

OCTOBER 1995 • \$4.00

# LANDSCAPE MANAGEMENT



CUSTOM  
DESIGNED  
**IRRIGATION**

ALSO: Baiting and trapping • Hydraulic seeding • Soil and the ecosystem

AN ADVANSTAR PUBLICATION

**Penncross:  
Tried and True**



Louis Miller, Supt., Louisville CC, Louisville, KY

## "I've Specified Penncross For 33 Years. Why Mess With Success?"

"I've been in business 33 years as a golf course superintendent, contractor, consultant and golf course owner. Of the nearly 500 greens I've built or rebuilt, 95% have been planted with Penncross creeping bentgrass. The customers specified PennLinks on the others.

As a certified golf course builder, my company is currently working on six courses in three states, and all will have Penncross greens. Why? Because I believe Penncross has already been where all of the other bents are trying to go. Penncross can take the extremes of heat, humidity and cold we experience here, plus the daily wear

and tear of spikes, ball marks and divots. But the real value is in its rapid establishment. In today's economy, a golf course must generate revenue quickly to recoup land, construction and startup expenses. I can seed Penncross anytime the soil is warm enough to germinate and have green grass in five days. We're then mowing the greens in 13 to 16 days. This pleases both investors and owners.

We mow Penncross between 5/16" and 1/8", and this is fast enough to please the most demanding golfer we get.

I plan to specify Penncross for years to come. Why would anyone mess with success?"

Penncross is available from your dealer in the distinctive burlap bag or 25 pound 'Penn Pail'. Order yours today.



**Tee-2-Green  
Corp.**

PO Box 250  
Hubbard, OR 97032  
1-800-547-0255  
503-651-2130  
FAX 503-651-2351

## LANDSCAPE MANAGEMENT

is a proud member of these  
green industry professional  
organizations:



Associated Landscape Contractors of America,  
12200 Sunrise Valley Dr., Suite 150, Reston,  
VA; (703) 620-6363.

American Association of Nurserymen (National  
Landscape Association), 1250 I St. NW, Suite  
500, Washington, DC 20005; (202) 789-2900.

Golf Course Superintendents Association of  
America, 1421 Research Park Dr., Lawrence, KS  
66049-3859; (913) 841-2240.

International Society of Arboriculture, P.O. Box  
908, Urbana, IL 61801; (217) 328-2032.

International Turfgrass Society, Crop & Soil  
Environmental Sciences, VPI-SU, Blacksburg, VA  
24061-0403; (703) 231-9796.



National Arborist Association, The Meeting  
Place Mall, P.O. Box 1094, Amherst, NH 03031-  
1094; (603) 673-3311.

National Golf Foundation, 1150 South U.S.  
Highway One, Jupiter, FL 33477; (407) 744-  
6006.

Ohio Turfgrass Foundation, 2021 Coffey Rd.,  
Columbus, OH 43210; (614) 292-2601.



Professional Grounds Management Society, 120  
Cockeysville Rd., Suite 104, Hunt Valley, MD  
21031; (410) 584-9754.



Professional Lawn Care Association of America,  
1000 Johnson Ferry Rd., NE, Suite C-135,  
Marietta, GA 30068-2112; (404) 977-5222.

Responsible Industry for a Sound Environment,  
1155 15th St. NW, Suite 900, Washington, D.C.  
20005; (202) 872-3860.



Sports Turf Managers Association, 401 N.  
Michigan Ave., Chicago, IL 60611-4267; (312)  
644-6610.

Turf and Ornamental Communicators Associa-  
tion, 421 West Travelers Trail, Burnsville, MN  
55337; (612) 894-2414.

## AS WE SEE IT

JERRY ROCHE, EDITOR-IN-CHIEF



### A giant step in athletic turf safety, economy, aesthetics?

Athletic turf management moves as a  
turtle in the sand.

Every five or six years, sports turf man-  
agers discover a new grass blend that  
works slightly better or researchers find a  
little bit faster way to germinate grass for  
overseeding.

So, as we prepared our special athletic  
turf report that some of you will receive  
this month, we were hard-pressed to find  
anything radically new. But lo and  
behold—just in time to follow up for this  
issue—we saw a report on CNN about the  
new grass infrastructure (can we call it  
that?) being used at the University of Utah.  
It's an unusual blend of natural and syn-  
thetic turf.

We dispatched managing editor Terry  
McIver to Salt Lake City (where he was to  
attend a PLCAA board meeting anyway) to  
find out more about this new product  
called SportGrass.

It was invented by Jerry Bergevin,  
president of Turf Systems International.  
Its playing surface is more level than  
either a natural or artificial turf surface.  
There's much less divoting, if any, and it's  
safer than a fully artificial field.

"The field looked great at the time of  
my visit, and certainly was a more even  
surface," McIver reports. "The crown of  
the plant is protected by the synthetic fab-  
ric. Management is identical to that for a  
usual turf surface; you can even aerate  
with 1/2-inch solid tines or a Hydroject."

And of course, SportGrass doesn't have  
to be replaced, as do most high-use fields.

Utah Coach Ron McBride told us the  
field was in great shape after two games  
and is a fine playing surface. "It's the best  
thing going in football," says McBride,  
who adds that the field plays fast, and is  
"great for kickers."

Back in the 1970s, it only took a few  
years for synthetic grass (now mistakenly  
referred to as "turf" by most sportscasters)  
to catch on. It quickly became the surface

of choice in the Astrodome and at other  
multi-purpose fields on the professional,  
collegiate and even high school levels.

The swing back to safer natural grass—  
though well under way now—is taking  
longer, much to the dismay of most ath-  
letes. Not surprisingly, the first major U.S.  
installation of this new hybrid product  
called SportGrass came as a rash of new  
synthetic turf-related injuries hit the  
National Football League.

In the early stages of training camp,  
the Cincinnati Bengals' top draft choice,  
running back Ki-Jana Carter (who played  
collegiately on Penn State's natural turf)  
tore the anterior cruciate ligament in his  
left knee, and is out for the season. In the  
first week of the regular season, the same  
thing happened to Pittsburgh Steelers' All-  
Pro safety Rod Woodson. Both injuries  
were sustained, shamefully, on synthetic  
turf. And both were "non-contact"  
injuries, in that other players were not  
involved.

The debate over artificial versus natural  
turf is always a compelling subject, and  
always timely indeed. As always, we're  
interested to hear your initial thoughts on  
the product, by mail, fax, phone or e-mail.

Only time will tell if SportGrass is a  
partial solution to the problems of safety,  
economy and aesthetics that have plagued  
sports turf managers for years. For now,  
it's an interesting development that holds  
bright promise for athletic field managers  
and athletes alike.

*Jerry Roche*

# LANDSCAPE MANAGEMENT

OCTOBER 1995 VOL. 34, NO. 10

## COVER STORY

### 8 Custom-designed sprinklers

The benefits of a properly designed and installed irrigation system are healthy turf plus dollar savings.

*James T. Holter*

## FEATURES

### 11 LM Reports: Baits & traps

There's more than one way to skin a cat...or trap a mole...or scare a goose. Here are some handy, humane ways to get rid of unwanted animal pests.

*James E. Guyette*

### 13 Extending equipment life

Treat gasoline engines with tender loving care, both before bedding them down for winter and during the busy season.

### 14 Hydraulic seeding

Benefits of this fast, efficient way of seeding large areas can be helpful on highway rights-of-way, on home lawns and in golf course renovations.

*Ron Hall*

### 16 Affordable liability coverage

If you have liability insurance, don't assume it's the best you can get. And don't assume that high premiums are unavoidable.

*Bess Ritter May*



8G



12G

## GOLF & ATHLETIC TURF

### 1G Working smarter

Athletic fields must last longer and be safer. In this "State of the Athletic Turf Industry" report, we find that field managers are successfully accomplishing more with less.

*Steve & Suz Trusty*

### 6G Living a dream

Veteran golf superintendent James Baran helps shape a new public course in northern Ohio—his dream job.

*Ron Hall*

### 8G 'SportGrass'

Proponents from both the artificial and natural turf camps will be thrilled with this latest ally in surfaces, found perfect for University of Utah football.

*Terry McIver*

### 12G Your worst nightmare

Vance Mulch, superintendent at Semiahmoo G&CC, had the city turn off his taps for more than 30 days last summer. Talk about a super's worst nightmare!

*Leslee Jaquette*

### 14G Football field irrigation

The first step in an irrigation project is selecting an experienced contractor.

*Dan Almond*

## TECH CENTER

### 17 Too much salt?

More salt in turfgrass diets, most from treated wastewater used for irrigation, is a growing problem.

*John Schmitz*

### 21 'Quality' water

Here's how to determine if the water you're using on plants is up to snuff, from salt content to toxic ions like boron.

*W. Lee Berndt, Ph.D.*

### 23 Soil, the source of life

The savvy landscape manager knows how important a role soil plays in supporting plant life.

*John Fech, Ph.D.*



## HOT TOPICS

### 26 Hot and brown

Heat, humidity fry turf in the Midwest and East; promote disease and crabgrass; force turfseed prices up.

*Jerry Roche, Ron Hall, James Holter*

### 27 Green Industry Expo report

Keynoter is a former prisoner-of-war who will talk about learning to cope and overcome adversity.

### 28 Legislative report

The outlook in Washington, D.C., for the green industry issues is "iffy," making it not much different than any other government concern, according to a speaker at the RISE annual convention.

## DEPARTMENTS

- |                            |                          |
|----------------------------|--------------------------|
| <b>1 As We See It...</b>   | <b>31 Info Center</b>    |
| <b>6 Ask the Expert</b>    | <b>32 Jobtalk</b>        |
| <b>29 Grass Clippings</b>  | <b>33 Product Review</b> |
| <b>29 Events</b>           | <b>37 Ad Index</b>       |
| <b>30 Suppliers Corner</b> | <b>38 Classified</b>     |

Cover photo of irrigation in action at Ridgewood Golf Course in Parma, Ohio, where Ted Benze is superintendent, by John Quinn.

## READER ADVISORY PANEL

**Joe Alonzi**  
Westchester Country Club  
Rye, N.Y.

**Rod Bailey**  
Evergreen Services  
Bellevue, Wash.

**Alan Culver**  
Mahoney Golf Course  
Lincoln, Neb.

**Charlie Racusin**  
Environmental Ldsc. Services  
Houston, Tex.

**Jack Robertson**  
Robertson Lawn Care  
Springfield, Ill.

**Steve Wightman**  
Jack Murphy Stadium  
San Diego, Calif.

# LANDSCAPE MANAGEMENT

## EDITORIAL STAFF

E-mail: 75553.502@compuserve.com; Fax: (216) 891-2675

**JERRY ROCHE**, Editor-in-Chief: (216) 826-2830

**TERRY McIVER**, Managing Editor: (216) 891-2709

**RON HALL**, Senior Editor: (216) 891-2636

**LISA BODNAR**, Graphic Designer: (216) 891-3101

**MAUREEN HREHOCIK**, Group Editor: (216) 826-2829

**LISA LEHMAN**, Group Designer: (216) 891-2785

**Contributing editor:** James E. Guyette; **Contributing writers:**

Dr. Balakrishna Rao, James T. Holter, Dan Almond, Dr. W. Lee Berndt, Dr. John Fech, Leslee Jaquette, Peter Lederer, Bess Ritter May, Phillip M. Perry, Paul Posluszny, John Schmitz, Lisa Tilley, Steve & Suz Trusty

**BUSINESS STAFF**—Fax: (216) 891-2675

**JOHN D. PAYNE**, Publisher: (216) 891-2786

**LINDA HALLIGAN**, Acting Production Manager: (218) 723-9281

**LESLIE MONTGOMERY**, Administrative Coordinator: (216) 826-2856

**ALEX DeBARR**, Group Publisher: (216) 891-2789

**ROSY BRADLEY**, Senior Production Manager: (218) 723-9352

**DEBI HARMER**, Production Director: (218) 723-9325

## ADVERTISING OFFICES

**DAVID MIETHKE**, Eastern Regional Sales Manager: (216) 891-2753

**STEPHANIE STIGGERS-SMITH**, Classified Ad Mgr.: (216) 891-2719

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

**TOM GALLIGAN**, National Sales Manager

3901 52nd Ave.  
Kenosha, WI 53144  
Phone: (414) 653-9523  
Fax: (414) 653-9524

**BOB MIEROW**, Western Sales Manager

1333 N.W. Norcross  
Seattle, WA 98177  
Phone: (206) 367-5248  
Fax: (206) 367-5367

**OTHER SERVICES:** Advanstar Marketing Services (800) 736-3665

**REPRINTS (100 minimum):** Maureen Cannon, (216) 891-2742

**CIRCULATION LIST RENTAL:** Mark Fleischer, (216) 891-3166; fax (216) 891-2727

**MICROFICHE/MICROFILM COPIES:** Advanstar Marketing: (800) 225-4569, x839

**SUBSCRIBER/CUSTOMER SERVICE:** Chris Baxter: (218) 723-9477; fax (218) 723-9437

**INTERNATIONAL LICENSING:** Mary E. Abood: (216) 826-2804



**President & CEO:** Gary R. Ingersoll

**President, Advanstar Publishing:** Brian Naim

**President, Advanstar Expositions:** William M. Windsor

**Vice President/Finance, Chief Financial Officer and Secretary:** David W. Montgomery

**Vice Presidents:** Kevin J. Condon, William J. Cooke, Brian Langille, Phil Stocker

**Treasurer & Controller:** Adele D. Hartwick

LANDSCAPE MANAGEMENT (ISSN 0894-1254) is published monthly by Advanstar Communications, Inc. Corporate and editorial offices: 7500 Old Oak Blvd., Cleveland, OH 44130. Advertising, accounting, advertising production and circulation offices: 131 West First St., Duluth, MN 55802; 1333 N.W. Norcross, Seattle, WA 98177.

Subscription rates: one year, \$39, two years \$58 in the U.S.; one year \$66, two years \$99 in Canada. All other countries: one year \$130, two years \$195. Current issue single copies (pre-paid only): \$4 in the U.S.; \$7 in Canada; \$12 elsewhere; add \$3.50 per order for shipping and handling. Back issues, if available, \$10; add \$3.50 per order for shipping and handling (pre-paid orders only).

Office of publication: Advanstar Communications, Inc., 131 W. First St., Duluth, MN 55802. Second class postage paid at Duluth, Minnesota 55806 and additional mailing offices.

Copyright © 1995 by Advanstar Communications, Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from Advanstar Marketing Services, Attn: Permissions, 7500 Old Oak Blvd., Cleveland, OH 44130 or phone (800) 225-4569 x743. Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by Advanstar Communications for libraries and other users registered with the Copyright Clearance Center.

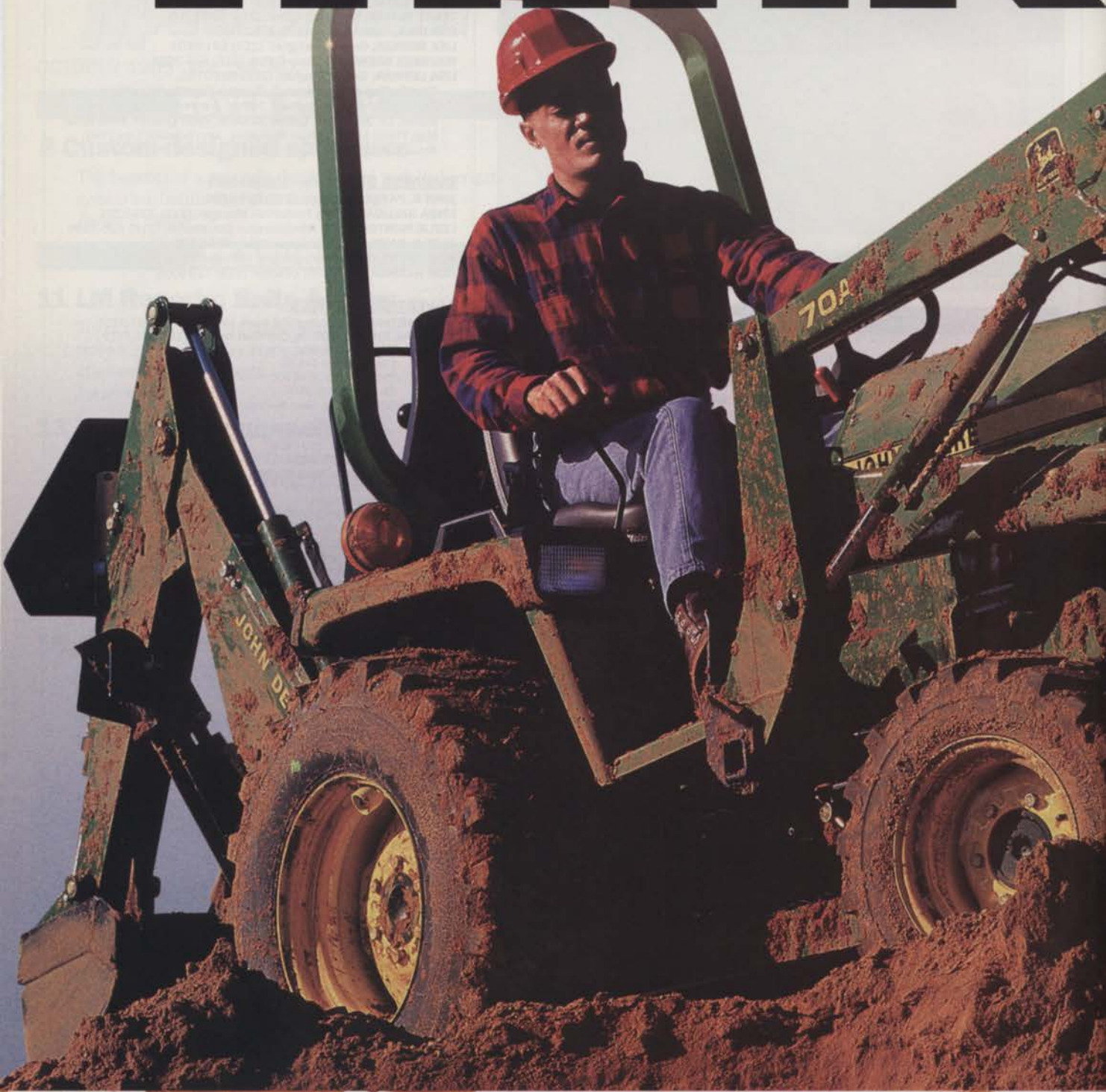
Canadian G.S.T. Number: R-124213133.

**POSTMASTER:** Send address changes to *Landscape Management*, P.O. Box 6198, Duluth, MN 55806.



Printed in the U.S.A.

# Think



NOTHING RUNS LIKE A DEERE®

Circle No. 112 on Reader Inquiry Card

# Ugly!



## 55 Series Tractors

John Deere compact tractors are out to put you in an ugly frame of mind. No small task considering their inherent good looks. Looks that have often led to the mistaken belief that these hydrostatics are little more than glorified lawn and garden tractors.

But hold the phone. These rugged 20- to 33-hp diesels take second seat to no other compact. In fact, when it comes to tackling tough tasks, these 55s have "ugly" that goes clean to the bone. Especially with regards to wallow-in-the-mud backhoe/loader work like you see here.

And best yet, these tractors are blessed with the fastest hookup times in the industry (just five minutes, without tools).

Ugly can be beautiful. Visit your nearby John Deere dealer and see for yourself. Or call 1-800-503-3373 for information.

# ASK THE EXPERT

DR. BALAKRISHNA RAO



## Repair construction damage carefully

**Problem:** During the construction of a new housing development last year, some oak and maple trees were damaged. Most of the visible damage is on the main trunk of large (20- to 30-inch DBH) oak trees. Some of the injury is three feet long and about 10 inches wide. Is there anything we can do to help the trees recover? (North Carolina)

**Solution:** Although injury to the trunk is the most visible damage that occurs during construction, less obvious problems may be as serious, if not more so. Grade changes, disruption of water flow, root injury and soil compaction are all common problems associated with construction.

You indicated that injury occurred to large areas of the main trunk of a number of trees. If bark only was removed, a smooth surface still remains for wound tissue to cover the injured areas. If the damage was not extensive—if less than one-third of its circumference was affected—there is a good chance that, with the proper care, the trees will recover. Recovery also depends on the previous health of the trees and the extent of soil or root damage.

Carefully remove loose or peeled bark; however, do not cause additional injury. It is not necessary to “shape” the wound with bark tracing. For aesthetic reasons, you may want to use a wound dressing.

Fertilize, water and mulch the trees as needed to help improve their vitality. Generally, borer insects and canker-causing fungi establish on weakened and stressed trees. Borers can be managed with labeled insecticides, but fungicides are not effective for canker diseases. Maintaining proper health is the best defense against cankers.

## Crabgrass explodes

**Problem:** We have used Surflan A.S. to manage weeds in the landscape. In previous years, we have had good results. However, this year we are finding an abundance of weeds, particularly crabgrass, in flower beds. Could you please explain this? (Michigan)

**Solution:** There has been an explosion of crabgrass this year in many parts of the U.S. Moisture, sunshine and high temperatures have provided ideal conditions for annual grasses, such as crabgrass, to establish. In many situations, pre-emergence herbicides have not provided satisfactory weed management because of a prolonged germination period and good weed/crabgrass growing conditions.

Generally, crabgrass seeds can remain viable for 10 to 20 years. These seeds germinate in the spring when there is abundant moisture and sunlight, and the soil temperature warms up to 55° F. Most pre-emergence herbicides are effective only during this period and provide 40 to 60 days protection. Generally, this is sufficient to provide satisfactory crabgrass control. However, this

year, germination continued because environmental conditions favored its growth.

Other causes of poor weed control may be related to mixing and/or application techniques and watering after application. Correct mixing techniques and equipment calibration is important. Maintain good agitation and application technique. Avoiding skips and overlaps would reduce poor coverage and/or over-application problems, respectively.

If there is no chance of rain, the treated area needs to be watered in for the herbicide to become active and effective. According to the label, a minimum of one-half inch of rain or its equivalent is needed to activate Surflan A.S. Since much of the Northeast had a dry spring, Surflan might have remained on the surface and degraded more rapidly than after being incorporated into the soil by rain.

This would also cause future weed problems because there is no herbicide residue in the soil to manage germinating seeds. In the future, if there is no chance of rain and/or post-watering, consider providing shallow cultivation (to one to two inches) where practical. This would improve herbicide effectiveness.

## Prune black knot on fruit trees

**Problem:** How do you manage black knot disease on cherry and plum trees? Some of the trees have many black knots. How practical is it to manage this problem? Should we advise our client to remove infected trees? (New York)

**Solution:** Black knot is caused by a fungus which infects the twigs and branches of cherry and plum trees, which results in the formation of swellings or knots. The disease can weaken the plants, and—if severe—can cause extensive twig dieback.

Knots can kill a branch by girdling it. Sometimes, the fungus can even enter the main trunks. Once the tissue is infected, the new knot continues to grow and mature over two years. During this time, proper cultural and chemical management is necessary.

Prune and discard knotted twigs to whatever extent possible. Ideally, prune all infected branches at least four inches below the knot. Pruning should be done when dry, during late fall or early spring before budbreak. Knots on large limbs may be surgically excised if they have not completely girdled the branches. Destroy all infected areas and plant tissue that was pruned. Treat with thiophanate methyl (such as Cleary's 3336 or Systec) when dormant and at pink bud, full bloom and three weeks later.

*Dr. Balakrishna Rao is Manager of Research and Technical Development for the Davey Tree Co., Kent, Ohio.*

*Mail questions to “Ask the Expert,” LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, OH 44130. Please allow two to three months for an answer to appear in the magazine.*



# The Ultimate in What a Mower Can Do.

The New Combo Mulching™ Deck\* lets you achieve superior results in varying conditions using the same deck.

Available in 44", 48", 52", 61" and 72" decks.



## GRASSHOPPERABILITY

*the ability to make all the right moves for mowing quality and timesaving productivity.*

- **EASY CONTROL** to make all the moves you want to mow with soft-touch dual levers. You get the "feel" in no time at all because the hands-on control is so natural.
- **ELIMINATE MOST SECONDARY TRIMMING** using hydrostatic direct drive and zero-radius maneuverability with outrfront deck reachability.
- **NO TOOLS NEEDED** to remove decks and add year-round attachments in minutes thanks to the new, exclusive Quik-D-Tatch® mounting system\*.
- **CHOOSE YOUR POWER** from nine engine models, 14 to 28 hp, gas or diesel, air-cooled or liquid-cooled — the broadest line of outrfront riders in the industry.



Zero-radius Maneuverability



Outfront Reachability



Square-corner Turnability



Durability ... plus ROPS



*Grasshopper Selectability will change your mind about what a mower can do.*



New Model 928D, 28 hp diesel, with Quik-D-Tatch Vac® System and Trail Hopper™ collector.



Snowthrower



Angle Dozer Blade



Rotary Broom

### Other Attachments

- Dethatcher
- Bed Shaper
- AERA-vator
- ROPS
- Cab Enclosure
- Sunshade

Call today for a demonstration to see what a Grasshopper can do for you!



First to Finish ... Built to Last

## GRASSHOPPER®

YOUR NEXT MOWER

The Grasshopper Company • One Grasshopper Trail • P.O. Box 637 • Moundridge, KS 67107 U.S.A. • Phone: (316) 345-8621 • FAX: (316) 345-2301

Circle No. 111 on Reader Inquiry Card

\*patent pending

# Custom design for quality sprinkler systems



**COVER  
STORY**

**The benefits of a properly designed and installed irrigation system: healthy turf, dollar savings.**

by James T. Holter



**Q**UALITY IRRIGATION systems result in more than just healthy turf. The proper system will also help you make the most of your time and money through water and power conservation.

An irrigation system is a long-term investment, one which can affect your budget for years to come. But purchasing a new system should not be approached with intimidation. A buying decision should be based on the knowledge of what an irrigation system can do, and how new options make them more site-specific than ever before.

Irrigation systems provide a basic, yet vital service: they get water to turf, so it can better meet the needs of the users, whether they are playing golf, football or going on a picnic. The options available to tailor a system, however, have become more advanced, and provide the opportunity to save time, money and resources.

**Cost management**—With computer-controlled systems, you can regulate water and power consumption quickly and even remotely, says Bud Knowles, president of Wolf Creek, a Rain Bird distributor in Dayton, Ohio.

According to Knowles, systems with modern options avoid using too much water and put back into the soil only what was lost through evapotranspiration.

Computers also make it easier to adjust the irrigation system to meet seasonal requirements.

"The biggest fallacy that most people have with irrigation systems is they turn them on, and they let them run at one pace all year," according to Bruce Funnell, Wolf Creek specifications expert. "That's silly. It doesn't make any sense, but people do it all the time."

Plants have different water requirements in different seasons because they are in different stages of development. They could be expanding their roots or developing their blades, Funnell explains. Also, daily fluctuations in the weather make frequent adjustments necessary. With

computer-controlled systems, Funnell says, you can make these adjustments almost effortlessly.

When you adjust for seasonal needs, you not only do what is best for the turf, but you keep water and power consumption at a minimum. Low-voltage equipment that meets the specific needs of the site will make for even greater savings.

**Custom comforts**—High-tech features make purchasing a new system quite attractive. A quality irrigation system, designed to easily adapt to future developments, saves money in the long run and time the day after installation.

"Superintendents should make sure that they have a good, quality-designed system," says Funnell, "one that meets all of their requirements and gives them the flexibility that they need. The better system that they have—if it was installed correctly—is the first step to saving money."

"It's not the installation of the system that's going to cost them," he says. "It's the operation of the system over the next 20 years or so."

You, Funnell warns, should not be "penny-wise but pound-foolish." You should make the initial investment necessary to meet your future needs, tailoring the system to your site and getting the best design advice available.

With all of the current options, customizing has become a greater concern. The question of whether a site needs equipment such as weather stations or moisture sensors could have potentially expensive answers. Environmental factors, physical



aspects of the site and, most importantly, the needs of who will use the site are imperative in finding cost-effective answers.

**Green needs**—Steve Morton, superintendent at Mallard Creek Golf Course, Columbia Station, Ohio, has installed Toro Network LTC stand-alone control units on the irrigation system feeding the nine new holes on the 27-hole course.

The new digital units give Morton accuracy that he says he couldn't get with mechanical controls.

"You can set them (mechanicals) for five minutes," Morton says. "and they'll run for six or seven."

The original 18 holes still use mechanical units. The maintenance staff took in all the clocks and recalibrated them, but they still don't work right. Morton will replace them next year with digital units.

Morton can also set the system to turn on automatically, an option of which he hasn't taken advantage. When pipes are installed, some dirt and debris inevitably gets in the system, he says. If he doesn't closely watch the system, a pebble might stick in a valve and flood the area without him even knowing it.

With the stand-alone units, Morton can easily vary applications from day to day and season to season. Although rainfall in the Columbia Station area has been regular recently, he's made three or four small

adjustments in the last two weeks. Morton appreciates the ability to fine-tune the system and expects the turf does too.

Morton says Mallard Creek



spent just the right amount for the system. He and management looked at all the options, he says, from various pump models and parts to remote control units. They purchased just what they needed and did all the installation that they had the time and the qualifications to do.

Moisture sensors are another option that Morton feels would be unnecessary.

"I don't think I want to depend on moisture sensors to tell me how much water to put down," he says. "I can go around the course and look. I can see if there's a problem anywhere. If a couple extra heads need running, I'll add time to them."

Whether a system uses "high-tech



**Steve Morton and his crew at Mallard Creek saved about \$20,000 when they designed and installed this pump station.**

options," Morton says, depends on the golf course. Mallard Creek, for example, is a public course. The customers don't demand amenities that would take Morton away from the irrigation system and force him to install a more independent unit.

**Landscape applications**—The scenario at Case Western Reserve University in Cleveland is a good example of how landscape personnel should analyze their irrigation needs before buying.

The university has purchased a computer-controlled irrigation system in order to conserve time and water and better feed newly-landscaped acreage. The entire project is planned for completion in 1997, in conjunction with new building and field construction.

The system is controlled by a Toro OSMAC central computer, and will cover 52 zones, from intramural athletic fields to lawn areas.

"It will be an elaborate system," says John Michalko, landscape superintendent at Case Western, "more so than I've ever dealt with."

Operators will be able to program the computer four ways: over phone lines, from the central computer, from field units, and over the university's exclusive radio frequency. Multiple control options were required, Michalko says, because of labor and growth considerations. With radio control, new zones do not have to be hard-wired to the central computer. Built with expansion in mind, the system will evolve to meet future needs of the university.

The system can be updated with moisture sensors, a weather station, a leak

detection system and sensors to measure evapotranspiration. These are all options that the system was designed to accept, according to Robert Dye, irrigation sales representative at North Coast Distributing Inc., a Toro distributor in Cleveland.

**Expecting the unexpected**—Operators typically will use radio control to adjust the system. If Michalko programs the irrigation system to turn on at a certain time, then learns of a conflicting game time, he can program the changes in one session at the central computer.

"[The system] can be left to have a start time every day or every other day," says Dye.

The system is housed in an area around a new library and above a parking garage. This part of the system will automatically shut off before it overloads the deck with water. The parking garage was one application that made this system unique, Dye says. The moisture level concerns in many ways mandated the design of this part of the system. Another trick was having the main lines bypass the roof area.

Michalko doesn't need a weather station or moisture sensors because he has the staff to make the decisions such equipment would handle. What Michalko *does* need is a system that is economical in terms of hardware and does well with water management. That is what he took the time to find, and he is confident that is the system he is installing.

He's also dealing with a common industry employee trend.

"It's the same old buzzword: you have to

*continued on page 10*

(Right) Michalko: new irrigation system can be adapted to meet future needs.

(Below) Morton: stand-alone units offer scheduling versatility.



## Irrigation solutions

■ Computer controlled systems open up a whole new world of options that make running an irrigation system cheaper and easier. Features range from remote control to water sensors. Not all options are right for each site, but you save time and save money when you know the options that work.

• **Remote Control.** A computer-controlled system offers great advantages in terms of time management. With such a system, you can enter relevant data into a computer and expect the system to operate quite independently.

"All [the superintendent] has to do is tweak the system on a daily basis as he is touring the golf course," according to Bud Knowles, president of the Wolf Creek distributorship. "Otherwise the computer will control the whole thing."

This option would work well for a superintendent who has extensive duties away from the irrigation system.

• **Weather Stations.** Weather stations are not cost-effective for every site, but larger operations can save money with one by knowing how much and how often to run its irrigation system.

A weather station will save water, Knowles explains, by keeping pump operation at a minimum. This saves money in terms of power consumption as well, he adds.

"But if you're a good water manager," cautions Bruce Funnell, Wolf Creek's specification manager, "it would be hard to justify a weather station just in terms of water savings."

The big opportunity to save money with a weather station is in labor management. If you have to drive around to multiple locations and continually adjust something, Funnell explains, a weather station will drastically decrease the amount of time needed for adjustments.

• **Moisture Sensors.** These are another great way to know when to turn off the pumps, but, unfortunately, are even more cost-prohibitive than weather stations.

"Soil conditions vary from one site to another site, or one hole to another

hole, so moisture sensors would have to be over the whole golf course to really be effective," according to Knowles.

These might be right for areas that traditionally have been trouble spots. For such sites, Knowles says, strategically placed moisture sensors can help you control the problem.

• **Vertical Turbines.** For the most part, centrifugal pumps have been replaced with vertical turbine pumps, according to Knowles.

The reason, Knowles says, is that vertical turbine pumps operate at 15 percent to 20 percent greater efficiency than centrifugal pumps.

• **Vertical Frequency Drive.** VFD permits a pump station to save electricity, based on the water needs of site.

VFD controls the velocity of the water going through the system, which manages water hammer and reduces physical problems such as loose fittings and blown pipes.

Conventional systems control pressure with a pressure regulating valve. A VFD pump, though, avoids pressure problems altogether. There is no need for a solution to a problem that doesn't exist.

A VFD pump works by applying pressure at a constant, Knowles says. "This is another large advantage to [VFD pumps], that you do not have a large fluctuation in pressure."

• **Lightning Protection.** Some new technologies protect an irrigation system from lightning, Knowles points out.

"One of the things we handle is called the high LDP," Knowles says. "It senses the lightning coming into the area. When it senses the lightning, it will disconnect the power to the computer or to the pump station."

That power will stay off as long as the lightning is in the area. Once the lightning has left the area, the whole system will kick back on without any instructions from the superintendent.

With the high use of computers in irrigation systems, a good lightning protection system is important. Computer circuits are very sensitive to fluctuations in current. It wouldn't take much for a routine thunderstorm to cause thousands of dollars in damage.

do more with less," says Michalko. "That means you have to get more sophisticated in the type of equipment and chemicals you use and your scheduling."

He also has a knack for instilling pride in his crew.

"If they take more pride in what they're doing," Michalko promises, "they will produce more."

—James T. Holter is a journalism student in his final year at Ohio University in Athens, Ohio. This past summer, he interned at Advanstar Communications.

—J.H.

# Controlling critters to net more profits

**Moles? Geese? Rats? From traps to 'porcupine wire,' here are some control aids.**

by James E. Guyette  
Contributing Editor

■ Uninvited critters that come a-callin' can wreak havoc on any landscape, golf course or athletic field. Fortunately, innovations abound, giving you an increasing array of impressive tools to bait, trap and exclude unwanted visitors. However, you may find yourself under increasing pressure from customers to do away with any pests in a humane manner.

"Exclusion" is rapidly becoming a technique of choice. This merely involves keeping the animals at bay before they even set paw on the property. (Any land-



scape manager who's been vexed by a vole can tell you that exclusion is better than trying to rout an already entrenched rodent.)

For larger animal pests, a new line of Get Away repellents from IntAgra Inc. uses all-natural ingredients that repel by both taste and odor without being offensive to humans. It reportedly keeps away deer,



**Fire ants (mound, above) can be terrible pests in the southern landscape. If left untreated, they can injure humans, too (left photo).**

rabbits, squirrels, raccoons, dogs and cats. Other manufacturers are nosing into the field with similar products.

Rodents can be a particular concern to homeowners fearful of the much-publicized Hantavirus. Sonic Technology's PestChaser Ultra-sonic Rodent Repeller uses a highpitched noise that hurts the animals' ears while remaining un-heard by humans.

The battery-powered, lunchbox-sized Rat Zapper from Agrizap uses a jolt of electricity to dispatch rodents. It is considered humane because death comes quickly.

Traps and poisons were causing adverse customer reaction among the clients of the Morehart Mercantile Corp. outlets in California, so owners Marty and Patricia



**Rodent bait stations like this one from Bell Laboratories, are excellent for getting rid of rats and mice.**

Morehart switched to the Rat Zapper. "We are rat- and mouse-free, and we have also used the Rat Zapper in our home as well as on our ranch with equal results," they note.

**Birds and geese**—For Bill Stout, president of Stout's Pest and Weed Control in Mountain View, Calif., birds were a prime source of irritation to his clients. He found that birds stayed away after he affixed stainless steel "porcupine wire"

*continued on page 12*

**CRITTERS** from page 11

from Cat Claw to gutters, chimneys, awnings and wherever else the birds were likely to rest. They are not harmed, yet the sharp spines ruin any roosting plans.

"It's a long-term solution versus the gels that we used in the past," Stout states. "It's good and clean and the people don't notice that it is there," he points out.

Geese that present problems on golf courses can be given the heave-ho by strategically placing a tough netting product from GridTech. Geese use ponds as a source of protection, and when they are denied access they leave.

"When the G-Grid is installed, the geese can no longer get from the water to the grazing site and then back for protection," explains GridTech's Tom Suprock. "They won't be able to see it from the clubhouse because it's virtually invisible, but the geese can see it," he notes. "The geese will swim back and forth for hours looking for a hole in the fence." It irritates the birds and causes them to move somewhere else, Suprock says, noting that the geese netting is considerably more sturdy than standard bird netting used on trees.

His company also markets a similar netting product that is imbedded in the ground to thwart burrowing rodents. It's being used under the runways at O'Hare Airport in Chicago.

**Trapping**—To trap pest animals, "you should be licensed and bonded," according to Jim Williams of Jim's Trapping Service in Sublimity, Ore.

Landscape managers need to make sure they are properly covered for any liability that may arise out of a trapping effort. A neighbor's dog getting caught in a trap meant for a mole, gopher or other pest can be a costly adventure.

Trapping skills are best obtained by hands-on experience, and would-be trappers are urged to attend trapping seminars sponsored by equipment suppliers or extension agencies.

Trapping is not the quickest type of service to offer. "It takes a lot of time," says Williams. It's tough to learn, and it's tough

## Selected landscape-oriented pest control product suppliers

**American Cyanamid Co.**

Wayne, NJ 07470  
(201) 831-3573  
*fire ant controls*

**Argizap Inc.**

1860 Eastman Ave.  
Ventura, CA 93003  
(800) 946-7437  
*electronic pest killers*

**Bell Laboratories Inc.**

3699 Kinsman Blvd.  
Madison, WI 53704  
(608) 241-0202  
*rodent control products,  
tracking powder*

**Burlington Scientific**

222 Sherwood Ave.  
Farmingdale, NY 11735  
(516) 694-9000  
*yard animal repellents*

**Cat Claw Inc.**

2710 Bedford St.  
Johnstown, PA 15904  
(814) 266-5544  
(800) 832-2473  
*bird control wire*

**Chase-A-Way Inc.**

1187 E. 156th St.  
The Bronx, NY 10474  
(718) 861-0100  
(800) 831-4308  
*personal insect repellents*

**Ciba Turf & Ornamental**

P.O. Box 18300  
Greensboro, NC 27419  
(910) 547-1160  
*insecticides,  
fire ant controls*

**Cinch Trap Co.**

P.O. Box 130  
Hubbard, OR 97032  
(800) 841-5676  
*gopher, mole traps*

**Fas Technologies**

1550 Walnut St. #5  
Berkeley, CA 94709  
(510) 849-4234  
*biological insect controls*

**Gempler's**

211 Blue Mounds Rd.  
P.O. Box 270  
Mt. Horeb, WI 53572  
(608) 437-4883  
*trapping equipment,  
insecticides, rodenticides*

**GridTech**

294 Valley Rd.  
Middletown, RI 02842  
(401) 849-7920  
(800) 959-7920  
*bird, waterfowl netting*

**IntAgra Inc.**

8500 Pillsbury Ave. S  
Minneapolis, MN 55420  
(800) 468-2472  
*animal repellents*

**R.J. Advantase**

501 Murray Rd.  
Cincinnati, OH 45217  
(513) 242-3300  
*geese repellent for grass*

**Sonic Technology Prod.**

120 Richardson St.  
Grass Valley, CA 95945  
(916) 272-4607  
(800) 247-5548  
*ultrasonic pest repellers*

**Target Specialty Prod.**

15415 Marquardt Ave.,  
Santa Fe Springs, CA  
90670  
(310) 802-2238  
*chemical controls*

**Valent**

P.O. Box 8025  
Walnut Creek, CA 94596  
(510) 256-2700  
*ant control products*

**Wilco**

P.O. Box 80664  
Seattle, WA 98108  
(206) 762-2120  
*traps and baits*

to get the job done correctly—especially if you don't quite know what you are doing. "It's like playing cards; you don't know until it's over whether you've won or not."

When stalking gophers or moles for clients, "I've caught them in a couple of hours and then I've taken a month to catch them," notes Williams. "And when I first did it, I wasn't successful at all. I had a problem with coyotes stealing my traps."

Trapping fees depend on what the market will bear. Some trappers will get a \$25 service fee just for setting foot on the lawn, plus \$50 for each catch.

"To people who pay \$10,000 for landscaping, it's worth it," says Williams, who adds that he receives much less payment for his services in rural Oregon. ("There

are a lot of retired people here and I get a lot of fresh vegetables and things.")

Upscale, semi-rural neighborhoods are the best hunting grounds for trappers seeking additional clients, Williams advises. "They go to wealthy areas and the people there don't have the time to catch them—so they'll gladly pay 50 bucks apiece for you to catch them."

Be certain of your marketing region. Williams says that word-of-mouth advertising, plus a business card tacked up on a local store bulletin board, brought him a good amount of calls—yet the area was too widespread to make good business sense. "I didn't want to drive 20 miles to check my traps," he concludes.

# Extend power equipment life with year-round maintenance

■ To extend the lifespan of your power equipment, you must treat the gasoline engines with tender loving care—both before bedding them down for the winter and during the busy season.

It's most important to change the oil before storing the equipment for the winter.

"Late fall is the best time to change the oil and check the spark plug to make sure that it will be ready to go in the spring," says James Garthe, instructor in ag and biological engineering at Penn State University. "Don't keep old oil in the engine. Solids, water and acids that have accumulated in the oil over the summer will corrode the engine.

"Change the oil while it's still warm. Contaminants are suspended in warm oil and will drain out. If you wait until it cools, these materials settle to the bottom of the crankcase and solidify into a thick gum."

If possible, remove gasoline from the tank before storing the mower, either by siphoning or by taking off the tank. Consult your owner's manual to determine the best method.

If you can't remove the gas, put a fuel stabilizer designed for small gas engines in the tank and run the mower for a few minutes before storing it. "A good fuel stabilizer can extend the storage life of the gas by up to six months," Garthe contends.

If you keep the equipment in a damp location, consider coating it with a silicon spray before storing it. The silicon will create a film that keeps moisture out and discourages rust.

Covering the equipment with a plastic tarp also helps keep moisture and rodents out. "Mice have been known to chew wires and other engine parts, and even to build nests in the mower," Garthe notes. A plastic tarp will discourage these pests more than cloth, which mice chew up for nesting material.

**During the season**—The lifespan of a small gasoline engine is also directly related to routine maintenance performed on it during the operating season. A few simple pro-



Late fall is the best time to change the oil one last time and check the spark plug.



A dirty air filter also keeps air from getting to the engine and affects the air-fuel ratio.

cedures that are easy to perform and take very little time can extend engine life, according to Briggs & Stratton.

Over time, component parts will wear out or need replacing. It is important to use genuine parts. They will help keep your engine in top performing condition.

All gasoline-powered engines require proper fuel and lubrication. They also need air for full power delivery and adequate ventilation to prevent over-heating.

**Maintenance tips:**

**Lubrication**—Change oil regularly after 25 hours of operation. Many professionals change oil as often as at the end of each working day. Use a high grade detergent automotive oil—30 weight is highly recommended when operating in temperatures

above 40 degrees.

Fill to the proper level indicated in the manufacturer's maintenance instructions, being careful not to overfill. Check oil level every time you add gasoline.

"The wrong oil shortens your engine's life by causing overheating and excessive wear on valve guides, seals and main bearings," warns Garthe. "Use high quality engine oils containing additives that buffer corrosive acids generated during fuel combustion."

**Fuel**—Use clean, fresh unleaded gasoline. Using lead-free gas slows combustion deposit build-up and contributes to a cleaner environment.

**Air**—Clean air is needed to mix with gas for optimum combustion and power; it is the lifeblood of engines.

Large capacity pleated paper air cleaners help keep the engine clean. Proven for years in automobiles, pleated paper air cleaners offer small engines unbeatable protection and convenience. And service is a snap: remove and replace just like an automobile air filter. Again, it is important to replace with genuine parts.

"If the air filter is dirty, minute particles of silicon eventually can get into the internal moving parts, wear-

ing them down and pitting them," Garthe notes. "A dirty air filter also keeps air from getting to the engine and affects the air-fuel ratio that governs combustion. The engine has to work harder, wasting energy and fouling the spark plug with deposits."

The oil foam air cleaner also offers good protection. Replace whenever it appears very dirty.

**Blower housing**—Dirt and debris can enter the engine's blower housing and clog the cooling fins, causing high engine temperatures. If the temperature rises too high, internal parts can be damaged. Prevent grass and debris build-up by removing blower housing and cleaning the area.

# Hydraulic seeding: from highways to home lawns

## Benefits of this fast, efficient seeding method can be helpful in golf course renovations, too.

by Ron Hall  
Senior Editor

■ Hydraulic seeding is the process of mixing seed, fertilizer and fiber mulch with

water in correct proportions inside a tank and then spraying the slurry onto a prepared soil surface.

Many landscape contractors refer to the process as "hydroseeding." But like Kleenex and Xerox, two other brand names that came to represent categories of products, the name Hydro Seeder is registered to a specific company, the Finn Corp., which made its first Hydro Seeder in 1953.

Whatever you call it—hydraulic seeding, mulching or grassing—it offers

advantages over mechanical seeding in many turf and landscape projects. Hydraulic seeding, say its proponents:

✓ is faster and usually requires less labor because seed, fertilizer and

mulch are applied at the same time. (Other amendments such as lime or biostimulants can be added too.)

✓ provides a more uniform distribution of seed, fertilizer and mulch.

✓ usually results in faster seed germination.

✓ offers a higher grass survival rate.

✓ reduces soil erosion.

✓ puts seed in difficult areas like slopes, berms, and ditches.

Hydraulic seeding reportedly gained its

## Hydraulic mulchers available to the green industry

COMPANY	MODELS	FEATURES
<b>Badger Associates</b> 1108 Third Ave. New Brighton, PA 15066 (800) 822-3437	Turbo Turf: 8 different size units ranging from the HS-50, 50-gal. skid-type unit, to the HS-1600-ZX, 1600-gal. unit.	The HS-1000-XPW 1000-gal. poly tank, skid-type system; 16 hp B&S Vanguard or Kohler Magnum engine with electric start; 4" x 4" high-volume centrifugal pump; 100 ft. of 1½" ID hose, hose holder and five nozzles.
<b>Bowie Industries, Inc.</b> P.O. Box 931 Bowie, TX 76230 (800) 433-0934	7 different model sizes ranging in working capacities from 250 gals. (the "Baby Bowie") up to 3,000 gals. (the "Bowie Imperial 3000")	Victor 1100 Hydro-Mulcher with 1125-gal. tank (steel plate with epoxy resin coating on inside); Wisconsin W4-1770 air-cooled engine; 2300 STD Bowie pump; enclosed shredder bar; 2 agitators to keep slurry homogenous.
<b>Easy Lawn Inc.</b> 543 Shipley St. Seaford, DE 19973 (800) 638-1769	2 models: HD6001-60 with 600-gal., polyethylene tank and the HD3002-30 with a 300-gal. polyethylene tank.	Spray range of 100 ft.; the HD3002-30 gives about 4,000 sq. ft. coverage; the HD6001-60 about 8,000 sq. ft. coverage; multi-tube jet agitation; 100 ft. of clear braid hose; manual hose reel with greaseable ball bearing swivel.
<b>Finn Corporation</b> 9281 LeSaint Drive Fairfield, OH 45014 (513) 874-2818	7 models with working capacities from 250 gals. to 3,000 gals.; most popular models the T90 (800 gals.) and T120 (1,000 gals.)	T120 Series II Hydroseeders feature new in-line clutch/pump assembly ("Clump") that boosts hp and rpms, increasing application distance 20% while also allowing use of bulkier materials; powered by diesel Kubota 1703; discharge distance for both is 180 ft.
<b>Reinco Inc.</b> P.O. Box 512 Plainfield, NJ 07061 (800) 526-7687	Full complement of Hydrograssers ranging in size from HG-5H with a 500-gal. working capacity to the HG-30GX with a 3000-gal. working capacity.	Model HG-10GXA with 1000-gal. working volume; 130 feet spray range; air gap fill; double-valved fill pipe for hands-free filling; exclusive Tilt-Load fiber feeder and mulch grinder; 35-hp air-cooled gas engine; dual agitation system with "Hydro-Jets" and paddle mixers; stainless steel nozzles.
<b>TGMI, Inc.</b> 11074 Ashburn Ave. Cincinnati, OH 45240 (800) 241-8464	Aqua Mulcher 400, 400-gal., portable unit will hydromulch 4500 sq. ft.; (also a distributor for Bowie units).	All steel construction; paddle agitation; hydrostatic agitator drive; centrifugal pump; clutched pump drive; steel tank with epoxy interior coating; spray distance 90 ft. from end of hose (190 ft. total).
<b>The Broyhill Co.</b> Box 475 Dakota City, NE 68731 (402) 987-3412	The Turfseeder with a 150-gal. poly tank and the Turfmaker with a 200-gal. steel tank.	The Turfmaker: mechanical agitation; Bowie positive displacement pump with Honda engine; clear-water hose flush system; bale loader, hose reel for transportation and hose storage; two nozzles.



first commercial use when the Connecticut Highway Department outfitted a tank with a recirculation-type agitation system and applied a slurry of grass seed and peat moss to slopes in the 1930s, says Walter Reinecker, Reinco Inc. A landscape architect in West Virginia saw obvious advantages to use the concept in his hilly state too, explains Reinecker.

But hydraulic seeding didn't really gain widespread use until America's highway-building frenzy began just after WWII.

Large hydraulic seeders were used to seed mile after mile of highway roadsides, including areas that would have been impractical, or even dangerous, to seed mechanically. They saved untold expense and labor because they could spray thousands of square feet in minutes.

America's highway-building era is basically over, but uses for hydraulic seeding—if not the size of the projects themselves—continue to grow, particularly for landscape contractors and for golf course seeding and renovation. While soil reclamation and erosion control remain the two biggest markets for hydraulic seeding, landscape contractors now regularly use it, often for areas as small as individual home lawns. Golf courses and sports turf, particularly football and soccer fields, can benefit from hydraulic seeding too.

**Smaller is better**—Recognizing this trend, several manufacturers entered the market with smaller, less expensive units about a decade ago or less.

Ray Badger, Badger and Associates, New Brighton, Penn., says landscape contractors even using smaller hydraulic mulching units can cut their labor costs compared to mechanical seeding. "And a lot of times they can charge a premium for hydraulic seeding," he points out.

Established companies like Finn, Reinco and Bowie expanded their lines, offering products that are more suited and affordable to the landscape market, too.

Cost is obviously a consideration, but a landscape contractor should focus primarily on productivity, says Walter Butman, the Finn Corp. Does the hydraulic seeding unit possess sufficient capacity and power to most efficiently perform the tasks that the contractor is planning for it?

Bob Person, president of TMGI, Inc., Cincinnati, advises contractors to compare the construction (stainless or plastic tanks) of comparably sized units and operating features. He says units with identically sized tanks may have different capa-

## Cost is obviously a consideration when buying, but you should focus primarily on productivity.

bilities. This may be most obvious when it comes to the amount of mulch they can hold and dispense. This often determines the success or failure of a seeding project, particularly if environmental conditions turn against the contractor.

Person likens it to buying a pickup truck. Although the bed size of, for instance, a Ford pickup is the same for half-ton, three-quarter-ton and one-ton models, the work capacity of the one-ton model is obviously much greater than the other models.

That's why each contractor must review the type and size of the projects that they plan to use their units for, and then carefully check their requirements against each unit's suitability. All manufacturers provide

literature that outlines the capabilities of their hydraulic seeders, but prospective buyers shouldn't be afraid to ask questions. Nor should they hesitate to gather information about the costs of hydraulic seeding. Again, manufacturers can help.

Reinco, for instance, offers a free publication titled "Hydrograssing and Power Mulching Cost Analysis." It details the current methods available for hydrograssing, explains the positives and negatives of each, calculates the cost per square foot and suggests the best available process for a variety of applications. Charts and tables are included, along with an overview of machine selection.

Equipment options that make the seeding process easier include electric hose reels, extension hoses, mulch shredder bars and accessory nozzles.

Established manufacturers in the hydraulic seeding market also offer mulch spreaders, crimpers/discs, tack applicators (Reinco), and an AEM Spreader to transport and place large quantities of bark mulch, compost or similar product (Finn).

## WORK-WORK-WORK-WORK-WORK

PROFIT

PROFIT

TOO MUCH WORK, NOT ENOUGH PROFIT

## TURBO TURF HYDRO SEEDING SYSTEMS



### REDUCE YOUR COSTS

- ✓ 1 man can seed faster than a crew did before.
- ✓ Fast germination. Great lawns in 1/2 the time.
- ✓ No messy straw to blow into other yards.

### INCREASE YOUR PROFITS

- ✓ Hydro seeding cost is 1/2 of dry seeding.
- ✓ Charges are higher, it's a premium service.

### WE BUILD A SIZE FOR YOU

50 Gal.	650 sq ft / load	\$ 1295.00
100 Gal.	1300 sq ft / load	1995.00
150 Gal.	2000 sq ft / load	2795.00
300 Gal.	4000 sq ft / load	3995.00
500 Gal.	6600 sq ft / load	4795.00
750 Gal.	10,000 sq ft / load	7995.00
1000 Gal.	13,000 sq ft / load	9995.00
1600 Gal.	21,000 sq ft / load	19,995.00



**TURF WIZARD**  
**RIP - LEVEL - SMOOTH - RAKE**  
**ALL IN ONE PASS**  
**\$2495.00**

FOR A FREE HYDRO SEEDING INFO PACK CALL

**BADGER ASSOCIATES**

1108 THIRD AVE, NEW BRIGHTON PA 15066

800-822-3437

# Affordable liability coverage

**If you have liability insurance, don't assume it's the best you can get. And don't assume that high premiums are unavoidable.**

by Bess Ritter May

■ Premiums for most small businesses have risen drastically in the past few years. If you need affordable liability insurance, you have to know how to choose an agent, company and policy. The organization and safety conscious nature of your company also count. Here's a look at the key points to consider when buying liability coverage.

**Agents and brokers**—Agents represent one company, whereas brokers represent many companies which offer different types of coverage at different rates. Choose a broker carefully. You don't want a broker who will pressure you into purchasing coverage you don't need. Nor should you choose a broker who "churns" or "clean sheets" applications.

"Churning" occurs when the agent or broker urges a client to drop a good policy to earn the broker a substantial first year commission.

Other unacceptable practices include the "buy now because you may not be able to get such a great policy later" argument, and doubletalk whenever you question policy specifics.

**What you should know**—Exactly what is covered? Details include: medical payments, product liability, advertising liability, personal injury, contractual liability.

Insist on a "certificate of insurance" from the broker. This is a type of broker's malpractice insurance. It guarantees that if he or she fails to follow through on a binder or omits some critical detail concerning your coverage in their report to the insurer, you can collect through your broker's insurance.

Insist that the agent/broker inspect your entire business premises, including the basement, storage areas and parking lot. Do this before buying, so inspectors can identify hazards and explain how correcting them can bring a lower rate.

Items of concern can range from the lack of fire detectors in storage areas to pot-holes in the parking lot.

Insurance inspectors will also offer

## When accidents happen...

1. You should have a first aid kit ready. Always replenish first aid supplies as needed. Keep the physician and emergency aid number on the cover of the kit. Store it in a handy place.

2. Establish a simple accident report form and make a number of copies. Keep them with your first aid kit. Include:

- name, address and phone number of your company
- name, address and phone number of the injured person/persons
- date and time of injury
- name, address and phone number of closest relative
- description of accident, and signatures, addresses and phone numbers of all witnesses.

3. Don't panic, even if the injury is serious. Do not move the patient. Cover with a coat or blanket and try to keep onlookers away.

4. Even if the injury is relatively minor, keep the injured person in a quiet area and apply first aid.

5. Delegate one person to call 911 or send for a doctor/ambulance/

6. Complete your prepared accident report while waiting for medical help.

If the injured person refuses, make a note of this.

7. Call the insurance company or broker at once and submit your completed and signed report.

—B.R.M.

advice concerning common sense safety practices such as clean, dry floors.

The lawn care industry has a feature most other business don't have: the use of pesticides. Be sure to state—at the time of application—exactly how the chemicals you use are stored and applied. Describe the expertise of the employees who do this work. When you obtain approval from the carrier, you won't be surprised to learn later that a claim is not going to be honored.

"Self insure," by assuming part or all of the smaller losses. Most insurers like this because it can cost them as much as \$500 or more to process a \$100 claim.

**Cancellation clause**—Check your new

policies cancellation clause. This is vital since some companies will actually drop clients who file too many unprofitable claims or transgress in some other way that causes a profit loss for the company.

Insurers do not have to give you a reason for cancelling after as little as five days' notice. So negotiate that clause before you buy, and bargain for time. You will need it to line up new insurance.

Be sure your liability insurance is written so that limits apply on a "per claim occurrence" basis. If you are found responsible for an "incident" which results in the injury of more than one person on one occasion, and are insured on a "per claim" basis, the company is liable for all resulting injuries which occurred at the time. Under a "per occasion" arrangement, the company will guarantee only one payment regardless of the number of persons injured.

Be sure that all workers know and understand the terms of your liability insurance. Post a copy in a prominent space and mark in red all claims which might nullify or reduce your coverage. Insist that all incidents be reported promptly. Delegate all such matters to one competent employee.

Employee ignorance of the policy terms or an error in reporting could someday result in bankruptcy.

**Don't make enemies**—Always be courteous to everyone on the payroll or to anyone who may visit the premises, and to all business associates, and avoid arguments. You never know when a misunderstood word or deed will escalate into a serious complaint involving your liability insurance that might have been forgotten with softer treatment. Insist that all employees develop the same gentle attitude. Be gentle in your treatment of them as well.

With your attorney's help, write up a list of steps you will have to take in the event of a claim. This is done to sure the company will not put you off or invoke a "reservation of rights" clause in order to deny protection.

One example is the requirement of most companies that prompt notice be given on any claim or even on some unusual circumstances which might result in a claim. Check with your attorney again before actually filing for a claim, especially if it is a big one. The insurer is bound to look for loopholes.

—The author is a freelance writer based in Philadelphia.

# GOLF & ATHLETIC TURF

## Athletic turf management: WORKING SMARTER

by Steve and Suz Trusty

■ Sports participation in the U.S. is booming at every age and skill level, requiring more athletic fields that can withstand longer hours of use.

With minimal staffing and limited budgets, athletic turf managers must work smarter to accomplish more with less.

The good news is: they're doing it.

A core of intelligent, well-educated, highly-trained athletic field managers combine the science of growing grass and the art of maintaining sports turf to grow safe and aesthetically pleasing playing areas. And they willingly share their knowledge and expertise.

"The sports turf industry is going great guns," says George Toma, turf consultant for the National Football League and former grounds manager for the Kansas City Chiefs.

"What we need to do first is look at the construction of fields. Quality construction is the key to a good field. Contractors have to be honest and do a good job. The agronomists have to do their job and be honest. The soil testing laboratories have to be honest and assure the entire field will be put in with the specified rootzone mix. Close, honest attention to detail is vital at each step of the construction process. The groundskeeper needs to be involved from day one. Poor natural grass installations are a real concern."

Toma believes owners of professional teams should pay as much attention to the playing surface as they do to the players' other amenities, such as training areas and salaries. And, says Toma, grounds managers

need to be paid a higher wage.

"I'm all for players making good money," says Toma, "but we can't forget where the game is played. The playing field needs to be number one."

**Partnering**—Toma also says training in turfgrass management should be a priority. More professionalism, says Toma, is needed.

Dr. Gil Landry, extension turf specialist at the University of Georgia and immediate past president of the Sports Turf Managers Association, believes the industry is on a steady rise, due to better trained and more experienced people.

"Exposure to premium fields, on site or via TV, is one of the reasons for the heightened awareness of sports turf facilities, and I think that's going to continue," says Landry.

"STMA is also moving ahead, but we need more involvement from individuals, organizations and corporate entities, and more financial backing to accomplish our goals."

Landry adds that the association would like to develop relationships with associated green industry organizations.

Information is shared freely within the industry, says Mary Owen, extension turf specialist at the University of Massachusetts. "The industry is in a very positive state of change, an upsurge of positive activity. The networking opportunities are tremendous, and everyone seems to be coming together to make things happen. It's not just people wanting to help, they're eager to help."



**Toma: Make education a priority, continue to raise level of professionalism.**

Owen says field managers are trying to learn from each other, and are always looking for new products and procedures to help them get the job done.

"There's a higher level of professionalism," says Owen, "both in how the industry conducts itself and in how it's viewed."

"We're still behind the golf course industry, but we're growing and improving in all areas," says L. Murray Cook, stadium man-

*continued on page 2G*

### ELSEWHERE

**New golf course  
a dream come true,  
page 6G**

**Natural/synthetic  
turf field works,  
page 8G**

**Getting by on  
rationed water,  
page 12G**

**Irrigation contracts  
start with safety,  
page 14G**

**SMARTER** from page 1G

ager for the city of West Palm Beach, Fla.. "For a time, the sports turf industry was stagnant, but in the last five years we've made improvement."

**The right stuff**—The future for athletic field management may be bright, but it will dim quickly if it doesn't continue to recruit the right people into the profession.

"It's especially important that we keep many intelligent, energetic young people coming into the profession," says Mike Schiller, assistant superintendent of parks for the Schaumburg, Ill. Parks District.

"This new crop of individuals has both the personal resources and the desire to make a difference," says Schiller. "While

they're tackling their job responsibilities admirably, we need to get them involved with STMA to ensure future growth."

Some suggest that by viewing the relationship between athletic field managers and industry suppliers as a "partnership," ideas and cooperation will help the industry prosper.

"The sports turf industry is developing rapidly and should be seen by industry companies as a viable, professional entity and as a growth opportunity," says Gary Lindquist, manager of market development for John Deere Company's Commercial Mowing and Utility Vehicles Division.

Deere, according to Lindquist, has reorganized its internal business groups to bet-

ter focus on the various segments of the commercial market.

"The future of improved sports fields is positive," says Eugene W. Mayer, training and technical support manager, The Scotts Company, and commercial vice president of the Sports Turf Managers Association.

"Athletic field usage is increasing and so is new construction and renovation of fields," says Mayer. "But equally important is the increasing awareness of participants, administrators and groundskeepers that better quality and safer playing conditions are possible on all levels of play by using specifically-designed turf products correctly and employing better field management practices."

## Managers 'feel the heat'

seven to be exact.

Lamneck reports the university is building a massive, 14-field/8-diamond facility to handle lacrosse, soccer and football.

Operations the size of Marseglia's rely heavily on a team attitude and department cooperation.

"I think you need a 'marriage' between the grounds maintenance department and the athletic department," says Marseglia. "Then the coaching staff; and it continues to the athletes and the administrators understanding your needs, you understanding their needs.

"Then there's the community at large, and the general public. If I need volunteers, they're there."

Lamneck credits his success to his being able to set priorities, and to "dedicated people who are willing to communicate effectively; and a well-trained staff."

**Terry Dale Meyer**, park services manager for the City of Olympia Parks and Recreation Department, Olympia, Wash. believes budget support is an essential. Meyer says he's "maxed out" in terms of the athletic field supply and demand ratio. Meyer tends 12 fields, which are used for softball and baseball, so it's a relief to have the money at hand.

"They give us what we need," Meyer says. "If they ever give us more fields, they'll have to give us more money to maintain those, but right now we don't have any more fields."

Some of that money went for a new irrigation system, installed in September. Employees are kept happy by a progres-

sive policy for part-timers.

"We increase payroll or benefits (for part-time workers) the same as our cost-of-living increases for our full-time," Meyer says.

Some departments have to contract work out to landscapers to make ends meet. Marseglia doesn't have the personnel or equipment for every job, so he contracts out some seeding, fertilizing, aeration, turf renovation and ball diamond rototilling.

Marseglia believes "attitude" is important if a crew wants to get any work done.

"I would rather have an individual who does not know anything (about the industry) and likes to work outside; that's half the battle. If they're conscientious on top of that, I just feel I have a gold mine. I will painstakingly teach that individual, and it's usually very rewarding."

"Everybody is going back to grass from AstroTurf," says **Mike Hess**, grounds manager for Georgia Tech Athletic Association, Atlanta.

The stadium at Georgia Tech now surrounds a natural grass field of Tifway 419.

"I've seen a trend in soil amendments," adds Hess, who is trying an amendment called Rebound, which consists of finely chopped rubber particles

"In anticipation of the 1996 Summer Olympics, we're redoing the track and renovating the coliseum. The stadium is smack dab in the middle of what will be the Olympic Village."

—James T. Holter & Terry McIver



■ Much of the athletic turf industry was in a "heated" state this summer, thanks to tropical July and August weather.

Consequently, managers had to divert their attention from planned projects to restore dying turf.

"Turf disease hit this summer," says

**Dan Marseglia**, outside maintenance foreman for the Cheshire Public Schools, Cheshire, Conn.

Marseglia had to manage summer patch and pythium, which he thinks was brought about from the high humidity followed by a dry spell. Marseglia suspects the fungi might have had a chance to incubate, what with the extra irrigation.

Which raises the question: which is worse, no turf or diseased turf?

**Mark Lamneck**, manager of intramural fields and irrigation, Ohio State University, blames the weather for some dollar spot and turf rust problems.

"We're putting down a 21-3-21 (fertilizer)," to bring the turf back," he reports. "We'll review the fields then we'll decide to what extent we'll have to overseed.

If we do overseed, which I think we will, we'll probably use straight ryegrass for quick growth."

Marseglia—as do many athletic field professionals—manages multiple fields,

“American  
Cyanamid  
And I  
Want to  
Give You  
\$10,000.”

*A. Thomas Perkins, Ph.D.*

Business Manager

Professional Turf, Ornamental & Pest Control Products

# Introducing *new* PENDULUM And the PENDULUM

Pick the weed that PENDULUM Plus Fertilizer *doesn't* control, complete & mail the entry form, and you may win \$10,000!



LARGE CRABGRASS  
*Digitaria sanguinalis*



ANNUAL BLUEGRASS  
*Poa annua*



CHICKWEED  
*Stellaria media*



KNOTWEED  
*Polygonum aviculare*



GREEN FOXTAIL  
*Setaria viridis*



GIANT FOXTAIL  
*Setaria faberi*



SPURGE  
*Euphorbia* spp.



EVENING PRIMROSE  
*Oenothera biennis*



GOOSEGRASS  
*Eleusine indica*

**“Once in a great while, a product comes along that deserves not just a minor mention, but a major announcement. PENDULUM® Plus Fertilizer belongs in that category.”**

*A. Thomas Perkins, Ph.D.*

American Cyanamid is so excited about introducing new PENDULUM Plus Fertilizer, we're giving away \$10,000 in cash to the ultimate weed picker. PENDULUM brand Pendimethalin has earned a reputation for providing cost-effective, broad spectrum, season-long, preemergent control against many troublesome weeds. And now it's available on quality

fertilizers from American Cyanamid, the leading manufacturer of preemergent turf herbicides.

PENDULUM Plus Fertilizer controls all the troublesome weeds that PENDULUM alone does, including crabgrass, goosegrass, foxtail, oxalis and spurge. In fact, it controls every one of the weeds illustrated above *and more*. So the correct answer to our question is actually “none.” Remember *that* when you're filling out your entry form. It could win you \$10,000 in cash!

PENDULUM also offers greater flexibility than ever before, since it is also available in 60 WDG and 3.3 EC sprayable formulations. And now, like all Pendimethalin based products, it's more affordable, thanks to special cash rebates available to you through July 31, 1996.

# PENDULUM® Plus Fertilizer, M Plus Sweepstakes.



SOUTHERN CRABGRASS  
*Digitaria ciliaris*



HOP CLOVER  
*Trifolium procumbens*



BARNYARD GRASS  
*Echinochloa crus-galli*



CUDWEED  
*Gnaphalium purpureum*



FALL PANICUM  
*Panicum dichotomiflorum*



PURSLANE  
*Portulaca oleracea*



LAWN BURWEED  
*Soliva pterosperma*



HENBIT  
*Lamium amplexicaule*



OXALIS  
*Oxalis spp.*



Broad spectrum. Season-long control. Cost-effectiveness. Flexibility. And a chance to win \$10,000 in cash.

Looking for a preemergent herbicide that offers more? We don't think you'll find one.

**Sweepstakes Rules:** Offer available to professional product end-users only. Distributors or other individuals reselling product not eligible. No purchase necessary. Limit one entry per person. Complete the entire form. Incomplete information will nullify entry. All entries must be postmarked no later than March 10, 1996. Two winners will be selected, one each from the golf course and lawncare industries, from a random drawing to be held March 15, 1996. If prize is not claimed, additional random drawings will be conducted until all prizes are awarded. Estimated odds of winning are 10,000 to 1. The winners will be contacted by telephone and/or mail by an American Cyanamid Representative. All applicable taxes are the responsibility of the winners.

**CYANAMID**  
Agricultural Products Division  
Specialty Products Department  
Wayne, NJ 07470 © 1995

**PENDULUM**  
herbicide  
**Plus Fertilizer**

-----  
YES, I'D LIKE TO BE A \$10,000 WINNER.

NAME \_\_\_\_\_

TITLE/COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

ZIP \_\_\_\_\_ PHONE \_\_\_\_\_

Amount of preemergent herbicide purchased annually:

Preemergent + Fertilizer \_\_\_\_\_ lb Sprayable Preemergent \_\_\_\_\_ lb/gal

Brands of preemergent herbicides used in the past year: \_\_\_\_\_

Please send me additional information on PENDULUM Plus Fertilizer. Which of the weeds shown does PENDULUM Plus Fertilizer NOT Control? \_\_\_\_\_

Mail this form to: PENDULUM PLUS Sweepstakes, C/O M&B Associates, P.O. Box 8575, Trenton, NJ 08650-9871

PTO-953

# Living a dream

## Veteran superintendent James Baran helps shape a new public course in northern Ohio.

by Ron Hall  
Senior Editor

■ James Baran, CGCS, is living a golf course superintendent's dream even as he works about 12 hours each weekday and another eight hours each Saturday.

Baran's helping supervise the building of the Eagle Creek Golf Club in Norwalk (pop. 17,000) in north central Ohio. He does it with a grin because Eagle Creek will be his to maintain when it's opened to the public next June.

He doesn't mind putting in so much effort now. It will mean a better golf course, and fewer maintenance headaches in the years to come.

He realizes that often—too often—a superintendent is brought in after a new course has been built. Not at Eagle Creek, though.

"I've always been hired to handle problem golf courses and to solve someone else's problems. Now I get to start from scratch," he says, his gaunt face covered by an enormous smile.

It's mid-August and the shocks on his four-wheel-drive Chevy pickup (his "office on wheels") are shot. They've been insulted by too many ruts in the 220 acres that, Jim predicted, will be one of the best 18-hole public golf courses in Ohio.

"This course is going to have a variety of types of holes. It'll have open holes, holes along wetlands, and holes that play out of the woods," says Baran. "It will be a golf course where your wife can play off the front tees and enjoy it, and a real good golfer can play the back tees and get a different look and be challenged, too."

This particular afternoon, 12 workers, two full crews, from Golf Tech & Design, Omaha, Neb., lay wire and plastic irrigation pipe. They can work as fast as the property is shaped.

They're installing a computerized Toro LTC irrigation system with a double row of heads down each fairway, about 500 heads in all. Baran says he'll spend many winter hours programming the system. He's not



For easier mowing, Baran designed wider aprons between greens and bunkers and reduced the steepness of some slopes.



The fairway leading to hole No. 4 in mid-August, prior to seeding with Penneagle.

displeased with the thought.

Baran says Eagle Creek progresses at breakneck speed, at least when the weather cooperates.

That's partly because several of the project's partners—specifically Bob and Ken Bleile and Mark Schaffer—own and operate construction and excavating compa-

nies, respectively.

At one time, in fact, 13 dozers crawled over and pushed the property into distinctive features. They were joined by four track hoes, three rubber-tired front-end loaders and a host of dump and pan trucks.

The project is also progressing well because golf course architect Brian Huntley took advantage of the existing terrain. The property is mostly former farmland and woodlots. Three small creeks run through it.

The owners, Norwalk Golf Properties Inc., wanted to build the course in about six months; they're going to be close. By mid-August they were only six days off schedule in spite of weekly thunderstorms.

Baran anxiously counts the days until he can seed. Then comes 90 turf-growing days before the course is ready for play. He would like to get most of the growing days yet in 1995.

"I'm looking forward to the grow-in. The course will finally start to look good when everything starts to turn green," he

says.

Brillion seeders, in 10-foot swaths, will go in two directions to seed the fairways in Penneagle creeping bentgrass. Roughs get a mixture of Kentucky bluegrass, perennial rye and fine fescues. The fairways and roughs will need between 12,000 and

*continued on page 14G*



# ProStar®



Your key for  
locking out  
turf disease

You'll want to be among the first to use PROSTAR®, the remarkable new systemic fungicide from AgrEvo USA Company. Extensive tests by leading universities and golf course superintendents have shown that PROSTAR provides outstanding control of brown patch, yellow patch, and gray snow mold. It also stops southern blight, pink patch and red thread. In addition, PROSTAR has demonstrated its ability to suppress fairy ring for which no control agent currently exists. So now you can rely on the broad-spectrum activity and extended residual control of this outstanding new compound.

PROSTAR is in the benzamide class; it represents a whole new chemistry that makes it a perfect choice for use in resistance management programs, and it can also be tank-mixed with several other fungicides, including BANOL® or triazole compounds, for even wider disease protection.

PROSTAR can be used either for preventative or curative control and has shown excellent safety on all species of fine turf.

For more information on new PROSTAR, call or write AgrEvo USA Company.



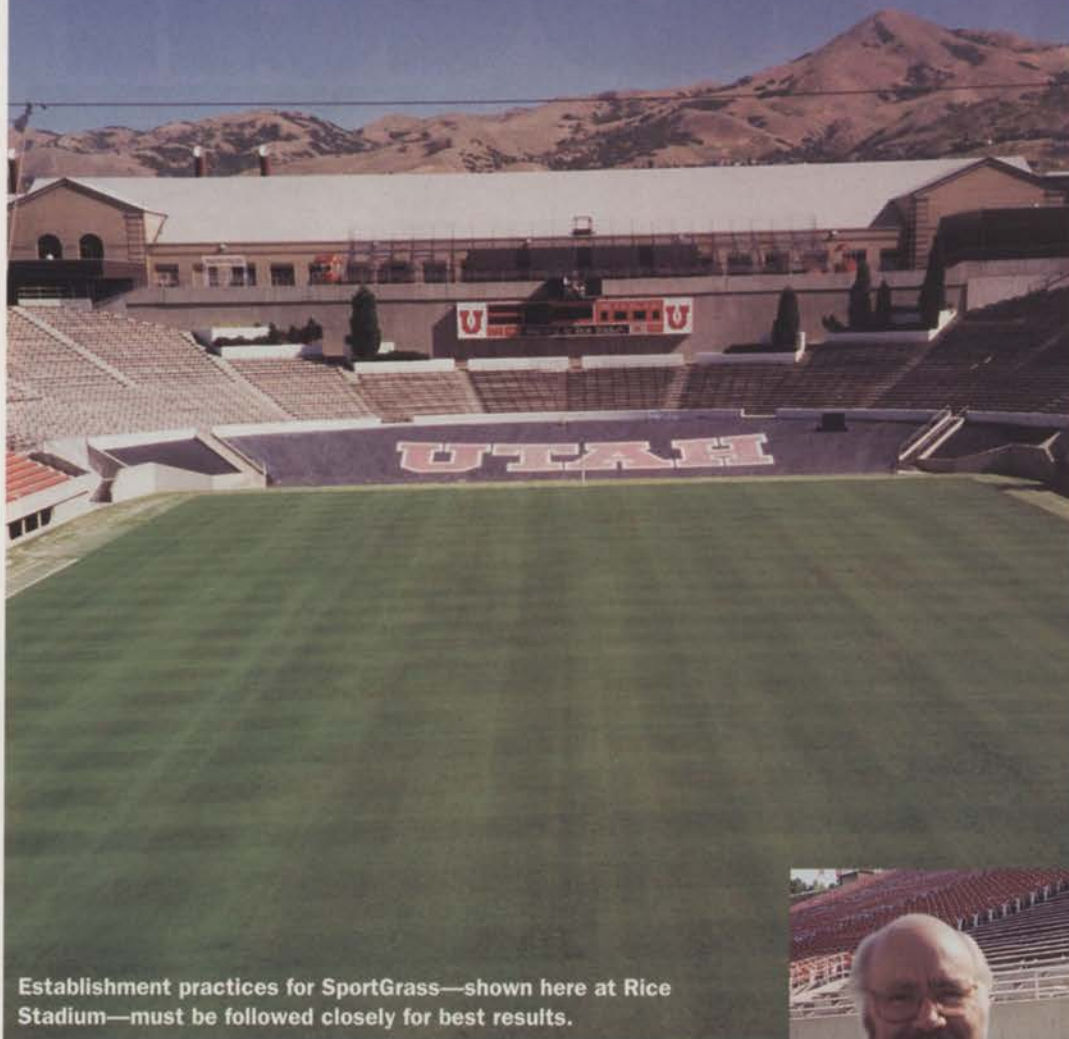
A company of Hoechst and NOR-AM

AgrEvo USA Company  
Little Falls Centre One, 2711 Centerville Road  
Wilmington, DE 19808

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

**PROSTAR...Your key for locking out turf disease. Turn it to your advantage.**

# Natural, synthetic turf joined for divot-free playing surface



Establishment practices for SportGrass—shown here at Rice Stadium—must be followed closely for best results.

**SportGrass is possibly the next step beyond total artificial or all natural turf fields. It gets a passing grade in Utah's Rice Stadium.**

by Terry McIver  
Managing Editor

Proponents from both the artificial and natural turf camps will be thrilled with the latest ally in athletic turf surfaces: SportGrass.

The invention of sport field expert Jerry

Bergevin, president of Turf Systems International, SportGrass consists of natural grass grown into a synthetic matting. Grass grows down through the synthetic backing and in-between fibrulated synthetic strands, which protect the crown and roots of the plant.

The result is a surface with the playability of natural grass and the wear resistance and durability characteristics of synthetic turf. The natural turf cushions the impact of sports activity, and the artificial turf and matting below act as an anchor to reduce—if not eliminate—divots.

SportGrass is available as sod, or it can

be established on site, as it was late this past summer at the University of Utah's Rice Stadium, the first major SportGrass installation in the U.S.

Brian Nelson, director of buildings and grounds at the university, says the field has held up "extremely well" after practices and two full games. A pregerminated ryegrass mix was used to fill in minimal wear areas—which the company says should be expected—but Nelson reports there were "no divots whatsoever."

SportGrass needs five to six weeks to establish, after which the grass has grown above the height of the plastic blades, and the roots have formed a mass of interconnecting fibers in the soil.

#### Synthetic secret—

The key to field stability seems to lie in the type of synthetic material used. SportGrass uses Desso DLW synthetic turf, manufactured by Desso DLW



Bergevin, left, and Eric Chapman, turf nutrition expert who consulted on Utah SportGrass project.

Sports Systems, Int., headquartered in Germany.

"SportGrass is basically the same material as a sand-filled synthetic turf. All we've done is modify the material," says Bergevin. The artificial turf is made out of polyethylene, which is softer than polypropylene or nylon, and has a more

grass-like feeling.

"The fiber is thicker," says Bergevin, "and I don't allow them to use the secondary latex backing because that makes it impervious (to air and water and gas exchange)."

"SportGrass is stabilized horizontally and vertically, which is very important," says Gundolf Becker, U.S. marketing manager for Desso DLW.

"SportGrass is stabilized horizontally



**UCLA's David Ashman: likes the 'instant playability' of SportGrass.**

by the backing," explains Becker, "to distribute the load. Vertically, it's stabilized by the fibers."

Bergevin says SportGrass fields are compatible with a Prescription Athletic Turf system or any other viable field construction, provided there is good drainage.

**Short growing season**—Bergevin realizes that playing on a newly established field is not always the best treatment for tender young seedlings.

"Generally," he admits, "you like to have a full growing season. But it will survive fine as long as they don't play on it too much. The second season it will be great."

In addition to regular watering, SportGrass control product applications can be made as with standard turf fields.

"We're still doing a lot of testing," says SportGrass Marketing Manager Donny Jones, who adds that he's had inquiries on how SportGrass can be used at golf driving ranges and in tee boxes. "It's working well in high traffic, walk-off areas" on test golf areas, says Jones.

"We're almost there for tees, but the main focus is ball fields."

## Natural grass the choice of the pros

■ Maybe now the proponents of artificial turf will listen.

A recent survey by the NFL Players Association of professional football players revealed something many turf managers already knew: players don't like artificial turf.

Survey results, released earlier this year, say 85 percent of the 965 players who answered prefer to play on natural grass. Seven percent preferred artificial turf and eight percent had no preference.

And come contract time, 70 percent said that the home field surface was either very important or somewhat important in selecting the teams they would consider signing with as free agents.

The three stadiums most preferred by the players: Tampa Stadium, Joe Robbie Stadium and Sun Devil Stadium in

Tempe, Ariz.

The three least preferred playing surfaces are found in Three Rivers Stadium in Pittsburgh, Philadelphia's Veterans Stadium, and Riverfront Stadium, Cincinnati, Ohio.

Other results of the survey:

- 93 percent of NFL players believe artificial turf is more likely to contribute to an injury than a natural grass field.

- 96 percent believe artificial turf causes more soreness.

- 91 percent believe artificial turf is more likely to shorten their careers.

- 90 percent believe artificial turf is more likely to worsen their quality of life after football.

- 54 percent identified an artificial turf injury they suffered that they believe would not have happened on grass.

**Sodded variety**—Three thousand square feet of SportGrass sod were recently installed at a UCLA practice field. Dave Ashman, facilities director, is most impressed with SportGrass's "instant playability."

"The sodded material gave us such an advantage because you didn't have to wait to get on it," says Ashman. "It gives the team a competitive advantage and gives them a safe environment. It may not be the final answer, but it's very close."

Bergevin cautions against thinking of SportGrass as a "perfect" natural turf, but he says it still is subject to the pests which plague normal turf, but without the problem of root-feeding insects.

"It's still 100 percent natural turf," reminds Bergevin, but he adds that he doubts pest problems will appear in the same degree of severity as they can on a field that does not have the artificial underbelly.

**Air conditioned**—An added feature of the Rice Stadium field is the SubAir cooling system. Developed by Augusta National superintendent Marsh Benson, SubAir picks up cooler air from the tunnels below the stands and blows it through the sub-surface drainage system to oxygenate and cool the turf.

Eric Chapman specializes in nutrient movement through sand-based profiles.

He's consulted with Bergevin during the Utah SportGrass establishment phase, and gives the field high marks.

"There would never be a need to aerify if you maintain an aggressive verticutting and thatch control program via nutrition, catching clippings and irrigation," says Chapman.

Verticutting is advised at the rate of four to six times a year.

"There may be some management changes in water use because the mat actually provides a barrier against evaporation," suggests Chapman. "It may be that this field uses less water in the long run because of that barrier to evaporation."

**Early fertility program**—Chapman explains that during establishment a granular fertilizer was used, one that contained a bit more soluble nitrogen rather than than a full-blown slow-release product.

"It's a young field," reminds Chapman, "and in sand-based situations, the microbial activity needed for breakdown of slow-release materials isn't there yet. So we're using more of quick-release fertilizer for now. They'll be able to use a blend of nitrogen that has more slow-release as the field ages."

Optimum playing height for SportGrass is one-and-a-half inches.

# A new twist to

*A new 18-hp diesel engine powers higher-capacity hydraulic pumps in the new 2653A to deliver 33 percent more torque to the reels.*

DIESEL



# a great story

## INTRODUCING THE NEW JOHN DEERE 2653A

It's a great story. One that includes hydraulic drive, all-wheel-power, exceptional stability, and high-torque reel motors. The 2653 has proven it can mow where others can't. Now, the 2653A builds on that same solid story with its new 18-hp diesel engine.

Truth is, a new engine is just the start of the 2653A story. Larger-capacity hydraulic pumps help deliver 33 percent more torque to the reels. You think the 2653 eats through lush grass? This one's an animal. Plus, the higher capacity system allows the 2653A to work with standard John Deere 26-inch cutting units now, as

well as the new 30-inch versions that will be available in late 1995.

Other 2653A improvements include larger automotive-type brakes, a more comfortable operator's station, unitized engine and transmission, and a one-piece hood for simple service access. The story just keeps getting better.

For the name of your nearest distributor, or free literature on all our golf and turf products, call 800/503-3373. Or write

John Deere, Dept.  
956, Moline, IL  
61265.



*The new 2653A is designed to accept both the standard John Deere 26-inch cutting units available now, as well as the new 30-inch versions coming later in 1995.*



NOTHING RUNS LIKE A DEERE®

# Your worst nightmare: 'no more water'

by Leslee Jaquette

■ Affected profoundly by a drought plaguing the Pacific Northwest, Washington state's top-rated golf course suffered at the hands of the El Niño weather pattern over the past two years.

Enduring a second hot summer in succession, Semiahmoo Golf and Country Club, located near the Canadian/U.S. border in Blaine, Wash., has had to pull the plug on watering. Beyond implementing a carefully orchestrated hand-watering campaign, Semiahmoo—rated three years in succession best course in Washington State and the 18th best resort course in the country by *Golf Digest*—has few major problems.

Superintendent Vance Much explains that last summer's drought was so severe that the City of Blaine turned the taps off for more than 30 days. The longest dry spell lasted 15 days, during which the city could spare no water for golf course maintenance.

While the Inn at Semiahmoo and its contiguous development own a three million gallon reservoir, the course still had to ration its allotment throughout the worst of the drought.

"We were forced to irrigate just the greens," says Much, who sighs when he recalls the over-abundant standing water during last February's rains. "We hand-

watered first the greens, then the tees and lastly the fairways."

While he admits to a certain level of

stress. Fortunately, he learned that while little rain may leave the course ravaged, the grass makes a sound comeback given



**Vance Much: 'A calendar doesn't dictate when we spray. We use slow-release fertilizers when our test sites indicate the need.'**

anxiety over the health of the ever-browning course, Much notes that he was in an even greater sweat the preceding summer. During his first year as superintendent, the drought of 1994 produced tremendous

the moderating temperatures and inevitable rains of fall. In the end, Semiahmoo lost little turf.

Dry conditions give the ball more roll, and—as Much observes—"thirsty grass



tries harder." Forced into dormancy early, the grass sent down some deep roots that have served well for survival again this year.

Still, "it's been a labor intensive situation but good because we only put water where its needed," says Much. "Spot watering forces us to be practical."

**Less is better**—When water isn't the issue, Much's golf course maintenance team of 20 focuses on the care of a basically healthy course. Few pests prowl the rolling fairways and roughs, though crews spot-treat for the European crane fly in January and February on two of the resort's 150 acres.

Disease is also minimal, so the staff does not apply preventive controls. Instead, they prefer to scout test greens daily. If fusarium shows up in the fall, they will spray in order to prevent it from flourishing in the cool, wet weather. However, if it gets spotted in dry weather during the spring, the maintenance crew pretty much ignores the fusarium, preferring to let the sun run its course.

The crew uses organic fertilizers on demand as opposed to a schedule. "A calendar doesn't dictate when we spray," says Much. "We use slow-release fertilizers when our test sites indicate the need." Even then, Semiahmoo's crew restricts itself to light, frequent applications on greens, using 1 lb. of nitrogen every two weeks, supplementing with organics to reduce leaching.

In keeping with the course's status as a member of the Audubon Society Cooperative Sanctuary Program, crews spray no closer than 10 feet from all waterways.

**Back to nature**—Probably the biggest success of the Arnold Palmer-designed course is its commitment to returning land to the wild. Several years ago—before the course was Audubon certified—it demanded wall-to-wall maintenance. It was a labor-intensive, manicured course. Since then, approximately 1/10th of the course's area has been returned to natural grasses, wildflowers and reforestation.

In addition to attracting increased wildlife, this change decreases maintenance in terms of mowing and watering. Following program guidelines, Much saves up to 40 percent in chemical costs because they only spray once in the spring.

"The wild areas lend maturity to the course," he adds. "In some areas it looks like its been here 100 years."

Much notes more deer wander the



**More than 300 native trees including western cedar, western hemlock, Douglas fir and assorted maples have been planted at Semiahmoo.**

course as well as increased numbers of bald eagle nest in course trees. Canada geese, great blue herons and skunks continue to maintain habitats in the wild sections of the course.

Over the past few years, the maintenance crew as well as landowners have put in about 50 birdhouses. Bats living in bat houses placed under the eaves of the pump station on hole No. 6 eat 3,000 mosquitos per hour, according to Much.

Interestingly, it wasn't the geese, skunks or bats that caused problems this spring. No...it was a lone mother redwing blackbird. Much says the female reportedly attacked several golfers when they approached her nest near the 18th green. "Someone said she even drew blood," reports Much.

Observing the birds' territoriality, Much called the Audubon Society for advice. Experts suggested the mother needed about a month to raise her young. Lo and behold, right on schedule, she desisted her aggression.

"We just sat it out and hoped no one got hurt," says Much with a smile.

More than 300 native trees including western cedar, western hemlock, Douglas fir and assorted maples have been planted to replace those removed for development and to augment the natural surroundings. These trees plus wildflowers and sequoias work well in this climatic area that receives 20 percent less rain than Seattle.

Despite the fact that Much's energies are focused around 70 percent administrative and 30 percent on the course, he inspects the course every day. In keeping

with his philosophy to be visible and involved, he mows occasionally, even on rainy days.

"I like to be out there working," reflects Much. "In fact, I'd love to be out there all the time!"

## THATCH MANAGEMENT!

### THATCH BUSTER

*Cellulose Decomposing Enzyme*

### PERVADE

*Superior, Biodegradable Penetrant*

### MAXIPLEX

*Non-fulvic humic soil amendment for improved microbial activity*

### FLORATINE

*Creative Solutions for Turfgrass Management*



179 So. Main/Collierville, TN 38017  
(901) 853-2898

**DREAM** from page 6G

14,000 lbs. of turf seed, he estimates.

Baran and his crew will seed tees and greens themselves with Providence bentgrass. They'll use walk-behind units. "We don't want the bentgrass seed to get into the roughs," says Baran.

Baran is a native of the Cleveland area. He spent five years as superintendent of Wooster Country Club, also in Ohio. He's worked 28 years on golf courses, and 18 years as a superintendent since graduating from Penn State University.

Baran joined Eagle Creek in March, just after the irrigation pond had been dug and land clearing began.

He'd been hired, at least in part, because course architect Huntley of Canton, Ohio, recommended that Norwalk Golf Properties hire an experienced superintendent prior to construction. The company, made up of 19 Norwalk-area investors, acted.

That was just one of several long-range adjustments that the owners made after starting the project.

"As the project proceeded, the owners made a decision that they didn't want just another public golf course. They wanted the best public golf course they could build," says Baran.

For instance, the owners had initially planned to save four holes of an existing nine-hole golf course on the property and add them to 14 new holes.

But Baran argued that the character of the new and old holes would be too dissimilar. Also, since the old greens were built on mounded native soil decades ago, Baran predicted never-ending maintenance problems.

Instead, he's building all 18 greens similarly, using about 5,700 tons of greens mix (85 percent sand and 15 percent peat).

Another positive change, said Baran, was allowing bentgrass, rather than Kentucky bluegrass, fairways. Baran said

he'll be able to mow the fairways at a half inch or less, and golfers will appreciate the difference.

Among the other inputs offered by Baran included widening the aprons between bunkers and greens to better accommodate mowers, and reducing the steepness of some slopes, again to facilitate mowing.

Baran credited the course owners, including director of golf Gary Wilkins, for their willingness to make tough financial decisions to build an exceptional public course. For 22 years, Wilkins served as both superintendent and golf professional at the original nine-hole course.

But maybe the toughest decision the owners made was to reduce the number of residential housing lots they would sell adjoining the course.

"I said we needed more room for the golf course," says Baran. "The golf course really is the number one priority at Eagle Creek."

It's no wonder Baran smiles so easily.

## Football field irrigation: Getting the right contractor



Irrigation system in operation at the Denver Broncos training facility.

Photo courtesy Hunter Industries.

by Dan Almond

■ Football fields are the workhorses of sports turf, subject to wear and tear by "really big," determined athletes, often during unfavorable weather conditions. The irrigation systems of these fields sim-

ply must be safe, efficient and durable.

The first step in an irrigation project is selecting an experienced contractor who understands that the main focus is athlete safety.

Ideally, you should be involved from the beginning. It's more efficient for the contractor to work through key points of

design, component selection, installation and maintenance with the person who will be controlling the system. At the end of the project, the contractor should supply you with a copy of the working design and the system design "as-built," showing exact placement of all components, includ-

*continued on page 16G*



# BANOL®

**Stops pythium dead in its tracks**



Whether BANOL® Fungicide is used as a preventive or curative treatment, the secret to its success lies in its ability to protect plants from within and to disrupt the normal growth of pythium. Although a powerful, systemic fungicide, BANOL has also proven to be safe for use on all kinds of turf.

AS A PREVENTIVE MEASURE on established turf, BANOL guards against the onslaught of pythium, even during periods of high temperature and humidity — conditions usually considered perfect for pythium. ON OVERSEEDED AREAS, BANOL can be safely applied after germination to control pythium damping-off.

AS A CURATIVE TREATMENT, the same BANOL can be applied at higher application rates to control this fast-moving disease. BANOL won't wash off and maintains a residual effect (protecting plant crowns, roots and tissues), yet BANOL shows no sign of resistance development over time.

Easy, flexible application by hand or power sprayers means turf managers can use BANOL in rotation or in tanks mixed with other systemic fungicides for resistance-management programs. BANOL needs no agitation after the initial mix, and watering-in after application is not required.

*It's Your Move...  
Make It With*

 **AgrEvo™**

A company of Hoechst and NOR-AM

AgrEvo USA Company  
Little Falls Centre One, 2711 Centerville Road  
Wilmington, DE 19808

**When it comes to stopping pythium, BANOL® Fungicide speaks for itself.**

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

**FOOTBALL** from page 14G

ing any alterations from the original design.

Certain factors must be known prior to design:

- the soil profile;
- the water source, quality and usable pressure;
- how turf will be established and restored;
- whether chemigation or fertigation capability is desired; and
- any constraints on water use.

If you have past experience with irrigation systems, your preferences also should be discussed up front.

Frequent, open communication is vital. Typically, an experienced irrigation contractor and an experienced sports turf manager will parallel each other in ideas. If you have concerns, the contractor should encourage you to visit another installation, or at least talk with another facility manager using a similar system.

**Heads**—The basic football field irrigation design uses a five rows running parallel to the length of the field. One row (or zone) is placed along each edge of the field, with three rows within the playing surface. Because so much of the game is played between the hash marks, this system configuration allows for individual zone control within that segment of the field.

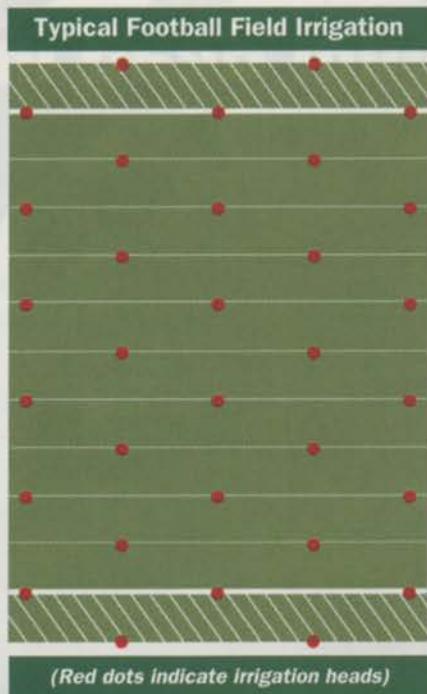
Individual heads are equally spaced along each row. The spacing is determined by the effective length of the watering stream (or throw) produced by each head. Generally, the effective throw of one head will reach to the head next to it (head-to-head coverage). By designing the layout with each head offset from the heads in the rows that parallel its row, a triangular pattern is created. In effect, each head then produces head-to-head coverage with four other heads. This layout should provide uniform watering, even during varying wind conditions.

The degree of flexibility required will help determine installation needs. For example, irrigation heads may be installed with triple swing joints, allowing movement from side to side and up and down.

Irrigation heads should be selected based upon their performance record under conditions matching those of the field—and above all—for their safety. The smaller the surface area (diameter) of the head, the better. In addition, rubber covers minimize injury potential.

The soil profile helps determine head selection. Sand-based fields require heads

that perform well in sand, with the ability to withstand the abrasion that will occur. Different types of heads will be needed for native-soil or amended-soil fields, again selected specifically for proven performance and durability within that soil texture and structure.



Head selection is also influenced by the water source, pressure and quality. Each head requires a specific level of water pressure (such as 50 pounds per square inch or psi) to produce the desired throw. The designer will need to know where the water supply will enter the facility and whether there is a master water line from which water will be channeled to the field (generally through a two- to three-inch pipe), or if there is a separate, dedicated water line for the field. If water is fed to the field from a master line, other demands on the water which could affect the static water pressure and available gallonage must be determined.

Heads should be placed with the rubber cover even with the soil surface of the field, allowing for a "pop up" capacity of at least four inches to rise far enough above the turf surface for efficient coverage. On new, seeded fields, it is recommended that each irrigation head be surrounded by a 24- to 36-inch "donut" of erosion control fabric or sod to prevent erosion around the head until the seed is established.

**Other components**—All of the valving for each irrigation zone is then located off the playing surface in an enclosed plastic

box. There may be one basic valve box, or a valve box for each zone. Generally, the valve box or boxes are placed off the back of the end zone; in a stadium, between the end-zone and the facility wall.

Valve boxes may be buried two to three inches below the soil surface and covered with sod, or placed level with the soil surface and covered with artificial turf. This allows access to the valves within the boxes, yet helps the boxes "blend" with the surrounding turf and creates a safe, protected surface.

Typically, quick coupling devices also will be provided, especially in cold climates where they are used to blow out (or winterize) the system. Some systems will include rain shut-off devices to interrupt pre-programmed irrigation cycles in response to natural rainfall.

The clock and other "weather critical" control features will be housed in a protected box or building. The type and design of these components will vary with the complexity of the system and the preferences of the system operator.

Water quality also is important. A city water source with a high alkaline level may produce residue build up that could hamper system operation. With a non-potable water source, irrigation valves may require internal "scrubbing" components to remove contaminants that could clog heads and nozzles.

The heads, nozzles and irrigation clock must be capable of meeting requirements.

If the system will be used to inject fertilizer or other chemicals, the valves selected must resist corrosion and the clock must provide sufficient control capabilities.

Though budget limitations are considered in system design, it's important to use the best materials for the project. The initial cost differences will be recouped many times over by increased efficiency and lower maintenance.

Expect the irrigation contractor to provide a one year warranty on materials and the system. Individual components may carry a longer, manufacturer's warranty. The contractor also should help facility personnel establish a connection with a local distributor source, when possible. Finally, keep communicating. If problems arise, find out why and reach a workable solution.

—Dan Almond is a landscape architect for Randall & Blake, Inc. (RBI), a multi-discipline design-build company with branches in Littleton, Colo.

## Too much salt for your grass?

by John Schmitz

■ More and more golf courses and other public recreation sites today are facing a serious health problem: too much salt in their diets, most of it coming from treated wastewater used for irrigation.

One prescription for the dilemma is to use salt-tolerant grasses. Another is over-irrigation, which some say flushes the offending salts away from the turf and root-zones.

A number of grass seed companies are researching salt-tolerant grasses. One of the first to address the dilemma is International Seeds, Tangent, Ore. What prompted the research, says senior seed research scientist Steve Johnson, were complaints from golf course superintendents.

Non-tolerant grass shrivels up and dies when exposed to salty water, says Johnson. Groundsmen and landscape managers can't mistake it for disease because the discoloration doesn't occur in patches, he notes.

In the summer of 1993, ISI began a program to identify grasses that can withstand the devastating effects of inorganic salt-laden effluent from such sources as municipal sewage treatment plants and local factories. To date, ISI has analyzed some 20 cultivars for their capacity to grow in salty environments. So far, the variety showing the most promise is a slender creeping red fescue marketed as Marker by ISI.

Ancestors to the variety actually came from grass growing on and around Dutch dikes, which thrive in salty, ocean air. The variety is also used extensively for roadsides in the Midwest, where a lot of salt is used during the winter.

Dr. Eric Nelson, director of turfgrass research and product development at Medalist America in Albany, Ore., says that



International Seed's Steve Johnson with some of the grasses ISI's looking at for their salt tolerance properties. These particular grass varieties are being considered for grass tolerance analysis, even though they're growing under normal conditions rather than being subjected to salty water.

the use of effluent on golf courses and other public reaction spots is definitely a trend.

"You'll see more recycling of water as treatment processes become better."

Nelson says that one benefit of using treated wastewater on turfgrass is that the plants are able to use the nitrogen and phosphorus, whereas the dumping of that same treated water in streams or oceans is harmful to fish and humans, as well as being against the law.

Different species of grass react differently to high salt concentrations, says Nelson. Some simply exclude salt from being taken up by plant roots while others can either exude it after being taken in or store it away from plant cells. Those plants having low tolerances for salt will become stressed and unable to take up water efficiently and even-

tually die.

Medalist America's Fults, an alkaligrass developed by Colorado State University, is being used successfully in mixtures for roadsides which are subjected to salt during and following snow storms. The variety was also used to seed a golf course in Chicago with a heavy amount of imported sewage sludge in its topsoil.

Nelson says that Fults will actually "fade" and become "non-competitive" without a certain amount of salt pressure. The variety grows best in slightly basic soil with a pH of around 8.0, he says.

Dr. Leah Brilman, research director for Seed Research of Oregon in Corvallis, says that extensive studies done at the University of Arizona show that "the turfgrass commu-

*continued on page 20*

### ELSEWHERE

**Finding 'quality' water  
for your grass and plants,  
page 21**

**Soil: the source  
of turfgrass life,  
page 23**

STOP BY THE GMC TRUCK BOOTH #1416 AT THE GREEN INDUSTRY EXPO NOV. 13-16, 1995,  
AND AT BOOTH #800 AT THE TREE CARE INDUSTRY SHOW NOV. 16-18, 1995.



# "GREEN IS MY FA

A combination of power, payload capacity and operating efficiency is the key in landscaping or any other business. And it's GMC TopKick's custom fit that turns your hard work into profit.

#### **BUILD YOUR OWN TOPKICK.**

Underneath, GMC TopKick offers you a choice of suspensions. For delicate greenery there's a 19,000 lb rear air system available. For fragile cargo, there are lightweight parabolic tapered-leaf springs. For loads that shift or sit up high, conventional multileaf springs are



THE AVAILABLE CAT® 3116 DIESEL  
WILL DELIVER FROM 170 TO 275 HP.

the call. TopKick's frame is a C-channel, Class 8 design. Strong stuff. For a lower deck height, TopKick's available LoPro model gets down to business. Inside, TopKick offers firm seat cushions and lumbar support, folding seatback and refreshing power ventilation.

#### **WHATEVER THE JOB, YOU CAN PULL IT OFF.**

In any configuration, unleashing the power underneath TopKick's hood is a moving experience. Choose from a 6.0L or 7.0L gas engine or the incredible CAT® 3116 diesel, with a power range from 170 up to 275 horsepower. To get the show rolling, TopKick offers a range of manual and automatic transmissions.

Steve "Bogie" Bogaards, President Preferred Maintenance, Inc. Miami, FL



# FAVORITE COLOR!"

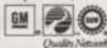
All in all, there's more than enough power-train to move TopKick's range of GVWR's - 18,000 to 61,000 lbs.

**WORK GETS DONE. MONEY GETS MADE.**

The bottom line is that GMC TopKick offers you the kind of dependability and advanced engineering that keeps your crew moving. The list goes on, just like a GMC TopKick. And so does the limited warranty\* which includes two years/unlimited mileage basic coverage. For more information see your GMC Truck dealer, or for a GMC TopKick catalog call 1-800-GMC-TRUCK (1-800-462-8782).

\*See your GMC TopKick dealer for terms and conditions of this limited warranty.

©1995 GM Corp. All rights reserved. GM, GMC, GMC Truck, TopKick, LoPro and the GMC Truck logo are registered trademarks of General Motors Corporation. Buckle Up, America!



TOPKICK IS SERVICED AND SUPPORTED BY A NETWORK OF OVER 900 GM MEDIUM DUTY DEALERS.



**TOPKICK**  
THE STRENGTH OF EXPERIENCE

**SALT** from page 17

nity" can actually clean effluent water, "so by the time it goes through the turfgrass and works its way down to the aquifer it's pretty much cleaned up of all the things that people don't like. Turf is a great cleaning mechanism for water."

Although effluent can provide beneficial nutrients to grass plants, you must keep regular tabs on the amount of nitrogen being supplied, says Brilman. "You have to be careful you don't over-fertilize because you're essentially fertilizing with nitrogen and phosphorus every time you water."

Brilman says that salty effluent can become even more of a problem and adds more stress to plants as the water evaporates off and leaves behind a salt crust. The cure for this, especially in well-drained soils, is a healthy irrigation program that tends to keep the rootzone flushed.

In many grass species, the relationship between salt tolerance and drought tolerance is similar, says Brilman. "What you have is the water wanting to leave the plant instead of come into it. So, very often if you can identify a plant or group of plants with good drought tolerance, such as the alkligrasses and some of the fine and tall fescues, often they will have pretty good salt tolerances."

"We have some things that show good salt tolerance but I won't say that's what we were breeding for," says Brilman. "When we were looking for drought tolerance, we got salt tolerance with it."

Seed Research of Oregon is trying to identify good salt tolerators. It's screening germplasm from species that grow in salty environments, such as near seashores. Also being looked at are "new" species of grasses, which Brilman explained as being other species of grasses that potentially could have good salt tolerance but haven't been looked at for their turf potential. "Any new varieties that look promising may be crossed with existing varieties having other characteristics we want," she says.

For the past five years, Cactus Seed Co. in Arizona has been working with a promising salt-tolerant grass for use on the fringes of turfgrass areas. "It's very, very salt tolerant," says vice president and general manager Ernie Milner of a grass he calls "Salt Grass." Samples of the grass were brought to Milner by two Tucson seed breeders who specialize in developing salt-tolerant grain and vegetable seed for use in places like Saudi Arabia. Milner has been able to identify the male and female grass plants and

## Irrigation systems fight sodium build-up

■ Landscape managers make informed purchasing decisions when they understand irrigation options and how they relate to a system's primary role. One of the effects of proper watering is a reduction in sodium build-up in the soil.

**Soil composition**—"The primary purpose of an irrigation system is to maintain the viability of your plant material," says Bud Knowles, president of Wolf Creek, a Rain Bird distributor in Dayton, Ohio.

For a healthy turf—and satisfied customers—sufficient water must reach the roots of the grass. That is, it must infiltrate the soil well. The irrigation system regulates infiltration by controlling salinity and bicarbonate levels as well as the Sodium Absorption Ratio, or SAR.

"An important factor is being in tune with what the plant and soil requirements are," says Bruce Funnell, specification manager at Wolf Creek.

• **Salinity.** Salts slow infiltration and keep water from plant roots. If water is applied too conservatively, it will aggravate the problem. When this happens, even less water penetrates the salt barrier. With less water flushing out excess salts, salinity will increase. Plants won't get enough water, and turf will die.

"All salts cause an imbalance in the water in the membrane of the plant cells," says Gil Landry, extension turf-

grass specialist at the University of Georgia. "Then the plant can't take up sufficient water."

The most common solution is leaching. That is, applying sufficient water each irrigation—being careful not to over water—so that enough nutrients reach all plant roots.

• **Sodium Absorption Ratio.** Sodium causes a problem when more than 160 mg/l is in the water, or if the SAR of the water is greater than six. The common result is plant stress.

"Many people use a non-ionic material like gypsum, which is calcium sulfate," Landry says. "The calcium displaces the sodium on the exchange complex, and the sodium can then be leached out as sodium sulfate."

• **Bicarbonates.** "Bicarbonates can cause calcium and magnesium to precipitate," Landry explains. "That brings about an increase in sodium."

High bicarbonates initially cause pooling. If this occurs, and soil extracts have high electrical conductivity, further testing should determine if bicarbonates are the problem.

The ultimate effect on the turf is the death of the plant. One solution, Landry says, is to apply enough fresh water to leach the nutrients below the root zone.

—James Holter

cross them to produce seed.

Salt Grass, which can be irrigated with ocean water, could be released next year, says Milner. It's presently being "bumped" in a small production field about 45 miles east of Yuma.

Milner says the grass, which is a bunch type that grows upright and spreads by sending out rhizomes two or three feet underground, is able to use the beneficial components of salty water while depositing the salt itself on the leaves. "It would make a good reclamation grass or contrast grass and requires very little maintenance. It only grows 18 inches high."

Plant breeder Crystal Rose Fricker of Turf Seed, Inc. in Hubbard, Ore. says that even effluent with low salt concentrations can become a problem over time. "It may seem okay in the beginning," she says, "but

as you water, the salinity builds up in the soil over time, so it gets hotter and hotter and hotter, starts burning the grass."

This burning action actually attacks the grass in two places: above ground where the freshly mowed tips of the plant are exposed to the salt, and below ground where the roots can't take in needed water because of the presence of salt.

Managing effluent use should be guided pretty much by both the level of salt in irrigation water and the type of soil, particularly drainage characteristics, says Fricker.

Seabreeze, a slender creeping fescue, and Dawson are the most salt tolerant of all cool-season grasses tested by Turf Seed, says Fricker. This September, Tee-2-Green will be releasing Seaside II, a Penn State-developed creeping bentgrass ideal for fairways, she adds.

# 'Quality' water for your plants

by W. Lee Berndt, Ph.D.

Water quality is vital to turf and landscape plants. Four aspects of water govern its quality:

- 1) the level of dissolved salts;
- 2) the level of sodium ion relative to other cations;
- 3) the level of bicarbonate ion relative to cations; and
- 4) the level of potentially toxic ions like boron.

Lab testing is needed to judge the quality of a water. A better grasp of the lab terms will give more meaning to the test results.

**Salinity and Soluble Salts.** Some waters have high levels of dissolved salts. Irrigating with these waters adds salts to the soil. As the salts accumulate, they cause plant stress. For example, salt build-up in soil causes the water in plant cells to flow back into the soil. This is called crenation. It causes the plants to wilt when

soil water is adequate. As a result, the plant's energy is diverted away from the normal growth process.

## Irrigating with water that is high in sodium may destroy the soil's structure.

The EC (electrical conductivity) of a water is measured to find the level of dissolved salt. The EC of a water varies directly with the salt content. EC is measured in units termed micromhos per centimeter ( $\mu\text{mhos cm}^{-1}$ ). Water with an EC of less than  $750 \mu\text{mhos cm}^{-1}$  is the most suitable for irrigating turf and landscape plants (see Table 1).

**Leaching to Control Salts.** Leaching a soil with water will help to prevent the build up of salts. Without leaching, the salts gather in direct proportion to the EC of the water. The LR (leaching requirement) is given by the formula:  $LR = EC_{iw} \div EC_{dw}$  where  $EC_{iw}$  is the EC of the irrigation water and  $EC_{dw}$  is the EC of the drainage water percolating from the bottom of the rootzone. In effect,  $EC_{dw}$  is the maximum level of salt the plant of interest can tolerate (see Tables 2 and 3).

*continued on page 22*

**Table 1.** Classification of irrigation water based on the level of soluble salts (EC), and the ratio of sodium to calcium plus magnesium (SAR). EC is measured in units called micromhos per centimeter ( $\mu\text{mhos cm}^{-1}$ )\*.

Class of Water	Designation	EC ( $\mu\text{mhos cm}^{-1}$ )	SAR
C1	Low Salinity	< 250	---
C2	Medium Salinity	251-750	---
C3	High Salinity	751-2,250	---
C4	Very High Salinity	> 2,251	---
S1	Low Sodium	---	< 10
S2	Medium Sodium	---	10.1 - 18
S3	High Sodium	---	18.1 - 26
S4	Very High Sodium	---	> 26

\* Many labs give the value of EC in millimhos per centimeter ( $\text{mmhos cm}^{-1}$ ), in desci-siemans per meter ( $\text{dS m}^{-1}$ ), or in siemens per meter ( $\text{S m}^{-1}$ ).  $750 \mu\text{mhos cm}^{-1} = 0.750 \text{ mmhos cm}^{-1} = 0.750 \text{ dS m}^{-1} = 0.075 \text{ S m}^{-1}$ .

**Table 2.** Approximate salt tolerance of select grasses and landscape plants.

2,000 $\mu\text{mhos cm}^{-1}$	3,000 $\mu\text{mhos cm}^{-1}$	4,000 $\mu\text{mhos cm}^{-1}$	6,000 $\mu\text{mhos cm}^{-1}$	8,000 $\mu\text{mhos cm}^{-1}$	> 8,000 $\mu\text{mhos cm}^{-1}$
Star Jasmine	Pineapple Guava	Kentucky Bluegrass	Glossy Privet	Tall Fescue	Creeping Bentgrass
Oregon Grape	Chinese Holly	Colonial Bentgrass	Yellow Sage	Perennial Ryegrass	Bermudagrass
Photinia	Rose, cv. Grenoble	Red Fescue	Orchid Tree	Chewings Fescue	Zoysiagrass
Pyreneas Cotoneaster	Glossy Abelia	Annual Bluegrass	Southern Magnolia	Blue Gramma	St. Augustinegrass
	Southern Yew	Centipedegrass	Japanese Boxwood	Orchardgrass	Western Wheatgrass
	Tulip Tree	Meadow Fescue	Indian Hawthorne	Smooth Brome	Tall Wheatgrass
		Heavenly Bamboo	Spreading Juniper	Weeping Bottlebrush	Alkaligrass**
		Laurustinus	Thorny Elaeagnus	Oleander	Seashore Paspalum**
		Algerian Ivy	Pyracantha	European Fan Palm	Natal Plum
		Chinese Hibiscus	Cherry Plum	Blue Dracaena	Evergreen Pear
		Strawberry Tree	Japanese Black Pine	Spindle Tree	Bougainvillea
		Crape Myrtle	Oriental Arborvitae	Rosemary	Stone Pine
			Xylosma	Aleppo Pine	Ceniza
				Sweet Gum	Brush Cherry
					White Iceplant*

\* > 10,000  $\mu\text{mhos cm}^{-1}$

\*\* > 16,000  $\mu\text{mhos cm}^{-1}$

**Table 3. Leaching requirement (LR) as related to the electrical conductivity (EC) of irrigation water and plant salt tolerance.**

EC of Irrigation Water ( $\mu\text{mhos cm}^{-1}$ )	Maximum Plant Salt Tolerance		
	4,000 $\mu\text{mhos cm}^{-1}$	8,000 $\mu\text{mhos cm}^{-1}$	12,000 $\mu\text{mhos cm}^{-1}$
100	2.5	1.2	0.8
250	6.2	3.1	2.1
750	18.8	9.4	6.2
2,250	56.2	28.1	18.8
5,000	---	62.5	41.7

*Example:* Assume the plant has a maximum salt tolerance of 4,000  $\mu\text{mhos cm}^{-1}$ , and assume that the EC of the water utilized for irrigation is measured at 2,250  $\mu\text{mhos cm}^{-1}$ . An extra 56.2% more water would need to be applied with each irrigation to continuously leach salts from the rootzone.  $LR = EC_{iw} \div EC_{dw}$  where  $EC_{iw}$  = EC of the irrigation water to be applied, and  $EC_{dw}$  is basically the salt tolerance of the plant of interest.

**Table 4. Background information on ions with regard to the quality of irrigation water for turfgrasses.**

Ion	Name	mg meq <sup>-1</sup>	meq mg <sup>-1</sup>	Acceptable Level for Irrigation Water
Na <sup>+</sup>	sodium	22.98	0.0435	SAR of 9-10 or less; SAR <sub>adj</sub> of 3-6 or less; less than 70 ppm or 3 meq L <sup>-1</sup>
K <sup>+</sup>	potassium	39.10	0.0256	
Mg <sup>2+</sup>	magnesium	12.16	0.0823	
Ca <sup>2+</sup>	calcium	20.04	0.0499	
Ni <sup>2+</sup>	nickel	29.35	0.0340	less than 0.5 ppm or 0.02 meq L <sup>-1</sup>
Cu <sup>2+</sup>	copper	31.77	0.0318	less than 2 ppm or 0.06 meq L <sup>-1</sup>
Zn <sup>2+</sup>	zinc	32.69	0.0306	less than 5 ppm or 0.15 meq L <sup>-1</sup>
Cd <sup>2+</sup>	cadmium	56.20	0.0178	less than 0.005 ppm or 9.0 x 10 <sup>-5</sup> meq L <sup>-1</sup>
B <sup>3+</sup>	boron	3.60	0.2778	less than 1-2 ppm or 0.2-0.6 meq L <sup>-1</sup>
Cl <sup>-</sup>	chloride	35.45	0.0282	less than 250 ppm or 7 meq L <sup>-1</sup>
HCO <sub>3</sub> <sup>-</sup>	bicarbonate	61.02	0.0164	RSC of less than 1.25; less than 120-180 ppm or 2-3 meq L <sup>-1</sup>
NO <sub>3</sub> <sup>-</sup>	nitrate	62.00	0.0161	
CO <sub>3</sub> <sup>2-</sup>	carbonate	30.01	0.0333	
SO <sub>4</sub> <sup>2-</sup>	sulfate	48.03	0.0208	less than 250 ppm or 5.2 meq L <sup>-1</sup>
PO <sub>4</sub> <sup>3-</sup>	phosphate	31.66	0.0316	

**ppm** = parts per million = milligrams substance per liter of water (mg L<sup>-1</sup>)

**meq** = number of milliequivalents of a substance

**meq L<sup>-1</sup>** = number of milliequivalents of substance per liter of water

**meq mg<sup>-1</sup>** = number of milliequivalents of substance per milligram of substance

**mg meq<sup>-1</sup>** = number of milligrams substance per milliequivalent of substance

**(ppm)(meq mg<sup>-1</sup>) = meq L<sup>-1</sup>**

(example: 70 ppm sodium x 0.0435 meq mg<sup>-1</sup> = 3 meq L<sup>-1</sup>)

**WATER** from page 21

**Sodium Ion and the Sodium Hazard.** Irrigating with water high in sodium (Na<sup>+</sup>) may destroy the soil's structure. As the Na<sup>+</sup> is added to the soil, it adsorbs to the exchange sites.

If Na<sup>+</sup> becomes the dominant cation on the exchange sites, the soil particles tend

**Ions in a water can affect plants—even be toxic to them.**

to repel each other. This is termed dispersion. When a dispersed soil is dried it forms a hard crust. Dispersion hinders the drainage that is vital to plant growth.

The levels of Na<sup>+</sup> and other ions in a water are measured in a variety of ways. The levels are given in units called meq L<sup>-1</sup> (milliequivalents per liter) or in units called ppm (parts per million) (see Table 4). Once the levels of Na<sup>+</sup>, calcium (Ca<sup>2+</sup>), and magnesium (Mg<sup>2+</sup>) are known an SAR (sodium adsorption ratio) can be calculated for a water:

$$SAR = \frac{Na^{2+}}{\sqrt{(Ca^{2+} + Mg^{2+}) \div 2}}$$

The SAR is a term that expresses the relative Na<sup>+</sup> hazard of a water. It is a ratio of the level of Na<sup>+</sup> to the levels of the other major cations. Water that has an SAR value of less than 9-10 is the most suitable for irrigating turf and landscape plants (see Table 1). SAR values greater than 9-10 imply that Na<sup>+</sup> levels are excessive.

**Bicarbonate Hazard.** Irrigating with a water that has a high level of bicarbonate (HCO<sub>3</sub><sup>-</sup>) may also destroy the structure of the soil. When HCO<sub>3</sub><sup>-</sup> is present in a water it can react with the Ca<sup>2+</sup> and Mg<sup>2+</sup> to form carbonate salts. This reaction increases the proportion of Na<sup>+</sup>.

The bicarbonate hazard of a water is given by the term RSC (residual sodium carbonate). Once the levels of HCO<sub>3</sub><sup>-</sup> and CO<sub>3</sub><sup>2-</sup> are known the RSC can be calculated:  $RSC = (HCO_3^- + CO_3^{2-}) - (Ca^{2+} + Mg^{2+})$

A water with an RSC of less than 1.25 is safe. A water with an RSC of greater than 2.5 has a high HCO<sub>3</sub><sup>-</sup> hazard. An adjusted value of SAR will also reflect the HCO<sub>3</sub><sup>-</sup> hazard of a water:  $SAR_{adj} + SAR [1 + (8.4 - pH)]$  where pH is a calculated value (see Table 5). Water with an SAR<sub>adj</sub> of less than 6 is safe while water with a value greater than 9 may pose severe prob-



lems regarding  $\text{HCO}_3^-$ .

**Toxic Elements.** Certain ions that are present in a water can be directly toxic to plants. Ions in a water that may be toxic to plants include  $\text{Na}^+$ ,  $\text{Cl}^-$  (chloride), and  $\text{B}^{3+}$  (boron). Boron is needed for normal growth in very small quantities. Injury can occur to plants if that level is exceeded. Boron can injure lemon trees and American elms when levels in soil water are 0.5 ppm (see Table 6).

**Summary.** Ions that are in a water will affect the health and vigor of landscape plants. High levels of dissolved salts cause plant stress while high levels of  $\text{Na}^+$  and  $\text{HCO}_3^-$  affect soil structure. Other ions like  $\text{B}^{3+}$  can be directly toxic to plants. Routinely test a water that is used to care for plants. The results of water testing can make a difference in your plant care practices.

**Table 5. Data necessary to calculate pHc and  $\text{SAR}_{\text{adj}}$ .**

Total meq $\text{L}^{-1}$	$\text{pK}_2 - \text{pK}_C$	$\text{pCa}^{2+}$	$\text{pHCO}_3^-$
0.1	---	4.30	4.00
0.5	2.11	3.60	3.30
1	2.13	3.30	3.00
2	2.16	3.00	2.70
4	2.20	2.70	2.40
6	2.23	2.52	2.22
8	2.25	2.40	2.10
10	2.27	2.30	2.00
15	2.32	2.12	1.82
20	2.35	2.00	1.70
25	2.38	1.90	1.60
30	2.40	1.82	1.52
35	2.42	1.76	1.46
40	2.44	1.70	1.40
50	2.47	1.60	1.30

**Sample calculation:** assume water contains 2.0 meq  $\text{Ca}^{2+}$  per liter, 1.0 meq  $\text{Mg}^{2+}$  per liter, 3.0 meq  $\text{Na}^+$  per liter, and 5.0 meq  $\text{HCO}_3^-$  per liter. The total cation concentration is 6 meq per liter. Therefore,  $\text{pK}_2 - \text{pK}_C = 2.23$ . The value of  $\text{pCa}^{2+}$  at 2 meq per liter equals 3.00 and the value of  $\text{pHCO}_3^-$  at 5.0 meq per liter equals 2.31. The pHc is the sum of these values, or 7.54. The  $\text{SAR} = 2.45$ . The  $\text{SAR}_{\text{adj}} = 2.45[1 + (8.4 - \text{pHc})] = 4.56$ .

**Table 6. Approximate boron tolerance limits of select grasses and landscape plants.**

Sensitive < 0.5 ppm	Sensitive 0.5-1.0 ppm	Semi-sensitive 1.0-2.0 ppm	Semi-tolerant 2.0-4.0 ppm
Oregon Grape	Persimmon	Gladiolus	Bottlebrush
Photinia	Grapefruit	Olive	Date Palm
Xylosma	Avacado	Sweetpea	Carnation
Thorny Elaeagnus	Cherry	Blue Dracaena	California Poppy
Laurustinus	English Walnut	Sunflower	Japanese Boxwood
Wax-leaf Privet	Apple	Marigold	Oleander
Pineapple Guava	Zinnia	Poinsettia	Chinese Hibiscus
Spindle Tree	Pansy	China Aster	Sweetpea
Chinese Holly	Violet	Gardenia	Kentucky Bluegrass
Juniper	Larkspur	Southern Yew	
American Elm	Glossy Abelia	Brush Cherry	<b>Tolerant</b>
Yellow Sage	Geranium	Ceniza	<b>4.0-8.0 ppm</b>
Lemon	Rosemary	Blue Dracaena	Indian Hawthorne
Blackberry	Orange		Natal Plum
			Oxalis
			Purple Vetch

## SOIL: the source of turf life

**The savvy landscape manager knows soil is a medium to support ornamental plant life, a vital component of the ecosystem.**

by John Fech, Ph.D.,  
University of Nebraska

■ To some, it's nothing more than "dirt" that sticks to their shoes when wet. Others think of soil as something to be swept away and discarded or covered. An engineer may view soil as something to be moved during a construction project.

Good, healthy soil is a dynamic living system with many biological, chemical and physical properties. In landscape soils, one of the most important properties that affects plant growth and vigor is aeration.

Aeration is a measure of the rate at which oxygen is able to move through the soil to the plant roots.

Oxygen movement depends on the soil water content. A well aerated soil is composed of about 50 percent solids, 25 percent water and 25 percent air spaces or voids (Fig. 1). Soils which have less than 25 percent air spaces are considered compacted and limit root growth to some degree.

Compaction can be caused by foot and vehicle traffic, soil texture and maintenance procedures conducted on the site such as irrigation, fertilization and mowing. Heavily trafficked areas are subject to compaction, and the turfgrass growing in compacted sites usually becomes thin and non-vigorous (Fig. 2).

Soils most likely to be compacted are those with a heavy clay content. The percentage of clay, sand and silt in a given soil combine to form the soil's texture. A soil testing laboratory can make the most accurate assessment of a soil's texture. Once the percentage of each component is calculated, soil texture is determined by using a textural triangle (Fig. 3). The

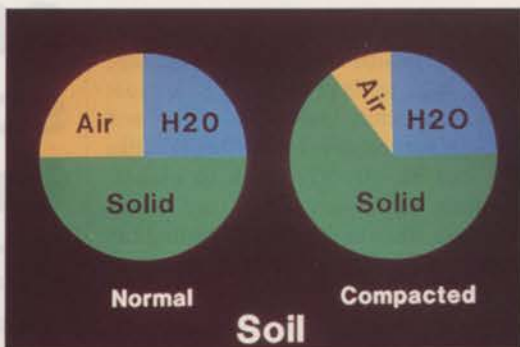
*continued on page 24*

**SOIL** from page 23

three sides of the triangle represent increasing or decreasing percentages of sand, silt and clay. By drawing lines through the known percentages, a soil texture classification can be made. A loam is an ideal combination of the three.

**Water retention**—Each component (sand, silt and clay) varies in its capacity to retain nutrients and water. Clay has the greatest retention capacity.

Sands tend to drain quite readily, and silty soils range from



**Fig. 1**—A well aerated soil is composed of about 50 percent solids, 25 percent water and 25 percent air spaces or voids.



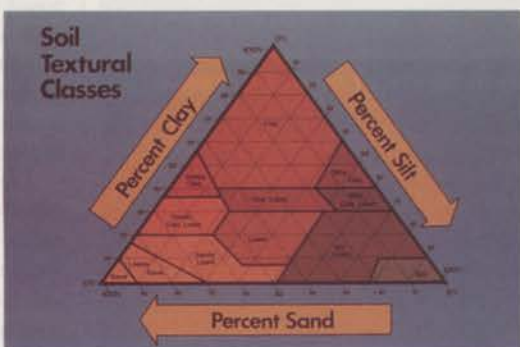
**Fig. 2**—For a very small fee, soil labs will test your soil and tell you its components so you can make fertility determinations.

intermediate to slow draining.

Soil drainage and water/nutrient retention is a function of particle size and surface area. Clays and loams have much greater surface area than sands. In fact, the surface area increases 1000 times per unit weight as the particles decrease in size from very coarse sand to clay.

The effect of decreasing particle size can be related to a deck of playing cards, which has a small amount of surface area exposed. However, when the deck is subdivided into each card, surface area increases greatly. Chemical and physical reactions in the soil relating to nutrient and water holding capacity and availability occur at the particle surface. Therefore, the greater the surface area, the greater the nutrient and water-holding capacity.

An ideal soil profile is depicted in Fig.



**Fig. 3**—Once the percentage of each component is calculated, soil texture is determined by using a textural triangle.

4. In general, the "A" horizon is rich in organic matter and water/nutrient holding capacity. At least 12 inches of "A" horizon is desirable to support turf and tree growth. In many recently disturbed soils (as in new housing developments, shopping malls), little or no "A" horizon exists.



**Fig. 4**—At least 12 inches of rich organic matter ("A" horizon) is desirable to support turf and tree growth.

Instead, a thin layer of "A" covers extensive depths of "B" and "C" horizons, which have poorer rooting properties.

**pH a factor**—Relative soil acidity—or pH—is another major property. Soils with a pH of 7 are neutral, with a balance of positive and negative ions. Most ornamental plants and turfgrasses grow well in slightly acid soils that have a pH between 6 and 7. The pH of a soil has a major effect on nutrient availability. Alkaline soils above 8, and acid soils below 5.5 tend to "tie up" certain nutrients and make them unavailable. The classic example of this is pin oak chlorosis.

When diagnosing plant disorders, remember to consider the soil as a potential cause of the decline. The old adage, "out of sight, out of mind" applies to soils. Half of the plant is growing in the soil below, and can't be seen. Examination of the physical and chemical properties of soil through soil testing and root system observations can go a long way toward diagnosing a suspected plant problem.

—The author is an extension educator for the University of Nebraska Cooperative Extension.

**Buckeye Beer Garden**

Open for lunch each day!

**Job Fair**

Meet  
prospective  
employees!



# OTF 1995

## Ohio Turfgrass Foundation Regional Conference and Show

**December 5 - 8, 1995  
Columbus, Ohio**

**Exhibits!**

Over 550 booths  
with the latest in  
turfgrass equip-  
ment, chemicals,  
and technology  
await you!

**Education!**

No matter what your specialty is, you will benefit from attending the 1995 Ohio Turfgrass Foundation Regional Conference and Show. Don't miss one of the industry's largest events!

- Golf Course Superintendents
- Lawn Care Operators
- Athletic Field Managers
- Grounds Maintenance Personnel
- Landscapers
- Sod Producers

The industry's top experts will once again be in Columbus to share the latest in turfgrass research and education. Recertification credits are available from many states!

**Silent Auction**

Industry products and other valuable items will be available for you to purchase at the Silent Auction.

**New!  
Breakfast  
Roundtables**

Meet with your fellow turfgrass professionals and industry representatives in an informal breakfast meeting.

**Rush me information on:**

- Exhibiting     Attending     Membership

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Zip \_\_\_\_\_ Phone \_\_\_\_\_

Ohio Turfgrass Foundation • PO Box 14824 • Columbus, OH 43214-0824  
Phone 614-261-6750 • Fax 614-261-1242

# HOT TOPICS

## Heat, humidity fry turf in Midwest and East; promote disease and crabgrass; force turfseed prices up.

**NATIONAL REPORT**—"It's a year of burnout," says Stan Zontek of the USGA Green Section. "It's September 13th and there's some dead grass, and trees are already dropping leaves."

"But most of the grass looks worse than it is. Turfgrass is amazingly resistant."

A worldwide shortage of grass seed, coupled with blistering heat, then a late-summer drought in the grass-rich Midwest and Eastern U.S., are forcing prices of proprietary brands up drastically.

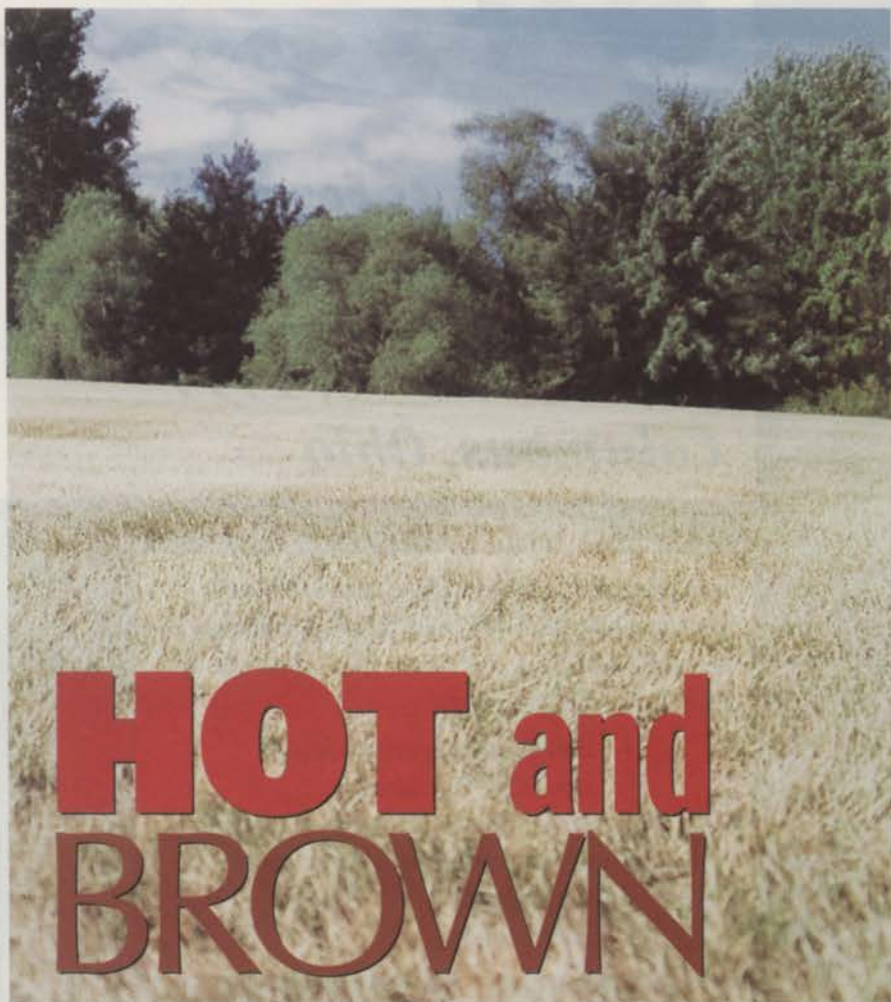
"Demand is tremendous," Mike Robinson of Seed Research of Oregon told LM on September 11th. "Sales are up at least 20 percent, and I think that's industry-wide—and we've still got half of September and all of October to go."

A band of land from Chicago to Philadelphia was among the hardest hit. In Chicago, for instance, at least 50 golf greens had been killed, says Robinson.

"Turf is just dead everywhere," he says, "and it's not just home lawns; it's golf courses, too—even those with irrigation."

Bruce Church says the second-hottest summer in Chicago history forced D.R. Church Landscaping to send out water trucks in double shifts, night and day. Yet increased incidence of crabgrass, summer patch, leaf spot and grubs were unavoidable, meaning...

"We're doing tons of renovations," he says. "We're trying to blend in patches of new turf, but I get the feeling that the renovations we're doing now will be just a small portion of what we'll be asked to do



next spring."

Even though the weather boosted the demand for turf renovations, nobody's hoping for a repeat of 1995's crabgrass and turfgrass disease problems.

"We've had a ton of crabgrass," reports Steve Van Noord of Weed & Feed Lawn Care, Byron Center, Mich. "Everybody has their theories as to why, and I'm not sure either, but it seems that every fourth or

fifth year we have a bad year for crabgrass."

Several Ohio lawn care pros speculate that the near-tropical conditions—weeks of continuous high heat and humidity—proved to be too much for pre-emergents at their labeled rates. Most customers generally understood that the unusual conditions were at fault, they say.

Clark Throssel, associate professor at

### ELSEWHERE

**POW to speak at  
GIE, Ft. Worth,  
page 27**

**Delaney Clause  
under the scope,  
page 28**

**Positive action  
taken on 2,4-D,  
page 30**

**PSU's 'commando'  
turf research,  
page 31**

Purdue University, West Lafayette, Ind., says frost will kill the crabgrass. Even so, some managers will probably be looking for new products when buying pre-emergents this winter.

He provides these tips:

✓ When selecting a pre-emergence herbicide, stick with what works.

✓ If change is necessary, talk with peers and colleagues and find out what's working in your area.

✓ Once you chose a new product, try it on only a small portion of your accounts.

✓ Keep in mind the kind of equipment you use and if it is compatible with the pre-emergent.

✓ Be aware that some products stain sidewalks and equipment.

Turfgrass diseases clobbered many turfgrass areas, too.

Joe Rimelspach, extension turfgrass pathologist with the Ohio State University, says that brown patch (rhizoctonia) and phythium were especially active in Ohio. Turf got a double whammy when soil temperatures kept rising through mid-summer. When cooler temperatures finally did arrive, so did drought in many parts of the Midwest and Mideast. All these factors combined to stress turfgrass.

"Roots were deteriorating and there was no new root growth or initiation for weeks on end," says Rimelspach of the unusually hot summer weather. "Turfgrass just got weaker and weaker and weaker."

The problem was most dramatic on golf courses where high traffic and low mowing heights gave turfgrass little respite. "A lot of the grass that died on golf courses was almost out of control of the superintendents," says Rimelspach.

Meanwhile, seed prices are rising, partly because the international market is so tight. In other high-demand years, U.S. turfseed marketers were able to import seed from New Zealand or Europe. This year, that won't happen because of high overseas demand. An early indication was the price of tall fescue, which went up almost 15 cents a pound from mid-August through mid-September.

"We can't get the seed cleaned fast enough," Seed Research's Robinson contends. "And if the grass gets moister—as it is starting to do—and the fall stays mild, we will also see tight supplies next spring.

"We have never totally run out of seed, but that's not to say it can't happen."

—Jerry Roche, Ron Hall, James Holter

# GIE GREEN INDUSTRY EXPO

The National Expo For Lawn & Landscape Professionals

## Keynote message: learning how to cope

**MARIETTA, Ga.**—Charlie Plumb, a former prisoner of war, is the keynote speaker Nov. 13th at the Green Industry Expo.

Plumb, a former naval aviator who was shot down during his 75th combat mission over North Vietnam, spent six years in a Communist POW camp. The author of "I'm No Hero" and "The Last Domino" will emphasize the value of inner strength and how people in their business and personal lives create their own prisons through fear of failure, blaming others and self-pity. His message is said to be upbeat and entertaining.

Plumb's presentation on how to overcome adversity to achieve a more effective, productive life will begin at 2:30 p.m. in the Fort Worth (Texas)/Tarrant County Convention Center theater. It is one of many exciting events to be held during this nearly week-long celebration of the lawn and landscape industries.

Educational conferences by the three Expo co-sponsors (Professional Lawn Care Association of America, Associated Landscape Contractors of America, Professional Grounds Management Society) begin Sunday, Nov. 12.

The trade show kicks off with its Grand Opening and reception Monday at 4 p.m. It continues Tuesday and Wednesday. The GIE concludes with its popular outdoor equipment demonstration at nearby Trinity Park Thursday morning.

Although trade show registration will be available on-site for \$15 per day, to attend any of the educational sessions, you must register with one of the sponsoring organizations. A registration with one co-sponsor will automatically entitle you to attend educational sessions sponsored by any of the three organizations.

For more trade show details and exhibitor information, contact Eleanor Ellison at (770) 973-2019. To register for one of the three conferences, contact PGMS at (410) 584-9754; PLCAA at (770) 977-5222; or ALCA at (703) 620-6363.

(CLIP AND SAVE)

### GIE SCHEDULE-AT-A-GLANCE

Sunday, Nov. 12

ALCA certification exams, 9 a.m.-3 p.m.  
PGMS computer sessions, 9 a.m.-noon, 1-4 p.m.  
ALCA tour of leading companies, 1-5 p.m.  
PGMS pre-conference tour, 1-5 p.m.  
PLCAA pre-conference seminar, 2-5 p.m.  
PLCAA President's Reception, 6-7 p.m.  
ALCA welcome reception, 6-7 p.m.  
PGMS welcome reception, 6-8:30 p.m.  
PLCAA Western Roundup, 7-8:30 p.m.  
ALCA rodeo party at Billy Bob's, 7-10 p.m.

Monday, Nov. 13

ALCA Breakfast with Champions, 6:45-8:30 a.m.  
PGMS Business Over Breakfast, 6:45-8:30 a.m.  
PLCAA, ALCA Western picnic lunch, noon-1 p.m.  
PGMS annual business meeting, 1-2:15 p.m.  
GIE keynote address, 2:30-4 p.m.  
GIE Grand Opening & Trade Show reception, 4-6 p.m.  
PLCAA new & prospective member Fiesta Reception, 6:30-7:30 p.m.  
ALCA Ask the Experts, 6:30-10 p.m.  
PGMS Brag Night, 8-10:30 p.m.

Tuesday, Nov. 14

ALCA Breakfast with Champions, 6:45-8 a.m.  
PLCAA breakfast roundtables, 7-8:15 a.m.  
PGMS Business Over Breakfast, 6:45-8 a.m.  
PGMS Past Presidents Breakfast, 6:45-8 a.m.  
PGMS Certified Grounds Manager (CGM) breakfast, 6:45-8 a.m.  
PGMS CGM meeting, 8-9:45 a.m.  
PLCAA Annual Meeting, 8:30-10 a.m.  
GIE Trade Show, 10 a.m.-4 p.m.  
PGMS Branch/National Meeting, 3:30-5 p.m.  
PLCAA live auction, 5:30-7:30 p.m.  
ALCA awards reception and banquet, 6-10:30 p.m.  
PGMS awards banquet and reception, 7-10 p.m.

Wednesday, Nov. 15

PLCAA breakfast roundtables, 7-8:15 a.m.  
ALCA Breakfast with Champions, 6:45-8:00 a.m.  
PGMS Business Over Breakfast, 6:45-8 a.m.  
GIE Trade Show, 10 a.m.-4 p.m.

Thursday, Nov. 16

GIE Outdoor Equipment Demonstration, 9 a.m.-noon  
GIE Board of Directors meeting, 1-5 p.m.



## Environmental issues becoming politicized

**ALEXANDRIA, Va.**—"Environmental issues will be focused on by both parties," predicts David Crow, a Washington-based political consultant to RISE, Responsible Industry for a Sound Environment.

"We need to work the regulatory process a lot harder than we have been," Crow contends. "Our issues have become politicized in a way we didn't want.

"We don't expect to get much work done [in Congress] in 1996," says Crow, because politicians will be posturing for the election year. "In a lot of ways, the system isn't built to work better."

Crow was one of a raft of speakers at RISE's annual meeting here last month.

"We think we can get FIFRA through this year," he said, "and maybe a water bill that we can live with. If we can get these two things done, we'll have had a great year. But we have to stay focused on our issues, and make them good bipartisan

### Manufacturers file suit against the U.S. EPA

**BETHESDA, Md.**—On September 5th, the Portable Power Equipment Manufacturers Association (PPEMA) filed suit against the U.S. EPA.

The PPEMA is challenging the EPA's recent approval of California's Tier II exhaust emission regulations for portable power equipment which, according to an independent study, will virtually eliminate the market in California for portable gasoline-powered equipment.

The suit requests judicial review of the EPA's decision. It charges that the EPA failed to comply with the requirements of the Clean Air Act, which mandate that it conduct a comprehensive feasibility study of the California regulations before granting approval.

If the Tier II regulations are, indeed, enacted, several major user groups will be affected, including landscape contractors, arborists and parks & recreation departments.

efforts."

"(We can probably expect legislation in September" on the Safe Drinking Water Act, the newest press release from RISE says.)

**Delaney**—Congressmen, generally, are recognizing that the Delaney Clause to FIFRA is outdated because of definitions that have not evolved with technology.

If passed, H.R. 1627, now in committee, would:

- replace the Delaney Clause with a negligible risk standard;
- require tolerances that protect the health of infants and children;
- streamline EPA's authority to remove certain pesticides from the market by requiring it to cancel and suspend dangerous pesticides within one year;
- provide uniform pesticide tolerances; and more.



**Despite a Republican majority, the 'Senate didn't really embrace the Contract with America,' David Crow says.**

"I'm skeptical that the whole package of FIFRA can make it through," observes Kate DeRemer of the Senate Agriculture, Nutrition and Forestry Committee, "but the 'minor use' portion could."

She notes that Sen. Pat Leahy (D-Ver.) believes that "some sort of stewardship should be legislated rather than voluntary" on the part of manufacturers.

**Predictions**—National legislation will continue to move slowly, several speakers noted, because the country is divided over most issues.

"There's no real consensus in this country" said Crow. "It's as confusing a time as I can remember. What's happening in Washington is absolutely as clear as mud.

"I would bet that in 1996, Clinton will be re-elected, but the House and Senate will pick up more Republicans."

Other major programs at the meeting focused on the President's Council on

*continued on page 29*

## L.A. continues attack on power leaf blowers

**LOS ANGELES**—Councilman Marvin Braude of Los Angeles has proposed the third bill in nine years aimed to ban the sale and use of gasoline-powered leaf blowers.

"They merely blow one person's dirt and leaves onto someone else's yard or onto their car or under their door and into their living rooms," Braude contends. "Simply blowing debris from one place to another accomplishes nothing, except polluting the air and making people angry."

Section 112.05 of the current Municipal Code allows leaf blowers if they are no louder than 65 decibels at a distance of 50 feet.

"If we had a law which simply banned... these machines, we would not have to

worry about having specially trained [noise abatement] officers using expensive, sophisticated equipment to handle enforcement," Braude said in a press release.

The press release went on to mention that:

- "one hour's use of a leaf blower produces as much volatile organic compound pollution as 100 miles of driving an automobile" and

- "by generating air currents...twice the speed of a hurricane, the blowers kick up clouds of dust, insecticide, animal waste and debris which can be harmful to people with respiratory problems."

Similar legislation was also up for review in Greenwich, Conn., at presstime.

**ENVIRONMENTAL** from page 28

Sustainable Development and Multiple Chemical Sensitivity.

**MCS**—Dr. Janette Sherman, author of "Chemical Exposure and Disease," contended that Multiple Chemical Sensitivity is a bona fide disease, which is in direct conflict with a position paper by the American Medical Association.

"Pesticides are contaminating much of the world," she said. "The intellectual and educational ramifications of pesticide use are enormous. Registries are quick fixes, but they're not long-term answers."

Taking the side of the AMA, Dr. Suellen Pirages of the Environmental Sensitivities Research Institute noted that "MCS doesn't follow the principle of toxicology and causation. We need carefully designed and controlled medical studies on this phenomenon."

**RISE's approach**—Issues like MCS mean a change in philosophy for RISE.

"We will become activists for our industry," RISE executive director Allen James promised. "Defense is no longer adequate."

—Jerry Roche

## GRASS CLIPPINGS

Unusual news & notes from the turf & ornamental world

### 'Silverdome West' decked out

■ The research dome known as "Silverdome West" is decked out in new outerwear as part of ongoing research to learn more about growing grass indoors.

Dr. Trey Rogers says that the Sheerfill IIA Architectural Membrane allows roughly twice the amount of sunlight through than the material that currently covers the real Silverdome.

The Michigan State University research facility at East Lansing was constructed to mimic conditions at the Pontiac Silverdome, where MSU's turfgrass scientists perfected the portable indoor turf on which the 1994 World Cup soccer games were played.

Low light is the greatest challenge to growing durable grass indoors. "The theory is that this new membrane will allow turfgrass to stay indoors without supplemental light for a long period of time," says Rogers.

### Interesting uses of grasses

■ Author Craig Tufts, in his book "The Backyard Naturalist," urges people to consider more interesting uses and varieties of grass.

"Tall, graceful, murmuring grasses look great all year round (with once-a-year cutting), and others can be plucked to make dry-grass arrangements," he writes. "As a bonus, most grasses are highly attractive to wildlife (especially to birds and butterflies) for both food and shelter."

Tufts, who also directs the National Wildlife Federation's Urban Wildlife Division, recommends hardy native species to add texture to the landscape, help control erosion, attract wildlife and look pretty.

For more information on native grasses available for landscaping, Tufts recommends "Grasses, an Identification Guide" by Lauren Brown.

### Around the world on a lawnmower

■ Ben Garcia, listed in the "Guinness Book of World Records" for longest lawnmower ride, plans to break his own record by riding around the world, beginning March 13, 1996.

In 1986, he drove the "Woofmobile" from Maine to California, riding for W.O.O.F. (World Order of Friends) and ended up in the national media. Before he begins his current around-the-world itinerary, he and Sister Rosalie Curran, Ph.D., are asking for sponsorships. Sister Curran is W.O.O.F. president.

"An amateur seven-minute action-filled video from Ben's initial transcontinental lawnmower ride is available, on request, for your inspection and pleasure," Sister Curran writes. You can contact her by phoning (201) 292-6300 or by writing W.O.O.F., Tiffany Village, Summit Lane, Old Orchard Beach, ME 04064.

## GREEN INDUSTRY EVENTS

### NOVEMBER

**1-Jan. 10: Arboriculture Skills Workshop**, Kent (Ohio) State University. Phone: Chris Carlson, (216) 332-0361 or Anita Linde, (614) 433-0045.

**2: 2,4-D Reregistration Status Report**, O'Hare Airport Marriott Hotel, Chicago. Phone: (800) 345-5109.

**5-8: National Institute on Park and Grounds Management**, Toledo, Ohio. Phone: (414) 733-2301.

**11: International Hong Kong & China Golf Exhibition & Conference**, Hong Kong Convention & Exhibition Center. Phone: 011 (61-9) 322-3222.

**7-9: Penn State Golf Turf Conference**, Nittany Lion Inn, University Park, Pa. Phone: (814) 863-3475 or Dr. Peter Landschoot, (814) 863-1017.

**7-10: New York Turf & Grounds Exposition**, Rochester Riverside Convention Center. Phone: (800) 873-8873 or (518) 783-1229.

**12-14: International Irrigation Exposition & Technical Conference**, Phoenix Convention Center. Phone: (703) 573-3551.

**12-14: Golf Courses on Landfills Conference**, Industry Hills (Calif.) Sheraton Resort. Phone: Bill Burbaum or Judy Thompson, (407) 744-6006.

**14-16: Midwest Turfgrass & Ornamental Seminar**, Lafayette, Ind. Phone: Bev Bratton, (317) 494-8039.

**16-18: Tree Care Expo**, Indiana Convention Center, Indianapolis, Ind. Phone: (800) 733-2622.

**16-19: International Golf Show & Golf Course Europe**, Pabellon de Cristal, Madrid, Spain. Phone: Charles Duff, (510) 526-6922.

**25-28: Forum on Golf Course Building at the International Trade Fair for Design, Equipping and Care of Amenity Areas**, Cologne (Germany) Exhibition Center. Phone: Dr. George Heim, 011 (0221) 971-3021.

**27-29: North Central Turfgrass Exposition**, Pheasant Run Resort, St. Charles, Ill. Phone: Jack Lagershausen or Nancy Jones, (312) 201-0101.

# SUPPLIERS CORNER

The **Scotts Co.** is now accepting nominations for the 1996 Tradition of Excellence Award that recognizes outstanding achievements among superintendents in advancing the science of course maintenance. Nomination forms are available from Burke Geeler at (913) 832-4465, Darlena Huffman at (513) 644-7633 or Deb Strohmaier at (614) 846-7777.

**Homelite**, a subsidiary of **Deere & Co.**, purchased the assets of Green Machine from Mark Machine, Wadsworth, Ohio. This fall, the company introduced a new line of commercial grade outdoor power equipment called Green Machine by John Deere. The line includes string trimmers, brushcutters, edgers, blowers, hedge trimmers, chain saws, a sprayer and walk-behind mowers.

## 2,4-D takes another step to re-registration

**BELHAVEN, N.C.**—The latest in a series of tests show no evidence of carcinogenicity and occurrence of brain tumors in laboratory rats at doses three times higher than previously tested.

The tests, required by the U.S. Environmental Protection Agency for re-registration of 2,4-D, will be the focus of a symposium to be held Thursday, Nov. 2 at the O'Hare Airport Marriott in Chicago. The symposium will also include a briefing on the status of 2,4-D in the re-registration process.

The symposium, sponsored by the Industry Task Force II on 2,4-D Research Data, is open to all interested parties at no charge.

For more information, contact Don Page, the executive director of the Task Force II, at (919) 964-4558.

2,4-D is a broad-spectrum herbicide used extensively in the green industry as well as in agriculture and at the homeowner level. It is the third-most popular herbicide in the country. Use of the 50-year-old product has been increasing for several years because of its excellent fit in no-till and other reduced-till ag systems.

**American Cyanamid and Rohm & Haas** have formed **RohMid L.L.C.**, a marketing and sales joint venture to develop, register and commercialize a new insecticide, RH-0345, for the U.S. turf and ornamental market. RH-0345 is a diacylhydrazine insecticide that controls grubs and other soil-borne pests. RohMid hopes that the EPA will grant a registration by early 1997.

William Brehm, founder of **B&G Equipment Co.** and inventor of the B&G compressed air sprayer, died Aug. 20 in Atlanta. He was 70. A scholarship fund has been established at Purdue University in his name. Further information is available by writing William Brehm Scholarship Fund, Purdue University, 1158 Entomology Hall, West Lafayette, IN 47907.

**MacKissic Inc.** purchased a commercial duty chipper-shredder line from **Ameri-quip Corp.** that will be manufactured in MacKissic's Parker Ford, Pa. facility. The chipper-shredders are compact, highway towable, high performance machines for landscapers.

Rodney Sams of Evergreen Lawn Service in Hamilton, Ohio, is winner of the **Ransomes America Corp.** Fantasy Vacation Sweepstakes. The prize is a four-day cruise in the Bahamas and three days at Walt Disney World. More than 20,000 lawn and grounds care professionals entered.

## Educational opportunities

**APPLICATIONS** are being accepted for Penn State University's two-year Turfgrass Management Technical Program, beginning September, 1996. Application fee is \$35; deadline for application is Dec. 31st. Applications can be obtained by calling (814) 865-8301 or by writing to: Turfgrass Management Technical Program, 306 Ag Administration Bldg., P.S.U., University Park, PA 16802-2601.

**THE UNIVERSITY** System of Georgia has an independent study course in turfgrass management. Earn college credit

while completing this course in the comfort of your home or workplace. All basic principles of turfgrass management for both cool- and warm-season grasses are covered. For more information, call the UGA Independent Study Office, (706) 542-3243.

According to reports from **Snapper**, a national factory rebate program on its commercial walk-behind mowers is achieving tremendous success. Since announcing the program the first week in August, the company says, business has tripled. The rebate includes \$500 on commercial walk-behinds, which includes the full "10/5/2" factory warranty and the "no payments until '96" credit program.

**Terrasorb** of Bradenton, Fla. now has a business alliance with Plant Health Care Inc. of Pittsburgh, Pa. to market to horticultural markets its family of mycorrhizal fungi spore products called MycorTree.

**PanAmerican Seed** has put its products on CD-ROM for growers, seed distributors, university teachers and students and retail garden staffers. The system fits most desktop computer systems equipped with a CD-ROM drive. The CD-ROM itself costs \$30 and is available through GrowerTalks BookShelf at (800) 456-5380.

**Gravelly International and DewEze Manufacturing** are now jointly manufacturing and marketing DewEze mower products. That includes three models of the All-Terrain Mowers sold primarily to governments. The products will now be sold under the Gravelly brand name.

**Woods Equipment Co.** bought **Gill Manufacturing Co. L.P.** Gill's core products include pulverizers, turf renovators, seeders, core plug aerators, landscape rakes, rearblades, backhoe and skid steer buckets, tillers and spreaders. Woods products are sold through a network of 6,000 independent dealers in North America.

**EROSION COURSES** are being offered by the International Erosion Control Association. Subjects include erosion and sediment control; bioengineering; and streambank/lakeshore erosion control. The courses run for three consecutive days: Nov. 7-9 in Columbia, S.C. and Nov. 28-30 in Houston, Texas. For more information, phone (800) 455-4322 or fax (970) 879-8563.



# INFO CENTER

Books, literature and videos for the green industry

**SPORTS PLANS...**Typical sports field irrigation plans are now available from Hunter Industries for use as general guidelines in preparing estimates and installations. Included are layouts for football, baseball, softball, tennis, soccer, lawn bowling and croquet. The plans, which are 11 by 17 inches, are scaled to professional sports field standards. A set of 27 plans are included, three-hole punched. Cost is \$15 for the plans; with a Hunter Sports Field Plan binder, \$20. To order, call (619) 471-9010.

**SUSTAINABLE LANDSCAPES...**A new guide contains current, research-based information on fertilizing trees, shrubs and lawns; the fate of pesticides; low maintenance trees, shrubs and grasses. Also included are in-depth reviews of proper planting and maintenance of trees and shrubs; integrated pest management and a comprehensive list of recommended plants for a variety of locations. Cost of the 74-page publication is \$7.50. Make check or money order payable to UMass and send to Bulletin Center, Cottage A, Thatcher Way, Univ. Mass., Amherst, MA 01003; or call Kathleen Carroll at (413) 545-0895.

**ESTIMATING...**The Professional Grounds Management Society's updated "Estimating Guidelines" is now available for \$15. Long held to be the estimating "bible" by grounds professionals, the booklet is 36 pages long, three-hole punched. Included are a cost estimating worksheet, points of cost generation, how to estimate, costs vs. bid, personnel costs, machine costs, capital cost calculations, etc. Send orders to PGMS, 120 Cockeysville Rd., Suite 104, Hunt Valley, MD 21030. (Maryland residents add 75 cents state sales tax.)

**PRUNING STANDARD...**The International Society of Arboriculture and the National Arborist Association are both offering copies of the ANSI A300 Pruning Standard. It is titled "Tree, Shrub and Other Woody Plant Maintenance: Standard Practices." To order through the ISA, send \$20 for each publication (\$15 for ISA members) to ISA, P.O. Box GG, Savoy, IL

61874. Add \$5 for domestic shipping. To order through the NAA, phone (603) 673-3311 or e-mail to 76142.463@com-puserve.com.

**EN ESPAÑOL...**The Ball Floriculture Dictionary translates from English to Spanish and vice versa. It is a practical, handy book for people in the floriculture business with more than 6,000 entries and a cross-referencing system. For more information, write Ball Publishing, P.O. Box 9, Batavia, IL 60510. In the U.S., phone (800) 456-5380 or fax (800) 456-0132. Outside the U.S., phone (708) 208-9089 or fax (708) 208-9350.

**BETTER BUSINESS...**"The Successful Business Plan: Secrets & Strategies" is now available for \$25.50 from the American Association of Nurserymen, 1250 I St., NW, Suite 500, Washington, DC 20005. An excellent tool for businesses that need financing, it contains more than 150 tips from 15 insiders who reveal what most impresses the people who evaluate and fund business plans. Seventy-two worksheets make it easy, and a sample plan guides you. AAN members receive a \$4 discount. For more information, phone (202) 789-2900 or fax (202) 789-1893.

**FIFTY PUBLICATIONS...**In its new Publications Catalog, the Associated Landscape Contractors of America has listed more than 50 publications designed exclusively for the green industry. Included is information on everything from managing your finances in a tough economy to creating a safer work environment to marketing your valuable services. For a free copy, contact ALCA at 12200 Sunrise Valley Dr., Suite 150, Reston, VA 22091; phone (800) 395-2522 or fax (703) 620-6365.

**NOW ON TAPE...**The "Tree Climbers' Guide" is now on five 60-minute audio cassettes that contain every word of Sharon Lilly's book. Cost is \$40 (\$30 for International Society of Arboriculture members). Shipping & handling to U.S. points is \$5. Contact Robin Kopp at the ISA for more information: (217) 355-9516.

## PSU's Huff: 'commando' research on turfgrasses

**UNIVERSITY PARK, Pa.**—How much damage can the treads of a 60-ton M-1 Abrams tank do on grass?

Enough that David Huff of Penn State University is trying to develop new grasses to revegetate military training sites.

"In times of war, you can't be concerned about environmental impacts, but the Army realizes that there is no need to destroy an environment for training purposes," says Huff.

Research for the project, which is funded through the Army's Cold Region Research and Engineering Laboratory in Hanover, N.H., will be done at Fort Drum near Watertown, N.Y., and at Penn State's turfgrass facilities here.

"At Fort Drum, we were out there with the troops and the tanks and practice artillery," remembers Huff. "It was like collecting plants in the middle of a war zone—commando botany."

Huff is trying to develop a grass species that grows fast enough to revegetate barren stretches of ground while also exhibiting the resiliency to grow back after a tank or a company of soldiers tramps all over it.

He is examining local native grasses such as crinkled hairgrass and some commercially available grasses like fine fescues.

"We want a hardy species that can grow back from below-ground growing points while also giving us enough seed production to keep reseeding," says Huff. "Otherwise, this isn't a beauty contest—we don't care what the grass looks like."

By concentrating on grasses collected at Fort Drum, Huff can use individual species' natural adaptability while selectively breeding other traits like seed production and/or disease resistance.

The research may also help land reclamation and restoration efforts.

"I think grasses are one of the greatest tools for reclaiming land," Huff says. "At Fort Drum, which has very sandy soil, these grasses could turn inland sand dunes into usable land. It's a very slow process and you have to have a lot of patience. The Army realizes it's not going to be done overnight."

# JOB TALK

## Versatile mowers are a maintenance 'must' in Old Lyme

■ Old Lyme, Connecticut—where Lyme disease picked up its moniker—is largely a “bedroom community” for stock brokers, doctors, lawyers and other professionals who work in nearby Hartford and New York City.

Whether they commute on a daily basis or just come to the rural community on weekends, taking care of their own lawn maintenance is simply not an option for many residents.

Serving the needs of this unique demographic group is the foundation upon which Village Landscaping has built a successful business. Owner Richard Vattalino says that maintaining more than 300 estate-size (about two acres) lawns would not be possible without some time- and labor-saving equipment. Each estate poses different obstacles and landscaping features with which he must cope.

“Every estate is different,” Vattalino says. “From the type of trees and shrubbery to other beautification features like flag poles and bird baths, our zero-radius unit and its outfront deck give us the ability to reach under shrubs, under rail fences and trim close—and to do it all quickly. It’s the only way I can keep up.

“Of my 300 customers, 200 of them must be maintained weekly. My zero-radius unit’s maneuverability, speed, ease of handling,



Richard Vattalino needs quick maneuverability to maintain the ins and outs of Old Lyme's vast array of estates.

comfort and up-close trimming capability saves me so much time over other mowers, I can easily keep up with the pace.

“I estimate that zero-radius maneuverability has allowed me to service a third to half-again as many accounts—and to harvest the additional income they provide—than if I were to use a different mowing system.”

Virtually every estate also has a wide range of mowing requirements. Around swimming pools, patio gardens and other sensitive areas, for instance, there can be no clipping residue. With the 25 hp Grasshopper Diesel mower, he can easily engage a grasscatching system and switch back to side discharge quickly and easily.

In addition to maintaining the grass, during the fall and important part of Village Landscaping’s workload also includes keeping estates free of massive amounts of leaves.

“Though Connecticut is famous for its beautiful fall and its enormous variety of leaves, those leaves must be picked up,” notes Vattalino. “Having a versatile machine is important to making that job quick and easy. Its ability to leave the area absolutely immaculate is very important to me and my customers.”

THE VOICE OF THE GREEN INDUSTRY

**LANDSCAPE**  
*management*

**COMING NEXT MONTH!**

**A new logo, a new design, and a new format...**  
*...for your favorite green industry publication*

**WATCH FOR IT IN NOVEMBER**

# PRODUCT REVIEW

## Flail mowers used for manicured finish

Alamo AT (Turf Flail) mowers are designed for mowing large private lawns, parks, golf courses, schoolyards, playgrounds and business parks where a manicured finish is desired.



The vertically-rotating knife action of the flail mower projects the cut material downward into the grass, rather than out from under the mower. The AT60 and AT74 have cutting widths of 60 and 74 inches, respectively. Both are available in forward or reverse rotation.

The AT74 comes with a reversible three-point hitch which permits centered or offset operation for close quarters.

The Turf Flail is the original "No-Bag-It" mower, Alamo says.

**Circle No. 201 on Reader Inquiry Card**

## Three-HP edger features curb hop, mud scrapers

Husqvarna's Model LE309 edger, powered by a three-horsepower Briggs & Stratton engine, was designed to easily trim along curbs. It uses a nine-inch blade with an adjustable curb hop.

The edger also has mud scrapers on the blade shield and rear wheels. Handle-mounted depth control allows the operator to adjust the edger without bending over. The edger can be adjusted to a maximum cut depth of 2 1/2 inches. A 3/4-inch handle, as opposed to the standard 1/2-inch handle, was



added for extra durability.

The edger can be adjusted to a variety of degrees for improved cutting to both the left and right. The unit comes with a wider 15-inch base and dual front wheels.

According to Husqvarna, with their new curb hop feature, it is as easy to trim along curbs as on sidewalks.

**Circle No. 202 on Reader Inquiry Card**

## A neat, powerful edger for commercial users

The new Green Machine 1900e, offered by Homelite Inc., was designed to edge neatly along beds, walks and drives.

It has a large, adjustable guide wheel and a nine-inch blade powered by a 22.6cc



Mitsubishi engine. The edger has a fuel capacity of 16.9 fluid ounces, a 72-inch flex shaft and comes with a one-year commercial user warranty.

Other features include a safety harness with a quick release latch and vibration absorbing design. The throttle starting lock allows the user to start the unit at just above idle speed, rather than at full throttle. A commercial quality gear case features two-piece housing and can be accessed without special tools.

Carbon steel helicopter gears were included in the design for maximum durability.

**Circle No. 203 on Reader Inquiry Card**

## Two-way radio called smallest in the world

The world's smallest hand-held two-way radio is now available from Global Wireless Communications Products.



MicroTalk, which is the approximate size of a king-size cigaret box, is a five-watt, 10-channel synthesized radio featuring user-selectable scan to lock out or avoid busy channels. It is available in 148-174 MHz and 450-470 MHz frequencies.

MicroTalk comes with a belt clip, a 600MAH battery, 110-volt wall charger, rubber duck antenna and wrist strap.

**Circle No. 204 on Reader Inquiry Card**

**Trimmers, brushcutters new for professionals**

Four new trimmers/brushcutters and two new brushcutters, made for the commercial market, offer Life+1 warranties. They are Green Machine brand, manufactured by Homelite, a subsidiary of Deere & Co.

The 2600 and 2800 series of trimmers/brushcutters have the exclusive Tap-For-Cord line feed, a 72-inch shaft, 17-inch trimming swath and loop handle. They weight just 13 lbs.

The 3000 is the ultra-heavy duty high-performance model made for 40 hours-a-week use. It comes with either a j-bar or bicycle-type handle and has a full anti-vibration system.

The 4000 series brushcutters have a large 42.7cc engine, j-bar or nordic-type handlebars, 18-inch trimming swath and 74-inch shaft length.

**Circle No. 205 on Reader Inquiry Card**

**Heavy duty edger makes professional end product**

Sidewalks, driveways and curbs need a manicured edge, and that sometimes means cutting through dirt, debris and turf. Encore's Pro-Line Edger will stand up to heavy use and give a well-groomed, professional trimmed finish.

The counter-rotating blade is guarded



to protect the operator from debris. A hardened steel .150-inch blade with sharpened edges gives a clean cut. Engine selections include a 3 hp Briggs & Stratton or a 4 hp Honda.

**Circle No. 206 on Reader Inquiry Card**

**New device perfect for tying up loose leaves**

Jokari's new Multi-Sealer instantly wraps a heavy duty tape around the ends of any trash or lawn bag, creating a strong, airtight seal that won't open or unravel.



The Multi-Sealer seals tight in seconds on bags with sealing areas up to 1.5 inches in diameter. It's small enough to carry around with you and—best of all—costs only \$6.75 wholesale with tape for 100 seals (additional tape sold separately).

**Circle No. 207 on Reader Inquiry Card**

**Broad line of edgers has numerous applications**

Creative Curb manufactures edgers that use the extrusion method to form curbs and edging. They are available as self-propelled, electric, or gas-powered. Accessories for the equipment include a variety of curb shapes, including mower strips.

Creative Curb's concrete landscape borders are durable, permanent and freeze-thaw tolerant. Installation requires no forms, displacing little of existing landscape. The installed borders will not rot, rust or discolor. Concrete borders control root systems, separate lawns and simplify the edging process.

The cost of materials is approximately 40 cents per foot while the machines' production capabilities are more than 200 feet of concrete edging per hour, according to

Creative Curb.

Larger machines are available for all curbing applications.

**Circle No. 208 on Reader Inquiry Card**

**Trimmer's lightweight design adds to operator comfort**

The SRM-2110 trimmer and brushcutter from Echo Inc. is designed for use by those with lightweight needs or for the heavy-use homeowner.

The SRM-2110 comes standard with an eight-tooth grass and weed blade for brushcutting and with a heavy-duty, dual-line head filled with .095 Cross-Fire trimmer line for trimming. The SRM-2110's grip assembly is ergonomically designed to increase operator comfort. The cushioned grips and vibration-reduction system help keep the operator's wrist in a natural and relaxed position, reducing discomfort and fatigue.

The 21.2cc engine gives the unit sufficient power for cutting brush and weeds. The SRM-2110 comes with a 59-inch shaft and an angled cutting head so it could get in hard-to-reach places.

**Circle No. 209 on Reader Inquiry Card**

**Gas-powered, hand-held edger features durability**

The SE301F edger from Hoffco is a sturdy addition to that company's commercial product line.

The SE301F is designed for day-to-day use by professional grounds managers. It features a solid state ignition with a positive on and off switch for safety and convenience, and the 19.3-ounce fuel tank allows for a longer running time.

Powered by a 25.6cc, two-cycle Fuji engine, this unit is still lightweight at 15 pounds. A Walbro carburetor provides the air/fuel mixing and has a primer pump for easy starting. It cuts with an eight-inch blade that is protected by a die-cast guard and features an adjustable cutting depth.

An anti-vibration "tear-drop" handle is ergonomically designed for operator comfort and control. The guide wheel offers smooth maneuverability and balance. Safety goggles are standard equipment, and a shoulder strap is optional.

The SE301F edger comes completely assembled with a one-year commercial warranty.

**Circle No. 210 on Reader Inquiry Card**

## New software automates pump monitoring

Syncro has upgraded its Superintendent Software for remote monitoring of its Eagle Pump Stations from a remotely located PC.

The software displays full performance data, including flow rate, total gallons pumped, system pressure, set point and variable frequency drive (VFD) speed. The user can also set individual alarm presets.

A menu-driven display enables the superintendent to obtain the status of individual pump station components such as individual pump performance, VFD operation, speed control mode and individual selector switch settings. Results can be sent to a printer or disk file for later access.



The Superintendent Software works with MS-DOS 3.0 or later, MS-Windows or OS/2 and runs on any Intel-based, IBM-compatible computer.

**Circle No. 211 on Reader Inquiry Card**

## Numerous options give one machine many uses

Excel's compact mower line with its optional attachments allows one person to mow, edge and pick up clipping in a single pass.

The eight-bushel Bac-Pac grass catcher vacuums grass, leaves and other debris. The side-mounted edger attachment features a coulter blade that cuts against the sidewalk or curb. Both attachments were designed so that the controls would be in easy reach of the driver.

Excel's mowers have a dual-path hydrostatic system. Each drive wheel is independently controlled for zero-radius turning. The Hustler line also offers simple twin-lever steering for control of forward, reverse and turns in one hand.

The Hustlers 251K and 260K include anti-scalp wheels that provide added flotation on uneven turf.

**Circle No. 212 on Reader Inquiry Card**

## Catalytic oxidation provides waste-water treatment

RGF Environmental Systems Inc. has designed the CO<sup>3</sup>P System of low-cost oxidant to provide a hydroxal radical for contaminated water treatment.

The CO<sup>3</sup>P is a poly-skid mounted sys-

tem that uses ozone, UV light and hydrogen peroxide to create a hydroxal radical for maximum potential. This system will destroy herbicides, pesticides, hydrocarbons, odors, chlorine, algae and bacteria through oxidation. The process breaks down organic compounds to carbon dioxide and water.

This unit can be added to an existing water treatment or recycling system or can be used as a stand-alone system.

**Circle No. 213 on Reader Inquiry Card**

## Insertion flow sensor line has multiple applications

George Fischer Inc. offers a recently expanded line of Signet insertion flow sensors in a variety of materials.

The Signet 515 Rotor-X and 2535 Low Flow plastic paddle wheel sensors are both available in a choice of chemical-resistant materials. Both are designed to be effective in applications involving gravity flow lines. They can be fitted in pipe sizes from 1/2 inch to 36 inches.

The Signet 2540 and 525 metal paddle-wheel sensors offer the advantages of insertion flow sensor technology in a 316 stainless-steel package. Designed for applications with extremely low flow velocities, the 2540 is available for pipe sizes ranging from 1 1/2 inches and above. An optional "hot tap"

configuration was added to decrease downtime. The 525 metalex Flow Sensor is available for pipe diameters from 1/2 inch to 12 inches and high pressure, high temperature applications.

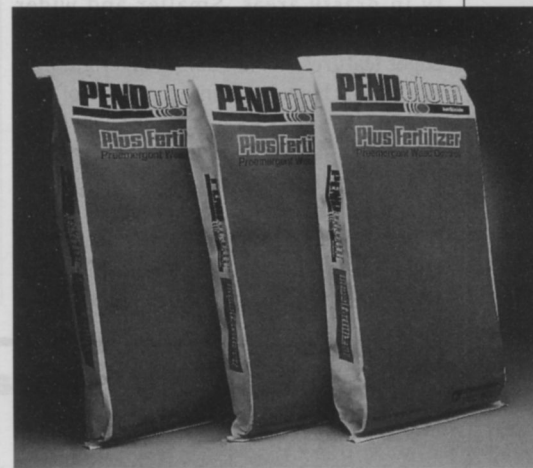
The Signet 2550 Insertion Magmeter combines insertion flow measurement technology with advanced microprocessor-based electronics. Packaged in a metal enclosure, the Signet 2550 handles flows from 0.3 to 20 fps and pressures up to 250 psi. The Magmeter has no moving parts and handles waste streams and slurries containing up to 20 percent suspended solids.

**Circle No. 214 on Reader Inquiry Card**

## Pre-emergent, fertilizer combined as one product

American Cyanamid has Pendulum Plus Fertilizer, a combination product that includes both a pre-emergence herbicide and a fertilizer.

Pendulum Plus Fertilizer is formulated to provide control of most annual grasses and many broadleaf weeds found in turfgrass. It is labeled for use on Kentucky bluegrass, perennial ryegrass, fine fescue, tall fescue, bentgrass (except putting greens and tees), bermudagrass, St.



Augustine grass, bahiagrass, centipede-grass, zoysiagrass and blends.

This is a granular product and can be applied with most commercially available spreaders. It contains the active ingredient pendimethalin. Pendulum Plus Fertilizer can be used over the top of flower beds and nurseries for pre-emergence control of more than 45 grassy and broadleaf weeds without harming more than 260 labeled ornamentals.

**Circle No. xxx on Reader Inquiry Card**

### Mobile AC power with new charging unit 2500 watts

Many vehicles carry onboard equipment that requires a reliable source of mobile AC power. A new inverter/charger/conditioner from Heart Interface Corp. supplies a full 2500 watts of dependable AC power from any 12-volt DC battery bank.

The Fleet Power 2500 acts as a 130 amp, 3-stage battery charger/conditioner. It features fully automatic, "hands-off" operation, including automatic power source transfer switching.

The unit is UL listed and C-UL listed for Canada.

Compact and quiet, the Fleet Power 2500 requires no maintenance.

**Circle No. 216 on Reader Inquiry Card**

### Three edgers designed for home and professional use

Three edgers from Stihl are designed to meet specific edging needs, from the professional landscaper to the weekend home user.

The FC-72 comes equipped with a depth adjustment wheel to simplify edging along sidewalks or curbs, as well as stability in grassy areas. Smaller and wider wheels are available as an option. This edger features a 1.45 cubic-inch engine, an eight-inch blade and an arbor size of one inch.

The FC-44 was designed to put the finishing touch on any edging job. Standard features include a master control handle, a debris deflector, an easy access blade nut and air filter and a large choke. This edger has a 1.84 cubic-inch engine and holds 1.2

### New control tool allows for irrigation expansion

PiggyBack is a new way to extend the range of existing controllers by adding more stations.

When triggered by the last station of a controller or of one program, it begins watering when that station turns off.

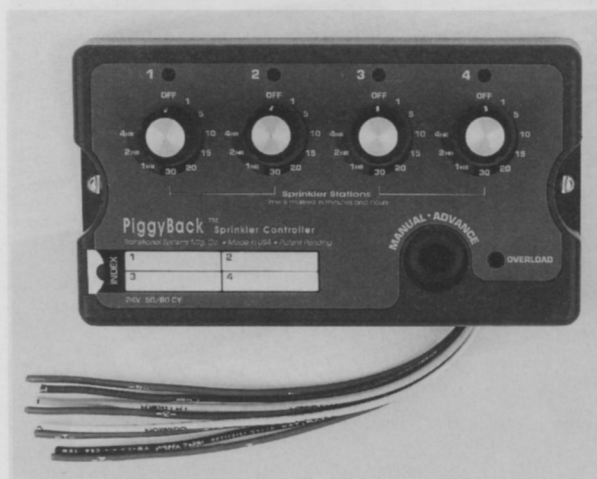
Each of its four zones has a timing range of one minute to four hours and units can be connected in series to add more zones.

A manual start/advance button, pump start and circuit breaker are provided.

PiggyBack can also be used alone by manually starting each cycle. By coupling units together, it can temporarily substitute for a controller during repairs.

Further uses include homeowners who dislike automatic programming, or situations requiring closely-monitored watering such as nurseries, new plantings and severe water restrictions.

**Circle No. 217 on Reader Inquiry Card**



pints of fuel.

The electronic ignition and full-lined shaft on the FC-44 have a lifetime warranty. A wide guide wheel and replacement skid plate are available as options.

Designed for home use, the EC-70 electric edger is lightweight and quiet. It has an easy-to-adjust depth wheel and cord keeper and a built-in shoulder strap attachment. The EC-70 weighs a little over 10 pounds and is 73.6 inches long.

**Circle No. 218 on Reader Inquiry Card**

### Controller versatile to match landscape needs

The ESP-LX controller from Rain Bird features flexibility and is available in six-, eight-, 12- and 16-station models.

Designed to match both the water requirements of various landscapes and mandated water-use regulations, the ESP-LX provides four programs and a 365-day calendar with true odd- and even-day watering schedules. The ESP-LX is an outdoor model and has a weather-resistant

### Protect and carry landscape blueprints on-site easily

Donnelly International, of Wales Center, N.Y., makes The Print Cady, a carrier and working surface for blueprints and drawings.

For use in the office or out in the field, the Print Cady secures and protects prints in windy conditions and provides a place for convenient, temporary storage.

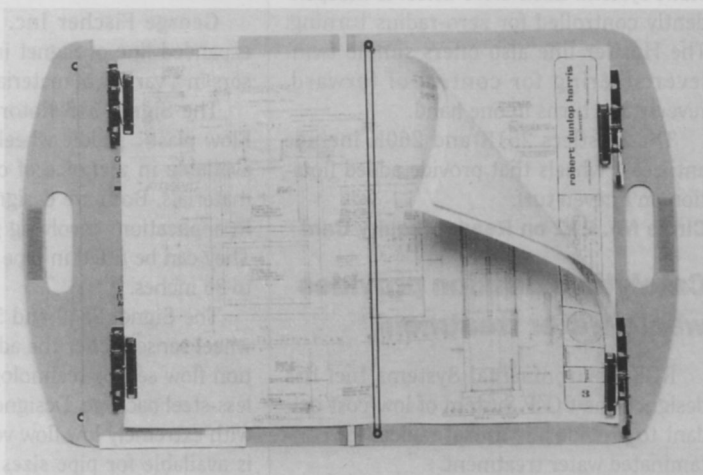
The Print Cady is ideal for landscape contractors, engineers, architects, builders or electricians.

The Print Cady is made of durable PVC, and is available in 11x17 inches; 17x22 inches (adjustable to 18x24); and 24x36 inches.

Custom-size quotations by request. Custom name and logo are optional for a nominal charge.

Prices range from \$46.95 to \$56.95.

**Circle No. 219 on Reader Inquiry Card**



and key-lockable cabinet.

The controller has a diagnostic, electronic circuit breaker system. The system can sense a shorted or overloaded valve circuit. When a short is detected, the problematic station is bypassed and the ESP-LX continues to operate the other stations in the program. An alert light turns on to indicate there has been a problem and the station number with the problem is displayed along with the word "fault."

The controller has a test program, water budgeting program and provisions for hooking up a rain or moisture sensor system. An indoor version (ESP-LXi) of the same series, with a plug-in style transformer, is also available through Rain Bird Distributors worldwide.

**Circle No. 220 on Reader Inquiry Card**

**Central controller for large turf applications**

The Network DR2 from The Toro Company is a new irrigation control system for new and retrofit large turf applications.

The Network DR2 satellites use modular technology to allow for flexible system design as site demands change. Four-station modules enable easy expansion from 16 to 32 stations and should keep retrofitting less costly and disruptive. The Network DR2 provides diagnostic sensor data to the central computer and can operate as a stand-alone controller, which is programmable through a portable keyboard interface, or as a satellite of the central control system.

The Network DR2 includes Toro's Electro-Flow feature, which assists in the proper management of hydraulic flow and electric current demands for optimal operation of the control system during the irrigation cycle.

The Network DR2 central comes with a one-year, no-charge subscription to the exclusive Toro National Support Network, a support system for computer hardware and software.

**Circle No. 221 on Reader Inquiry Card**

**Walk-behind mowers offer versatility and value**

Walk Behinds from Ariens mulch, bag or side discharge grass and vacuum leaves.

The Walk Behinds come with 5-, 5.5- or 6-hp engines, made by Kawasaki, Briggs & Stratton or Tecumseh, respectively. The

mowing deck is made of 14-gauge steel. The 21-inch deck also features a "rolled-under" lip to enhance air-flow for better bagging and side discharge.

Standard equipment includes a 2½-bushel rear bagger, a side discharge and a Mulch-Master Plug and mulching cover. The handlebar was designed with ergonomics in mind, to fit the most comfortable position of the hands and wrists. The handlebar features four working positions, one service position and one storage position.

Optional Swivel System wheels are available and improve the Walk Behinds's performance around flower beds, trees and shrubs.

**Circle No. 222 on Reader Inquiry Card**

**Steel, tree support device minimizes branch breakage**

A simple wire device attached to a stake can support heavily-laden fruit or ornamental tree branches to prevent breakage.

The Fruit Brute is made by V.I.T. Products of San Diego.

The wire ends provide dual point penetration which dig into the stake under high compression stress to prevent slipping and to assure a positive locking action.

The Fruit Brute installs quickly and can be removed quickly.

Fruit Brute is extra wide at its bottom, for full closure at the top of the stake to create a centered entry for the barbed ends. Using your thumb and forefinger to gently squeeze the shank, the top of Fruit Brute easily opens for rapid installation.

Fruit Brute will not twist or unwind and will not splinter stakes.

**Circle No. 223 on Reader Inquiry Card**

**Low-profile light combines styling with efficient output**

The Malibu Low Profile Edge Light features a half-dome shape and low profile for use along driveways, sidewalks, patios, paths, steps and decks.

The light is secured into the ground by two stakes. The stakes can be removed so the light can be easily mounted on walls, fences and other flat surfaces.

When the ground stakes are removed, the edge light can be mounted to create dramatic lighting effects on flowers, plants, walls or architecture.

**Circle No. 224 on Reader Inquiry Card**

**ADVERTISER INDEX**

- 101 AgrEvo USA Co. .... 15G
- 102 AgrEvo USA Co. .... 15G
- 103 AgrEvo USA Co. .... 7G  
American  
Cyanamid..... 3G, 13L
- 104 American  
Cyanamid ..... 4G-5G
- 104 American  
Cyanamid ..... 14L-15L
- 121 Akzo Nobel Salt..... CV4
- 105 Badger Associates .... 15
- 106 Easy Lawn..... 25L
- 107 Echo, Inc. .... CV3
- 108 Finn Corp. .... 17L
- 109 Floratine Prod..... 13G
- 110 General  
Motors Corp. .... 18-19
- 111 Grasshopper Co. .... 7
- 112 John Deere ..... 4-5
- 113 John Deere .... 10G-11G
- 115 Nextel  
Communications..... 25
- 116 Sandoz  
Agro, Inc. .... 20L-21L
- 117 Tee 2 Green..... Cv2
- 118 Toro Co..... 1L-10L
- 119 Turfco Mfg. .... 19L
- 120 Wells Cargo..... 23L

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

Every month the Market Showcase offers the readers of Landscape Management a complete and up-to-date section of the products and services you're looking for. Check it out every month, or you might miss out.

# LANDSCAPE MANAGEMENT

"WE KNOW YOUR TURF"

FOR ADVERTISING INFORMATION AND AD PLACEMENT, CONTACT:  
**Stephanie Stiggers-Smith, 216-891-2719**  
 1-800-225-4569 (ext. 719)  
 Fax 216-826-2865

For all ads under \$250, payment must be received by the classified closing date. VISA, MASTERCARD, & AMERICAN EXPRESS accepted. Send to: Advanstar Marketing Services, 7500 Old Oak Blvd., Cleveland, OH 44130.

Send blind box replies to: Landscape Management, 131 W. First St., Duluth, MN 55802 (Include box number in address.)

## EQUIPMENT FOR SALE

### Lawn Sprinkling Cable Laying

Without a Line-Ward line laying machine you could be missing the best buy on the market!!



- Moves On Tracks, (Not Wheels), For Superior Traction
- No Restoration
- Up to 16" Depths
- 800 LB

Since 1972



Boring Attachment Available

#### Fast Parts Delivery & Service



Line-Ward Corp.  
 157 Seneca Creek Road  
 Buffalo, New York 14224  
 Fax: (716) 674-5334

Phone: (716) 675-7373 / (800) 816-9621

## FOR SALE

**LANDSCAPE DESIGN KIT 3**  
 48 rubber stamp trees, shrub, & plant symbols & more 1/8" scale. Stamp sizes range 1/4" to 1 3/4". \$77.50 + \$5 s/h VISA/MasterCard, or mo's shipped next day. Checks delay shipment 3 weeks. No cod's CA add 7.75% Sales Tax.

**AMERICAN STAMP CO.**  
 12290 Rising Rd., Dept. LM955  
 Wilton, CA 95693  
 Voice/FAX (916) 687-7102

**FREE** LANDSCAPE DESIGN BOOK WITH YOUR LDK 3 ORDER!  
Free offer expires 30 days from publication date.

**FREE** Landscape Design Book with your LDK order.

### COMMERCIAL INSURANCE FOR LAWN CARE FIRMS

#### "GREEN INDUSTRY SPECIALISTS"

M.F.P. Insurance Agency is dedicated to providing comprehensive insurance programs to the Green Industry at competitive prices. We back up this dedication with a staff of professionals who understand every facet of your business, from marketing to customer service. We know how to properly insure your company whether you're a sole proprietor or a multi-state operation.

Just as your customers look to you for lawn care advice, people come to us for insurance advice because they do not want to become insurance experts themselves. If you want good advice, the right coverage, and competitive rates, please contact:

Richard P. Bersnak, President

Jill A. Leonard, V.P.

1-800-886-2398  
 FAX: 614-221-2203

**M.F.P. Insurance Agency, Inc.**  
 50 West Broad Street, Suite 3200  
 Columbus, OH 43215-5917

Circle No. 301 on Reader Inquiry Card

**Customer Service Concerns?**  
 Call 800-346-0085, ext 477

### Creative curb

Concrete Curb & Landscape Border Equipment



Create Beautiful Concrete Borders & Curbs for Less than Half the Cost of Conventional Methods!

- Add on to your services/profits
- Low maintenance/easy to use
- Self-propelled, electric or gas powered
- Create various shapes and sizes
- Durable curbing is freeze/thaw tolerant

23042 Alcalde #C • Laguna Hills, CA 92653  
 (714) 587-8488 • (800) 292-3488 • FAX: (714) 951-2656

## THE TREE SAVER

### YOU CAN STAKE UP TO 20 TREES PER HOUR WITH THE TREE SAVER™ TREE STAKE KITS

Our unique rubberized tree anchoring system saves time & money, grows stronger root systems and helps protect you from injury liability. Call today for a **FREE** product sample.

**1-800-833-5323**

Lawson Landscape Products,  
 A Division of  
 Lawson & Lawson, Inc.  
 35 Industrial Drive,  
 P.O. Box 1784,  
 Martinsville, IN 46151

### TREE STAKE KITS

## RE-FLEX BORDER MARKERS

A Professional Marker for Outlining Driveways, Roads, Parking Lots, Construction Sites, Etc.

- Flexes upon impacting
- Covered in soft foam
- Highly reflective
- Quick installation
- 24" & 36" above ground lengths
- Light & heavy duty models
- Many colors & custom lettering



Call (617) 862-1343

Manufactured By: CPC, P.O. Box 442, Dept. LM, Lexington, MA 02173

### TRUCKCRAFT



**PICKUP INSERT DUMPER**  
 For FREE brochure, call toll free 24 hr.  
**1-800-755-3867**  
 WE SHIP NATIONWIDE

The next ad closing for **LANDSCAPE MANAGEMENT** is **Nov. 10, 1995 for the December 1995 issue.**



## MISCELLANEOUS



60'x100'x10'  
\$13,981

Build it yourself and save MONEY 5,000 sizes, all bolt-together ALL STEEL BUILDINGS. Call today for a price quote and a brochure.

Need Subscription  
Information?

Call 800-346-0085, ext 477

## EDUCATIONAL OPPORTUNITIES

Learn **LANDSCAPING**  
**TRAIN AT HOME** for an exciting hobby or profitable career. Start your own spare or full time contracting business, work in the garden/nursery field or landscape your own property - we show you how. Diploma awarded. **FREE BROCHURE** describes opportunities. No salesman. 1943  
 Write or call today! 1-800-326-9221  
 Lifetime Career Schools, Dept. LF01X5  
 101 Harrison St., Archbald, PA 18403  
 Accredited Member, Distance Education & Training Council

The next ad closing for  
**LANDSCAPE MANAGEMENT** is  
**Nov. 10, 1995** for the  
**December 1995** issue.

Become a **CERTIFIED  
 TURFGRASS PROFESSIONAL**

Train at home; master up-to-date turfgrass management practices and procedures. Covers 14 topics for all regions of U.S. Certification by The University of Georgia and PLCAA.



Contact Karen Bishop,  
 1-800-542-8097, UGA,  
 Georgia Center, 191,  
 Athens, GA 30602-  
 3603, for a brochure.

Circle No. 302 on Reader Inquiry Card

**LANDSCAPE  
 MANAGEMENT**

## GOLF COURSE MARKETPLACE

## SOFTWARE

**TRIMS for Windows**

The World's Most Popular  
 Grounds Management Software is now  
 available for Microsoft Windows.

**TRIMS for Windows Includes:**

- Budgets & Expenses Tracking
- Inventory & Purchase Orders
- Personnel & Labor Activity Records
- Equipment Maint. & Work Orders
- Chemical & Fertilizer Records
- Irrigation & Weather
- Fuel Reporting
- Event Scheduling
- TRIMS DrawView for site plans

TRIMS Software International  
 3110 N. 19th Ave. - Suite 190  
 Phoenix, AZ 85015

For More Information Call:  
 (800) 708-7467 or (602) 277-0067

## FOR SALE

### TURBO TURF HYDRO SEEDING SYSTEMS



- ☑ Seed-mulch-fertilize
- ☑ Faster germination
- ☑ Lower seeding costs
- ☑ 1 man operation
- ☑ No messy straw
- ☑ Units start @ \$1295

FOR A FREE HYDRO SEEDING INFO PACK CALL

**BADGER ASSOCIATES**

1108 THIRD AVE. NEW BRIGHTON PA 15066  
 800-822-3437

Reach over  
 21,000 key market  
 decision makers  
 in the new

**Landscape Management  
 GOLF COURSE  
 MARKETPLACE**

Call Stephanie Stiggers-Smith at  
 800-225-4569 ext. 719  
 or reach her by fax 216-826-2865.

**LANDSCAPE  
 MANAGEMENT**

# CLASSIFIEDS

For all ads under \$250, payment must be received by the classified closing date. We accept Visa, Mastercard & American Express. Credit card orders are accepted by phone. Send ad copy with payment to Stephanie Stiggers-Smith, LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, OH 44130 or call 216-891-2719. Fax Number 216-826-2865.

**BOX NUMBER REPLIES:** Mail box number replies to: LANDSCAPE MANAGEMENT, Classified Ad Department, 131 W. 1st St., Duluth, MN 55802-2065. Please include box number in address.

## EQUIPMENT FOR SALE

2 Low profile fiberglass chemlawn bodies 1200 gal. tank split 400/800 w/200 gal. torpedo tank, 3 hose reels complete with dual pumps, excellent condition. \$2,950.00 each. Call Cavalier Equipment 703-992-3355, Fax 703-992-2150. 10/95

**SPYDERS-** New/Used/Rebuilt. Full line of replacement parts and update kits. Kubota, Ruggerini, and Kohler engines & parts. Nichols-Fairfield torque hubs. We repair and rebuild Spyder hydraulic pumps and motors. **FAST SERVICE.** Call or write: Mobile Lift Parts Inc., 5402 Edgewood Rd., Crystal Lake, IL 60012. (800)397-7509, FAX (815)455-7366. 12/95

**REINCO HYDROGRASSERS** and power mulchers in stock. Opdyke Inc., (Philadelphia Area) 215-721-4444. 12/95

**BUCKET TRUCKS:** Straight Stick, Corner Mount and Knuckle Boom Cranes. Brush Chippers: New Morbark Disc and Drum Style. New Rayco Stump grinders. Best prices anywhere. Used Chippers: Asplundh, Morbark, etc. 2 to 8 usually in stock. Sprayers, Dumps, Stakes, Log Loaders, Crew Cab Chip Box Dumps, Railroad Trucks, 50 in stock. Sold as-is or reconditioned. We also buy your surplus equipment. Opdyke's, Hatfield (Philadelphia Area). 215-721-4444. 12/95

## POSITIONS WANTED

**LANDSCAPE MANAGEMENT CONSULTANT**  
 Consider an alternative to hiring a senior-level manager. Reduce costs and ensure employee loyalty through training in systems and procedures that will best help your business succeed. With nineteen years experience in landscape maintenance in Texas, Florida and the Midwest, I've helped companies grow, stabilize their work force, increase profits, and develop processes to enhance the company's performance. Estimating, scheduling, budgeting, crew organization and effectiveness, profitability and job quality are evaluated and a plan for improvement developed. T.D. MORLAND/HBMC (608)832-6401 10/95

## HELP WANTED

## GROW WITH US™

LESCO, Inc. has opportunities for candidates with sales or agronomic backgrounds for our Service Centers and Golf Course Routes. LESCO is a leading supplier of products and equipment for the green industry. Now accepting resumes for the following regions: Northeast, Mid-Atlantic, Southeast, Midwest, West and Southwest.

Send resume to:



LESCO, Inc., Attn: HRSL3  
20005 Lake Road  
Cleveland, OH 44116

EOE

**Atlantic Landscapes Opportunities:** We are currently seeking key people to work interior and/or exterior. We offer competitive salary, excellent benefits and unlimited opportunities in our: Richmond, VA; Hampton Road, Virginia Beach, VA; and Research Triangle, Raleigh, NC offices. Please call, fax or mail us a resume. Atlantic Landscapes, 1400B Nowell Rd., Raleigh, NC 26717. Phone 919-233-2930. Fax 919-233-2941. 11/95

**MAINTENANCE MANAGERS & SUPERVISORS:** One of the nation's largest and fastest growing full service landscape companies has an immediate need for experienced maintenance managers and superintendents, as well as entry level maintenance supervisors in the Midwest, Southwest, Mid-Atlantic, Northeast and Southeast states. The company seeks energetic, team oriented college graduates with proven leadership, communication and interpersonal skills. The company offers full-time positions, excellent advancement opportunities and exceptional compensation and benefits with an industry leader celebrating more than 50 years of uncompromising customer service. For immediate confidential consideration, please send or fax your resume to: The Brickman Group, Ltd., Corporate Office, 375 S. Flowers Mill Road, Langhorne, PA 19047, 215-757-9630, EOE 10/95

**SALES/MARKETING PROFESSIONAL-** Landscaping firm with long term reputation for exceptional quality seeks an experienced salesperson with knowledge in landscaping maintenance, installation and estimating. Horticultural degree preferred. Position is based in Boca Raton, Florida. Call 407-997-0696 or fax resume to Human Resources Att: Pat 407-997-0971. 10/95

**Sales, Grounds Maintenance - Design/Build.** Progressive, well established northern NJ horticultural enterprise seeks a mature experienced sales manager. The right individual must have a minimum of 5 yrs. experience in the industry, knowledge of grounds management a must. Horticultural degree a plus. Excellent benefits. If you have the ability to close sales and win the trust and respect of corporate clients, please fax your resume to 201-992-6050, attn.: Michael Branch, EOE M/F. 10/95

**MAINTENANCE SUPERVISORS, ACCOUNT MANAGERS:** One of the nation's largest landscape management companies looking for experienced maintenance and irrigation supervisors in No. California market. We're seeking energetic, creative, team oriented people. Excellent growth opportunities and benefits package. Please mail or fax resume to: Environmental Care, Inc., 825 Mabury Rd., San Jose, CA 95133. Fax (408)437-1817. 11/95

**ENVIRONMENTAL CARE, INC.,** Nations' largest full service landscape maintenance company is currently accepting applications for experienced maintenance supervisors. Proven horticultural knowledge and communication skills required. Company provides medical, dental, life insurance and 401K plan. For immediate consideration FX resume to 602-276-8191 or mail to 2902 E. Illini, Phoenix AZ 85040. Phone 602-276-5900. Attn: Bill Rademacher. 10/95

**Landscape Installation and Maintenance** Award winning regional based company seeking quality supervisors and foremen with leadership skills for our Columbus branch. Experience in grounds maintenance and/or installation a must. Small engine repair knowledge, lawn and tree care license, or irrigation experience a plus. These year round positions are available for immediate start. We offer top pay, medical and dental benefits, 401k and more. Send resume to **PROLAWN PROSCAPE**, 11488 Deerfield Rd., Blue Ash, Ohio 45242. 11/95

**Landscape Maintenance Division General Manager.** Gulf South leading landscape and irrigation contractor with multiple locations has recently expanded into the commercial landscape maintenance market in Louisiana and Mississippi. We are seeking an individual whose background includes a current position as Division Head or General Manager of a successful maintenance company for a minimum of 5 years with gross revenues of \$1,000,000.00 or more. Has a college degree in a related agricultural curriculum preferably Horticulture, Agronomy, Landscape Contracting or Entomology. Has the background and ability to take a fledgling division and develop the department including recruiting, budgeting, bidding, administration of contracts and billings, training and staff development, equipment purchasing, etc. Has a solid background and formal training in pesticides use and the ability to develop and oversee pesticide and chemical programs tailored to high profile properties. The individual must be energetic, goals oriented, a proven leader with good interpersonal and communication skills which are all necessary for the leading and planning of the operation. We offer an excellent compensation plan, medical benefits, retirement benefits, paid vacations, etc. For more information contact R. Rotolo at 1-800-641-2427. 10/95

**PRUNING DEPARTMENT MANAGER,** Creative leadership position with full management responsibilities. State-of-the-art facilities and equipment provided with the best arborists in the region. Minimum 5 years experience Pruning and Supervisory background. College degree helpful, but not necessary. **PHC FIELD SUPERVISOR,** 2-4 year related degree desired with a minimum of 2-3 years experience in disease & insect diagnosis and recommendations. Excellent communication skills combined with the ability to independently train, oversee, and supervise production crews is a must. Base salary + performance bonus, health, dental, disability insurance and profit sharing plan. Send resume with references and salary requirements to: Swingle Tree Co., 8585 E. Warren, Ave., Denver, CO 80231, Attn: Tom Tolka. 10/95

**Landscape Maintenance Foreman-KT Enterprises, Inc.,** a large Northern VA landscaping firm, is currently seeking highly qualified individuals to supervise within our commercial maintenance division. Candidates must have strong supervisory skills, solid horticulture background. CDL licensing and certified pesticide applicator license. Excellent wages, complete benefit package, 401(k) retirement plan and unlimited advancement. Submit resume with salary history to: Human Resources Department, 4001 Westfax Drive, Chantilly, VA 22021. (703)222-0449, fax (703)222-0578. EEO/AAP 11/95

## BUSINESS FOR SALE

Landscape design & maintenance company. Established for 10 years servicing Metro Detroit. Excellent growth potential. Well established accounts. Includes all equipment. Gross sales in 1994 over 390,000.00. Asking 140,000.00. Write Landscaping Services, P.O. Box 24015, Detroit, MI 48224-0015. 12/95

**COMPLETE NURSERY, RETAIL SALES and MAINTENANCE BUSINESS in PIEDMONT, NORTH CAROLINA... HIGH GROWTH RETIREMENT and RESORT AREA.** On busy highway. Thriving and growing. Owner will stay for transition. Call John McKeithen, Gouger, O'Neal & Saunders, Inc., 800-672-2228 or 910-295-2696. 11/95

Chicago; SW suburbs, growing Landscape and Maintenance company. Good profits, newer equipment. Grossing 600K plus, Commercial/Residential contracts. Owner willing to help with transition. Call PC Commercial 708-361-9000. 10/95

## EDUCATIONAL OPPORTUNITIES

**NOW...LEARN PROFESSIONAL LANDSCAPING AND GARDENING AT HOME!** Accredited program provides thorough training in all phases of commercial and residential landscaping. Diploma awarded. Free brochure describes program and opportunities in detail. Call 1-800-326-9221 or write Lifetime Career Schools, Dept: LF0115, 101 Harrison Street, Archbald, PA 18403. 12/95

## LEASE FINANCING

**LEASE** any type equipment for your business. Call AmeriNet Financial (216)543-3800. 3/96

## WHOLESALE DISTRIBUTOR

Needed to market environmentally friendly, liquid, slow-release fertilizer products direct from manufacturer. Ken Franke, P.O. Box 123, Plato, MN 55370; 800-832-9635. 10/95

## FOR SALE

**BUCKET TRUCK:** Hi Ranger 65', 57', 50'. Skyworkers with chip boxes. Asplundh bucket trucks with chip boxes. Asplundh brush chippers. Bean 55 gal. sprayers. Pete Mainka Enterprises, 633 Cecilia Drive, Pewaukee, WI 53072. 800-597-8283. 12/95

## BUSINESS OPPORTUNITIES

**FREE! LAWN AND PEST CONTROL SURVIVAL CATALOG.** Non-Compete Agreements, Equipment Assignment, Office Forms, Contracts, Sales Letters. **A+BB** 1505 S.E. Elm St., High Springs, Florida 32643. Voice-24HRS. 1-800-308-4522 ext. 3 12/95

Mail Blind Box Replies to:

## LANDSCAPE MANAGEMENT

Classified Ad Dept.,  
131 W. First St.,  
Duluth, MN 55802

Please include box number in address!

# Receive FREE information on products and services advertised in this issue.

## LANDSCAPE MANAGEMENT

OCTOBER 1995

This card is void  
after December 15, 1995

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
PHONE (\_\_\_\_) \_\_\_\_\_ FAX (\_\_\_\_) \_\_\_\_\_

I would like to receive (continue receiving)

LANDSCAPE MANAGEMENT each month:  Yes  no

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

1. MY PRIMARY BUSINESS AT THIS LOCATION IS: (check only ONE in either A, B or C)

A. LANDSCAPING/GROUND CARE AT ONE OF THE FOLLOWING TYPES OF FACILITIES:

- |  |   |
|--|---|
| 0005 <input type="checkbox"/> Golf Courses   | 0040 <input type="checkbox"/> Private/Public Estates & Museums                            |
| 0010 <input type="checkbox"/> Sport Complexes  | 0045 <input type="checkbox"/> Condominiums/Apartments/Housing Developments/Hotels/Resorts |
| 0015 <input type="checkbox"/> Parks  | 0050 <input type="checkbox"/> Cemeteries/Memorial Gardens                                 |
| 0020 <input type="checkbox"/> Rights-Of-Way, Maintenance for<br>Highways Railroads & Utilities | 0055 <input type="checkbox"/> Hospital/Health Care Institutions                           |
| 0025 <input type="checkbox"/> Schools, Colleges & Universities                                 | 0060 <input type="checkbox"/> Military Installations & Prisons                            |
| 0030 <input type="checkbox"/> Industrial & Office Parks/Plants                                 | 0065 <input type="checkbox"/> Airports  |
| 0035 <input type="checkbox"/> Shopping Centers, Plazas & Malls                                 | 0070 <input type="checkbox"/> Municipal Government/Municipal Facilities                   |
|  | <input type="checkbox"/> Other (please specify) _____                                     |

B. CONTRACTORS/SERVICE COMPANIES/CONSULTANTS:

- |  |   |
|--|---|
| 0105 <input type="checkbox"/> Landscape Contractors (Installation & Maintenance) | 0125 <input type="checkbox"/> Landscape Architects                          |
| 0110 <input type="checkbox"/> Lawn Care Service Companies                        | 0130 <input type="checkbox"/> Land Reclamation & Erosion Control            |
| 0112 <input type="checkbox"/> Custom Chemical Applicators (Ground & Air)         | 0135 <input type="checkbox"/> Extension Agents/Consultants for Horticulture |
| 0120 <input type="checkbox"/> Tree Service Companies/Arborists                   | 0140 <input type="checkbox"/> Irrigation Contractors                        |
|  | <input type="checkbox"/> Other Contractor or Service _____                  |

C. SUPPLIERS:

- 0210  Sod Growers, Turf Seed Growers & Nurseries  
0215  Dealers, Distributors, Formulators & Brokers  
0220  Manufacturers

2. WHICH OF THE FOLLOWING BEST DESCRIBES YOUR TITLE? (check ONE only)

- 10  EXECUTIVE/ADMINISTRATOR: President, Owner, Partner, Director, General Manager, Chairman of the Board, Purchasing Agent, Director of Physical Plant  
20  MANAGER/SUPERINTENDENT: Arborist, Architect, Landscape/Ground Manager, Superintendent, Foreman, Supervisor  
30  GOVERNMENT OFFICIAL: Government Commissioner, Agent, Other Government Official  
40  SPECIALIST: Forester, Consultant, Agronomist, Pilot, Instructor, Researcher, Horticulturist, Certified Specialist  
50  OTHER TITLED AND NON-TITLED PERSONNEL: (please specify) \_\_\_\_\_

3. SERVICES PERFORMED: (check ALL that apply)

- |   |  |
|---|--|
| A <input type="checkbox"/> Mowing               | I <input type="checkbox"/> Landscape/Golf Design             |
| B <input type="checkbox"/> Turf Insect Control  | J <input type="checkbox"/> Turf Weed Control                 |
| C <input type="checkbox"/> Tree Care            | K <input type="checkbox"/> Paving, Deck & Patio Installation |
| D <input type="checkbox"/> Turf Aeration        | L <input type="checkbox"/> Pond/Lake Care                    |
| E <input type="checkbox"/> Irrigation Services  | M <input type="checkbox"/> Landscape Installation            |
| F <input type="checkbox"/> Turf Fertilization   | N <input type="checkbox"/> Snow Removal                      |
| G <input type="checkbox"/> Turf Disease Control | O <input type="checkbox"/> Other (please specify) _____      |
| H <input type="checkbox"/> Ornamental Care      |  |

4. WHAT IS YOUR ANNUAL BUDGET FOR EQUIPMENT, CHEMICALS, SUPPLIES? (please check one)

- 1  Less than \$50,000      4  \$250,001-\$500,000  
2  \$50,000-\$100,000      5  More than \$500,000  
3  \$100,001-\$250,000

101	119	137	155	173	191	209	227	245	263	281	299
102	120	138	156	174	192	210	228	246	264	282	300
103	121	139	157	175	193	211	229	247	265	283	301
104	122	140	158	176	194	212	230	248	266	284	302
105	123	141	159	177	195	213	231	249	267	285	303
106	124	142	160	178	196	214	232	250	268	286	304
107	125	143	161	179	197	215	233	251	269	287	305
108	126	144	162	180	198	216	234	252	270	288	306
109	127	145	163	181	199	217	235	253	271	289	307
110	128	146	164	182	200	218	236	254	272	290	308
111	129	147	165	183	201	219	237	255	273	291	309
112	130	148	166	184	202	220	238	256	274	292	310
113	131	149	167	185	203	221	239	257	275	293	311
114	132	150	168	186	204	222	240	258	276	294	312
115	133	151	169	187	205	223	241	259	277	295	313
116	134	152	170	188	206	224	242	260	278	296	314
117	135	153	171	189	207	225	243	261	279	297	315
118	136	154	172	190	208	226	244	262	280	298	316



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

**BUSINESS REPLY MAIL**

FIRST-CLASS MAIL PERMIT NO 950 PITTSFIELD MA

POSTAGE WILL BE PAID BY ADDRESSEE

## LANDSCAPE MANAGEMENT

ADVANSTAR COMMUNICATIONS INC  
PO BOX 5054  
PITTSFIELD MA 01203-9698



Receive **FREE** information  
on products and services advertised in this issue.



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

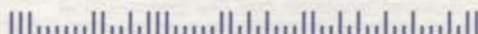
**BUSINESS REPLY MAIL**

FIRST-CLASS MAIL PERMIT NO 950 PITTSFIELD MA

POSTAGE WILL BE PAID BY ADDRESSEE

**LANDSCAPE  
MANAGEMENT**

ADVANSTAR COMMUNICATIONS INC  
PO BOX 5054  
PITTSFIELD MA 01203-9698



**LANDSCAPE  
MANAGEMENT**  
**OCTOBER 1995**

This card is void  
after December 15, 1995

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
PHONE (\_\_\_\_) \_\_\_\_\_ FAX (\_\_\_\_) \_\_\_\_\_  
HAVE A SALES REP CALL ME 18  (A)

I would like to receive (continue receiving)

LANDSCAPE MANAGEMENT each month:  Yes  no

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

1. MY PRIMARY BUSINESS AT THIS LOCATION IS: (check only ONE in either A, B or C)

A. LANDSCAPING/GROUND CARE AT ONE OF THE FOLLOWING TYPES OF FACILITIES:

- |  |   |
|--|---|
| 0005 <input type="checkbox"/> Golf Courses   | 0040 <input type="checkbox"/> Private/Public Estates & Museums                            |
| 0010 <input type="checkbox"/> Sport Complexes  | 0045 <input type="checkbox"/> Condominiums/Apartments/Housing Developments/Hotels/Resorts |
| 0015 <input type="checkbox"/> Parks  | 0050 <input type="checkbox"/> Cemeteries/Memorial Gardens                                 |
| 0020 <input type="checkbox"/> Rights-Of-Way, Maintenance for<br>Highways/Railroads & Utilities | 0055 <input type="checkbox"/> Hospital/Health Care Institutions                           |
| 0025 <input type="checkbox"/> Schools, Colleges & Universities                                 | 0060 <input type="checkbox"/> Military Installations & Prisons                            |
| 0030 <input type="checkbox"/> Industrial & Office Parks/Plants                                 | 0065 <input type="checkbox"/> Airports  |
| 0035 <input type="checkbox"/> Shopping Centers, Plazas & Malls                                 | 0070 <input type="checkbox"/> Municipal Government/Municipal Facilities                   |
|  | <input type="checkbox"/> Other (please specify) _____                                     |

B. CONTRACTORS/SERVICE COMPANIES/CONSULTANTS:

- |  |   |
|--|---|
| 0105 <input type="checkbox"/> Landscape Contractors (Installation & Maintenance) | 0125 <input type="checkbox"/> Landscape Architects                          |
| 0110 <input type="checkbox"/> Lawn Care Service Companies                        | 0130 <input type="checkbox"/> Land Reclamation & Erosion Control            |
| 0112 <input type="checkbox"/> Custom Chemical Applicators (Ground & Air)         | 0135 <input type="checkbox"/> Extension Agents/Consultants for Horticulture |
| 0120 <input type="checkbox"/> Tree Service Companies/Arborists                   | 0140 <input type="checkbox"/> Irrigation Contractors                        |
|  | <input type="checkbox"/> Other Contractor or Service _____                  |

C. SUPPLIERS:

- 0210  Sod Growers, Turf Seed Growers & Nurseries  
0215  Dealers, Distributors, Formulators & Brokers  
0220  Manufacturers

2. WHICH OF THE FOLLOWING BEST DESCRIBES YOUR TITLE? (check ONE only)

- 10  EXECUTIVE/ADMINISTRATOR: President, Owner, Partner, Director, General Manager, Chairman of the Board,  
Purchasing Agent, Director of Physical Plant  
20  MANAGER/SUPERINTENDENT: Arborist, Architect, Landscape/Ground Manager, Superintendent, Foreman, Supervisor  
30  GOVERNMENT OFFICIAL: Government Commissioner, Agent, Other Government Official  
40  SPECIALIST: Forester, Consultant, Agronomist, Pilot, Instructor, Researcher, Horticulturist, Certified Specialist  
50  OTHER TITLED AND NON-TITLED PERSONNEL: (please specify) \_\_\_\_\_

3. SERVICES PERFORMED: (check ALL that apply)

- |   |  |
|---|--|
| A <input type="checkbox"/> Mowing               | I <input type="checkbox"/> Landscape/Golf Design             |
| B <input type="checkbox"/> Turf Insect Control  | J <input type="checkbox"/> Turf Weed Control                 |
| C <input type="checkbox"/> Tree Care            | K <input type="checkbox"/> Paving, Deck & Patio Installation |
| D <input type="checkbox"/> Turf Aeration        | L <input type="checkbox"/> Pond/Lake Care                    |
| E <input type="checkbox"/> Irrigation Services  | M <input type="checkbox"/> Landscape Installation            |
| F <input type="checkbox"/> Turf Fertilization   | N <input type="checkbox"/> Snow Removal                      |
| G <input type="checkbox"/> Turf Disease Control | O <input type="checkbox"/> Other (please specify) _____      |
| H <input type="checkbox"/> Ornamental Care      |  |

4. WHAT IS YOUR ANNUAL BUDGET FOR EQUIPMENT,  
CHEMICALS, SUPPLIES? (please check one)

- 1  Less than \$50,000      4  \$250,001-\$500,000  
2  \$50,000-\$100,000      5  More than \$500,000  
3  \$100,001-\$250,000

101	119	137	155	173	191	209	227	245	263	281	299
102	120	138	156	174	192	210	228	246	264	282	300
103	121	139	157	175	193	211	229	247	265	283	301
104	122	140	158	176	194	212	230	248	266	284	302
105	123	141	159	177	195	213	231	249	267	285	303
106	124	142	160	178	196	214	232	250	268	286	304
107	125	143	161	179	197	215	233	251	269	287	305
108	126	144	162	180	198	216	234	252	270	288	306
109	127	145	163	181	199	217	235	253	271	289	307
110	128	146	164	182	200	218	236	254	272	290	308
111	129	147	165	183	201	219	237	255	273	291	309
112	130	148	166	184	202	220	238	256	274	292	310
113	131	149	167	185	203	221	239	257	275	293	311
114	132	150	168	186	204	222	240	258	276	294	312
115	133	151	169	187	205	223	241	259	277	295	313
116	134	152	170	188	206	224	242	260	278	296	314
117	135	153	171	189	207	225	243	261	279	297	315
118	136	154	172	190	208	226	244	262	280	298	316

# Its Patented Shredder Design Leaves Others Holding The Bag.



The image shows the ECHO ES-2000 Shred'n'Vac Plus, a white and black vacuum blower. It has a large black intake tube at the front and a white bag at the back. The bag has the ECHO logo on it. The blower has a handle and a trigger gun. The background is a light, textured surface.

## THE ECHO ES-2000 SHRED'N'VAC PLUS™.

There's nothing like it. Nothing as versatile. Nothing as thorough.

It vacuums up leaves, twigs and garden debris through a large diameter intake tube. The exclusive, patented, built-in shredder mechanism simultaneously turns yard waste into fine mulch in a single pass.

The rugged and powerful 23.3 cc Echo engine features superior dual-ring, piston-ported design. Its Pro-Fire® Electronic Ignition and purge pump-equipped carburetor give sure, fast starts and steady powerflow. There's a comfortable foam-cushioned rear handle. And large 1-3/4 bushel bag has a convenient shoulder strap and is easy to empty.

For the Echo Dealer nearest you, call 1-800-432-ECHO (3246). Or write Echo Incorporated, 400 Oakwood Road, Lake Zurich, IL 60047.

**ECHO®**

**Ask Any Pro!**

# We come in, solve all your deicing problems and what do we get in return?



## Thrown out in the cold.

Akzo Nobel Salt Inc. offers an extensive line of effective, economical deicing products, in bulk and in bags. **Halite**<sup>®</sup> salt crystals are a reliable, low-cost, all-around deicer. **JiffyMelt**<sup>™</sup> deicer is specially designed for melting snow and ice near highly sensitive vegetation. And, if you want to protect your steel structures but need the melting power of rock salt, turn to **LoCorr**<sup>™</sup> ice melter. So, go ahead, throw us out in the cold. Walk all over us. We don't mind. In fact, we like it. For more information about deicers from Akzo Nobel Salt, just give us a call at 1-800-379-9099.

Akzo Nobel Salt Inc., "Easy to do Business with..."



Akzo Nobel Salt Inc.