitiveness impacted your business?

A. Southwest Florida has experienced high growth. Competitiveness has equaled that growth, and margins have lowered with that growth. Competition creates a challenge for us to provide a higher level of customer service, communicate better, ensure quality and reduce errors. I believe our country is focusing on quality management issues out of dire necessity.

Q. How important is association involvement?

A. We've been involved in ALCA, the Florida Nurserymen and Growers Association, American Association of Nurserymen, American Society of Landscape Architects and, locally, with the Collier Building Association. I'm on the board of directors of the local Economic Development Council.

We have found that you only have so much time and have to make a choice as to how you're going to use your time.

We've focused on local involvement and found that it brings us major results. National involvement is important as well. I've gotten the most from ALCA because they have specifically targeted business aspects, like TQM, which is the real heart of the future of business and industry. ■

The author is a Contributing Editor to Lawn & Landscape Maintenance magazine and is based in Lakewood, Ohio.

Roundup® herbicide is the ideal management tool when budgets are tight or manpower is limited.

You can cover more ground in the same amount of time it would take using mechanical methods or pulling weeds by hand.

Better yet, Roundup gives you long-lasting control. So crews don't have to keep coming back. You'll be able to allot more manpower to other jobs and save wear and tear on equipment—getting the most out of your budget.

If you're not already using Roundup, don't waste another minute. Ask for our FREE brochure telling how Roundup combines ecology and economy.

Call: 1-800-332-3111. **LOWEST PRICE EVER**



..... Some don't.

ALWAYS READ AND FOLLOW LABEL DIRECTIONS FOR ROUNDUP HERBICIDE. Roundup® is a registered trademark of Monsanto Company. © Monsanto Company 1993 IND-30003 2/95

USE READER SERVICE #29

Irrigating with Reclaimed Water:

Not Just For Large Turf Anymore

Not long ago, reclaimed water was restricted to large turf areas such as parks and athletic fields due to concerns over potential health risks. Today, cities are providing avenues for its use on residential turf.

By Cathy Hoehn

Green industry professionals are beginning to consider the use of reclaimed water to irrigate plant beds and turf areas. Photo: Olson Irrigation



LANDSCAPERS IN the Midwest may scoff at using reclaimed water for irrigation, but those in droughty regions find it an affordable means to conserve their most precious resource.

The concept of irrigating with reclaimed water surfaced about 15 years ago in Western and Southern states stricken with freshwater shortages. Irvine, Calif., and St. Petersburg, Fla., pioneered the process of piping a city's wastewater to a treatment plant where it is treated to a lesser level than potable water and released back to the cities for landscape irrigation and other uses. The main differences between treated potable water and reclaimed water is the degree to which it is treated, and where it goes once the process is completed.

Despite recent technological advances in wastewater treatment, use of reclaimed water for irrigation is still mostly limited to large turf areas, such as golf courses, streetscapes, school yards, parks, resorts, residential common grounds, green belts and office complexes, said Steve Hutter, landscape architect for

Estrada Land Planning in San Diego. Most cities ban reclaimed water from being piped directly into homes or multifamily units, due to potential health risks and fear that homeowners will cross connect the pipes with potable water lines.

Numerous water districts in Florida, Nevada, Colorado, Arizona, California, Washington and Texas closely monitored Irvine's and St. Petersburg's pilot programs and recently began developing their own.

"We started seeing it discussed five years ago and being done about two years ago," said Brent Harvey, project manager for ACL, an irrigation consulting firm in San Diego. "It depends on how far advanced a city is and the extent of its water supply. For us, it's really simple to design an irrigation system using reclaimed water. Our only limitation is how much water is in supply."

In many areas where reclaimed water isn't available, cities require contractors to install additional piping for access once their programs are online.

SCARCE COMMODITY. Parts of Southern California import about 90 percent of their fresh water from the Colorado River.

"For every gallon of water that we reclaim, that frees up another gallon of imported water that we can provide for our customers," said Lesley Robin, public affairs representative for the Padre Dam Municipal Water District in San Diego County, Calif. "If we reclaim from our sewage water and provide that as water for irrigation purposes, and we still have the same amount of imported water coming in, we actually have more water available."

Florida boasts about 295 reuse projects that use nearly 290 million gallons of reclaimed water a day. About one-third of those uses are for landscape irrigation, said Dr. David York, reuse coordinator for Florida's Department of

(continued on page 36)



KUBOTA RUNS CIRCLES AROUND THE COMPETITION

Kubota's FZ2100 and FZ2400 with Zero Diameter Turn (ZDT) run circles around the competition.

The power in the innovative FZ front mowers starts with 20 or 24 horsepower Kubota liquid cooled diesel engines and continues with the Auto Assist Differential (AAD) drive system that automatically switches between 2WD and 4WD to match operating conditions. With AAD, you get extra power to maneuver easily in wet grass and muddy conditions with the front wheels rotating freely through the tightest turns. The FZ can turn completely around in one spot without damage to the turf, cutting way down the time spent on labor-intensive hand trimming jobs.

For productivity and versatility, Kubota's F-Series front mowers can't be beat. The F2400 is 4WD and 24 horsepower, while the F2100 is available in 2WD or 4WD, and has 20 horsepower. Both have Kubota diesel engines, and are equipped with hydrostatic rear-wheel power steering for easy handling. A wide selection of Performance Matched Implements provide the versatility. They include triplex reel, rotary, flail and mulching rear discharge mowers, rotary broom, leaf blower, snowblower, and front blade. Roomy operator's deck, tilt steering wheel, and excellent visibility increase comfort and productivity.

Your Kubota dealer can show you the complete Kubota turf equipment line with the power and maneuverability to run circles around the competition.



Kubota

For information write to:
Kubota Tractor Corporation,
P.O. Box 2992, Dept. LLM, Torrance CA 90509-2992
Financing available through Kubota Credit Corporation.

Reclaimed Water

(continued from page 34)

Environmental Regulations.

"The state's total capacity of reuse systems is about 600 million gallons a day, so there's still a lot of potential water out there that could be used," he said.

Altamonte Springs, Fla., has jumped ahead of other communities in offering reclaimed water to its residents. The city amended its Land Development Code in 1983 to require commercial and multifamily complex users to hook into the sewage treatment system once it became available, or to make provisions for hookup. By December, the city will enable all properties, including residential, to access reclaimed water.

"We will have provided reclaimed water to every property in the city — residential, business, multifamily, parks, whatever," said Allison Marcus, in-

formation liaison for Altamonte Springs, Fla. "We provide reclaimed water service through an underground irrigation system or allow hose bibs for people who don't have underground sprinkler systems."

The program is about 85 percent complete. The city provides individual service connections to the front of property lines. "We connect it to the homeowner's sprinkler system or provide them with a special attachment on their garden hose," Marcus said. "The system is permanent and they use that garden hose only with the reclaimed water system."

The city bans pipelines carrying reclaimed water from entering a household to deter residents from accidentally drinking the water. It also "posts signs in all neighborhoods using reclaimed water, and each individual service connection is tagged inside the box and on top of the box with

the words 'reclaimed water, do not drink,'" Marcus said.

Some cities require purple piping, valves and sprinkler heads to identify the equipment carrying reclaimed water.

"Purple is basically the universal color now indicating reclaimed water. So if you come across purple pipe, it's got reclaimed water in it," said Keith O'Neil, chief estimator for Valley Crest Landscape in Orlando, Fla. "Although these specialty products are not yet being manufactured in mass to any great extent — they cost a little bit more — over the years you'll offset that easily in water savings and benefits of saving potable water."

BENEFITS VS. RISKS. Reclaimed water can go through three types of treatment. Primary treatment is generally a screening or settling process that removes organic and inorganic solids. Secondary treat-

ment is a biological process in which complex organic matter is broken down to less complex organic material, then metabolized by simple organisms which are later removed. The water may be chlorinated before being reused.

Tertiary treatment is similar to various types of potable water treatment, such as chemical coagulation and flocculation, sedimentation, filtration or absorption of compounds by a bed of activated charcoal. These processes can purify the water to a high degree, especially if followed by chlorination.

Whereas potable water is processed then released back into natural water streams, reclaimed water is piped directly to the end user or to holding ponds. "Nature purifies water in its natural cycle. Wastewater treatment plants just speed up that pro-

(continued on page 38)

GENERALIZED FLOW SHEET FOR WASTEWATER TREATMENT

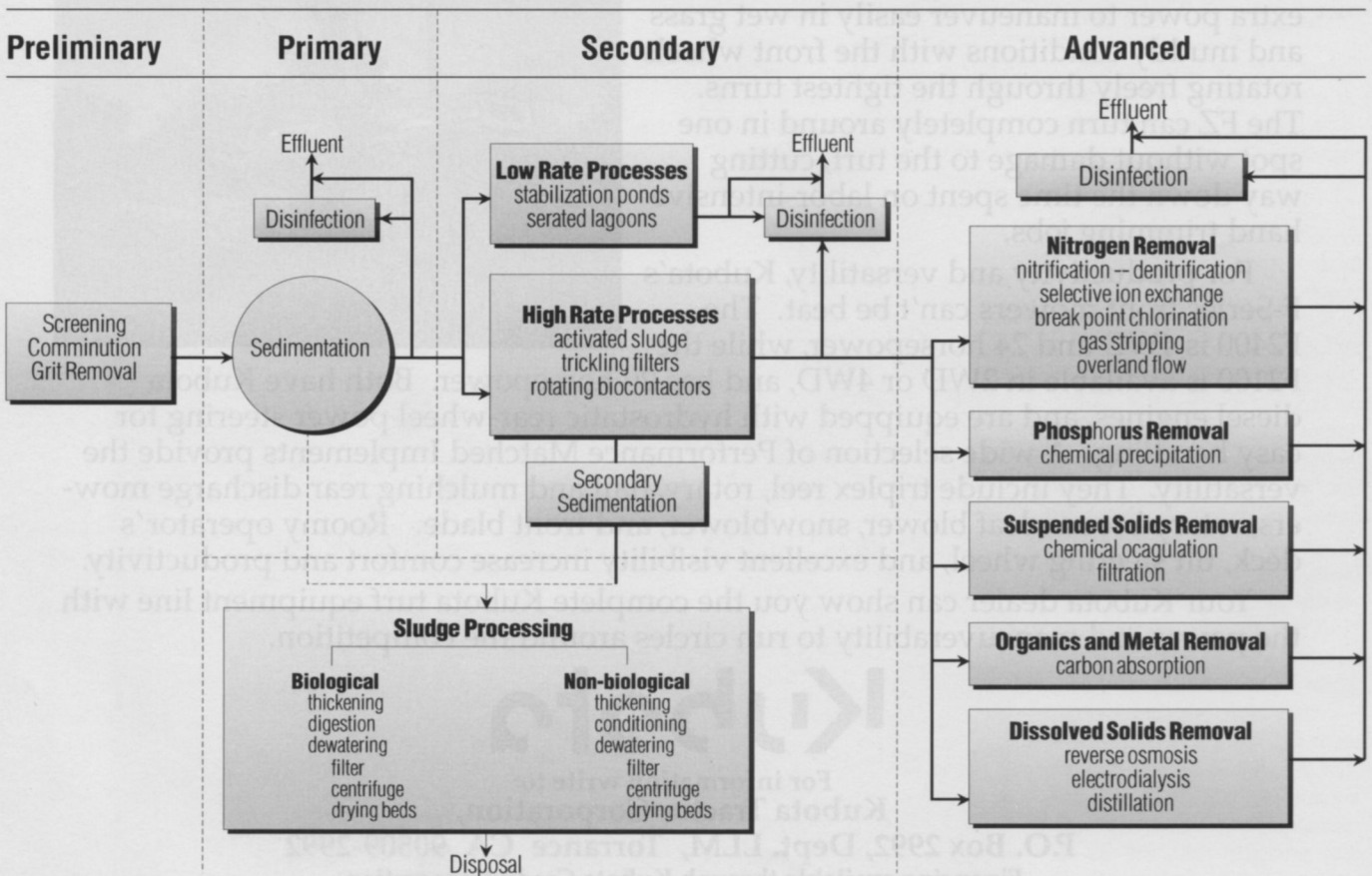


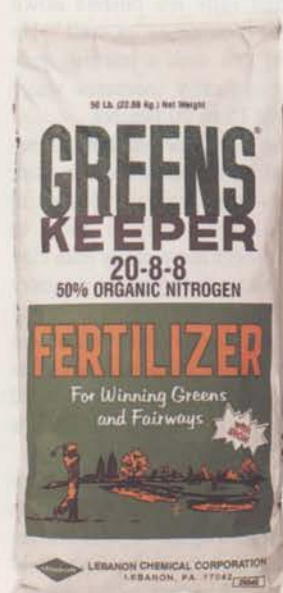
Table 1.

Source: Asano, T., R.G. Smith and E. Tchollanoglous, 1984

GREENSKEEPER 4-STEP. FERTILIZERS FOR ALL SEASONS.

For thoroughly balanced feedings and a consistent program that offers reliable results, you can count on the superior homogeneous quality of the Greenskeeper 4-step family.

For more information on these or any other quality Lebanon products, contact your Lebanon sales representative or local Lebanon distributor. Or simply call 1-800-233-0628.



- A full weight fertilizer with 50% organic nitrogen. Homogeneous particles provide balanced nutrient distribution. Ideal for spring and fall.
- To control crabgrass and feed in one step, nothing works harder than this combination fertilizer/pre-emergent herbicide. Apply in early spring.
- A combination fertilizer insecticide. Provides effective control of surface and soil insects while fertilizing turf. Late spring/early summer application.
- Greenskeeper homogeneous quality in a 1-2-1 ratio. For late fall and early winter applications, delivering faster green-up in the spring.

Reclaimed Water

(continued from page 36)

cess," said Bill Hunter, director of communications for Hunter Industries, San Marcos, Calif.

Golf courses and other facilities that filter their own water for reuse most likely use primary treatment. Reclaimed water for other types of irrigation projects used to undergo secondary treatment, but states are beginning to require more rigorous processing. "Most regulations I'm aware of require water to be treated to a tertiary level," said Mike Scott, president and chief executive officer of ACI.

Most contractors and many water district officials contend tertiary treated water is harmless, but Dr. Ali Harivandi of the University of California Cooperative Extension warns that it can contain pathogenic bacteria and viruses. Proper secondary and tertiary treatments can greatly reduce pathogen concentrates, but the potential for disease transmission remains a concern, he said.

Health risks in each situation depend on the degree of contact and the reliability of the treatment processes, he added.

Contractors concede that reclaimed water used 15 years ago bode a slight odor, and sometimes wore down irrigation valves. But technology today has corrected those problems. "There was a time you could use secondary treated water, which just goes through a lesser degree of treatment. It did leave some residual solids and other things that hampered irrigation," Scott said. "A lot of people think reclaimed water will still clog up heads, but that's not going to happen. It has to be treated to a better level than that."

Regardless of health concerns, many water districts and homeowners are preoccupied with reaping the benefits of using reclaimed water, namely, conserving water and saving money. "We did just a real informal study and found that the average homeowner with a quarter-acre lot who has a separate irrigation meter, only paying for water and not a sewer, was spending about \$396 a year," Marcous said. "With reclaimed water they spent \$96. The love it because it's not metered."

John Parsons, supervisor of onsite water systems for the Irvine Ranch Water District in Southern California, estimates homeowners there save at least 10 percent in costs. "It may cost a little more to design and build the system, and you may pay more for raw equipment and safety precautions," he said. "But you should save on fertilization, since reclaimed water provides nutrients which can replace those in fertilizer applications, depending on the soil, etc."

Reclaimed water provides higher amounts of nitrogen and other nutrients than fresh water,

Regardless of health concerns, water districts and homeowners are preoccupied with reaping the benefits of using reclaimed water, namely, conserving fresh water and saving money.

which greatly decreases the chances of groundwater becoming contaminated by reclaimed water, according to Harivandi.

RECLAIM REGULATIONS. States and municipalities are passing legislation both to require greater use of reclaimed water and to ensure its safe handling.

In California, the Department of Transportation must use reclaimed water to irrigate freeway landscaping wherever possible, Hunter said. The DOT will place distribution lines in freeway rights-of-way to deliver reclaimed water from reclamation facilities to other markets.

Florida is also developing more stringent regulations. York estimated that roughly 50 percent of the state's total land area is designated as critical water problem areas. "Given the rather high percentage of the total peninsula designated as critical, that is obviously where most of the concern is," he said.

Florida is considering legislation that would require all cities, even those outside critical areas, to look at reclaimed water uses.

Many water districts also mandate strict safety precautions, such as posting signs and using equipment identified as carrying reclaimed water. Safeguards include limiting where the water can be drained and applied. "De-

pending on local regulations, reclaimed water can't be used in natural drainage areas, where storm water has the potential of picking up reclaimed water," Scott said. "Most regulations address some form of control of airborne spray. So sometimes, depending on the treatment level, places like Nevada require a buffer zone irrigated with potable water."

RESIDENTIAL APPLICATIONS.

Few cities, it seems, are willing to jump on Altamonte Spring's lead to pursue residential application of reclaimed water.

"It would not be cost-effective to go and put dual piping in individual homes because Padre Dam Water District already has a water main going to the home under the street," said Robin. "The other thing is, when reclaimed water is used for irrigation on other non-residential property, it is easier to monitor. We know that at 7 p.m. the sprinklers are going to go on at the high school's football field with the reclaimed water. If it was used at homes, we would lose that control."

County and state health department officials have resisted the Irvine Ranch Water District's move to access residential property with reclaimed water due to potential health concerns. But the district plans to go on-line to large estate lots within a year, Parsons said. "I think there will be opportunity to go to individual lots within five years. I would anticipate that," he said.

Some water districts won't pipe reclaimed water to residential properties, but allow homeowner associations to use reclaimed water on common ground, as well as some subdivisions surrounding golf courses. "It's normally a case of a planned development centered around the course where wastewater is collected from the development to a central facility and used for landscaped common areas on the golf

course and perhaps the residential property," York said.

POTENTIAL PROBLEMS. Some irrigation contractors express concern about too much salt getting into the reclaimed water. Some districts ban certain water softeners for that very reason.

"Salt is definitely an issue, but that may be resolved through really deep leaching in the soil on a periodic basis," Hutter said.

Though some contractors claim they don't need to leach, Scott strongly encourages it.

"Typically, reclaimed water has higher salt content due to the residual of the treatment process," he said. "Consequently, if you supplied reclaimed water as you would potable water, that salt residue would build up in the soil and impede water availability to plants."

It's important to implement some type of leaching program on a regular basis — either every day irrigation is applied or on a periodic basis through multiple applications of water, he said.

"The wetted area of soil is pushed down below the root zone so that salts are pushed down below root zones as well." He added that such a leaching program typically increases water use by 15 to 20 percent.

The need for leaching is reduced with porous soil, he said. Sandy soil typically found in Florida "obviously is going to leach water more easily than clay soil. But where you have tighter soils, especially where humidity is lower, evaporative losses are higher and transpiration's higher — like it is in the western United States — leaching is an absolute requirement."

Scott and other irrigation contractors expect states to continue passing stringent regulations requiring increased reclaimed water use. "I expect in the not too distant future, it will become mandatory for certain size projects or certain irrigation demands to be served with reclaimed water," Scott said. "In Western states reclaimed water eventually will be mandatory in all new projects. There's a lot of legislation being passed to make that happen." ■

The author is Associate Editor of Lawn & Landscape Maintenance magazine.

Realizing the Future of Irrigation Maintenance

IT'S 12:20 P.M. and you're sitting in the office stealing a few minutes of peace and quiet while you grab a quick bite to eat. The phone rings and a customer informs you that his irrigation system just came on and soaked three company executives on the way out of the building for lunch.

The customer said the system is only supposed to come on from 1 to 5 a.m. He is angry and wants someone to immediately check the program and make sure the system is working.

You cringe knowing that it's a long drive and all your service people are busy for the rest of the day. You are no longer in the best mood either. Wouldn't it be great if you could check the system without leaving your office?

Just imagine... You get the complaint, turn to your computer console, pull up a special program and find the customer in question. The computer automatically dials a special phone number, you type in a security code, push the enter button and you are communicating with that customer's irrigation controller.

You pull up a screen which shows the existing irrigation schedule programmed into the customer's controller. For some reason, the controller is showing a current time of 1:15 a.m. You quickly adjust the controller to the proper 12:25 p.m. time. The computer ends the phone call, you



Centralized control is an option to consider for commercial jobs. Photo: Brian Vinchesi

Time and financial demands as well as labor costs are forcing landscape and irrigation contractors to seriously consider centralized control options.

By Brian E. Vinchesi, CID

call the customer, explain what has happened and what you have done to fix the problem.

You explain that he should replace the battery in the controller, or you can stop by and replace it the next time you have a technician in the area. After just a few minutes, you go back to enjoying your lunch. The customer's happy and you didn't

even have to leave your office.

Too bad it didn't really work that way... Now you have to figure out who is going to drive down and check out why the controller came on at the wrong time.

IMPROVED TECHNOLOGY. Irrigation controller technology has been changing rapidly over the last several years. So rapidly, in

fact, that it's difficult to keep up with the latest controller features, let alone have any idea of anticipated changes.

Based on recent changes and the industry's move toward computers to control irrigation systems, one feature beginning to gain popularity is the remote monitoring and managing of commercial and high-end residential irrigation systems. Tech-

nology is now available to monitor and control irrigation systems from remote locations.

Perhaps you are a large landscape and irrigation maintenance contractor with several large commercial properties. Under your contract you are required to maintain and manage the irrigation system. The irrigation maintenance contract requires you to adjust the irrigation watering schedule as needed and to check the system for proper operation.

Ideally, you would like a report on how well the system is operating each day. From a water management perspective, it would also be nice to have the ability to adjust the schedules based on daily evapotranspiration rates. To be price competitive, however, you can't afford to send someone out to the site each day to collect needed information or to check soil moisture.

What kind of equipment would

you need to perform these services from your office? To begin, you need a personal computer with a modem. The modem gives you the ability to call up an off-site controller. The site controller also needs to have a modem on a dedicated phone line. A state of the art software program capable of communicating with and creating schedules for the off-site controller, however, is the most important piece of equipment.

A number of software systems are available from the major irrigation equipment manufacturers as well as many specialized irrigation companies. Any control system that uses a central computer and can interface with remote satellite (controller) locations using telephone lines should work.

These types of systems don't care if the off-site satellite is in Georgia or north Montana and the computer is in California. All you need is a phone number for the off-site satellite and a security code to allow you access to the programmer to change the sched-

ule. The site controller and computer software do need to be compatible, however. Generally, the satellite is manufactured only to work with specific software.

Each type of software has its

Technology is now available to monitor and control irrigation systems from remote locations.

own hardware requirements, but most run on a DOS system using an IBM or IBM clone. A color monitor, mouse, operating software and communication software are either required or helpful.

The cost of these systems can be prohibitive, especially for the

average maintenance contractor. Not only does the site controller have to be upgraded to a satellite compatible with the central, but it must be able to store the programs downloaded from the central location.

Additionally, its own stand-alone programming capabilities are needed as a safeguard in case there is trouble with the communication link from the central location. There are continuing maintenance costs for the customer covering phone service, and for you to provide this monitoring/management service.

At the central location there are computer hardware costs—\$2,000 to \$3,000 depending on how fancy you want to be. There are also software costs—communication software and the operating system. The biggest financial cost will be the irrigation scheduling software itself. This specialized software is expensive no matter which manufacturer's system you purchase.

Depending on the specific type of software you purchase, costs

can range from \$7,500 to \$20,000. There are many types of software available in today's market, and a thorough study needs to be undertaken to determine which best meets your needs now and in the future. Be sure to check hardware requirements and what costs are involved for upgrades to the software.

ENDLESS OPPORTUNITIES.

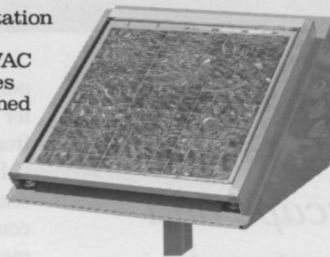
Sound like a lot of money to re-program a controller and get a few reports? If you are going to spend this kind of money, you probably would like to have the monitoring system perform a few more functions. For the most part, there is no limit to what computerized control systems can do, except for going out and physically performing a repair.

With the proper devices, the system can monitor very specific parameters. For instance, flow can be monitored and compared to a preset flow range. If the actual flow in the system, mainline or lateral line gets out of the preset range indicating a possible break

SUNDROP Programmable Irrigation Controller

FEATURES:

- Solar Powered 6 or 8 Station Controller
- Activates Standard 24VAC Solenoids/Control Valves
- Completely Self-Contained Power System
- Duravolt Unbreakable Solar Module
- Dual Programming/6 Start times Per Day



BENEFITS:

- Eliminates All Utility Hook-up Costs or Delays
- Eliminates Problems Associated With Battery Operated Controllers and DC Latching Solenoids
- Eliminates Power Outages, Surges, Controller Program Loss
- Designed For New or Retrofit Automation Projects

SOLAR ELECTRIC SOLUTIONS FOR TODAY



PHOTOCOMM INC.
PHOTOVOLTAIC SYSTEMS

PHOTOCOMM, INC.
Landscape/Irrigation Div.
7681 E. Gray Rd.
Scottsdale, Arizona 85260

(602) 948-8003
(602) 483-6431 Fax

USE READER SERVICE #67

TR12 TRENCHER

Compact Rugged Design!



MADE IN U.S.A.

MODEL TR12

QUALITY, DURABILITY, AND SIMPLICITY

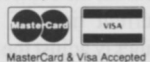
Provides for: digging shallow trenches in short periods of time, digging in hard-to-reach areas, ease of maintenance, and durability. There's no other machine built, designed, or priced like it on the market today. It comes equipped with carbide tipped, rock-type teeth for digging in all soil conditions at depths of 6, 8, and 12 inches. Ideal for your first trencher, and perfectly suited to compliment bigger machines.

for complete information please write, call or fax to . . .



CARLSON INDUSTRIES INC.

25010 E. 5th St., Unit B, San Bernardino, CA 92410
P.O. Box 917, Highland, CA 92346
(909) 888-4882 • FAX (909) 889-5855



MasterCard & Visa Accepted

USE READER SERVICE #68

or malfunction, a signal can be sent automatically to the controller to turn off the system.

The controller can then automatically call up the central location and report the break, called an alarm condition. Some systems can even call you up or have you paged if you are not in your office when an alarm condition occurs.

Using pressure transducers the system can track pressure, again signaling an alarm condition if pressures vary from a preset range. A weather station can call and report daily evapotranspiration rates. Irrigation zones that did not operate can be reported. With the proper equipment, even broken sprinklers or pipes can be reported and identified daily.

From a cost perspective, you need to have several accounts on this type of monitoring/management system to justify the cost. The system is state-of-the-art technology and readily available. Many city park and large commercial sites needing extensive irrigation have these systems. The remote technology is fairly similar to the computerized irrigation systems used on many golf courses.

If you are a large commercial landscape maintenance contractor already responsible for irrigation maintenance and management, or an irrigation contractor with many commercial accounts, this type of system could enhance your service capabilities and re-

sponse time as well as save you money. It's an area irrigation maintenance contractors are considering. If you already have a computer that will handle the scheduling software, this will help hold the costs down.

You don't even have to worry about the system tying up valuable computer time. You can program the system so it calls up all the off-site controllers early in the morning, collects the data and has the printed reports for each site waiting for you when you arrive in the morning. You can make any program changes before your office staff arrives to use the computer. Additionally, after reviewing the reports, you can schedule your service technician for any problems that might need attention first thing in the morning. You can potentially have a problem identified and resolved before the customer even knows about it. That might cause waves at billing time, but it does provide the ultimate service.

There are maintenance companies currently providing this service in some irrigation markets. Remote monitoring and control is something you might want to consider. As the cost of the scheduling software comes down, remote monitoring and scheduling will be a big part of the future in irrigation maintenance. ■

The author is a design engineer with Irrigation Consulting & Engineering Inc., Pepperell, Mass.

Questions about...

Your subscription?

Display advertising?

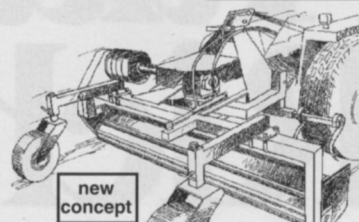
LLM's technical books?

☎ Call toll-free

800-456-0707

3 NEW Harley Power Rakes For Rugged Versatility

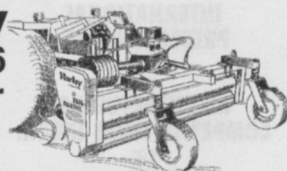
Harley Model T-6 Power Box Rake



- Bi-Angular • Oil Bath Drive
- Heavy-Duty Construction

Right- or left-throw raking. Drop adjustable end plates and rake simulates box scraper action. Move, pulverize, level more dirt in less time. Designed for 27-45 hp range tractors.

Harley PRO-6 Power Rake



- Oil Bath Drive • Bi-Angular
- Double Roller • 3-Point Hitch

Here's the #1 rake of choice by landscape contractors for 27-45 hp range tractors.

Harley PRO-8 Power Rake



- Bi-Angular • Oil Bath Drive
- Rugged Bridge Frame Construction
- Vertical Hydraulic Float Control

This rake is designed for heavy-duty work. Electric control box lets you make adjustments with a fingertip for perfect shaping, leveling and fine grading. Never before has there been so much versatility in a Harley rake for the 35-55 hp range tractor.

All Production Limited. Call For Availability.

Glenmac

Jamestown, ND 58402
701-252-9300/FAX 701-252-1978
1-800-437-9779

Reaping Atlanta's Riches

ATLANTA

POPULATION:
2,979,170

**DAILY INTERNATIONAL
FLIGHTS:**
15 to 24

**INTERNATIONAL
PRESENCE INDEX:**
117

**MANUFACTURING
COMPETITIVENESS INDEX:**
95

PRO-BUSINESS ATTITUDE:
Rank 7

Source: Fortune magazine

WHAT'S ATLANTA have that other cities don't? The 1996 Olympics, for starters. A new domed stadium. The 1994 Super Bowl. And heaps of positive press.

Atlanta is riding a wave of national attention, and the landscape industry is going along for the ride. Since January 1992, a formi-

dable group of national competitors have opened branch offices in the metro Atlanta area, including Environmental Care Inc. and its sister company Valley Crest Landscape, Rapiered Landscape Inc., Green Thumb Enterprises, The Brickman Group and HLS Landscape Companies. They enter a highly competitive and talented lawn and landscape maintenance market, raising the question: Is there enough work to go around?

Newcomers and veterans to the Atlanta landscape community say there is, but many have redefined their niches and fine-tuned their marketing approach to distinguish themselves from the competition.

WHY ATLANTA? National surveys of corporate executives repeatedly rank Atlanta high on their lists of places to do business. *World Trade* magazine named Atlanta one of the United States' "10 Best Global Cities" in its October 1992 issue. *Fortune* magazine ranked Atlanta first and



Atlanta has earned its reputation as a pro-business city, but the lawn and landscape maintenance market is already feeling the growing pains that go hand in hand with an inviting business climate.

By Julie A. Evans

fourth in 1991 and 1992, respectively, in its annual list of "Best Cities for Business." Atlanta is also the only city in the country to be named to the Fortune Top Five every year since the magazine began its ranking in 1989.

"Atlanta simply gets it done. It remains open to anyone from anywhere who sincerely would like to make a buck and hire a few locals in the process," wrote *Fortune* in its Nov. 2, 1992 issue.

Looking beyond the hype, Atlanta racks up some impressive statistics. Metro Atlanta accounts for 75 percent to 80 percent of growth in the state of Georgia. During 1992, a total of 130 new businesses entered the metro At-

The World of Coca-Cola is one of Atlanta's attractions, making it an ideal place to do business.
Photo: Kevin C. Rose



lanta market, bringing in 6,000 new jobs and occupying 3.1 million square feet of real estate.

Atlanta also leads the nation in job creation. According to statistics from the Georgia Department of Labor, 38,000 net new jobs were created in the metro Atlanta area in 1992.

What makes the city so attractive to business? A pro-business attitude, diverse economy, sophisticated communication and distribution systems and international air services are commonly cited reasons.

Tax incentives help lure business relocations and start ups to the region. Georgia does not use the unitary tax method; businesses are taxed only on income apportioned to Georgia. In addition, Georgia's 5 percent corporate income tax rate has not changed since 1969, and the



Installing and maintaining office complexes in Atlanta has become an extremely competitive business in recent years. Photo: The Landmarks Group

sales tax rate has risen only one percentage point since 1951, according to the Atlanta Chamber of Commerce.

"Atlanta looks ahead to avoid future problems," said William Hubbard, senior vice president of development for the Atlanta Chamber of Commerce. "The city's business and government leaders have been working together for a long time."

According to Hubbard, the city successfully changed its marketing strategy about five years ago from paid advertising to a more broad, special events marketing. That means the city generates loads of free publicity from such national and international events as the 1988 Democratic National Convention, the 1994 Super Bowl and the 1996 Summer Olympics.

Additionally, business leaders have contributed substantial funds

to Forward Atlanta, a five-year, \$10 million marketing effort designed to market the region in advance of the Olympic games.

NEW KIDS. With all of the national attention focused on Atlanta, it was only a matter of time before the lawn and landscape market would feel the effects. National companies with multiple branch locations have moved quickly into the Atlanta market, leaving existing firms little time to prepare for the onslaught of competition.

One of the most recent landscape firms to open for business in Atlanta is Rapiered Landscape, headquartered in Ashton, Md. Rapiered entered the market decisively in March after landing a \$3.93 million contract with the Georgia Department of Transportation for roadside improvements

along routes I-75 and 85/285 in Clayton and Fulton counties.

The company will install 217,000 shrubs, 51,550 evergreens, 21,500 perennial plants and nearly 4,000 trees of different varieties. The project also includes stream-channel clearing, topsoil replacement and grass and wildflower seeding along 12 miles of roadway. Installation is slated for a March 1994 completion and will be followed by a two-year maintenance plan.

Ken Thompson heads up Rapiered's new Atlanta branch, which will focus on commercial landscape installation and landscape management. He said there may have been some concern that an "out-of-town" contractor won the DOT contract, but Rapiered is committed to its newest branch and plans to keep local dollars at home.

"We're a national company, but now we're also an Atlanta company. I live here. My staff lives here, and we'll probably hire up to 100 people from this market. Our goal is to keep the money in this market," he said.

Thompson is encouraged by the competitiveness of the Atlanta market, which he said is similar to that of the Virginia branch he managed previously.

"If there weren't any competition, there probably wouldn't be a market for it (landscaping)," he said. "We've had some good feedback from our competitors who say they're glad we're here. We're not going to drive the prices down. We're going to have a positive effect on the market."

Environmental Care, a landscape maintenance firm, and its sister company Valley Crest Landscape, an installation company, opened

branch offices in the metro Atlanta area within the past year. Both are divisions of Environmental Industries, headquartered in Calabasas, Calif.

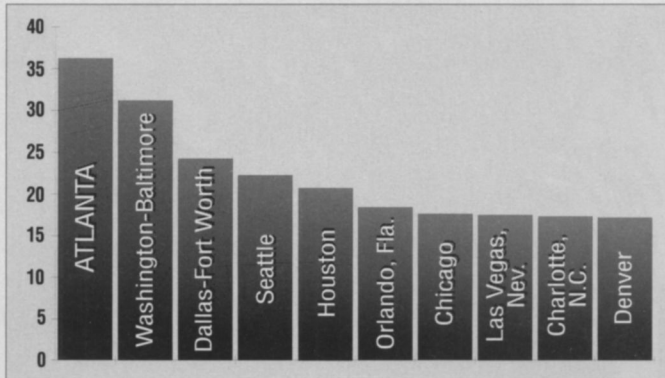
Like Rapiered, Environmental Care landed a large contract soon after entering the marketplace. It was awarded a three-year maintenance contract with Georgia Power. Valley Crest will handle installation. Atlanta Branch Manager Jack Mattingly declined to reveal the size of the contract.

According to Mattingly, Environmental Care was attracted to the Atlanta market because of its sophistication and willingness to embrace quality landscapes. "Clients here have a knowledge of good landscaping. Our primary objective is to introduce the market to Environmental Care and let them know who we are."

Mattingly said the competition ranges from the very solid, "old-time contractors," to "local boys who've only been in the business a short time." Growth has already exceeded expectations for the Atlanta branch, he added.

FORECASTING THE LEADING MARKETS

(Percentages represent the portion of survey respondents who named these cities as among the three areas that will generate the highest returns through 1995.)



Source: The Atlanta Journal-Constitution

"The interesting thing is that we have not butted heads with some of the newer companies who have entered the marketplace," he said. "I don't know if that's because we're not marketing to the same clients, but it doesn't seem to be a factor at this point."

The challenge for Environmental Care, Mattingly said, is to offer better quality services at a lesser price than competitors.

The Brickman Group Ltd., a design-build landscape architecture and horticultural management company based in Long Grove,


Ill., opened its Atlanta area office in January 1992. According to Branch Manager Brian Moore, the Atlanta office provides landscape maintenance, landscape construction, seasonal color and design/build services to commercial and multi-family residential accounts.

Some clients of the Atlanta branch are established customers of Brickman in other cities who also own properties in Atlanta, Moore said. But like other newcomers to the market, Brickman faces the challenge of winning over new clients.

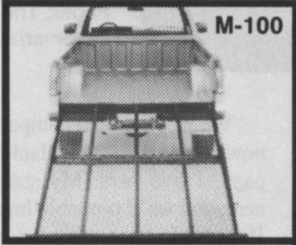
Other national companies that recently opened branch offices in Atlanta include Green Thumb Enterprises, based in Sterling, Va.; and HLS Landscape Companies, an \$18 million landscape maintenance and installation company based in Houston.

National-based firms enjoy one obvious advantage over local startups. They keep overhead down by relying on the parent company for technical and financial assistance.

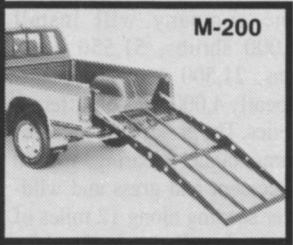
As Mattingly explained, "We



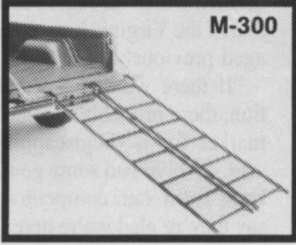
From METKO, INC.
1251 MILWAUKEE DRIVE
NEW HOLSTEIN, WI 53061-1499




M-100
M-100 Standard Ramp—fits standard size pickups.



M-200
M-200 Mini Ramp—fits mid size and mini-pickups.



M-300
M-300 Porta Ramp—fits any pick-up, trailer or van.



Call and order direct today:
414-898-4221
FAX: 414-898-5293

WIRE & VALVE LOCATER
Progressive Electronics
Model 521

save 10%



All The Equipment You Need To Troubleshoot Irrigation Systems

- Find Lost Solenoid Valves
- Locate Wire Path and Depth

\$585.00
(REG. PR. \$650.00)




36 - 2.2 cu. in., 36cc Pro features including our exclusive Air Injection system which means this saw runs up to 20 times cleaner than the competition. You can go longer between filter changes, and this saw has safety features like our inertia-activated chain brake.

Now only \$229.00



mini-клик • Freeze Sensor

• IRRIGATION
• LANDSCAPE
• WHOLESALE ONLY

\$15.95 EA.
CASE QUANTITIES
MIX OR MATCH



mini-клик II
The Rain Sensor for Dependable Sprinkler Control



DALLAS
214-406-0222
TOLL FREE
1-800-284-0205

USE READER SERVICE #52

USE READER SERVICE #49

interact with them (headquarters) almost on a daily basis. That allows me to focus on the customer here and the operation of the business. I can rely on them to handle administrative, legal and other business concerns. It's a great advantage, and it keeps overhead low," he said.

Rapiered's Thompson said the corporate headquarters is a tremendous support vehicle. "They offer stability, marketing support and a lot of purchasing support," he said.

THE COMPETITION. Support from a national headquarters may help landscape branches get started, but they'll have to hustle if they expect to make a dent in Atlanta's already competitive marketplace. Local firms have the advantage of name recognition and an established client list. Most Atlanta-based firms say they're prepared for the newcomers, but some agree they've had to strengthen client relations and re-define market niches.

"Yes, there are a number of

companies that have come into the market recently, but we view that as an opportunity," said Robert Bowden, director of landscape services for Landmarks Landscape Services Inc., a division of The Landmarks Group. "It creates a greater awareness of plants in the landscape in both commercial and residential markets, which long term I think is better for everyone."

Joe Skelton, president and co-owner of Lifescapes, a design-build firm based in Canton, Ga., said there definitely is not a lack of competition in the market. He once did a study that identified 350 landscape companies, a number that probably has grown significantly.

"There's more of the perception that Atlanta is the place to be than it actually is," he said. "We're not dealing with a vacuum situation where there's a void of people to do the work. We're sucking people in to do the work."

According to Skelton, Lifescapes bids less often as a result of the influx of contractors.

"Design/build is one mentality; competitive bidding is a different mentality. Some of the people coming into this market are adept at bidding large jobs," he said. "We've never been the lowest price in any bid situation. Our emphasis is not on how we can do the job for the lowest cost, it's how can we do the job for the best value."

Skelton said the company has been careful not to "pigeon-hole" itself into any one market segment. "From our perspective, we've had to look more carefully at what our niche market is. We find it's important for us to be diversified in what we do. We are not entirely a maintenance company, not entirely a bid contractor and not entirely residential."

Post Landscape Services, a division of Post Properties, also finds itself more selective in bidding situations. "Our time is best spent marketing long-term clients," said Andy Hull, vice president, director of installation. Hull said he finds the number of hours invested in bidding vs. the num-

ber of jobs won out of proportion and not cost-effective.

Like Lifescapes, Post Landscape Services is focusing on its design/build component. "Design/build helps us gain maintenance clients," Hull said. "It's a long-term marketing plan. You have to gain the client's trust."

Steve Coffey, president and owner of Atlanta-based Scapes, said his company also is refocusing its marketing efforts in light of the competitive market for commercial landscape maintenance and construction.

"We are moving into the residential market because the commercial market is getting so flooded. We've done some residential work, but always on a limited basis. Now we're pursuing it."

Green Thumb Landscapes Inc. of Norcross, Ga., has a different concern. Green Thumb Enterprises, a national company with a very similar name, moved into the market recently, causing somewhat of an identity crisis for

(continued on page 48)

SE STRONG ENTERPRISES, INC.
 SALES • PARTS • SERVICE • ACCESSORIES
 IN FLORIDA CALL COLLECT (305) 235-0967, OUTSIDE OF FLORIDA -PH: 1-800-228-0905
 WE ARE THE ONLY WHOLESALE SUPPLIER OF SPRAYER REPLACEMENT PARTS
 DIRECT TO THE LAWN CARE COMPANIES IN THE U.S. CALL US FOR QUOTATIONS

Bean Piston Pumps

Hypro diaphragm pumps...

25% DISCOUNT ON HYPRO PUMPS AND REPLACEMENT PARTS

JD9-C SPRAY GUN \$92.50

DISCOUNTS ON JOHN BEAN PUMPS AND REPLACEMENT PARTS

HANNAY REELS

SWITCHES FOR REWIND REELS

REWIND MOTORS

REEL SWITCHES \$7.00 EACH
 REEL MOTORS \$120.00

REPLACEMENT REEL SWIVEL JOINTS
 1/2" \$21.00
 1" \$32.00

FLUSH MOUNT

GLYCERIN GAUGES

PRICE EACH \$13.50

PRICES SUBJECT TO CHANGE WITHOUT NOTICE
 PRICES GOOD ON C.O.D. SHIPMENTS ONLY
 SOME PARTS OR PUMPS MAY BE SUBJECT TO INBOUND FREIGHT CHARGES
 PRICES LISTED DO NOT INCLUDE OUTBOUND FREIGHT CHARGES

WE SHIP THROUGHOUT THE UNITED STATES AND LATIN AMERICA
 for complete details and information write or call:

SE STRONG ENTERPRISES, INC.
 14090 SW 144 Avenue Rd., Miami Florida 33186
 In Florida (305) 235-0967, Outside Florida (800) 228-0905

USE READER SERVICE #73

MOW down the competition!

Let them **WEED**

through the paperwork!

Invest in your company's future with **BILLMASTER®**

- Quick Professional Invoicing
- Track multiple businesses & thousands of accounts
- Easy and Reliable / General Ledger / Check writing
- Chemical Tracking for D.E.C. requirements
- Tax and Financial Reports. Contracts & Proposals
- Scheduling, Routing, and Mailing Lists
- Unlimited TOLL FREE Training and Support
- Much More for only \$695.00

CALL for FREE DEMO DISK
1-800-572-8713

Please specify disk size 3 1/2 or 5 1/4

VISA MASTERCARD

Customized Business Software • Glen Rock, New Jersey

USE READER SERVICE #74



Watchful customers may environmental traits than our

Maintaining a weed-free lawn is important to your customers. So is maintaining the environment. Dimension® turf herbicide helps you look out for both...without losing sight of your needs as a busy lawn care operator.

Dimension provides season-long control of crabgrass. Yet, it's exceptionally safe for most turfgrasses. Its low use rates mean you put down a fraction of the active ingredient

needed with most other turf herbicides. Plus, Dimension has low mobility in the soil. And it will not leave ugly stains.

Along with offering peace of mind, we've kept your schedule in mind. Only Dimension gives you the flexibility of either a preemergence or early postemergence application. So you can extend your application window and add customers. Or you can wait until crabgrass appears and treat just those areas that need it.



care more about our wider application window.

Dimension also controls many other weeds and grasses. Its efficacy is not dependent on temperature or moisture. And now, with new Dimension on fertilizer, you can keep turf healthy and keep crabgrass away with one preemergence application.



Find out how Dimension can maximize your profitability under the watchful eye of the public.

Call: 1-800-323-1421.



DIMENSION
Turf Herbicide
by Monsanto

The toughest thing to emerge since crabgrass.

USE READER SERVICE #13

Dimension® is a registered trademark of Monsanto Company. © Monsanto Company 1993 1/93 DIM-30002

Regional Market Report

(continued from page 45)

the smaller Norcross landscape maintenance and installation firm.

Hank Sickerman, president and CEO of Green Thumb Landscapes Inc., said his company focuses on high-end residential landscape maintenance and installation. Sickerman said he is more concerned with "mow and go" companies than the influx of national competitors.

"There are a lot of people who are quantity driven, not quality driven. They undercut the competition and don't carry liability insurance," he said. "When you're in the service industry, quality is 90 percent of the job."

OLYMPICS. The XXVIth Olympic Games come to Atlanta in 1996, bringing along a projected economic impact of \$5.1 billion over the 1991-97 period. That includes an estimated \$2.7 billion generated from out-of-state visitors.

Many firms within the land-



scape industry hope to capitalize on Olympic spending, as the city freshens its image for the international camera. Bidding is expected to be highly competitive.

Environmental Care plans to use its experience with the 1984 Olympics in Los Angeles as a selling point. Similarly, Scapes hopes to capitalize on its experience with the World's Fair in

1982. Scapes owner Coffey cautions, however, that major exhibitions like the Olympics are no "cake walk."

"Olympic work sounds real good but there are last-minute decisions, and the cost of construction is more than you'd anticipate," he said. When Scapes provided installation work for the World's Fair, many general con-

tractors didn't get paid. Other firms won't bid Olympic landscape work per se, but hope to capitalize from the spin-off business generated from the Olympics. As Lifescapes' Skelton noted, many corporations will want to look top notch when they're on display to the world.

"I don't see the Olympics or the Super Bowl as events that are going to double our volume," Skelton said. "For us, the Olympics will provide fringe work. Existing customers want to put their best face on for the Olympics."

Still, it doesn't hurt to prepare, just in case. "We've done all of the political things, so we're poised if the opportunity presents itself," Skelton said. ■

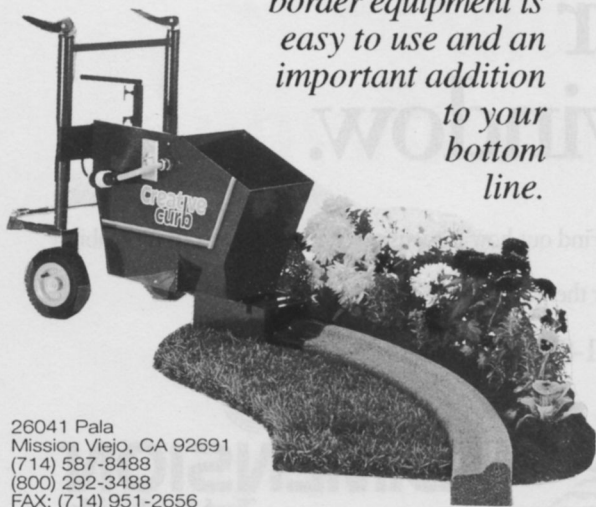
The author is a Contributing Editor to Lawn & Landscape Maintenance magazine and is based in Lakewood, Ohio.

Creative curb marketing

Permanent Landscape Borders

Create profits by offering your customers beautiful borders.

The Creative Curb Marketing line of concrete curb and border equipment is easy to use and an important addition to your bottom line.



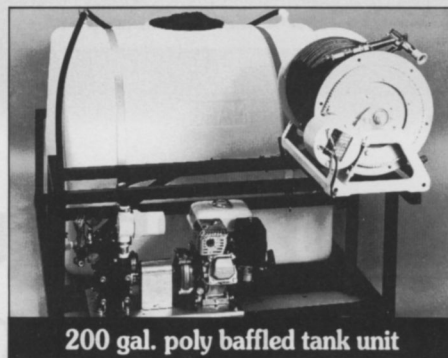
26041 Pala
Mission Viejo, CA 92691
(714) 587-8488
(800) 292-3488
FAX: (714) 951-2656

USE READER SERVICE #47



EVERYTHING FOR THE
LAWN MAINTENANCE INDUSTRY

CELEBRATING OUR 27th YEAR!



200 gal. poly baffled tank unit

- 200 gal. poly baffled tank
- 5.5 Honda with D-30
- Electric reel

- 300 ft. 1/2" hose
- Unit pre-tested & ready to use
- Custom built units available

**OLDHAM CHEMICALS
COMPANY, INCORPORATED**
COMPLETE SUPPLIER OF T & O CHEMICALS

1-800-888-5502

Or write: P.O. Box 18358, MEMPHIS, TN 38118

USE READER SERVICE #48

APRIL 1993 • LAWN & LANDSCAPE MAINTENANCE

Computing Mower Costs

Calculating mowing costs should be more than a shot in the dark. Increased profitability will result from taking the time to understand all the costs of providing a mowing maintenance service.

WITHOUT fail, *Lawn & Landscape Maintenance* magazine receives a number of calls every month regarding the costs of providing mowing maintenance services. Not just what it costs to purchase a mower, but what kinds of products are needed to help a firm make more money.



Mowing can be profitable when a maintenance firm is aware of all of the costs of doing business.

Additionally, other cost factors such as depreciation, maintenance, time spent on the job, labor, insurance costs and so on need to be considered.

In these economic times, it's more important than ever to know your direct costs as well as all the extraneous costs your firm will incur maintaining each job. The business side of your firm is just as important as a horticultural understanding of the industry.

Since equations and hands-on work sheets are what lawn and landscape professionals have told us they are looking for, we've reproduced some charts which have proved popular. We hope these help you in your business.

Additionally, discussion on the following pages will help bring things into perspective.

Computing mower productivity takes important considerations including the overall size of the property; whether it's flat, sloping or steep terrain; the number of landscape and hardscape features;

visibility of each section of turf; types of grasses; and most important—the client's expectations for the site.

Additionally, operator fatigue must be considered. Crews need to be productive throughout an eight- to 10-hour day. Seemingly little things like a comfortable operator station with a layout designed

for ease and efficiency, make a big difference to the person working with that unit hour after hour, day after day.

The criteria for choosing mowing equipment varies with the mix of accounts served. A tractor with gang mowers may be excellent for large stretches of open turf; a 60-inch front mower may be a better choice for highly landscaped business complexes; a 36-inch walk-behind may be more appropriate for small residential lawns.

The larger the mower deck size, the wider the area of cut achieved with each pass. Test the units to determine the exact difference under typical mowing conditions. Compare the time it takes your crews to cut a specific area with several different deck sizes. Use a stopwatch to be exact. Compare these figures by thousand square feet, or by acre, whichever unit you use in figuring your costs.

Mowing time per deck size is only one aspect of this decision.

Consider the cost of a larger unit compared to the cost of a smaller unit. Break down these costs to hours of use over the life of the

machine. Calculate the difference in fuel quantities and costs needed to power a larger engine. Consider the difference in labor costs over

CALCULATING MOWING COSTS:

(Figuring Your Equipment Costs Per Hour)

EQUIPMENT

1. Initial cost of unit _____
2. Finance charges (total) _____
3. Total unit cost (#1 + #2) _____
4. Projected total use hours _____
5. Projected use hours per year _____
6. Total projected years of use (#4 ÷ #5) _____
7. Projected value at end of use _____
8. Depreciable cost (#3 - #7) _____
9. Depreciable cost per year (#8 ÷ #6) _____
10. Unit cost per use-hour (#9 ÷ #5) _____

OPERATION COSTS

11. Fuel used per hour (gal. per hour) _____
12. Cost of fuel per hour (gal. cost of fuel x #11) _____
12. Annual cost of other fluids: oil, grease, antifreeze, etc. _____
14. Cost of other fluids per hour (#13 ÷ #5) _____

MAINTENANCE AND REPAIR COSTS

15. Parts _____
16. Labor _____
17. Percent of in-house maintenance and repair costs allocated to unit _____
18. Costs of maintenance and repairs per hour (#15 + #16 + #17) ÷ #5 _____

OTHER

19. Insurance _____
20. Taxes _____
21. Parking/storage _____
22. Licenses _____
23. Costs of other expenses per use hour (#19 + #20 + #21 + #22) ÷ #5 _____
24. Total unit costs per hour (#10 + #12 + #14 + #18 + #23) _____

ESTIMATING MOWING TIME

Predicting actual mowing times can be difficult, but John Deere has come up with a formula that it believe predicts actual experience:

$$108.9 \text{ divided by } (\text{mph} \times 0.9 \text{ (mower width in inches)}) = \text{hours to mow an acre} \times 60 \text{ minutes} = \text{minutes to mow an acre.}$$

The factor 108.9 includes the acres per hour dimensions and a 10 percent time factor for turning at the end of swaths.

The mowing speed is the miles per hour rating at the recommended mowing gear or usual ground speed. (John Deere uses nine-tenths of the mower deck width to factor in overlapping swaths for a uniform mowing job.)

Here's an example: If the normal, safe mowing speed of a lawn tractor is 3.5 mph and the mower deck width is 38 inches, then multiply 3.5 times 34.2 inches (nine-tenths of 38); the product is 119.7. Divide 108.9 by 119.7 and get the answer of 0.909, or 0.9 hours. Multiply that by 60 minutes to get the answer of 54 minutes.

To mow an acre of lawn (assumed flat with no landscaping touches) with a 38-inch mower deck at 3.5 mph will take about 54 minutes.

the projected hours of use.

Along with machine and labor costs per hour, other factors should be considered as well. With wider decks you lose a certain degree of maneuverability. Smaller decks may give a more pristine cut. A larger unit is more difficult to transport between mowing sites. A more complex machine will require a more experienced operator. Will the savings in labor hours compensate for these factors?

The better your mowing equipment matches your needs, the more productive your crews will be.

Another element of mowing costs that can make a major difference in profit or loss is often called non-productive time. A better term is non-billed time. The tasks performed are productive because they lead to completing the job, but the time taken might not be billed directly to mowing clients.

This includes travel time from job site to job site, fuel stops for travel vehicles, loading and unloading of equipment and time spent transporting clippings and

depositing them at landfill sites.

Keep track of this non-billed time in relation to each account by having crews note it on work sheets. Have them record what time they leave one site, then note the arrival time at the next site. Next write down the time when

equipment is unloaded and work beings. For further accuracy, have crews note the starting and ending time for each piece of equipment, then record when work was completed at that site and when they actually left the site. This will give a total breakdown of time

spent and equipment used.

If this record keeping is more than you want to face on a regular basis, keep track of these items for a week or one day a week for several weeks. Use these records to compile an average of the non-

(continued on page 52)

Preferred by Professionals.

For years professionals have relied on **KEES** for their turf care equipment requirements. A relationship earned by **KEES** as an innovator and throughout almost 20 years of building commercial midsize mowers, and as the pioneer and manufacturer of the Power Rake over the past four decades. Our 119 years of tradition and dedication to building quality products has made **KEES** a leader of turf care equipment, preferred by professionals, to meet professional demands.

KEES Midsize Mowers

- Shift on-the-go 36" and 48" Gear Drive.
- KEVLAR® reinforced double-wide cog drive belts.
- Large five gallon fuel tank.
- Scissor Idler System eliminates downhill runaway and provides steerable reverse.
- Exclusive ULTRATRAC adjustment for increasing traction, from the operator position, in wet conditions.



Power Rake/Power Slice

- Easily interchangeable as a commercial dethatcher or aerator.
- Handle conveniently folds for transport or storage.



FD KEES™ Since 1874
built for professionals
by professionals

For your nearest Kees dealer call or write:

F.D. Kees Mfg. Co. • 700-800 Park Avenue • Beatrice, Nebraska 68310 • Phone 402-223-2391 • FAX: 402-228-2258

The only grub control fast enough to compete in the fifty-yard dash.



Nothing works faster than DYLOX insecticide. Plus it has no turf restrictions, it's low odor, and it's available in an 80% water soluble powder and 6.2% granular. So it's easy to apply as well. Which helps when you have to cover a lot of ground. For more information, contact Miles Inc., Specialty Products, Box 4913, Kansas City, MO 64120. (800) 842-8020.



TURFGRASS ECOLOGY AND MANAGEMENT

FINALLY, AN ADVANCED TURFGRASS MANAGEMENT BOOK

for the turfgrass professional which goes beyond the introductory level.

TURFGRASS ECOLOGY AND MANAGEMENT is the first professional turf management text devoted to advanced environmental ecology. This pioneering work addresses the wave of the future and is a must for all professionals. It's written by Dr. T. Karl Danneberger, associate professor of turfgrass science, Department of Agronomy, The Ohio State University and published by *Lawn & Landscape Maintenance* magazine.

TURFGRASS ECOLOGY AND MANAGEMENT will be available June 1993. Hardbound, single copies only \$39 plus \$5 shipping/handling per copy. Quantity discounts available upon request.

RESERVE YOUR COPY TODAY AND SAVE. All orders received by May 15, 1993, will be billed at \$39 per copy. *Lawn & Landscape Maintenance* will pay all shipping and handling charges.

YES, I'm interested in purchasing _____ copy(s) of **TURFGRASS ECOLOGY AND MANAGEMENT**. I understand my purchase will be shipped in June upon payment. I also understand that I can return my book(s) within 15 days for 100 percent refund if I am not totally satisfied.

Bill me

Charge my VISA MasterCard

Card # _____

Expiration Date _____

Signature _____

Name: _____

Title: _____

Company Name: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Lawn & Landscape
Published by: **MAINTENANCE**

4012 Bridge Ave.
Cleveland, OH 44113

Call 800/456-0707 for information on volume, discount prices.

TURFGRASS ECOLOGY AND MANAGEMENT

CHAPTER 1: Climate, Weather and Turfgrass

CHAPTER 2: Light, As a Resource

CHAPTER 3: Nutrients – Gases and Minerals As Resources

CHAPTER 4: Water, As a Resource

CHAPTER 5: Physiological Responses to Temperature

CHAPTER 6: Soil – The Anchor in Ecology

CHAPTER 7: Population Dynamics

CHAPTER 8: Intraspecific Competition

CHAPTER 9: Interspecific Competition

CHAPTER 10: Disturbances . . . Predators

The Perennial Advantage

ALMOST ALL landscape professionals agree perennials hold a range of advantages over other types of flowers for certain designs, but the consensus ends there. The question of whether perennials can be used to control pedestrian traffic elicits a veritable mix of responses.

Some contractors said certain perennials could be used for that purpose in limited applications. Others said the herbaceous flowers shouldn't be used for controlling traffic at all. Barclay Bullock of Barclay's Gardens in Lake Oswego, Ore., summed it up rather aptly. "I don't think there is a cut and dry answer," he said.

Perennials found their way into American gardens in the late 1970s. A lot of "new" plants being introduced to the United States in the 1980s appeared in England more than 20 years earlier. Nowadays, however, the United States exports about as many perennials as it imports.

"A great many perennials come from North America's meadows, prairies and woods, but growing them in borders was an English innovation," said author Pamela Harper in the introduction to her book, *Designing With Perennials*.

The flowers continue to gain popularity in the United States as residential and commercial clients demand more colorful, eye-catching designs.

"People are looking for new ways to enhance their landscape design without spending a lot of money. So they're turning to perennials," said Harlan Hamernik, general manager of Bluebird Nursery, Clarkson, Neb.

Plant for plant, perennials tend to require more work than many woody plants often used to control traffic. So why use perennials?

These herbaceous plants can be used to guide pedestrians through a variety of landscape designs.

By Cathy Hoehn



"Perennials provide a great deal more change in the landscape, as opposed to shrubs, evergreens or annual bedding plants. Those things are all pretty much static, whereas with perennial plants and native plants, it's a constantly changing landscape. There's always this anticipation. What's it going to look like next week?" Hamernik said.

For homeowners, perennials score big points by offering a range of colors and by growing back each year, Barclay said. Commercially, people use perennials for two reasons: low maintenance and low water use.

BARRING NONE. There are essentially two ways to use plants to control traffic, say landscape pro-

fessionals. One is to plant them in mass or in a tight line, providing a physical barrier to prevent people from entering or leaving a designated area. The other is to position them as subtle accents, along a walkway or building entrance, for example, to gently influence the direction in which people gravitate.

Contractors expressed limited confidence in perennials as barrier plants, saying the plants lack the height or presence to prevent people from trampling through them.

"Herbaceous perennials have little structure. They're generally much shorter than other barrier plants and only seasonally effective at best," said Dave Beattie, associate professor of ornamental horticulture at Penn State University. "After the first frost they die back to the ground whereas barberries or pine trees remain throughout the season."

John Smith, owner of John C. Smith & Associates landscaping firm in Peapack, N.J., agrees that the task of barring people from moving into a particular area requires plants more rugged than most perennials. "Junipers and barberries work quite well for crowd control. Barrier plantings are not easy to do. People abuse them along trails in parks, shopping centers and banks."

Although perennials won't provide a year-round barrier since they're seasonal, some ornamental grasses are tall enough to present a physical barrier when in bloom, Strong said. "Instead of using barberry, which is often used, you could use ornamental grasses in that way. They have so many different heights and textures. You can brush past them without them hurting you. They can overhang



the walk. And the sound effect, the rustling, is beautiful."

Shrub-size pampas grasses, like *Miscanthus*, or *Cortaderia* used in Southern landscapes, might effectively serve as barriers, said Beattie. "Because of their sheer size they might inhibit people from walking through."

Hamernik believes some ornamental grasses can serve as barriers even in winter. "There are grasses that look alive in the wintertime, because the wind is moving them. They have beautiful plumes that of course have a different color in winter. They turn brown, tan. There are those that are almost white. But those are nice colors, especially in wintertime," he said.



Some contractors debated whether or not perennials could serve as parking lot island barriers. "I think there are shade areas where plants, like hostas, could be used in parking lot islands if you didn't want people to cross the beds," said Steven Still, associate professor of horticulture at The Ohio State University and executive secretary of the Perennial Plant Association. "Daylilies can be ornamental and again give something solid — it's not particularly easy to walk through daylilies that are 2 feet tall."

Robert McDuffy, an associate professor of horticulture at Virginia Tech, who two years ago gave a speech on using perennial plants for controlling traffic, said perennials are ineffective on col-

lege campuses and parks where people tend to trample through barrier plants.

Hamernik disagreed, citing campuses where perennials are used abundantly. "In very concentrated situations on some campuses, they can be trampled on. But some universities, like the University of Nebraska, use an incredible amount of perennials, quite effectively, not only to keep people from trampling across the lawn, but for trapping wind-blown trash and eliminating a lot of mowing."

THE SOFTER TOUCH. While it may not be feasible to use perennials in all applications where a physical barrier is needed, there are instances where a visual bar-

In addition to sprucing up a landscape, well-designed perennial beds can also serve as traffic reminders. Tulips are among the most popular bulbed varieties. *Lythrum*, (center) is another option. Photos: Wolfgang Oehme, center, and The Landmarks Group, left.

rier can achieve the same goal.

Perennials, with their colors, textures and fragrances, are ideal for drawing attention. Landscape professionals suggest a variety of ways the flowers can be used to subtly draw people to a specific focal point.

"If you're talking about directing people toward something, the color of perennials will always be eye-catching, whether you plant in mass or just a few," Strong said. "*Sedum* is beautiful in autumn. You could interweave it with *Rudbeckia* along narrow beds, maybe on each side of the walk, to carry you right to the end. Maybe have something tall at the end that would tease the eye to that certain point, if that's what you want.

"You could also use *Coreopsis* 'Moonbeam,' which has a little softer foliage and blooms all summer. To make it a little more interesting, you could mix them with extra ornamental grasses and small shrubs."

Still said using just ornamental grasses will also achieve a pleasing effect. "I think some of the low grasses could give directional interest if you have a sidewalk and particular entrance to a home you want to highlight," he said. "Some low-growing grasses or perennials could outline that entrance area. That would be one way to use them.

"Also, I've seen annuals along the driveway where you want people to get out of the car, walk up along the drive onto the sidewalk instead of across the lawn, something like that. Perennials can be used in the same situation," he added.

John Ross of John R. Ross & Co., Dallas, Texas, said perennials quite often are used to draw attention to a particular detail in a landscape. "Bright colors draw the eye subconsciously," he said.

The foliage of perennials can attract attention as well as the flowers. "There are silver-leaf

perennials, blue-leaf perennials, a whole range of greens, from chartreuse to blue-green or black-green," Hamernik said. "You not only have different colors, but different textures — bold heavy leaves that give a richness to the landscape or fine ferny leaves that give the landscape softness, provide contrast, set each other off, provide a better picture of the whole situation."

With the flower heads, color either draws attention or averts it, Ross said. "White color jumps out at you. Cool colors, blue/dark green, recede. Warm colors, those are your yellows, oranges, those colors come to you...That's designing with color in mind. We do it all the time for major accent."

He suggested using brightly colored perennials in pots next to doorway entrances, in small beds around pillars, around a pool, "anywhere people gather. People are drawn by the color of perennials, their fragrance, their detail."

In the same vein, dark colors can be used to mask certain things, such as utility or storage areas. "You can use dark greens to direct people away from those," he said.

Some landscape architects have fun using color to play tricks on people, Ross said. "You can have just a small accent of color here and there, and then turn a sharp corner and boom. Have a burst of color that jumps out at them." The same concept works going over a hill or around a curve. "The other side gives a completely different view."

Contractors concede they have only begun to realize the many potentials of perennials. "I think landscape professionals are basically uneducated about perennials and all the ways they can be used," said Jeff Iles, an extension horticulturalist at Iowa State University. "I think we still have a lot to learn." ■

The author is Associate Editor of Lawn & Landscape Maintenance magazine.

Measuring Insecticide Performance

ARE THE INSECTICIDES of the 1990s as good as the old ones, like DDT, chlordane and Dieldrin? The answer is yes. In fact, most of them are more toxic to insects than DDT and chlordane. The difference is they are not as persistent. New insecticides degrade more rapidly.

The business of lawn care is probably more efficient since the industry stopped using products like chlordane. The half-life of chlordane in soil has been estimated at about five years. At first it seems wonderful to have a product that remains active for an entire year or longer. The problem with persistent products is that insect pests tend to develop resistance to insecticides faster than predators do.

Japanese beetles and chinch bugs became resistant in areas where chlordane was heavily used. In the absence of predators, resistant pest populations exploded to levels rarely observed.

Aside from creating outbreaks of resistant pests, persistent insecticides also fail to meet current water quality standards. We quit using Dieldrin in the late 1960s, yet Dieldrin levels in trout from Lake Michigan did not peak until the late 1970s and are still above pre-Dieldrin levels. In comparison, the most persistent insecticides used today have a half-life of about one year, and most degrade within a few weeks of when they are applied.

As more was learned about insects and pesticides over the last 30 years, a more sophisticated approach to insect control replaced



Black vine weevil adult which is easy to control with any of several insecticides currently on the market. Photo: David Shetlar

Often, failure to control an insect infestation is blamed on the insecticide. In many cases, however, fault can result from a number of circumstances such as unreasonable expectations.

By David Smitley

the old preventive approach when insecticides were used almost like fertilizers. Most lawn maintenance professionals today use an integrated pest management approach in which insecticides are used as spot-treatments in conjunction with natural and cultural control methods.

The green industry has an ex-

cellent group of insecticide products labeled for use on turf. When used according to label directions, these products provide good insect control. Even so, stories that insecticides "don't work" can be heard. Sometimes these stories are repeated so often that people believe the rumors without ever trying the product in question.


Usually, when a "failure" is reported the product was not used properly or the expectations were not reasonable. During investigations of these reports, there is often not enough information to determine how well the product worked and, occasionally, a reasonable explanation for the failure cannot even be found.

WHY THEY DON'T WORK. In the last eight years I have made some notes on cases where insecticides don't work. These include unreasonable expectations, improper evaluation of product effectiveness, incorrect product selection, failure of an insecticide to reach its target pest, movement of insects back into treated areas, enhanced biodegradation and insect resistance to insecticides.

Unreasonable expectations. For some reason, people expect an insecticide to eliminate all insect pests. Subsequently, when they check a lawn a few weeks after treatment they may be surprised to find some chinch bugs or grubs and conclude that the insecticide did not work.

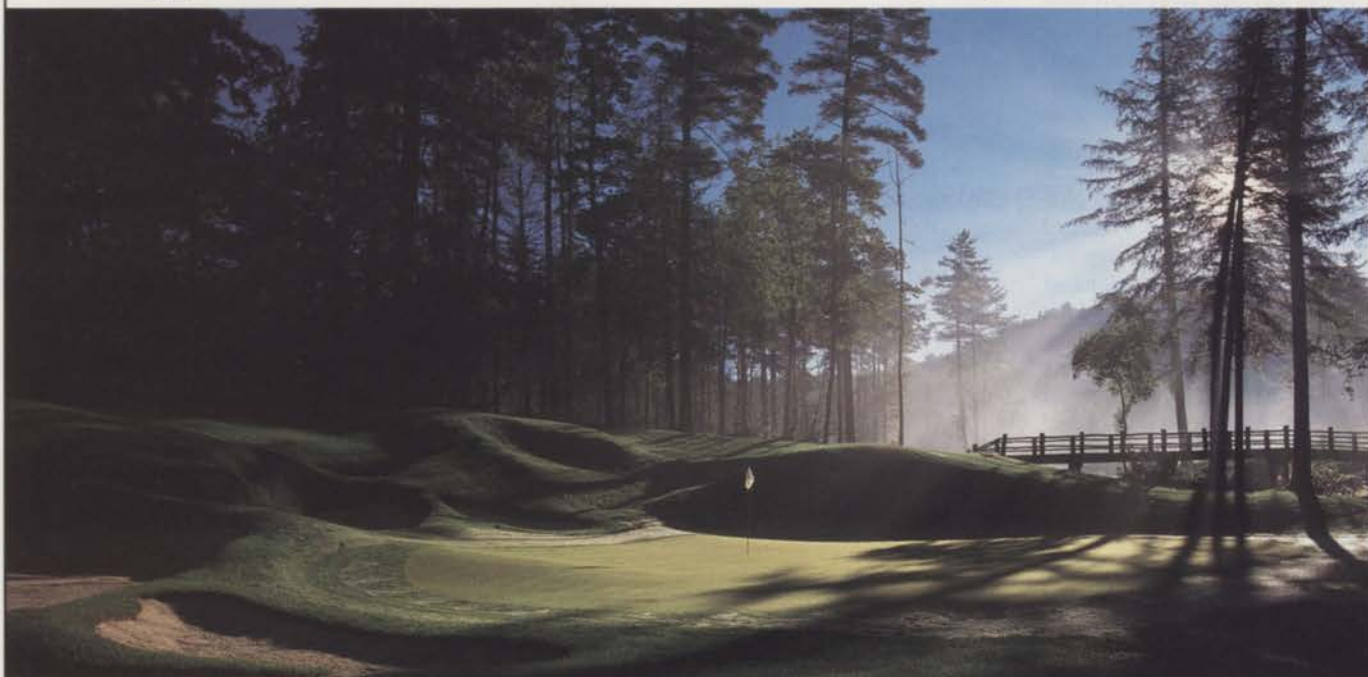
If all insects present when the insecticide was applied were killed, 100 percent control would result. This rarely happens in biological systems. If you look at the results of insecticide trials by research and extension specialists at universities, typical levels of con-

(continued on page 58)

 Tree roots around greens and sand traps, even cart paths, can get out of control quickly. Sand traps become a dangerous hazard and a source of complaints. Greens start to break a lot more than they should. But, the last thing you want to do is lose the trees.

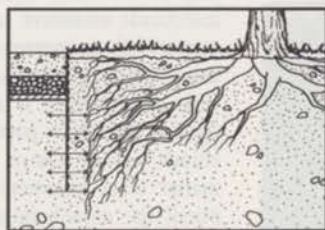
roots just shouldn't be par for the course.

Biobarrier installs quickly and easily as well. Simply place it as a vertical barrier to deflect root growth. Unlike plastic barriers or other forms of root control, Biobarrier is installed completely underground. So your



With Biobarrier, Nature Can Take Its Course Without Taking Over Yours.

That's why there's Biobarrier®, the root control system that stops roots and controls their route. And keeps them under control for over 15 years at a time.



Biobarrier is a geotextile fabric with controlled-release nodules containing the active ingredient trifluralin, which has been proven effective in stopping tree root encroachment under concrete pathways and places where

root control system is out of sight, and the roots are out of mind.

Biobarrier. It's the best way to let nature take its course and keep yours playing straight and long. For more information, or a consultation on your specific application, call 1-800-25-ROOTS.

Bio **barrier**®
The Roots Stop Here.

Insecticide Performance

(continued from page 56)

trol for recommended products are 78 percent for Japanese beetle grubs and 66 percent for chinch bugs. Don't expect miracles. *Improper evaluation of product effectiveness.* In most cases when an insecticide is reported a failure, the number of insects present before and after application were not determined. If a customer calls claiming to find five grubs per square foot after an insecticide treatment, the first question I ask is when was the insecticide applied.

Insecticides applied for grub control should not be evaluated until three weeks after application. Granular formulations of Oftanol, in particular, should not be evaluated for at least three weeks. The second question I ask is how many grubs were present before the insecticide was applied. It is impossible to determine how well an insecticide worked unless you count grubs before and after treatment.

Five grubs per square foot after treatment may account for good control if you started with 20 per square foot. A good way to determine how well an insecticide works is to count grubs, or whatever the target insect is, in four different places before treatment. Return to the same four areas for your final evaluation. Allow two weeks for chinch bugs and three to four weeks for grubs.

Before and after counts do not accommodate all situations such as a sudden decline in insect numbers because of disease or weather. Under these circumstances, even

COMMON NAME	TRADE NAME	SIGNAL WORD	(LD ₅₀ MG/KG ¹)		BEE ² TOXICITY	USE
			ORAL	DERMAL		
Hydramethylnon	Amdro	Caution	1,300	>5,000	PNT	Fire ants, harvester ants, big-headed ants
Bendiocarb	Turcam	Warning	35-45	566	—	Grubs, chinch bug, sod webworm, cutworm
Carbaryl	-Sevin	Caution	246	2,000-4,000	HT	Grubs, chinch bug, sod webworm, cutworm
Chlorpyrifos	Dursban	Warning	60-100	202-2,000	HT	Chinch bug, sod webworm, cutworm, billbug
Diazinon	Diazinon	Warning	300-400	3,600	HT	Grubs, chinch bug, sod webworm, cutworm, billbug
Fluvalinate	Mavrik	Caution	261-282	>20,000	MT	Chinch bug, sod webworm, cutworm
Fonofos	Crusade	Warning	8-17	25	HT	Grubs, sod webworm, cutworm, billbug
Isazofos	Triumph	Warning	34-184	118-755	—	Grubs, chinch bug, sod webworm, billbug, cutworm
Isofenphos	Oftanol	Warning	20	162	—	Grubs, chinch bug, sod webworm
Trichlorfon	Proxol	Danger	250	>2,100	PNT	Grubs, chinch bug, sod webworm, cutworm, billbug
	Dylox	Caution/Danger	250	>2,100	PNT	Grubs, chinch bug, sod webworm, cutworm, billbug

¹LD₅₀ is a standard toxicological term which indicates the number of milligrams (mg) of pesticide per kilogram (kg) of test animal body weight required to kill 50 percent of a test animal population. Values less than 190 indicate extremely high toxicity to mammals. The LD₅₀ data have been obtained from Farm Chemical Handbook and Material Safety Data Sheets, where the source gives an LD₅₀ range because different LD₅₀ values are given for each sex or species of test animal.

²Relative rating of insecticide toxicity to honey bees is HT = highly toxic, MT = moderately toxic, PNT = practically non-toxic.

Table 1.

questionable treatments such as walking over a lawn with spiked shoes or spraying beer and mo-

lasses will appear to be effective.

The only way to know about a sudden population crash occurring at the same time as your insecticide treatment is to compare it with an untreated (check) area. This sometimes happens with chinch bugs. If *Beauveria* spreads through a population of chinch bugs on a lawn, it doesn't matter what treatment was applied; the chinch bugs will be nearly gone when you return for evaluation.

Incorrect product selection. In most cases, insects listed on the label are effectively controlled by the product. Avoid using in-

secticides to treat insects not on the label. For example, cutworms and chinch bugs are on the Mavrik label but not grubs. This is for a good reason: Mavrik and most synthetic pyrethroids bind tightly to thatch and other organic matter, never penetrating into the soil to the grubs.

Dursban also binds to thatch, and therefore works better for grubs when applied to bare soil or injected into the soil. Occasionally, insects are listed on labels when the average level of control is under 50 percent. It is worthwhile to consult publications by your cooperative extension service to see which products are recommended for each insect or mite.

Failure of the insecticide to reach
(continued on page 60)



Insecticides applied for grub control should not be evaluated until three weeks after application. Photo: David Smitley.

NUTRALENE®

The Key to Your Dual Release Nitrogen Needs



Dependable NUTRALENE® Controlled-Release Nitrogen is based on methylene urea polymers that offer a dual-release mechanism through hydrolysis and soil microorganisms. So unlike other nitrogens that provide only one release mechanism this 40-0-0 formulation is fully available to turf in a single growing season, making it ideal for golf courses and other turf areas as

well as for landscape ornamentals. Straight NUTRALENE is sold in chip and granular forms and is also available in blends from your distributor or blender. For more information on the key to your dual-release nitrogen needs with NUTRALENE, please

 **NOR-AM**
NOR-AM CHEMICAL COMPANY
Specialty Products Division
A Schering Berlin Company

fill out the coupon below and return it to: NOR-AM Chemical Company, 6 Mt. Vernon Street, Suite 249, Winchester, MA 01890.

3509 Silverside Road, P.O. Box 7495, Wilmington, DE 19803

Yes! I want more information on NUTRALENE for turf ornamentals.

NAME _____

TITLE _____

GOLF COURSE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

IMPORTANT: Please remember always to read and follow carefully all label directions when applying any chemical.

USE READER SERVICE #11

Q: We've got good news for turf, bad news for bugs and worse news for weeds. Which would you like first?

NO JOKE!

A: How about all three at the same time?



When weeds and bugs attack your customers' lawns it's anything but a laughing matter. So why not strike back hard and fast? Hit 'em with a dose of the only TEAM/DURSBAN fertilizer combination available today. Ask about The Andersons exclusive formulas with TEAM and DURSBAN.

- 19-3-5 with 2 lbs. TEAM / 1 lb. DURSBAN
- 19-3-5 with 1 lb. TEAM / 1 lb. DURSBAN
- Custom blends available

Either single-application formulation produces high performance results. Find out more today.

1-800-225-ANDY

The Andersons

*DURSBAN is a trademark of DowElanco, *TEAM, ©1993 The Andersons

USE READER SERVICE #10

Insecticide Performance

(continued from page 58)

the target. Grubs are the most difficult group of turf insects to reach because the insecticide must move through the thatch and soil to where the grubs are active. Insecticide applications for grubs should be followed immediately with 0.5 inches of irrigation to help move the insecticide into the soil.

If there is no irrigation or rain for five days after a sprayable insecticide is applied, it may not work well because of degradation or sublimation of the product before it is washed deep enough into the soil to come into contact with grubs.

Although ants are usually more beneficial than harmful (fire ants are an exception), the same principle holds true. The queens may be located in chambers deep underground. Insecticides applied to turf affect workers foraging on the surface, but have little effect on the queen or larvae.

Ant mounding practically stops for a few days after an insecticide is applied then slowly returns to normal levels over a one- to six-week period. Insecticide baits may be more effective. They are slow-working insecticides that allow workers to feed the queen and larvae before they die.

Another way to "miss the target" is with incorrect timing of an insecticide application. Let's say Japanese beetle adults are flying from July to early September in your area. An insecticide applied on Aug. 1 may be extremely effective for the first seven to 14 days after application, but if more eggs are deposited after Aug. 15, the insecticide may no longer be effective.

Movement of insects back into treated areas. This is not a common problem, but it may be frustrating when it happens. The best example is Japanese beetle adults. They fly from tree to tree and back to turf, constantly moving about.

Susceptible trees like *Tilia* or *Malus* may be sprayed with an effective insecticide on Monday, yet be covered with beetles again by Friday. This is because new beetles fly to the tree after treatment, and the residue is not potent enough to kill them quickly (before even more beetles arrive).

In addition, chinch bugs may move in from a bordering lawn making the insecticide look effective in the center of a lawn and ineffective along the infested edge.

Cutworm and webworms are moths in the adult stage, making them very mobile and effective at searching for new sites to deposit eggs. An insecticide application in April may suppress predators, making the lawn a safe place for webworm or cutworm eggs and young larvae in June and July.

Enhanced biodegradation. One way that insecticides are broken-down or degraded is by bacteria in the soil that uses the insecticide as a food source. If a product is used repeatedly for several years, the bacteria that uses it as a food source becomes more abundant and may break down the insecticide more rapidly.

This is called enhanced biodegradation. It can lead to poor performance if an insecticide is expected to remain active for a long time. However, most of the time insecticides are expected to work only for three to 14 days after they are applied. In that case, enhanced degradation is not a problem. It is more likely to become a problem if an insecticide is applied in the spring and expected to work in August and September. It may also be a problem if an insecticide is applied in early August and expected to remain active into September. *Insect resistance to insecticides.* This is the most common explanation offered by someone observing a "failure." Indeed, this has been documented with chinch bugs and Japanese beetles. However, resistance is less likely than the other items listed above to be the reason for failure.

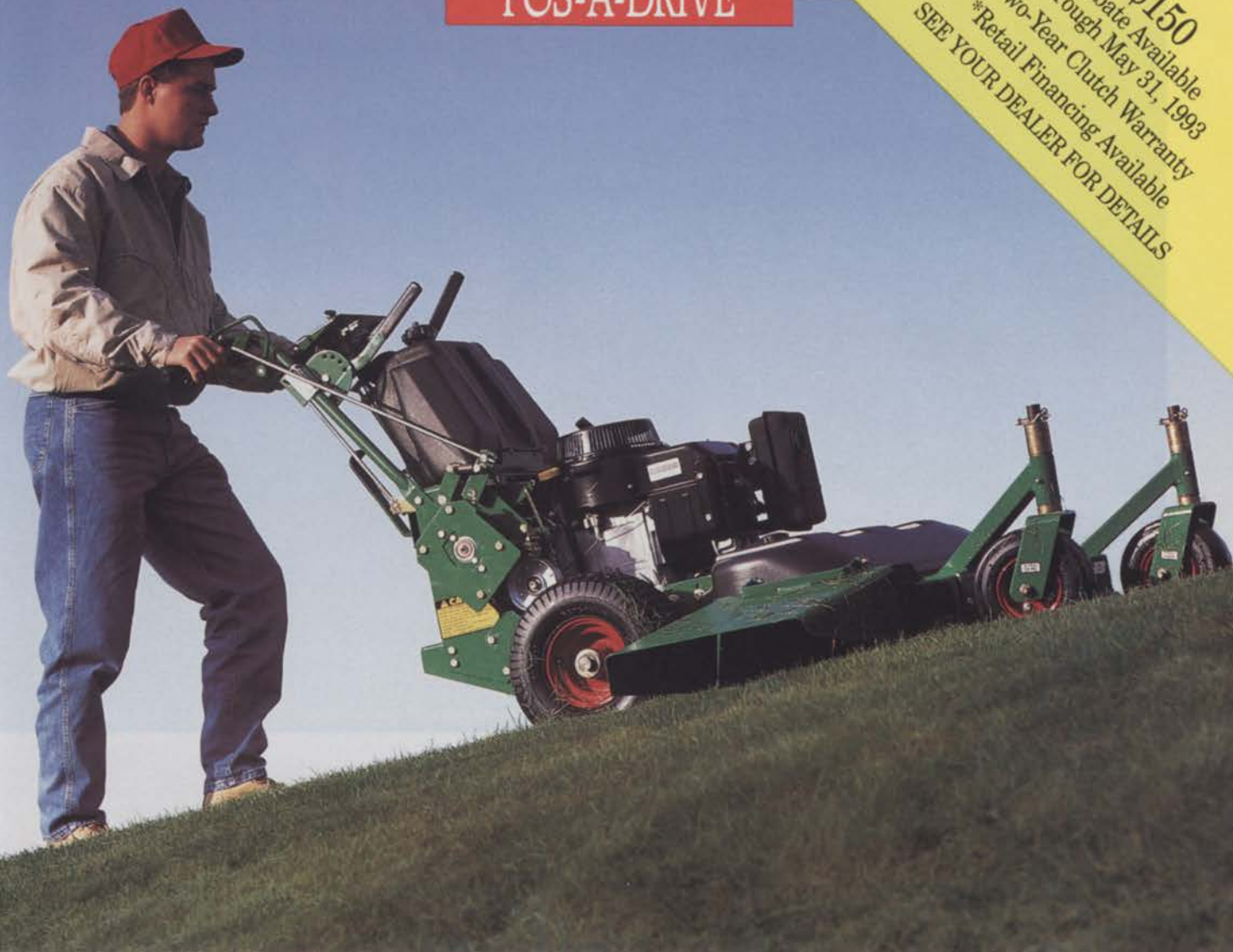
Most of the products used by lawn care companies appear in some university tests each year. If an insect pest develops a high level of resistance to one of these products it should be noticeable in test results. Low levels of resistance, however, may be overlooked.

One reason that resistance is not more of a problem is because insects move in and out of treated lawns, breeding with individuals that are not resistant, and thus preventing the buildup of a resistant population. Resistance is likely to develop first where a

(continued on page 62)

POS-A-DRIVE™

\$150
Rebate Available
Through May 31, 1993
Two-Year Clutch Warranty
*Retail Financing Available
SEE YOUR DEALER FOR DETAILS



Eliminate slipups on the way to the top.



Detail
of cog belt
drive system.

Mowing wet, undulating turf can be an uphill battle with standard belt drive equipment. Not so with Ransomes Pos-A-Drive™ mower. The Pos-A-Drive is the only mower on the

market that features cog belt drive and a sealed clutch system. As a result, the Pos-A-Drive can take on hilly terrain—wet or dry—without slipping.

*Offer good at participating dealers only. See your local dealers for details. Qualified buyers only.

And because it offers true positive forward and reverse drive—as opposed to reverse assist—operating the Pos-A-Drive is a snap.

From top to bottom, the Pos-A-Drive is designed to help you on your way up. No matter what the conditions.

Call 1-800-228-4444 for the dealer nearest you to arrange a free on-site demonstration.

RANSOMES

BOB-CAT

Built to Last



© 1992 CIBA-GEIGY Corporation, Turf and Ornamental Products, Box 18300, Greensboro, NC 27419. Always read and follow label directions.

Insecticide Performance

(continued from page 60)

large proportion of an isolated population is repeatedly treated.

Golf courses may be a better site for resistance problems than home lawns. The less insecticide used, the less likely it is that resistance will be a problem.

A NEW SELECTION. In a modern world of reduced pesticide use and notification and posting, low toxicity products have become more appealing. A quick way to assess the toxicity of products is to check the signal work on the label. (Table 1)

Some companies seek out products with CAUTION on the label, the least toxic category of products. The most important toxicity information is the oral and dermal LD₅₀ (lethal dose). Eye and lung irritation are important to know about also, but most cases of pesticide poisoning are from products with a low oral or dermal LD₅₀.

ALTERNATIVE INSECT CONTROL PRODUCTS FOR HOME LAWNS

COMMON NAME	PRODUCT NAME	ORIGIN	TOXICITY	USES
Azadarachtin	Bioneem Turplex Bioinsecticide, Benefit	Neem seed extract	Oral LD ₅₀ >10,000	Caterpillars, webworms and cutworms
<i>Bacillus popilliae</i>	Doom	Natural bacterial pathogen to save grubs	Harmless to humans	Japanese beetle and European chafer grubs
<i>Bacillus thuringiensis</i> *	Dipel, Attack Steward, MPV, Thuricide	Natural bacterial pathogen of caterpillars	Harmless to humans	Caterpillars, webworms and cutworms
Horticultural oil	Sun Spray Ultra-Fine Spray Oil	Refined petroleum oils	Oral LD ₅₀ >15,000, Dermal LD ₅₀ >5,000	Chinch bugs
Insecticidal soap	M-Pede Safer's Insecticidal Soap	Salts of fatty acids	Harmless to humans	Japanese beetle adults, Greenbug
<i>Steinernema carpocapsae</i>	Exhibit Orthoganic Guardian	Natural nematode pathogen of insects	Harmless to humans	Caterpillars, billbug larvae

**Bacillus thuringiensis*, according to "Farm Chemicals Handbook '92" is harmless to humans, animals and useful insects.

Table 2.



THE WORST PART ISN'T
THAT SHE'S CALLED BACK
THREE TIMES, OR THAT
SHE PROBABLY WON'T RENEW.
THE WORST PART IS THAT
SHE'S GOT NEIGHBORS.

If she's calling you about grubs, fire ants, or mole crickets, you can bet her neighbors are hearing about you, too.

Makes you wish you'd used Triumph®, doesn't it? You could have delivered up to 90% control in just 2 to 3 days. Too bad.

Bet you'll use Triumph first, next time.



USE READER SERVICE #32

The insecticides are easily the most toxic products used on turf. Wear complete protective clothing while mixing and applying insecticides, and be particularly careful applying products with an LD₅₀ below 100. (Table 1)

In the last 10 years, several alternative products have been developed and accepted. (Table 2) Usually these products are not toxic to insects, and do not have the broad spectrum of activity that conventional insecticides do. It is for this very reason that they are useful in IPM programs.

They can be used to suppress pest populations while having a minimal effect on predators, parasites and insect disease organisms. Although not as toxic as conventional insecticides, they may provide better long-term pest control by preserving the natural enemies needed to maintain a balance of plant feeders and predators in the insect community.

Most lawns are a balanced community. Pesticides tend to disrupt the balance, first suppressing all

insects, then causing a delayed outbreak of plant feeders.

The most useful products available at this time are the ones developed based on insect parasitic nematodes, neem oil and *Bacillus thuringiensis*.

Insect parasitic nematodes come packaged as live nematodes that seek-out insects to infect. They must be applied to moist soil, preferably in the evening, to be effective. The best results have been for cutworm, sod webworm and billbug larvae control.

Grub control has not been very good with *Neoalectana carpocapsae* applied at the recommended rate of 1 billion per acre. Higher application rates, particularly with *Heterorhabditis* nematodes on sandy soils, have been more successful for grub control. Unfortunately, *Heterorhabditis* is not readily available.

Neem oil is extracted from seeds of the neem tree, native to Asia, and used as a source of insect control products for hundreds of years. Two products are

currently labeled for use on trees and shrubs: Margosan-O and Bio-neem. Two products are now labeled for use on turf: Bio-neem and Turplex Bioinsecticide. Another product, called Benefit, is expected to receive Environmental Protection Agency approval this year.

Although these products may have several uses on trees and shrubs, the best activity on turf probably will be against cutworms, webworms and armyworms. At higher rates the neem products also seem effective on chinch bugs and grubs, but currently the neem products are recommended only for cutworms, armyworms and webworms.

The use of *Bacillus thuringiensis*, a naturally occurring soil bacterium, on turf is also limited to caterpillars, cutworms and webworms. Another bacterial product, *Bacillus popilliae* or milky spore disease, is specific to grubs. This bacterium has not yet been successfully grown in artificial media, and must be obtained by

collecting infected grubs. Therefore this product is costly.

So far, field testing of *Bacillus popilliae* has been disappointing. High levels of infection have been observed in the laboratory and in some field populations. However, in short-term field tests of one or two months, satisfactory control has not been obtained. The milky spore product available at this time, Doom, is only active against the Japanese beetle and European chafer.

One of the most common questions is "How effective are traps for control of Japanese beetles?" Traps are very good for attracting beetles but do not provide enough beetle control to reduce levels of grubs in turf. Some increase in adult feeding, and later in grubs, may be observed immediately around the traps. These traps are useful for detecting but not controlling the beetles. ■

The author is an entomologist at Michigan State University, East Lansing, Mich.



Hunter® SPRINKLERS

THE POPULAR G-TYPE

The World's Best-Selling Gear-Driven Sprinkler

G-Type sprinklers are ideal for use in turf and landscape applications and are available in three versatile models: the PGP 4" pop-up, the PGS shrub head and the PGH 12" high-pop. These sprinklers represent state-of-the-art efficiency in water conservation.

All G-type models feature 12 interchangeable nozzles to vary the discharge rate from .5 to 14.4 GPM and the radius from 22' to 52'. This versatility means less inventory and faster installation. Additionally, new low angle nozzles are available for all models, and a built-in drain check valve is optional on the 4" pop-up and shrub model, and standard on the 12" high-pop. G-Type sprinklers have a two-year, over-the-counter exchange warranty.

The PGP
Gear-Driven For
Quiet Operation

Hunter® The Irrigation Innovators

1940 Diamond St. □ San Marcos, CA 92069 □ 619 / 744-5240 □ FAX: 619 / 744-7461

USE READER SERVICE #65



IRRIGATION
TRAINING SERIES

SAFELY SIZING THE IRRIGATION SYSTEM

Poorly sized irrigation systems can result in problems for years to come. But these difficulties can be avoided with attention to water flow and additional external factors.

By Larry Keesen

SIZING THE IRRIGATION system is critical to its function, and can be a liability to the designer if the system fails to perform properly. Improper sizing can result in low pressure and inadequate coverage, wasted money invested in oversized equipment and water hammer which will reduce the life expectancy of the equipment.

Many designers are unaware of the problems they have created with their irrigation designs. If the contractor discovers the problem before installation, he will often try and correct the mistakes in the field. In other cases, he will attempt to correct the problem after the system is installed. Designers should ask contractors for feedback on individual designs, and what problems were encountered during the installation of the system to avoid future problems.

Photo: Geoflow, San Francisco, Calif.

Before we go further, take out irrigation lesson nine, "Analyzing Irrigation System Hydraulics" from the March issue of *Lawn & Landscape Maintenance* magazine and keep this article handy as we review pipe sizing techniques, sizing of other system components and total irrigation system losses.

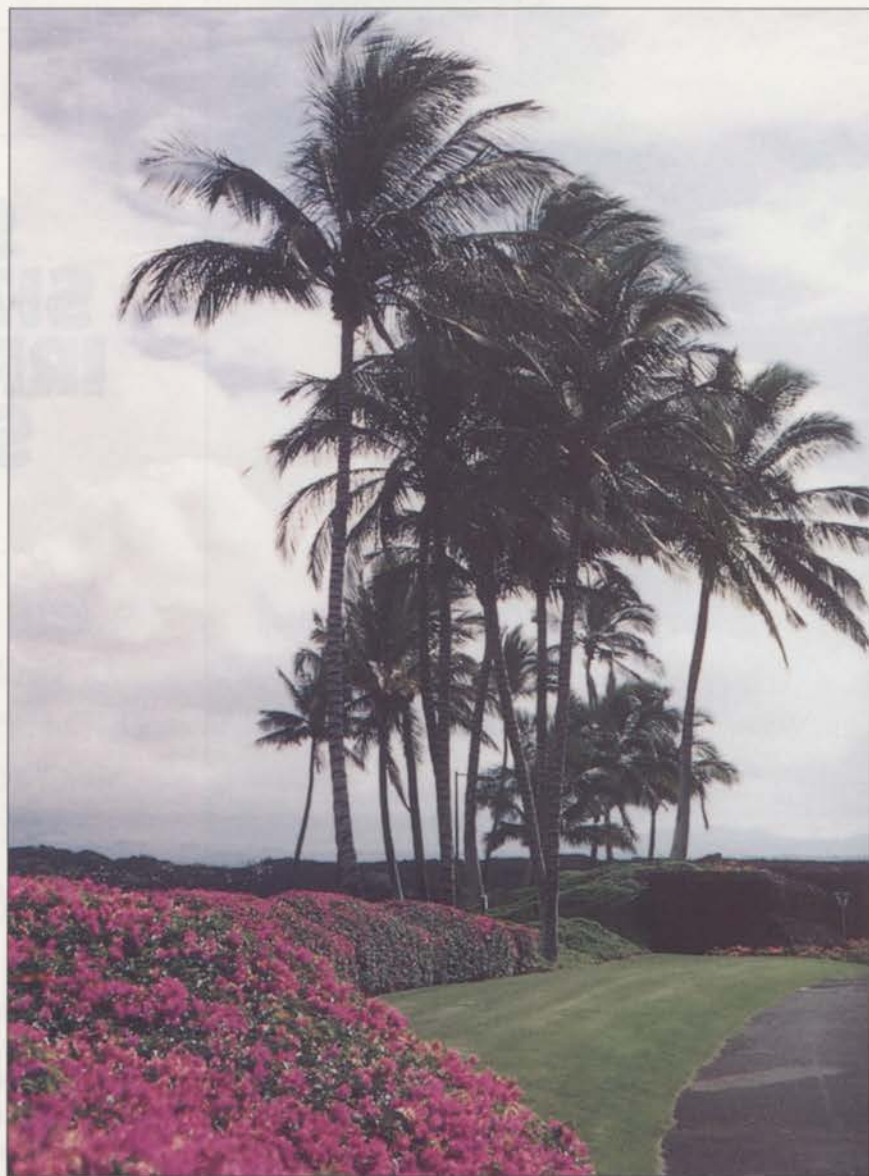
You will also want to make up a pressure loss work sheet before you start the sizing process including:

1. Valve number and flow rate
2. Available water pressure
3. Loss or gain due to elevation
4. Detailed list of various component pressure losses and velocities
5. The operating pressure requirements
6. Project location and date

WATER SERVICE & METER. Determining safe flows for service lines and meters is critical to the success of any design. The smaller water services and meters (1 inch and smaller) on municipal water mains are much more restrictive than larger services and meters. Pressure losses are much higher in the 3/4- and 1-inch service lines and meters. These losses can severely limit the flow of water into the system.

Use extreme caution if the service line is galvanized or lead pipe. This type of pipe is old and usually corroded, resulting in very high pressure losses, very low flow rates and systems that won't work.

About 25 years ago, we installed a small residential irrigation system in which the sprinkler heads would not pop up when the water was turned on. With several people pulling up a head,



we could get the rest to seat and spray but the coverage was unacceptable.

I checked the valves to be sure they were open, then called the water department for information on the type of service. I found we were dealing with an old 1/2-inch lead service from the main to the meter. The only choice was to replace the old service line with a new 3/4-inch copper line.

We should have checked the heads be-

fore the system was installed and warned the owner, or designed for a lower flow rate. As it turned out, the owner indicated a problem with water pressure when he took a shower. After much convincing, the owner decided to pay half the cost of the new service.

The best guide for sizing water services and meters is the "Manual of Water Supply Practice and Sizing Water Service Lines and Meters, AWWA M22"

(At left), Accurate irrigation results stem from good, original designs. Designers and contractors should work together to achieve desired results. Photo: Geoflow

from the American Water Works Association (303/794-7711). Water flow through meters is limited by the maximum flow capacity of the meter and maximum pressure losses recommended in the manual. The selection of the size of the water meter should be based only on flow requirement, not on pressure loss through the meter. (See chart below.)

The maximum design capacity, as recommended in the AWWA manual, is 80 percent of the maximum safe flow when the water meter serves only the irrigation system. The limiting factor is the affordable pressure loss in the service line. I prefer to use 70 percent of the maximum safe flow for systems with their own water meter. For example, a 1-inch water meter at 70 percent of 50 gpm is 35 gpm.

When the water meter jointly serves the irrigation system as well as indoor water consumption and other uses, remember to consider the customer's peak demand and don't use all the available water for irrigation. Size the meter at 50 percent or less of the AWWA maximum safe capacity for irrigation demand, and schedule system operation during the evening hours. (See chart above.)

This sizing method reduces pressure losses through the meter and will prolong the meter's life expectancy. Because of the high flow losses in the 3/4- and 1-inch service lines, it is impractical to design this size system at 80 percent of the maximum flow capacity.

RECOMMENDED MAX. METER SIZING FOR JOINT USE

Size in.	Flow for Irrigation 50% of Maximum Capacity		Type K Copper (C=130) Service Loss & Velocity		
	gpm	psi loss	psi/100'	psi/50'	vel/fps
5/8 x 3/4	10	3.7	16.4	8.2	7.4
3/4	15	3.6	34.8	17.4	11.0
1	25	3.7	21.9	11.0	10.3
1 1/2	50	4.9	11.4	5.7	9.3
2	80	4.9	7.0	3.5	8.5

Many water districts require the service line and meter to be of the same size. The 1-inch and smaller service lines are the restrictive factors in sizing, not the water meter. According to the AWWA manual, the service flow cannot exceed more than 15 fps velocity.

Urban water distribution systems have pressures ranging from 35 to more than 150 psi with averages in the 50 to 80 psi range. With pressures in this range, we cannot afford a lot of pressure loss in the service line and meter.

For example, a system with a 1-inch service (50 feet) and meter, a 30 psi operating pressure requirement at the head and 60 psi of static pressure, the total allowable loss could be as high as 30 psi. I recommend keeping the allowable loss below 20 or 25 psi to allow for pressure fluctuations and possible future modifications.

Using the 80 percent of maximum flow criteria, a flow of 40 gpm is possible through the meter, but the pressure loss in 50 feet of 1-inch K copper tubing is 26.7 psi. This means that the flow rate should be cut back to about 25 gpm and a psi loss of 11. This allows for 14 psi of loss in the other system components and a safely sized design.

BACKFLOW PREVENTER & SPECIALTY

VALVES. Industry standards for water flow through backflow preventers is a maximum of 7.5 fps. A 2-inch reduced pressure backflow device has a maximum flow rate of about 77 gpm at 7.5 fps. A 1-inch pressure vacuum breaker at 7.5 fps is about 20 gpm. Many designers ignore this requirement or are unaware it exists. Check manufacturers' pressure loss charts; never exceed the manufacturers' recommended maximum velocity for backflow prevention.

When sizing the electric control valve, we generally reduce the dimensions one pipe size below the downstream pipe. This reduces the cost of the valve with a relatively small increase in pressure loss of 2 to 4 psi. If the static pressure is more than 70 psi, this loss is easily affordable.

When using pressure reducing valves, sizing should be based on the valve's flow capacity at a reduced pressure level. Check the manufacturers' catalog for detailed flow information. We install pressure-reducing valves whenever the static site pressure is above 70 psi for most commercial and residential projects.

MAINLINE & LOOPED PIPE SIZING. When sizing the mainline you must take into consideration the potential surge pressure that can be produced from fast-closing valves. This surge danger can be reduced by maintaining velocities under 6 fps. Keesen Water Management designs

AVG. FLOW & PRESSURE LOSSES FOR METERS & PIPES

Size in.	Maximum Capacity		Design		K Copper (C=130) Service Line Losses	
	AWWA Flow gpm	Criteria psi	80% of Max gpm	psi	psi/100'	psi/50'
5/8 x 3/4	20	10.4	16	6.1	39.2	19.6
3/4	30	10.6	24	6.9	87.5	43.8
1	50	9.3	40	6.3	53.3	26.7
1 1/2	100	11.3	80	8.6	27.2	13.6
2	160	10.4	128	6.5	16.7	8.3

the mainlines for velocities that are always less than 6 fps, with the average project at 3 to 4 fps. Staying in this 3 to 4 fps range greatly reduces the chance of surge problems and enhances the life expectancy of the system.

Working from the furthestmost valve back to the source, size the pipe so it maintains velocities of about 3 or 4 fps. Don't forget to adjust for possible limitations resulting from affordable mainline pressure loss. If the static pressure is 52 psi and the system required 30 psi at the head, the affordable loss is 22 psi less a safety factor of 5 psi, or a total of 17 psi. This might require larger-sized piping in mainline and laterals in order to minimize the loss in the system.

Many of the systems we design have mainlines that are looped and/or interconnected so as to balance the pressure and flow. When feasible, these looped mainlines allow smaller pipe sizes or lower pressure losses because two or more pipes carry the same amount of water as one line.

As the water travels to the control valve it will follow the path of least resistance with approximately half of the water flowing in one direction and half in the other direction of the loop. The pressure loss is usually calculated as 1/2 the flow through 1/2 of the total loop length. The flows will adjust to create equal pressure loss in each leg of the loop.

Looping the mainline will usually re-

duce construction costs and provide for a better system. When the mainline losses are calculated, tally them and then add 10 percent for PVC fitting losses.

SIZING LATERAL LINES. The industry standard for pressure variation in lateral lines is 20 percent of the highest pressure in the lateral. This means that the pressure difference between any two heads in the zone should not exceed 20 percent of the highest pressure within the zone. This standard is necessary in order to provide high uniformity and efficiency.

If the required operating pressure is

(continued on page 70)

THE ONLY RAIN SENSOR AS DEPENDABLE AS MINI-CLIK.



Most rain sensors need frequent cleaning and repair. They waste costly service time. But Mini-Clik is guaranteed to shut off sprinklers during rainfall and make any irrigation system more efficient.

It all works because Mini-Clik's patented design is simple, from the way you install to the way you click in the precise settings.

For the nearest distributor call Glen-Hilton Products, 1-800-476-0260 or 804-755-1101 worldwide.

And get the rain sensor so dependable, you'll never have to hold its hand. **MINI-CLIK^{II}** Saves You Money On A Rainy Day.

©1989 Glen-Hilton Products, Richmond, Virginia

USE READER SERVICE #28

LAWN CARE
APPLICATION.
STAY OFF GRASS
UNTIL DRY.
FOR MORE
INFORMATION
CONTACT:

YOUR COMPANY'S NAME
YOUR PHONE NUMBER

**Play It
Safe
with
YARD STICK**

- Customized 4 x 5 message board with your company name, phone #, & entry lines for time & date of application
- Handy rain gauge
- Note holder for extra messages
- Built-in grass height gauge
- Made from quality resins—avoid mowing accidents
- Quick foot step for planting

**GREEN GENIE
PRODUCTS**

9601 N. Allen Rd.
Peoria, IL 61615

800-747-5211

call for quantity
discount prices

USE READER SERVICE #35

APRIL 1993 • LAWN & LANDSCAPE MAINTENANCE



At Pepco, We're Proud To Be On Your Team!

There have never been more options in drip and low-flow irrigation than there are today. So it's more important than ever to specify products that are designed from the very beginning to fulfill their precise function.



As one of the pioneering names in low-flow irrigation, Pepco makes it easy for you to specify with confidence.

Pepco parts and tubing aren't just repackaged ag products...they're designed expressly for home and commercial environments. Each of our products has been rigorously lab-proven. Only when a product is perfectly suited to its role do we release it to the marketplace.

And specialized products are just the beginning at Pepco. Our Customer Care department is dedicated to helping you specify the best products for your application. If another company's product can do the job better than ours, we'll be the first to tell you. Your satisfaction is our bottom line.

So if you're not specifying or installing Pepco, maybe it's time to put us on your team! Just give us a call at (800) 247-8138 for our complete product catalog and water conservation handbook. We'll also put you in touch with the authorized Pepco distributor in your area, who'll show you new and better ways to save our water.



PEPCO

WATER CONSERVATION PRODUCTS

800-247-8138

USE READER SERVICE #88

(continued from page 68)

30 psi, then the allowable pressure variation is 6 to 7 psi. If the required pressure is 50 psi, then the allowable variation is 10 to 12 psi. I prefer to keep the pressure variation in the lateral at less than 5 psi to provide a higher uniformity of coverage and a more efficient system.

Start at the head that is the greatest distance from the control valve and measure the distance to the next upstream head or tee in the line. If the flow is 4 gpm at this last head and the distance to the next head is 15 feet, calculate the pressure loss using last month's formulas or look up the loss in a pressure loss chart. You will find that

Size Poly Pipe	Max Flow	psi loss per ft.	Velocity
3/4 inch	6.0 gpm	0.034	3.6
1 inch	14.0 gpm	0.051	5.2
1 1/4 inch	30.0 gpm	0.055	6.4
1 1/2 inch	40.0 gpm	0.044	6.3
2 inches	60.0 gpm	0.028	5.7

the amount of loss in 3/4-inch polyethylene is 1.62 psi per 100 feet or 0.24 psi of loss.

Move to the next upstream head or tee and add the flow of that head to the previous one. The flows are accumulated as the losses are calculated. Next, proceed toward the valve. The second head has a flow rate of 2 gpm, so 6 gpm is used in calculating the losses in the next upstream segment. When you come to a tee in the lateral line, determine the entire flow for that segment of the lateral and add it to the total flow

amount for calculating the loss in the next leg back to the valve.

Write the flow, velocity, distance and psi losses on a blueline plan for a worksheet, or a permanent record. After all the legs are calculated, tally them and add 10 percent for PVC fitting losses and 15 percent for polyethylene to determine if the losses are acceptable. When figuring the system pressure losses, always check the valve farthest from the water source and the valve with the highest flow. Then, using the

(continued on page 73)

THE WALKER TOUCH



The Perfect Touch Many operators are finding the mid-size Walker Mower is the perfect size for their jobs – a compact, maneuverable tractor for small areas, combined with open space productivity of a rider, saves time.

The "Midas" Touch Walker Mowers are moneymakers; one owner explained why he was buying a second Walker, "The first one made me money – I like to make money."

The Finishing Touch To please the most discriminating customer, Walker delivers a beautiful mowing job and with the exclusive GHS grass collection option, the turf is vacuumed clean and manicured.

The Mid-Size Walker Line

Ride a Walker

- 3 tractor models from 11-21 HP with gas or diesel engines
- 3 year warranty on maintenance free hydrostatic wheel drive
- 3 mower deck sizes 36"-54" with grass collection, side discharge or mulching available
- 3 front mounted implements: snowblower, rotary broom and dozer blade

WALKER MFG. CO. • DEPT. GM, 5925 E. HARMONY RD., FORT COLLINS, CO 80525 • (303) 221-5614

USE READER SERVICE #78

(continued from page 70)

zone with the highest flow rate, finish calculating.

Another method of sizing the lateral is to limit the quantity of water flowing in each pipe size. For many years I have successfully used the following flow rate limits on systems with less than 30-foot spacing between the heads with good success. (See the chart on page 70.)

Lateral lines on slopes should be installed along the contour rather than up and down the slope. This will prevent pressure variations due to elevation changes.

Acceptable pressure losses for most irrigation systems (with adequate water

component	psi loss ranges
Service and meter	6.0 to 20.0
Backflow preventer and control valve	6.0 to 12.0
Mainline	2.0 to 5.0
Lateral lines	3.0 to 5.0
Totals	17.0 to 42.0

pressure) components are shown in the chart above.

Next month we will take a look at drip irrigation including potential problems, successful designs and appropriate uses.

The author is vice president of Keesen Water Management, 10700 E. Bethany Drive, Suite 103, Aurora, Colo. 80014; 303/695-7711.



IRRIGATION QUESTIONS

1. Which size service lines and meters have higher pressure losses?

2. What is the best guide for sizing water services and meters?

3. What is the industry standard for water flow through backflow preventers?

4. Why do many designers size the control valve one size smaller than the downstream piping?

5. When should pressure reducing valves be installed for most commercial and residential projects?

6. What is the advantage of a looped mainline?


Answers appear on page 90 of April LLM.


The photos in the March irrigation training series were supplied by Rain Bird. We apologize for the omission.

Look To . . .
WATERMARK
MOISTURE SENSORS

NEW! FINGERTIP CONTROL
IRRIGATION SCHEDULING

PREVENT	RAIN SENSOR	WATERMARK
OVERWATERING	NO	YES
UNDERWATERING	NO	YES
WATER DURING RAIN	YES	YES
ADJUSTABLE TO LANDSCAPE	NO	YES

ASK YOUR SUPPLIER OR ASK US . . . 

Write for free literature. 

IRRIGOMETER CO.
 Box 2424 • Riverside, CA 92516
 909/689-1701 • FAX 909/689-3706

WE NEVER SAID IT WAS LOW COST

THE LINE-WARD LINE-LAYER

PREFERRED BY PROFESSIONALS FOR OVER 16 YEARS

- Handcrafted, Solid Construction
- Moves On Tracks, Not Wheels, For Superior Traction
- Efficient, All-Mechanical Drive—No Recurring Oil Leaks
- Ever Reliable Kohler 16 Hp. Engine—Optional Electric Start
- Up To 16" In Depth
- Quick Service & Parts Delivery
- Boring Attachment Available



IRRIGATION!

For pipe or cable installation, Don't settle for less!
SEE FOR YOURSELF

Call For A Free On-Site Demonstration Of The L-2 Model Or Write For Our Color Brochure



Line-Ward Corp.
 157 Seneca Creek Road
 Buffalo, New York 14224
 (716) 675-7373

JUST THE BEST!

USE READER SERVICE #27

USE READER SERVICE #44

ENDOPHYTE: THE FUTURE OF LOW MAINTENANCE LAWNS

AS THE ENVIRONMENTAL activist movement spreads, the lawn and landscape maintenance industry comes under more scrutiny. For turf and landscape professionals, the judicious use of pesticides, fertilizers and water to regulate turf growth isn't just smart business, it's responsible business.

Additionally, endophyte-enhanced turfgrass is becoming better known as a natural solution to a number of turfgrass problems. And the best news is that endophytes aren't just for insects anymore.

"Low maintenance" is no longer just a pocketbook issue for a few consumers; it is a way of life for professionals in the turfgrass industry. Federal, state and local restrictions are getting tighter. As a result, clients are demanding a more thoughtful approach to their lawns and landscapes. They are looking to their lawn care professionals to plant the appropriate low maintenance grasses.

The most important aspects of achieving low maintenance lawns are species selection and proper maintenance. Today, the presence of the endophyte separates mere grass seed from improved turfgrass varieties. Because of the endophyte's advanced insect resistance and improved disease and drought tolerance, it is the most effective tool in the turf professional's arsenal.

In selecting an endophyte-enhanced turf variety, the turfgrass professional is making a sound "low maintenance lawn" decision that will last well after the sidewalks are swept and the bills are paid.

ENDOPHYTE RESEARCH. So what exactly is an endophyte? It is a beneficial fungus that lives symbiotically within the tissue of a host plant. Inside the plant the endophyte produces alkaloids that kill or repel insect pests that feed on plant tissue.

Endophytes are mostly found in the leaf tissue and seed, but also in the stem, crown and root tissues. There also appears to be a seasonal variation of alkaloid concentrations, with the highest levels coming in the summer and autumn months.

Since 1980 researchers have conclusively proved that turfgrass populations infected with the endophytic fungi show substantial insect resistance. Endophytic fungi produce

a range of chemicals, but the alkaloids are the most effective natural insecticides and repellents.

Acremonium loliae is the endophyte usually found in perennial ryegrasses, *Acremonium coenophialum* primarily infects tall fescues and *Epichloe typhina* infects the hard Chewings and strong creeping red fescues.



Sod webworms. The perfect reason for planting endophyte enhanced turfgrass.

Researchers continue to identify turf pests that are vulnerable to the endophyte. Insects affected by the endophyte alkaloids include bluegrass bill bugs, sod webworms, chinch bugs and armyworms. Recently, researchers discovered the presence of endophyte alkaloids in the root tissue of some tall fescue varieties. This research seems to point (although not yet conclusively) to the endophyte's effectiveness in reducing root-feeding pest populations like grubs and nematodes.

Once they established the effectiveness of the endophytic fungi on insect populations, scientists began doing parallel studies to determine the overall turfgrass quality of endophyte-enhanced varieties compared to endophyte-free types. If they could prove the endophyte had a positive effect on the overall health and success of the turf stand, then the seed industry could provide landscape and turfgrass customers with an effective, environmentally friendly tool.

QUALITY ASSURANCE. A Rutgers University study provided the good news. Researchers there discovered that in perennial ryegrass trials conducted from 1976 to 1983, varieties infected with an endophytic fungi either maintained or improved their stand density each year, whereas varieties that were endophyte-free

deteriorated year by year. For landscape contractors, as well as homeowners, this means an improved lawn with all the benefits of a natural insecticide.

Endophyte infection also appears to benefit a turf's ability to withstand environmental stress. For example, a lawn perennially infested with chinch bugs is ultimately more susceptible to drought and heat stress, whereas lawns with endophyte-laden turfgrass appear less vulnerable.

To that end, a 1985 study by Dr. Reed Funk of Rutgers University found that perennial ryegrass varieties infected with endophytes exhibited better summer survival rates, better fall recovery and reduced weed invasion than endophyte-free varieties. Other research shows 12 percent more tillers and 25 percent greater root growth in the endophyte enhanced varieties in the absence of insect pressure. This may be further evidence that an

endophytic plant, free of insect, fungal and environmental damage, will outperform its endophyte-free counterpart.

A 1987 study also indicated improved stress tolerance for fine fescues. Evaluated in trials under high and low maintenance management programs, the endophyte enhanced varieties received significantly higher quality ratings than the endophyte-free counterparts. (Saha et al, 1987)

What's more, the longer an endophyte-enhanced variety remained in cultivation, the more endophyte-free plants were culled. This means that over time a higher percentage of plants remaining will be infested with the endophyte.

Another study showed that an endophyte-enhanced variety improved from 48 percent to 84 percent infection in just seven years. Today, a homeowner need not wait seven years to have a totally infected lawn. The turfgrass professional can plant a 100 percent endophyte-infected lawn in one application.

New research is pointing to increased disease resistance in endophyte-enhanced turfgrasses. In a recently completed University of Tennessee study, endophyte-infected tall fescue seedlings exhibited significant resistance to brown patch (*Rhizoctonia solanii*) and *Pythium spp.* (Blank et al, 1993) A Rutgers University

(continued on page 76)

MOWMOWMOWMOWMOWMOWMOWMOWMOW
MOWMOWMOWMOWMOWMOWMOWMOWMOW
MOWMOWMOWMOWMOWMOWMOWMOWMOW
MOWMOWMOWMOWMOWMOWMOWMOWMOW
MOWMOWMOWMOWMOWMOWMOWMOWMOW
MOWMOWMOWMOWMOWMOWMOWMOWMOW
MOWMOWMO **G'DAY MATE** OWMOWMOW
MOWMOWMOWMOWMOWMOWMOWMOWMOW
MOWMOWMOWMOWMOWMOWMOWMOWMOW
MOWMOWMOWMOWMOWMOWMOWMOWMOW

WE INTERRUPT YOUR WORK TO BRING YOU THE TORO PROLINE NO DOWNTIME-DOWN UNDER SWEEPSTAKES.

Kangaroos. Shrimp on the barbie. Koalas. And G'Day Mates aplenty. That's Australia and it could be yours if you win the Toro ProLine No Downtime-Down Under Sweepstakes.

The Toro ProLine No Downtime Program means that if a Toro ProLine mower needs service, and cannot be repaired right away, a low-cost loaner unit will be made available to qualified customers.

It's just that simple. And now when you visit your Toro ProLine dealer to check out



No Downtime, you can also enter the No Downtime-Down Under Sweepstakes and win round-trip airfare and hotel accommodations for two to Sydney, Australia. Plus a rental car, plus \$500 spending money. And all you have to do is enter.

Visit your Toro ProLine showroom now and enter the Toro ProLine No Downtime-Down Under Sweepstakes. But hurry—the deadline for entries is April 30, 1993 and after that, it's back to mow, mow, mow.

The Professionals that keep you cutting.

No purchase necessary. Void where prohibited. Toro ProLine No Downtime-Down Under Sweepstakes is open to U.S. residents 18 years or older who are commercial lawn care professionals. Entries must be received by April 30, 1993 to be eligible. Drawing will be held May 31, 1993. See your participating Toro ProLine dealer for details and official rules.

USE READER SERVICE #26

Lawn & Land Billing Software Only \$99*

Requirements Include:
IBM or Compatible,
640K RAM,
PC/MS DOS 3.0
or higher and a
harddisk.

The Billing Clerk™

*Plus \$9.50
shipping &
handling.
Texas
residents add
6.75% tax.

Compare our features:

- ✓ **Unlimited** number of customers.
- ✓ **Recurring billing** mode (up to 14 regular recurring cycles per customer) for automatic billing of maintenance fees (weekly, monthly, quarterly or any other cycle).
- ✓ **Unlimited service/product codes** for flexible one-time invoicing of special jobs like fertilizing, tree trimming/removal, etc. One-time invoices can be saved and recalled for future reference.
- ✓ **Customer notepad** for miscellaneous information like special equipment needed, crew requirements, etc.
- ✓ **Recurring Invoices or Statements** print on pre-printed forms, blank paper or post cards.
- ✓ **Complete automatic accounts** receivable as you bill, late charges, past due notices, aging report, sales report, sales tax, discounts, customer ledger, mailing labels, Rolodex® cards, envelopes, plus much more!



WARE INC.

1395 FM 2722
New Braunfels
Texas 78132
(210) 899-2100
Fax (210) 899-2124

Call Now!
1-800-880-0887

*Special \$99 offer
expires 6/30/93.
Regular price \$179.
30 day return
policies do not
apply with special
\$99 pricing.

USE READER SERVICE #96

Seed News

(continued from page 74)

study also showed reduced dollar spot (*Lanzia spp.* and *Moellerodiscus spp.*) incidence in endophyte infected fine fescues. (Sun et al, 1993)

LIMITATIONS. Only parent plants infected with endophytes can produce infected seed. The endophyte can't be applied to an existing stand, but it can be overseeded into infected varieties.

Only species that naturally have endophytes within their tissues can be bred for high levels in a variety. No Kentucky bluegrass has been bred for endophyte infection, for example, since no naturally occurring endophyte has been identified in that grass. Currently, only the perennial ryegrass and the fescues (tall and fine)



Rutgers University fine fescue trial. The hard fescue on the left is endophyte free, while the right is endophyte enhanced.

offer endophyte infection to the turfgrass marketplace.

Once the endophyte is identified, breeder blocks can be set where all plants are shown to be infected. Selections are then made to ensure genetic preferences and presence of the fungi.

Many varieties are now being offered as endophyte enhanced. Levels of viable endophyte differ with each variety, but a level of 80 percent is considered minimum for effectiveness. Very high levels range from 85 percent to 100 percent infection. Endophyte levels will diminish unless the plants are stored in a cool, dry area. (As a side note, endophyte-enhanced varieties are best when the seeds purchased are under two years old.)

So, what does all this mean to the lawn and landscape industry? The immediate impact is that pesticide usage (particularly of insecticides) can be greatly reduced on an endophyte-enhanced lawn. The long-term effect is that the industry can provide improved turfgrass varieties that will in turn improve our image as stewards of our environment. — Skip Lynch

The author is national sales manager for Seed Research of Oregon, Corvallis, Ore.

The New **HANDY RAMP ENDGATE**

Slips on and off like a regular endgate, no drilling required! Takes less than 30 seconds to install! Weighs less than 110 lbs. yet loads any object up to 2,000 lbs. without needing extra personnel. It mounts on the same latching system currently used on all full size 1/2 - 1 ton pickup trucks and folds out into a ramp that allows any item to be loaded without backing into a ditch or using planks that can slip. Easily load: Riding lawn mowers, snowmobiles, ATV's, motorcycles, core aerators, etc...

100% all steel construction.

100% USA materials
and labor.

**Creative
Automotive
Products Inc.**

435 Wilson St. N.E.,
Minneapolis,
MN 55413

(612) 331-8600



USE READER SERVICE #97

People

FARMERS MARKETING Corp. named **Retha Schlabach** director of advertising and retail development. Schlabach is responsible for marketing the company's new Global Green brand line of turfgrass and other retail products.



Schlabach



Sasaki

ISK Biotech made the following appointments: **Michael Pompeo** as senior formulation chemist; **Robert Williams** as information specialist; and **Kevin Price** as Fluazinam project manager at the Mentor, Ohio headquarters. Pompeo is responsible for agricultural formulations, while Williams previously served as data evaluation specialist with Life Systems Inc. Price manages a team to develop and commercialize Fluazinam in North and South America, Europe and Africa.

Rain Bird promoted **Mike Baumann** to staff manufacturing engineer for the contractor division. Baumann supervises production-related technical support of all CAMSCO products assembled in Rain Bird's Hyson facility in San Diego. Rain Bird also appointed **Susan Basch** quality assurance manager for the Southwest Fabricators Corp. and Anthony Manufacturing Corp. Basch previously served as MIS specialist for SWF since 1988.

Easy Rake appointed **Kathleen McKee** as executive administrator. McKee supervises marketing and distributor/dealer coordination. Easy Rake also promoted **Dennis Woodard** to Midwest sales manager. He handles sales in Indiana, northern Kentucky and Ohio.

Richard Webb joined BSI Consultants as vice president of construction management services. Webb supervises a variety of construction management projects and develops new markets, focusing on public sector infrastructure.

Tak Sasaki was named president of Echo Inc. He formerly served as senior vice president, corporate planning and administration. He replaces **M. Kitazawa** who was promoted to managing director of Echo's parent company, the Kioritz Corp. of Japan. Kitazawa is responsible for corporate manufacturing and engineering.

Polymer Corp. appointed **Jeff Warren** industry manager. Warren directs marketing and sales development in the military and medical markets and electronics industry. He joined Polymer in 1990 as product manager for the custom components division.

MTD Products Inc. named **David Moll** service manager. Moll is implementing a Total Customer Service program, which involves restructuring the service department for better teamwork between the factory and service dealers.

Mike Schmidt joined Valley Grown Bedding Plants as a sales/marketing representative. Schmidt, formerly with Saylor Sod, covers central and southern parts of California.

Hunter named **Linda Wightman** sales education manager. A Hunter sales representative for eight years, Wightman directs all company education and training programs relating to irrigation design, maintenance and water management practices.

Michael Goblet became vice president of sales for the Ringer Corp. He formerly handled local, regional and key account sales assignments for O.M. Scott & Sons.

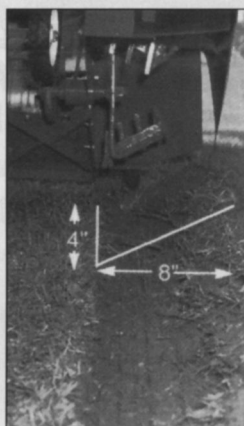
Zeneca Professional Products promoted **John Boltin** to senior technical sales representative and **Joseph Craft** to master sales representative, Southeast region. Boltin joined the company in 1987 as technical sales representative. Craft joined Zeneca in 1979 as technical sales representative. He last served as senior technical sales representative.

BedMASTER®

Reduces Bed Defining Time By 70% to 90%



Simply Add TrenchMaster's®
New
BedMaster™ or **StumpMaster™** *
rotors and TrenchMaster®
becomes an efficient bed definer
or stump grinding machine



- A perfect check shaped trench at 10 to 30 ft. per min.
- Trench 3" to 7" deep and 1/2" to 7" wide
- Install plastic or metal edging
- Prune Roots
- Lightweight, UPS shippable
- Easy Cleanup

A Product Of
BROWN
MANUFACTURING CORPORATION®

Rt. 3 Box 339 • Ozark, Alabama 36360 • (205)795-6603 • Fax: (205)795-3029
* Patent Pending

Products

AGGRAND NATURAL ORGANIC fertilizer combines natural components including condensed fish extract, sea plant extract, enzymes, amino acids and vitamins.

(continued on page 80)



PRODUCT SPOTLIGHT

WATERLOGIC INC. added pulse-sensing technology to its WaterLogic 3000 Moisture Detection System to provide greater control over irrigation. The detectors sense soil moisture levels in any given area, and help to eliminate over- and underwatering.

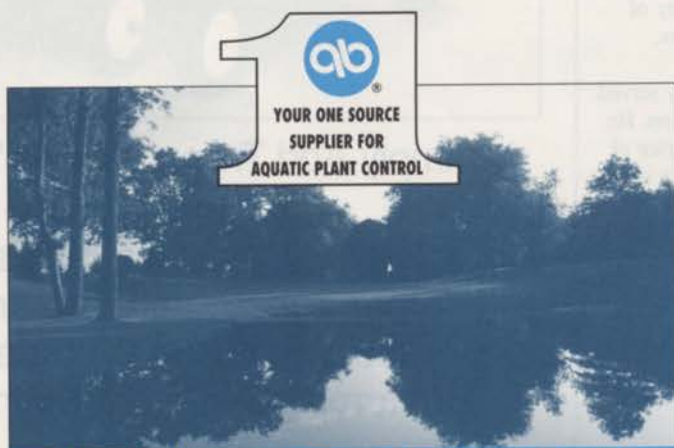
The WaterLogic 3000's time clock connects to the underground pulse sensor. When the timer calls for the sprinkler system to begin, the sensor gives the current moisture reading with an imperceptible flash. If the reading falls below pre-determined levels of dryness, the sprinkler valve is signaled to proceed. Should the indicated moisture level appear higher than necessary for the designated area, the sprinkler system's command will be canceled and the watering cycle interrupted — reducing water and equipment usage.

The water moisture detection systems are available with easy-to-install wire hookups, color codes and a user's guide. The systems work with 24-volt AC automatic irrigation systems.

Circle 125 on reader service card



WaterLogic 3000 Moisture Detection System



ab
YOUR ONE SOURCE
SUPPLIER FOR
AQUATIC PLANT CONTROL

No irrigation restrictions following treatment

AQUASHADE Expands Our Family to Six Algae and Aquatic Plant Control and Maintenance Products.

CUTRINE PLUS
ALGAECIDE/HERBICIDE

AQUASHADE
AQUATIC PLANT GROWTH CONTROL

- Concentrated • Patented • Low dosage rates
- E.P.A. Registered • Broad range control

Quality Products for Water Quality

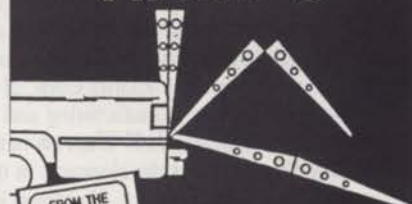
- Lakes and ponds • Aquaculture • Aquascapes

ab applied biochemists inc

6120 West Douglas Ave. • Milwaukee, WI 53218 • 1-800-558-5105

USE READER SERVICE #39

LOADING RAMPS



For a **FREE** Full Line Brochure of the Finest, Most Economical Ramps

and Accessories, write or call:

GERED MARKETING
Producers of
LOAD-EZE Products

2200 42nd Street North
Wisconsin Rapids, WI 54494
(715)424-4434

Ask for Don (Snook) Stoflet

USE READER SERVICE #38

THINK FAST STAY LOW



NEW SCIMITAR®

Applied at extremely low rates, rocket-fast SCIMITAR® insecticide blasts major surface feeders — chinch bugs, sod webworms, mole crickets. Even mites and aphids. While other insecticides can take up to several hours for results, SCIMITAR sends 'em soaring in just seconds — with no odor.

Fast control, low rates. Two advantages both you and your customers will appreciate.



Packaged for easy mixing, SCIMITAR is available in one-pound containers and handy water soluble packs. Plus it can be readily tank mixed with all commonly used turf and ornamental products for heightened control.

For fast control at low rates...new SCIMITAR. For more information call ICI Product Information at 1-800-759-2500.



Professional Products

Delivering the Promise

Always read and follow label directions carefully.
SCIMITAR® is a trademark of an ICI Group Company
A business unit of ZENECA Inc. © 1993, ZENECA Inc.

USE READER SERVICE #22

Products

(continued from page 78)

Aggrand may be applied to lawns, shrubs, trees and flowers with any type of spray equipment.

The fertilizer increases photosynthesis and leaf, stem and root development in plants, and accelerates microbial activity in soil which increases nutrients available for plant uptake. Laboratory testing shows Aggrand substantially increases plant tissue, sulfur, magnesium, zinc and iron, indicating increased photosynthesis and chlorophyll biosynthesis.

Circle 126 on reader service card

Two gas-powered hedge clippers are available from **Echo**. Model HC-2400 features a heavy-duty, commercial-grade gearbox; new air filtration system; and 23.6 cc engine with Pro-Fire electronic ignition. A purge pump-equipped carburetor ensures fast, easy starting.

The unit allows a 30-inch cut with its single-side, double-reciprocating cutter bar. Features such as a large recoil drum, an anti-vibration system for the left-hand grip and a vibration-dampened right-hand grip with a guard make it easy to use. A

slide stop switch and throttle interlock are located on the throttle assembly.

Model HC-2410 is identical except for its 40-inch single-sided, double-reciprocating blade. The longer blade gives users an extra 10 inches for hard-to-reach areas.

Circle 127 on reader service card

Low-voltage walkway lights from **Intermatic's Professional Landscape Lighting Products** division can be used to



mark paths, walkways, sidewalks and steps or to define flower beds and patio borders. The lights cast their glow downward in a

soft ring of illumination to prevent glaring.

The lights are available in four models. The all-metal PL195 and PL196 have electrostatically applied, baked epoxy, black enamel finishes and hold either an 8-inch or 11-inch diameter shade. Models PL195C and PL196C are solid copper with 8- or 11-inch shades.

Circle 128 on reader service card

VisualScape introduces the Plant Adviser, a comprehensive plant information computer software package that provides landscapers immediate access to a wide range of information about plants. Information called up onscreen includes the plant's common name, botanical name, type, function, mature size, soil type, flower color, foliage color, blooming season, light needs, moisture needs, growth rate and hardiness zone.

The Plant Adviser runs on at least a 386- or 486-based CPU personal computer with at least 4 megabytes of RAM memory and 10 megabytes of usable hard drive.

Circle 129 on reader service card

Spectrum Products introduced a line of Tregator portable drip irrigation systems. The 20-gallon green Tregator zips around



C&S TURF CARE EQUIPMENT, INC.

6207 Dressler Rd. N.W.
North Canton, OH 44720
(216)966-4511 • (800)872-7050

TURF TRACKER

SS8030



FEATURES:

- Spreads and sprays over 4000 sq. ft. per minute.
- Zero turning radius for maximum maneuverability.
- Full hydrostatic drive.
- 12' break away spray boom.
- 150 lb. capacity; 3 speed electric spreader.
- Designed for residential and commercial properties.

USE READER SERVICE #36

HOW DO YOU CARRY YOUR SPREADER ?

Safety conscience turf professionals carry theirs with the **EXTERNAL SPREADER CARRIER.**



The most effective and **efficient way ever** to transport your spreader.



New design for 93 accepts all brands of broadcast type spreaders...plus attaches to most utility type vehicles (Cushman, E-Z-GO, Yamahauler, etc.) with the flat bar adapter. (\$19.95)

DO YOUR COMPANY OR COURSE A FAVOR...ORDER YOURS TODAY!

Patented. We ship UPS anywhere USA and Canada.

ESC, inc.

\$169.00

201 Cherokee Circle
Little Rock, AR 72205
(501) 221-7384
FAX (501) 224-7826

USE READER SERVICE #37

a 1- to 3-inch caliper tree and irrigates for up to 32 hours. For larger trees, two Treegators can be zipped together to increase capacity to 50 gallons.

The green Treegator is constructed of UV resistant PVC with heavy-duty nylon



zippers and blends well with the existing landscape. The estimated cost is \$15.

Circle 130 on reader service card

Kubota Tractor Corp. added the VR3700 Verti-Reel Tri-Plex to its line of attachments for the Kubota F-Series tractor models. The Tri-Plex offers mowing, vertical-cutting and core-pulverizing capabilities.

Compatible with Kubota's 24-h.p. F2400 and 20-h.p. F2100/2100E, the mower features a 70-inch cutting width and cutting heights ranging from 0.375 inches to 3 inches.



Able to perform a variety of turf maintenance tasks, the VR3700 can be converted to a vertical cutter or core buster by changing heads.

Circle 131 on reader service card

The Tine Rake tow dethatcher from **JRCO Inc.**, designed to fit all tractors, has spring tension tines which float over uneven

**"He Thinks He's Lawn Skiing.
All I Know Is That He's Become
One Of My Top Performers."**



Velke—the incredible mower attachment that turns most walk-behinds into ride-behinds.



LAWN-WRIGHT, INC.
18761-A North Frederick Ave.
Gaithersburg, MD 20879

Gentlemen:

I'm sure you've heard a lot of interesting stories by now on the uses of your Velke. Let me add to your collection. One of my employees—a 20-year old—seemed a hopeless goof-off. Numerous verbal requests, notes in his paycheck, even reducing his pay each week got me nowhere.

Well, we bought a new walk-behind and spent a lot of extra money to have hydraulic drive instead of belts and "Oh so what, while we're at it throw in a Velke."

The results were more than I hoped for. My guys now get twice the work done. And my problem kid—he won't get off the thing! He thinks he's lawn skiing. All I know is that he's become one of my top performers. He's producing so much I've not only given him back his lost pay, but a raise. Now I just smile throughout my day watching his newfound attitude. What more can I say except thanks for making such a great product.

Gratefully yours

Steve Wilbraham

Steve Wilbraham
Condominium Grounds Maintenance



velke

For More Information Call 800-635-8485

From Lawn-Wright, Inc., makers of the Grass Gobbler.

Greener Grass. Healthier Turf. No Matter How You Cut It.

Anyone who takes care of turf and grass for a living should know about N-SURE®. It's a triazone nitrogen source that works in a controlled, slower-releasing and non-burning manner. And you can use it with less water so application is faster and easier. The results are greener, healthier turf and less downtime for more jobs per day.

So, if the grass is always greener on the other side of the fence, chances are someone's using N-SURE®. Find out more about it.



Call
1-800-654-4514

N-SURE®

Arcadian Corp. Triazone Div.
6750 Poplar Ave. Memphis, TN 38138

FYI...

Earth drill catalog. Little Beaver's 1993 catalog includes a wide variety of earth drills ranging from one-man, 5-h.p. mechanical drills to the 11-h.p. hydraulic units which can be adapted to one- or two-man operations. All models feature a patented telescoping torque tube which stops kickback.

Circle 135 on reader service card

Landscaping training videos available. California Polytechnic State University offers a catalog listing its landscape training videos. More than 100 titles are featured covering topics such as lawn mower safety, pruning, fertilization, irrigation installation and maintenance and turf management.

Circle 136 on reader service card

Soil turns to cash. Prego Press introduces the second edition of Lawn Aeration: Turn Hard Soil Into Cold Cash. The updated how-to book, geared toward entrepreneurs with start-up capital of about \$6,000, describes some of the most current equipment and materials on the market.

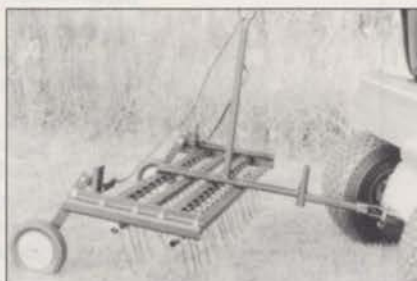
Circle 137 on reader service card

Manual explains microinjection. Tree Technology Systems offers a self-study manual for its Arbor microinjection products which explains how microinjection works and how to integrate microinjection into a tree health system.

Circle 138 on reader service card

ground, staying in contact at all times. Unlike other dethatchers, no additional weight is needed. In addition, the Tine Rake can be used safely in all seasons.

The Tine Rake gently loosens thatch without damaging turf, and aerates soil to improve water penetration for healthy root development. It smooths soil for grass seeding and rakes the seed into the soil for faster germination and better distribution.



Matting is minimized when high traffic areas are raked before being mowed.

Circle 132 on reader service card

Encore's Power-Comb removes thatch from tender bluegrass and other northern varieties with minimal disturbance to the plants. The comb's shaft, with 28 spring tines, rotates with the direction of travel to avoid tearing the grass.

The Power-Comb runs on a 5-h.p. engine. Additional features include a dead-man clutch for positive belt disengagement, collapsible handles for easy transporting, heavy-duty wheels with sealed ball bearings and semi-pneumatic tires.



The Power-Comb is available as a complete machine or as an attachment to Encore's Power-Thatch.

Circle 133 on reader service card

Cleary's PCNB 75WP turf and ornamental fungicide prevents and controls soilborne diseases which attack turfgrass on home lawns, institutional, ornamental and recreation areas with fine turf.

PCNB 75 controls brown patch on St. Augustine, bermudagrass and similar warm-season grasses; dichondra; and bluegrass, ryegrass, fescue, bentgrass and similar cool-season grasses. It also controls leaf spot, dollar spot, gray snow mold and pink snow mold (though it is not intended for use for the last two diseases in California).

Circle 134 on reader service card

Maintaining Immaculate Turf is a Complex Assignment

- **Super TRIMEC®:** Unparalleled broadleaf control from cool-weather broadcast spraying or summer spot treatments of hardened-off weeds, including spurge, oxalis and ground ivy. One gallon covers 4 acres.
- **TRIMEC® Classic:** Unmatched efficiency for controlling broadleaves when they are actively growing in cool-season turf. One gallon covers 2½ acres.
- **TRIMEC® Plus:** The ultimate post-emergent herbicide for outstanding control of crabgrass and nutsedge plus all the broadleaves controlled by Trimec Classic. One gallon covers up to 1 acre.
- **TRIMEC® Southern:** Especially designed to control broadleaves in 2,4-D-sensitive southern grasses. One gallon covers 4 to 8 acres.
- **TRIMEC® 992:** The applicator's formula especially designed for tank mixing with liquid fertilizer or other combinations. One gallon covers 2.66 to 3.5 acres.
- **TRIMEC® Encore®:** A Trimec Complex that replaces 2,4-D with MCPA. One gallon covers 1.75 to 2.66 acres.
- **TRIMEC® Bentgrass Formula:** Especially designed for use on bentgrass. One gallon covers 2 to 2.66 acres.



Weed Control in the Environmental Age:

As turf management has become more sophisticated and environmentally significant, it is absolutely essential for turf professionals to select a post-emergent herbicide that: Has a broad enough spectrum to control virtually all problem weeds; provides maximum safety to turf and adjacent trees and ornamentals; contains products that are environmentally sensitive; reduces overall expenses (chemical and labor) to an absolute minimum. Read why only Trimec Turf Herbicides can help you solve all of these problems.



Everett Mealman
Chairman and Chief
Executive Officer
PBI/Gordon Corp.

Broad Spectrum Control: The synergistic power of combining 2,4-D, MCPP and dicamba in a complex is so dramatic it earned Trimec a patent. Customers have told us that they haven't yet found a broadleaf weed in their turf that a Trimec Complex couldn't control. Spray it right with Trimec and your reward is immaculate, weed-free turf.

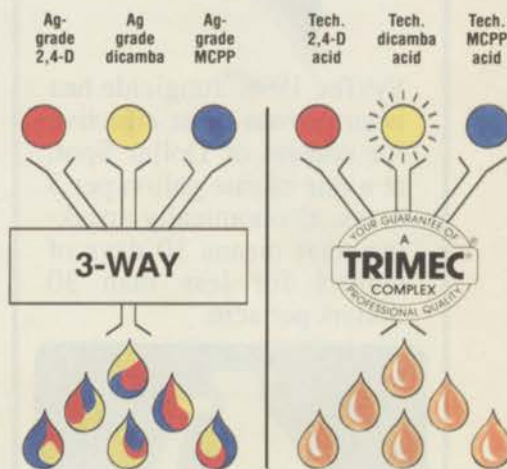
Maximum Safety: The fact that over 40 million acres of turf have been treated with Trimec to date attests to its outstanding margin of safety to turfgrass as well as to adjacent trees and ornamentals.

Minimum Active Ingredients: A broadcast spray of Trimec Classic at maximum label strength releases about one-third ounce 2,4-D; one-sixth ounce of MCPP; and four-one-hundredths ounce of dicamba per 1,000 square feet.

Reduced Expenses: Labor is the primary expense in turf management. Call-backs are the budget busters. So today you absolutely must have a herbicide that does it right the first time. Dependability is without a doubt the most important aspect of an herbicide.

From the very first day that we introduced Trimec in America, it has been famous for dependability. Although other 3-way herbicides are available, only Trimec gives you the absolute optimum in synergistic performance time after time. Why? Because of the way we make Trimec Broadleaf Herbicides.

In a standard 3-way tank mix, the droplets are not always identical, so there can be discrepancies in control. In a Trimec complex, every droplet is identical, for weed control you can count on — time after time.



Color code: Red, 2,4-D; yellow, dicamba; blue, MCPP; amber, Complex acid. Note: Colors are for code only and do not indicate the color of the product they are intended to identify.

The schematic drawing above indicates that, in a formulator's tank-mix (left), the molecules of 2,4-D, MCPP, and dicamba do not combine to form a new molecule. Accordingly, each droplet will be different and control may vary from droplet to droplet.

In a Complex (right), the three acids are reacted together to form a salt. Every droplet is identical, and thus precisely optimizes the intended synergistic activity.

The differences between a tank-mix and a Complex become significant when the goal is aesthetic excellence.

G pbi / Gordon
CORPORATION

1217 West 12th Street
P.O. Box 4090
Kansas City, MO 64101
816/421-4070

TRIMEC®

HERBICIDE

Calendar

SysTec 1998™

CONTROL
DOLLAR SPOT
30 DAYS - \$30

SysTec 1998™ fungicide has been proven most effective for control of Dollar Spot, at a rate of one gallon per 5 acres. Economically speaking, that means 30 days of control for less than 30 dollars per acre.



Compare the effectiveness and the low cost of SysTec 1998™ to any other fungicide and you will be a regular SysTec 1998™ user.



Setting New
Standards for
Turfgrass
Excellence

Regal Chemical Company
P.O. Box 900 / Alpharetta, GA 30239

Phone: 404-475-4837 / 800-621-5208

MAY 2 Update on Biodegradability seminar, held in conjunction with the Chemical Specialties Manufacturers Association's Mid-Year Meeting, Chicago Marriott Hotel. Contact: CSMA, 1913 Eye St. NW, Washington, DC 20006; 202/872-8110.

MAY 10-14 "Trees from the Inside Out" lecture series, Dr. Alex Shigo, Bellevue and Portland, Wash. Contact: John Kirkland, 503/254-0482.

MAY 12 Professional Turf and Landscape Field Day, Turfgrass Field Laboratory, North Carolina State University. Co-sponsored by the Turfgrass Council of North Carolina and the North Carolina Landscape Contractors Association. Contact: TCNC, 919/695-1333.

MAY 13 Pesticide Seminar, Phoenix. Contact: Arizona Landscape Contractors Association, 2720 E. Thomas Road, Suite A-205, Phoenix, AZ 85016; 602/956-4352.

MAY 23 Water Quality For Horticulture, University of Florida Cooperative Extension Service, Extension Service Auditorium, Sanford, Fla. Contact: Uday Yadav, 407/323-2500, ext. 5559.

JUNE 5 Estimating and Management Principles for the Landscape Contractor seminar, Phoenix. Seminar will be repeated June 22 in Tuscon. Co-sponsored by the Associated Landscape Contractors of America and the Arizona Landscape Contractors Association. Contact: ALCA, 12200 Sunrise Valley Drive, Suite 150, Reston, VA 22090; 703/620-6363.

JUNE 7-8 Management of Environmental Technology conference, University of Tennessee at Chattanooga. Contact: Dr. Phil Kazemsky, 615/755-4121.

JUNE 10 Cornell Turfgrass Field Day, Cornell Research Plots, Ithaca, N.Y. Contact: Department of Floriculture & Ornamental Horticulture, 20 Plant Science Bldg., Cornell University, Ithaca, NY; 607/255-3134.

JULY 14-15 Midwest Grounds Management Conference, Miami University, Oxford, Ohio. Co-sponsored by the Professional Grounds Management Society and the Association of Physical Plant Administrators. Contact: Matt Vehr, Spring Grove Cemetery and Arboretum, 4521 Spring Grove Ave., Cincinnati, OH 45232; 513/681-6680.

JULY 14-16 Mailorder Association of Nurseries summer convention, Greenville Hilton, Greenville, S.C. Contact: MAN,

8683 Doves Fly Way, Laurel, MD 20723; 301/490-9143.

JULY 14-16 American Sod Producers Association Summer Convention & Field Day, Opryland Hotel, Nashville, Tenn. Contact: ASPA, 703/836-4606.

JULY 18-24 International Turfgrass Research Conference, Breakers Resort Hotel, Palm Beach, Fla. Contact: Dr. George Snyder, University of Florida, IFAS, Everglades Research and Education Center, P.O. Box 8003, Belle Glade, FL 33430-8003; 407/996-3062.

JULY 24-29 American Society for Horticultural Science's Annual Meeting, Opryland Hotel, Nashville, Tenn. Contact: Christine Radiske, 703/836-4606.

JULY 25-27 International Lawn, Garden and Power Equipment Expo, The Kentucky Exposition Center, Louisville. Contact: EXPO 93, 6th floor, 6100 Dutchmans Lane, Louisville, KY 40205; 800/558-8767 or 502/473-1992.

JULY 27-29 East-Penn Allied Nursery Trade Show. Contact: Pennsylvania Nurserymen's Association, 1924 N. Second St., Harrisburg, PA 17102; 717/238-1673.

JULY 28-29 LCA Summer Conference, Holiday Inn Crown Plaza, Rockville, Md. Contact: Landscape Contractors Association, 9053 Shady Grove Court, Gaithersburg, MD 20877; 301/948-0810.

AUG. 6-8 1993 AAN Annual Convention, Dallas Convention Center. Contact: Kevin Morales, American Association of Nurserymen, 1250 I St. NW, Ste. 500, Washington DC 20005; 202/789-2900.

AUG. 18-19 West-PA Landscape & Nursery Trade Show & Conference, Pittsburgh Mart Expo, Monroeville. Contact: Pennsylvania Nurserymen's Association, 1924 N. Second St., Harrisburg, PA 17102; 717/238-1673.

SEP. 23 Landscape Expo, Lion's Club, Burtonville, Md. Contact: Landscape Contractors Association, 9053 Shady Grove Court, Gaithersburg, MD 20877; 301/948-0810.

SEP. 26-29 Florida Turfgrass Association 41st Annual Conference and Show, Tampa Convention Center. Contact: Charalyn Cole, FTA, 302 S. Graham Ave., Orlando, FL 32803; 800/882-6721 or 407/898-6721.

OCT. 5-8 1993 IPAA Convention, Salishan Lodge, Oregon. Contact: Interstate Professional Application Association, P.O. Box 1377, Milton, WA 98354-1377. ■

Weed out your biggest service problem.

Paperwork. It's more than a nuisance. It devours time and keeps you from delivering the service that can distinguish you from competitors.

Now you can speed through paperwork and improve the accuracy of records, while gaining time to serve your customers better.

Introducing a faster, smarter way to operate.

The 4000 Series portable data system from Norand. On the route, this powerful but easy-to-use portable computer quickly records the services rendered at every stop. The system's portable printer can create neat, highly legible sales invoices in seconds — a feature your customers will really appreciate.

At the end of the day, the system can end the need to drive back to the office. Your technicians could simply

send data for closing out invoices directly to your central computer from their phones at home. Missed services and material tracking are reported daily.

And time-stamping helps you monitor employee productivity.

Norand® portable data systems quickly pay for themselves and are proven on tens of thousands of routes in related industries. Contact us now for a FREE manual explaining how we can help you improve service by weeding out paperwork. And watch your profits grow.



Phone: 319/369-3156 or
1-800-452-2757 toll free

NORAND®

Mail to: Norand Corporation
550 Second Street S.E.
Cedar Rapids, Iowa 52401

Rush a FREE copy of *Automating Lawn Care Routes* to me. My business card is enclosed.

USE READER SERVICE #82



Classifieds

RATES

All classified advertising is 75 cents per word. For box numbers, add \$1 plus six words. All classified ads must be received by the publisher before the first of the month preceding publication and be accompanied by cash or money order covering full payment. Submit ads to: **Lawn & Landscape Maintenance** magazine, 4012 Bridge Ave., Cleveland, OH 44113. Fax: 216/961-0364.

BUSINESS FOR SALE

RETAIL NURSERY

44-year-old retail nursery (landscaping, irrigation, some maintenance) for sale. Avg. sales \$350K. Nice community, N.E. Okla. (City 40,000 population.) After 8 p.m., 918/683-3894.

TREE SERVICE

Southern Calif. tree service. Solid income from repeat customers since 1968. Evenings, 714/964-7154.

FULLY STOCKED NURSERY

Small plant nursery, fully stocked. Port St. Lucie, Fla. 407/878-6779.

BUSINESS OPPORTUNITY

GROWTH OPPORTUNITY

Exclusive franchise areas available for existing green industry operations. Come grow with the leader in organic-based lawn care. For details call **NaturalLawn® Of America Inc.** at 800/989-5444.

FOR SALE

LAWN CARE EQUIPMENT

Hannay reels new in-the-box, E1526s, E1530s, \$369; lawn spray hose, 275 psi and 600 psi, all sizes; original Imler measuring wheels, \$54.95; glycerin-filled gauges, 0-60 psi to 0-1,000 psi, \$19.95; ChemLawn guns, \$81.95; lawn spray boots, \$16.95; lawn spray gloves, \$1.95/pair. Call **Hersch's Chemical Inc.** 800/843-LAWN—outside of Michigan 313/543-2200

BOOK FOR SALE

LAWN INDUSTRY PROFESSIONALS TAKE NOTICE! IMPACT YOUR BOTTOM LINE! Our book, *Bidding and Contracts: Your Key To Success*, has the answers. \$36.95, includes postage and handling. Profits Unlimited, 3930-B Bardstown Road, Louisville, KY 40218; 502/495-1351. A division of Wayne's Lawn Service—since 1979.

PIPE LOCATOR

INEXPENSIVE. Locates, traces underground drain, water pipelines of clay, PVC, ABS, steel and cement. Bloch, Box 18058, Cleveland, OH 44118; 216/371-0979.



SPRAYER REPLACEMENT PARTS

Sprayer Replacement Parts — FMC, Hypro, Spraying Systems, Raven Tanks, Hannay Reels, plus more. Also Canaan sprayers and hydroseeders. FREE CATALOG. CANAAN INDUSTRIES, 800/633-7560.

INSURANCE

COMMERCIAL INSURANCE FOR LAWN CARE OPERATORS

M.F.P. Insurance Agency, Inc.
50 West Broad Street, Suite 3200
Columbus, OH 43215
614/221-2398

Contact:
Richard P. Bernak, President
or Jeanne Bartkus

EQUIPMENT

J. THOMAS Premium Replacement Parts

FOR ORDER INFORMATION OR A FREE CATALOG OF OUR COMPLETE LINE OF PARTS, CALL 1-800-828-7980



PART#	DESCRIPTION	COST
A. EB-15M	EDGER BLADE (10" X 2")	1.50
B. GC-1358M	IN-LINE FUEL FILTER	1.35
C. AF-2021M	12.5HP KAWASAKI PREMIUM FILTER	5.96
D. JT-101M	SPINDLE BEARING	4.80
E. H-8M	KAWASAKI OIL FILTER	4.25
F. TL-095	TRIMMER LINE, .095"	7.50
G. JT-100M	1LB. SPOOL VARIABLE SPEED PULLEY	73.99

FREE LAND

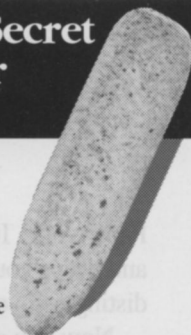
GOVERNMENT LAND now available for claim (including agricultural). Up to 160 acres/person. Free recorded message: 707/448-1887. (4NK8)

FINANCING

LET THE GOVERNMENT FINANCE your small business. Grants/loans to \$500,000. Free recorded message: 707/448-0270. (NK8)

PALM TREE FERTILIZER SPIKES

Here's the Secret to Healthier Palms



- Palm trees transplanted or lacking manganese, magnesium, or potassium have difficulty producing Chlorophyll & growth may be stunted. **Lutz Palm tree spikes are unmatched in their ability to restore and hold healthy green growth.**
- Fast/Feeder drives spikes quickly.
- After 6 months, 50% of a Lutz/Spike continues to feed while palms treated by broadcasting already show decline.

- Low cost
- Highly effective
- Easy to apply

For detailed information write:
LUTZ CORPORATION
Lutz Corporation
501 Ford Street
Oregon, IL 61061
or call (815) 732-2383

TWO-YEAR PLANTING TABLETS

20-10-5 For Less



• Remke manufactures a duplicate 20-10-5 tablet in the 21, 10 & 5 gram sizes you already use.

21 g. size: 500 tablets/25# case
10 g. size: 1,000 tablets/25# case
5 g. size: 2,100 tablets/25# case

As low as...
\$36/case
retail

For detailed information write:
Remke Enterprises, Inc.
P.O. Box 9357
Downers Grove, IL 60515
ENTERPRISES, INC. (708) 810-1662

PUMPS, PARTS

PUMPS — WANNER D-10 AND D-25 HYDRA-CELL. New, reconditioned parts, complete 24-hour repair service. Call Industrial Services Co., 614/965-4112. New lawn care hose reel swivel now available.

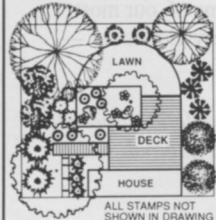
SPRAY EQUIPMENT

WHOLESALE, METERING,
CENTRIFUGAL, TURBINE, ROLLER,
PISTON AND 12-VOLT PUMPS.
Complete Line of Spray Equipment

Sandia Sprayer, Inc.
806/546-2242

DESIGN KIT

LANDSCAPE DESIGN KIT THREE



**COMPLETE
PROFESSIONAL
LANDSCAPE PLANS
IN MINUTES!**

48 rubber stamp symbols
of trees, shrubs, rocks,
stepping stones, vine,
& more. Use at 1/8 or
1/10 scale. Stamps 1/4 to
1 3/4 inches in diameter.

30 PAGE STAMP CATALOG - \$1
AMERICAN STAMP CO.
12290 RISING RD., #792
WILTON, CA 95693
(916) 687-7102

\$74.95

+ \$4.50 ship./hand.
Cal. only add 7 3/4% tax.
VISA/MasterCard
By MAIL Or Phone

PROPERTY

OSZARK MOUNTAIN OR LAKE ACRE-
AGES, from \$30/month, nothing down, en-
vironmental protection codes, huge selection.
Free catalog. WOODS & WATERS, Box 1-
LL, Willow Springs, MO 65793; 417/469-
3187.

STRAW BLOWER

Reinco Straw Blower Model M60W Ford
300 c.u.i., 6-cyl. engine, \$6,500; 317/335-
2080, IND.

VIBRATORY PLOW

Sub-pull model 300 3-pti hitch vibratory plow,
30 hours. Like new. \$2,000/best. Cayuga
Landscape, Ithaca, N.Y.; 607/257-3000.

MOWER PARTS

**ATTENTION MOWING CONTRAC-
TORS: FREE CATALOG.** Commercial
parts guaranteed to fit walk-behind mowers.
Wholesale pricing on blades, belts, filters,
pulleys, wheels, transmissions and more.
SAVE MONEY on Bobcat, Bunton, Exmark,
Snapper and Scag parts.

Call 800/343-4333. **LAWN CARE PARTS
UNLIMITED** delivers savings to your door-
step!

AMX/Visa/Mastercard accepted.

TO ADVERTISE IN
Lawn & Landscape
MAINTENANCE
CLASSIFIEDS
CALL
800/456-0707

COMPUTER SOFTWARE

Point and click

(no commands to memorize here)



We understand that the
landscaping industry has
complex processes such as
scheduling, bidding and generating
work orders. And because you
don't have time to learn
complicated commands we
integrated these processes into a
computer program that is easy to
use. The result? SuperScape for
Windows and Macintosh with
"push-button" graphics. All you
have to learn is *point and click*.
Call today for more information.

SuperScape™

800-299-9991 or 512-452-4500

IRRIGATION SOFTWARE

Dynamic computer software will help you make
money. Developed for LAWN IRRIGATION
service industry to provide improvements in
manpower control and utilization through en-
hanced scheduling, on-call routing, estimating,
work-order preparation and billing. Account-
ing modules are available. Contact NorthEastern
Research Associates, P.O. Box 482, Woodmere,
NY 11598. Phone/Fax, 516/569-7450.

HELP WANTED

BRANCH MANAGER

We are a fast-growing, employee sensitive
company that offers an outstanding salary,
bonus and benefits package. ChemLawn
branch managers and assistant managers wel-
come! Send resumes to **KAPP'S GREEN
LAWN**, Mike Markovich, P.O. Box 9038, Ft.
Wayne, IN 46899-9038. This is a branch
managers training program.

LANDSCAPE CONSTRUCTION SUPERINTENDENT

Unique quality projects throughout North-
west. Challenging, stimulating variety. Secu-
rity of established firm. Excellent benefits,
growth opportunity. Company vehicle, mov-
ing expenses. Award-winning design/build
firm. Must have 3 to 4 years foreman experi-
ence managing projects, personnel. Come to

booming economic region. \$23,000 to \$31,000
DOE. Resume: 11001 Newport Hwy., Spo-
kane, WA 99218.

TREE CARE FOREMAN

Tree care foreman/licensed applicator. Well-
established Eastern Long Island tree care com-
pany looking for individual to assist supervisor
in daily operations, sales and client contact.
Applicant must possess skills in identification
of plants, insects and diseases. This is a full-time
working position. Please send resume to:
Whitmore-Worsley, Attn.: Jim Kiley, P.O. Box
10—Montauk Hwy., Amagansett, NY 11930.

Ad Index

ALCA	26*
The Andersons	60
Applied Biochemists	78
Aquatrols	20
Arcadian	84
Bandit	14
Brown Manufacturing	77
C&S Turf Care	31, 80
CBS Software	45
Carlson	40
Ciba-Geigy	4, 26-27, 62-63*
Creative Auto	76
Creative Curb	48
Danville	90
Deere & Co.	7, 9
Dilloware	76
ESC	80
Eagle Design Software	17
F.D. Kees	50
Geoflow	23
Gered Marketing	78
Glen Hilton	68
Glenmac	41
Goossen	52
Green Genie	68
Hardie	2-3
Haybuster	30
Hunter	64
Irrigation Association	13
Irrrometer	73
Kubota	15, 35
Lawnwright	83
Lebanon	37
Lineward	73
Longhorn	44
Metko	44
Miles	51, 92
Monsanto	32-33, 39, 46-47*
Nor-Am	59
Norand	87
Oldham	48
Olson	24
PBI Gordon	85
PEPCO	69
PLCAA	27*
Photocomm	40
Ransomes	61
Reemay	57
Regal	86
Riverdale	23, 24, 31
SPS	14
Sandoz	18-19
Scag	25
Sendec	52
Strong	45
Toro	75
Tufflex	16
Turf-Seed	91
Walker	70
ZENECA Inc.	79

* Denotes regional advertising

Irrigation News

(continued from page 24)

anything else. By putting a very low concentration of fertilizer, very often, you avoid striping problems." Phene recommends subsurface for golf course applications "...because there is no lost playing time and pest management problems are reduced."

Gary Stewart, gray water system expert in Burbank, concurs that subsurface irrigation reduces a magnitude of turf problems.

"We've installed subsurface in turf, in all types of flower gardens and to deep irrigate trees. It's very good so far. No problems. These have been mostly residential installations, but we're now specifying it for commercial use as well."

Stewart said homeowners respond well after learning how the system works and getting a list of names they can call for reference.

Stewart recently completed a gray water study for the city of Los Angeles using subsurface irrigation equipment throughout the project. "We had no problems whatsoever with clogging. We want to experiment with matching different types of gray water systems with various types of subsurface irrigation to see which combinations work best.

"Subsurface irrigation makes gray water much more useful for lawns, trees and

landscaped areas."

Stewart said that as time goes on and people get used to installing subsurface, it will become more price competitive. "This is the key to making it the wave of the future. But right now, subsurface is not handyman friendly. You have to know what you're doing."

SUBSURFACE AND MUNICIPALITIES.

Dennis Hansen, landscape architect and certified irrigation designer in Fairfield, has been using subsurface irrigation since 1981 in shrub areas and ground covers for a variety of projects. He said his company has saved money using the system.

"We started experimenting with lawns as early as 1985. When we do a job, our standard practice is to use drip irrigation in all shrub and ground cover areas. In turf areas, we offer the choice between overhead spray and drip.

"Even on large projects, initial installation costs for drip irrigation can come in comparable to a well designed, properly installed overhead system. Over the long range, subsurface irrigation installation and water usage will result in savings."

Heeding his advice is the North Cordelia Improvement District in the city of Fairfield which has median strips 40 to 50 feet wide. Fifteen percent of the project will be subsurface irrigated. This year, Fairfield plans to begin a developer-funded project using

an extensive subsurface system.

Concerning plant and turf health, Hansen said, "It's my general impression that overall, plants do much, much better with subsurface irrigation. And I think it's mainly because you end up getting the water into the soil at a more controlled rate, once the user learns to properly judge water needs."

With technology borrowed from agriculture and fine-tuned for landscape and turf applications, subsurface irrigation is quickly becoming one of our most successful water conservation tools. —

Linda Knoche

The author is a public relations specialist with KPR Associates, Fallbrook, Calif.

REFERENCES

"Subsurface Drip Irrigation of Turfgrass: 1991 Update," Center for Irrigation Technology, California State University, Fresno.

"Subsurface Drip Irrigation Offers Management Advantages," C. J. Phene, *Drip/Micro Irrigation: Doing more with Less*. The Irrigation Association, Arlington, Va.

"The Use of Emitter Lines in Landscape Irrigation," Tom Bressan, March 1992.

SUBSURFACE IRRIGATION ADVANTAGES

- Saves water — up to 50 percent
- Invisible and subsequently aesthetically pleasing
- No vandalism because all equipment is buried
- No injury since there's nothing to trip over
- Healthier plants; disease/pest reduction
- No overspray or splash damage
- Reduced liability
- Durable — not exposed to UV damage
- Easy to retrofit and install
- Less energy — low pressure system
- Improved soil aeration
- No loss of recreation time
- No erosion, run-off, puddling

NO-DRIFT CHEMICAL APPLICATOR

Now apply chemicals on windy days! Sizes range from 30" to 72". Send for free packet with complete parts information and prices.



DANVILLE INDUSTRIES

Box 8
124 W. Main
Harper, KS 67058

1 (800) 662-4212

IRRIGATION TRAINING SERIES LESSON TEN

Answers to questions on page 73.

1. 1 inch and smaller.
2. The American Water Works Association, Manual of Water Supply Practice, Sizing Water Service Lines and Meters, AWWA M22.
3. A maximum of 7.5 fps.
4. This reduces the cost of the valve with a relatively small increase in pressure loss.
5. Whenever the static site pressure is above 70 psi.
6. Looping the mainline usually reduces construction costs and provides for a better system.

A BLEND OF FOUR PREMIUM PERENNIAL RYEGRASSES FROM TURF-SEED, INC.
FOR WINTER OVERSEEDING, LAWN RENOVATION, ATHLETIC FIELDS AND PARKS.

Alliance

BLEND

*Dark Green, Drought Tolerant, Insect
and Disease Resistant Turf... Naturally!*

Citation II

- Contains a high level of endophyte that enhances insect resistance.
- Very good resistance to leaf spot, brown patch, crown and stem rust, tolerance to red thread.
- Rich dark green color with good mowing quality.
- Excellent heat and wear tolerance.

Saturn

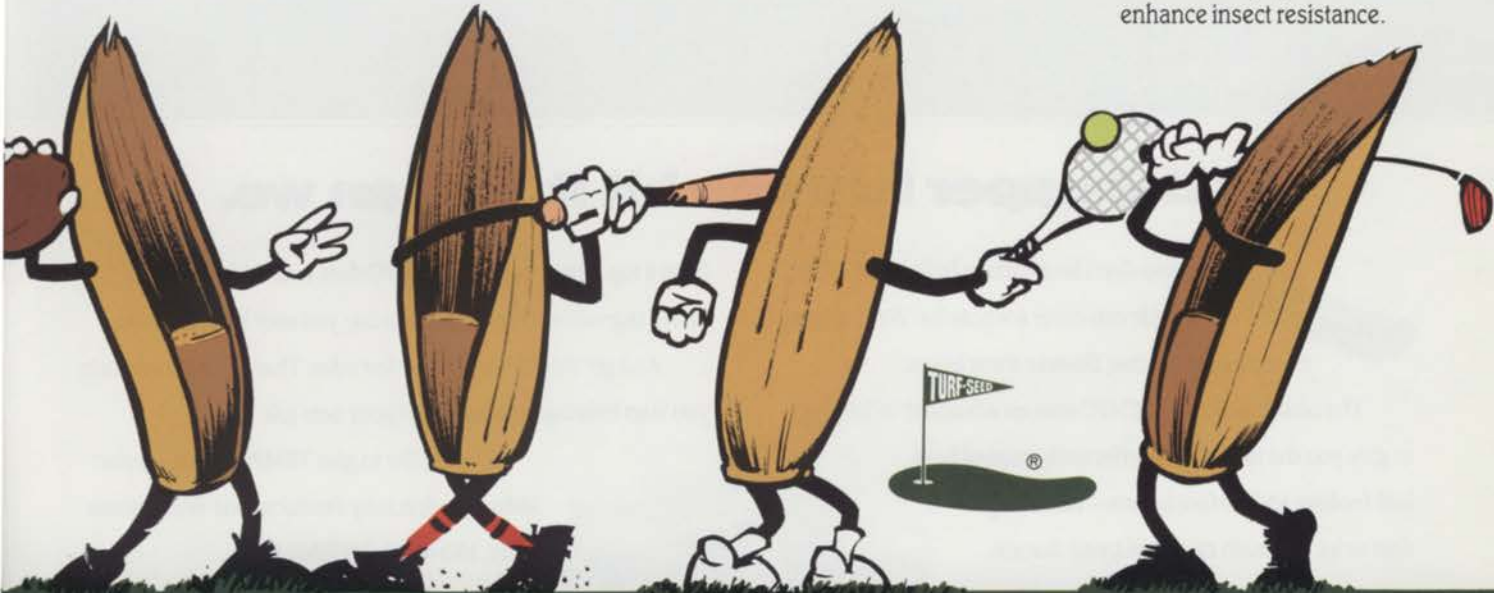
- The number 1 variety in the 1986 National perennial ryegrass trial.
- Dark blue-green colored low growing variety.
- Improved heat tolerance, and resistance to leaf spot, brown patch and stem rust.
- Very good performance in California overseeding trials.

Charger

- Improved resistance to leaf spot, brown patch, stem and crown rust. Tolerance to red thread.
- Good performance under low fertility and improved color and growth under cool weather conditions.
- Early maturity and tested as 2HH.

246 Sunrye

- Very dark blue-green colored turf-type variety.
- Dwarfier growth habit than other varieties in overseeding trials in Palm Springs area.
- Improved resistance to leaf spot, brown patch, and stem rust.
- Contains a moderately high level of endophyte to enhance insect resistance.



Turf-Seed, Inc. PO Box 250 Hubbard, OR 97032 503-981-9571 FAX 503-981-5626 1-800-247-6910

USE READER SERVICE #77



If the paper boy can hit it, so can we.



Maybe you don't know that a little bit of TEMPO insecticide can cover a whole lot. We're talking trees, shrubs, bushes, flowers. Even lawns.

The reason is simple. TEMPO uses an advanced technology to give you the flexibility to effectively control both leaf-feeding and surface insects – including deer ticks, the main carrier of Lyme disease.

TEMPO also provides the fast knock-down, and the residual control, you'd expect

from a top insecticide. And TEMPO does it all with *80% less active ingredient* than the insecticide you may be using now.

And get this. *TEMPO has a low odor.* That alone should help you start breathing easier about your next job.

If you'd like to give TEMPO a shot, contact Miles Inc., Specialty Products, Box 4913, Kansas City, MO 64120. (800) 842-8020.



935641 © 1993 Miles Inc.

USE READER SERVICE #57

MILES 