

Lawn & Landscape MAINTENANCE

MORE THAN 45,000 SUBSCRIBERS MONTHLY

MARCH 1994 • \$2.50

THE QUALITY DIFFERENCE

*Northern Lawns' Dale Amstutz
operates under one philosophy:
Well-served clients recognize the
value of quality over quantity.*

In this issue:

Pesticide Trends

Prevailing Mowing Heights

Organic Composting

Bidding & Estimating

Irrigation System Analysis

A 179424
PAUL
MICH



Northern
Lawns, inc.

57

THINGS THAT DON'T WORK WELL TOGETHER.



THINGS THAT DON'T WORK WELL TOGETHER.



Some things just aren't meant to go together. For example, baseballs and windows, Bush and broccoli, postal delivery persons and dogs. No matter how hard you try, they just don't fit together.

On the other hand, some things are meant to go together: beer and pretzels, football and Thanksgiving, peanut butter and jelly, kids and puppies.

When it comes to disease control on turf – especially brown patch, leaf spot, dollar spot, and summer patch – there are two products that go together pretty well, too.

Diseases Controlled By A Tank Mix Of Banner And Daconil 2787.

Anthracnose
Brown Patch
Copper Spot
Dollar Spot
Gray Snow Mold
Leaf Spot
Pink Snow Mold
Powdery Mildew
Red Thread
Rust
Spring Dead Spot
Stripe Smut
Summer Patch

So well, that it's as if they were almost created to be used in a tank-mix combination: Banner® and Daconil 2787.*

Because when used together, these two remarkable products provide even more remarkable results. Such as:

- Broader control
- Longer control
- Lower rates

Banner and Daconil 2787, when used at their lowest labeled rates, provide excellent control of all major diseases (except Pythium) on a 14- to 21-day program.

Better control, in fact, than you can get with the highest rates of either when used alone.

THINGS THAT DON'T WORK WELL TOGETHER.

These low rates minimize the amount of active ingredient applied to the turf, yet provide both longer disease control and a spectrum of control that would not have been possible otherwise.

Because this tank mix offers two different modes of action, there is less chance of disease recurrence. It also minimizes the development of insensitivity.

And the results are based on extensive research conducted all across the country.

Tank mixing Banner and Daconil 2787 can let you stay ahead of diseases – while you use the lowest labeled rates for cost efficiency.

If disease becomes established, you often have to throw a lot of money at the problem to make it go away. Many times, using a lot of different individual products to control the various diseases.

Using a preventive instead of a strictly curative approach to disease control has several advantages, including healthier, better-looking turf that has not been weakened by disease.

This alone is reason enough to try a Banner plus Daconil 2787 tank mix to prevent disease from ever getting a foothold on your turf. And it's available for both golf courses and professional lawn care.

This tank mix is so economical and effective, it makes taking a preventive approach to controlling turf diseases totally practical. Even on a tight budget.

In fact, so practical, we're sure you'll believe as we do that Banner and Daconil 2787 applied in combination are the greatest thing since sliced bread (and butter!).



THINGS THAT DO.



Who would have thought this combination would revolutionize the fight against brown patch and dollar spot? Yet a tank mix of Banner® and Daconil 2787®, at their lowest rates, will give you superior control. More than either fungicide can alone at their highest rates. And with longer residual. Which means brown patch and dollar spot won't just go away. They will stay away.

©1994 Ciba-Geigy Corporation, Turf and Ornamental Products, Box 18300, Greensboro, NC 27419. Banner is a registered trademark of Ciba-Geigy Corporation. Daconil 2787 is a registered trademark of ISK Biotech. Always read and follow label directions.



**CIBA IS THE PROUD SPONSOR
OF THE GCSAA
LEGACY SCHOLARSHIP AWARD.**

THINGS THAT DON'T WORK
WELL TOGETHER.



**THE INSPIRATION BEHIND
TRADITIONAL MOWER STEERING.**

THINGS THAT DO



**THE INSPIRATION BEHIND
THE TORO® T-BAR.**



It's a simple fact. The less energy you expend steering your mower, the more energy you'll have to fly through each job and be more productive. That's basically the thinking behind Toro® T-bar steering. Just put your hands on the bar, push, and you're off and running. Steer right, you turn right. Steer left, you turn left. Let go and it returns to neutral without engine kill. No grips to squeeze. No additional levers.

As you might expect, the Toro® T-bar is the preferred choice among commercial cutters. And it's available on any of our mid-size models.

To find out more, call us at 1-800-348-2424. If you'd like to see a demonstration, talk to your ProLine dealer (or just watch any bird that happens by).

TORO ProLine

When you want it done right.

Lawn & Landscape MAINTENANCE

VOLUME 15, NUMBER 3

MARCH 1994

FEATURES

Cover Photo:
Doug Walton,
LaVista, Neb.

34 Cover Story: The Quality Difference

In a market dominated by competitiveness, price-cutting and weather adversity, Northern Lawns operates under one simple philosophy: Well-served clients recognize the value of quality over quantity.

42 Maximizing Pesticide Performance

Selecting a pesticide is only half the battle when fighting pest infestations. Calibration, testing the pH and watering in the product are just a few of the factors leading to a successful program.

50 Reformulations Prevail In Competitive Market

Specialty pesticide manufacturers are working hard to produce new and reformulated products and packaging to encourage lower use rates, higher efficacy and reduced risk.

66 Mowing Heights Vary By Climate and Region

The one-third rule for mowing is no longer the top standard by which most contractors maintain turf height. Current research promotes growing most types of grass longer.

82 Contractors Anticipate Construction Upswing

Building construction is rebounding in most regions. The Northeast market is the slowest to recover in commercial work, while the West Coast's new housing and office segments continue to lag.

88 Using Compost: How Much Is Enough?

The final product of composting can be used successfully as an organic fertilizer. But the question of quantity perpetually stumps users.

95 Specialty Pesticides: The Calibration Rehearsal

Don't let poor preparation hinder the effectiveness of pesticides. Proper calibration, mixing, application and cleanup make crews more professional and customers more satisfied.

102 Estimating Strategies That Work

Today's landscape contractors are more likely to err by omission than by miscalculation. A typical mistake is forgetting to factor in hidden costs such as overhead.

111 Irrigation Lesson 21: Evaluating Existing Systems

Systems more than 12 years old may be due for an evaluation. A review now may provide the opportunity to implement new equipment resulting in valuable cost savings.



p. 66



p. 111



p. 88

DEPARTMENTS

138
Advertisers' Index

24
Association News

8
Business Watch

133
Calendar

136
Classifieds

10
Computer Bytes

29
Congressional Directory

6
Editor's Focus

14
Environmental Forum

120
Landscape News

26
Legislative News

16
News in Brief

123
People

124
Products

LAWN & LANDSCAPE MAINTENANCE (USPS 657-470 ISSN 1046-154X) is published 12 times per year. Copyright 1994 G.I.E., Inc. Publishers, 4012 Bridge Ave., Cleveland, Ohio 44113. All rights reserved. No part of this publication may be reproduced or transmitted by any means without written permission from the publisher. One year subscription rates, \$25 in the United States, \$29 in Canada and \$82 in other foreign countries. One year foreign airmail rate: \$182. Two year subscription rate: \$35. Subscriptions and classified advertising should be addressed to the Cleveland office. Second class postage paid at Cleveland, Ohio, and additional mailing offices. Postmaster: Return form 3579 to LAWN & LANDSCAPE MAINTENANCE, 4012 Bridge Ave., Cleveland, Ohio 44113.

Editor's Focus

I STILL REMEMBER the "rush" I got during my first visit to Washington, D.C., many years ago.

There's something mystical about the city where daily important domestic and foreign decisions are made. It's easy to feed off of the intensity and beauty of the environment. It's Washington where students and adults alike go to learn about the legislative process, walk the Mall from the Washington Monument to the Capitol, get their picture taken in front of the White House or attempt to run up the steps of the Lincoln Memorial.

Countless tourists visit the historic attractions every year, but fewer — once they're in Washington — take the time to meet and visit with their elected officials. Most people think their senator or congressman won't have time for them, (a feeling which isn't often far off the mark), but with enough advance notice, your representative will generally make an aide or staff member available for a few minutes to hear you out.

You'd be amazed the impact a brief conversation can have. One lawn care operator, eager to meet his new representative, approached his congressman with no specific agenda other than to introduce himself. The politician, somewhat on the defensive, wanted to know what the lawn care owner wanted. When the individual said he only wanted to meet him and see what he could do to help him out back home, the politician was flabbergasted but certainly would never forget the lawn care operator.

That's why legislative days, sponsored annually by a number of lawn and landscape associations, is an important program not to be missed. Not only does it give individuals a better sense of the mood of Washington, it's an organized opportunity to get your two cents in.

Most recently, about 85 representatives from the Professional Lawn Care Association of America visited the Capitol city for a firsthand look at the legislative process. They heard from representatives about the Federal Insecticide Fungicide and Rodenticide Act, the Clean Water Act, pesticide licensing and the Environmental Protection Agency.

When gauging feedback and gaining impressions, it was interesting to note varying opinions. Some were relieved that the federal government, Sen. Joseph Lieberman, D-CT, in particular, didn't have any immediate plans to introduce his well-known lawn care bill. (Actually, Lieberman feels just as strongly as he's ever felt about lawn care legislation, but it's not his only priority.)

Others were ready to go back home and proactively work with state officials on posting and notification legislation. Still others, specialty pesticide manufacturers mostly, were scratching their heads wondering how



to secure a better relationship with the EPA.

A year ago, many openly speculated about the much discussed "environmental" agenda of the new Clinton/Gore administration and what it would do to pesticide registration and product applications. A year later, that speculation has changed to bewilderment. Few, if anyone, have any idea what's really in store for the lawn and landscape industry. In fact, the administration has yet to appoint some key officials in this area.

To date, the budget, wars in Somalia and Bosnia and the health care controversy have received top priority in Washington. But current industry wisdom is that a pesticide debate of some kind will start soon and last until the end of the year.

It won't take it's usual shape and form — most notably FIFRA — rather it will appear via the Clean Water Act or a portion of the Water Pollution Prevention and Control Act. In any event, it represents a multifaceted attack through surface runoff, groundwater concerns, pollution and exposure to children.

While most attendees walked away feeling pretty secure in the knowledge that the federal government has no immediate plans to impede their lawn and landscape businesses, association officials are quick to point out that we can't start feeling too comfortable.

Case in point, preliminary results from a Golf Course Superintendents Association of America suggested that superintendents exposed to certain pesticides show elevated levels of non-Hodgkin's lymphoma. We know that no direct correlation has been made between pesticides and cancer, but tell that to Paul Harvey. He reported that the link has finally been made between the two.

Getting comfortable in and around Washington is different from getting complacent with politicians. — *Cindy Code*

EDITORIAL

Cindy Code
Editor/Co-Publisher

Cathy Hoehn
Senior Editor

Julie A. Evans
Bob Gitlin
Contributing Editors

GRAPHICS/PRODUCTION

Charlotte Turcotte
Art Director

Jami Childs
Production Manager

Helen Duerr O'Halloran
Tracy Green
Carolyn Badger

Richard J. W. Foster
President

Christopher W. Foster
General Manager

John Roddy
Controller

Rosalie Slusher
Circulation Manager

Mark Fosse
Market Research Manager

Fran Franzak
Books Manager

ADVERTISING/MARKETING

Maureen Mertz
Co-Publisher/National Sales Manager
1723 South Hill
Milford, Michigan 48381
810/685-2065
Fax: 810/685-2136

Tim Yedinak
Midwest Sales Manager

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

ADVISORY BOARD

Karl Danneberger, Tom Garber
Joe Vargas, Patricia Vitum
Richard White

EDITORIAL OFFICES

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

Subscriptions and Classifieds:
216/961-4130

LLM is a member of:

The Professional Lawn Care Association of America
The Associated Landscape Contractors of America
The Professional Grounds Management Society
The Irrigation Association
Responsible Industry for a Sound Environment
Turf & Ornamental Communicators Association
The Ohio Turfgrass Foundation
American Association of Nurserymen
National Landscape Association
The Composting Council

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



Has Your Paperwork Grown Out Of Control?



Free Demo Disk!
Version 4.01

Complete Training
Video now Available!

Mow it down fast. With CLIP, the Computerized Lawn Industry software Program that cuts down your paperwork to just minutes a day.

At the push of a button or the click of a mouse, CLIP handles your most time-consuming chores. Routing. Billing. Financial reports. Scheduling. You can even use CLIP to monitor crew activities throughout the day. And now we've upgraded CLIP for even easier use.

What's all this mean? You'll spend less time with paper and more time with people. You'll make fewer errors. You'll service your customers better. And you'll increase your business.

Never used a computer? No



Simply key in information and CLIP tracks your scheduling and routing.

problem. CLIP's easy-to-use menu guides you every step of the way. Just supply the customers and jobs, and CLIP does the rest.

You also get complete user support through our *CLIPnotes*

newsletter, direct helpline, and annual users conference.

What's more, CLIP grows as your needs grow. When you're ready, you can add other modules such as general ledger, payables, and payroll.

So cut yourself a break. Call for the latest CLIP free demo disk right now.



Specify
IBM disk size
when ordering.



For a free demo disk and sample print-outs, call:

1-800-635-8485

CLIP ...Cuts Paperwork Down To Minutes A Day.

USE READER SERVICE #49

Business Watch

SINCE A significant portion of the lawn and landscape business depends on building construction as an economic indicator, contractors have to be pleased with the latest government housing figures.

According to the Bureau of Census, housing starts continued their dramatic swing upward, rising 6.2 percent in December following a 4.3 percent increase in November. New home sales also reported an 11.4 percent increase nationally, with the most substantial increases occurring in the Midwest and South.

According to the National Association of Realtors, sales of existing family homes also posted impressive gains in December (6.7 percent nationally).

In other economic news, the unemployment rate remained stable throughout the first two months of 1994, while inflation has been kept in check and consumer confidence continued to build. The Conference Board, which tracks consumer attitudes about the economy, reported that consumer confidence recently reached its highest level since September 1990, adding to the country's optimistic economic outlook.

Generally, the economy is growing nicely.

UNEMPLOYMENT RATE

OCT.	NOV.	DEC.	JAN.
6.8	6.5	6.4	6.7

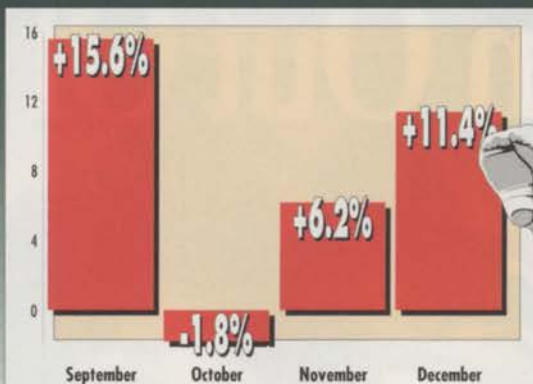
CONSUMER PRICE INDEX*

SEP.	OCT.	NOV.	DEC.
0.0	+0.4	+0.2	+0.2

*Percent change from preceding month (seasonally adjusted).

THE UPSWING CONTINUES

New home sales remained robust in December.

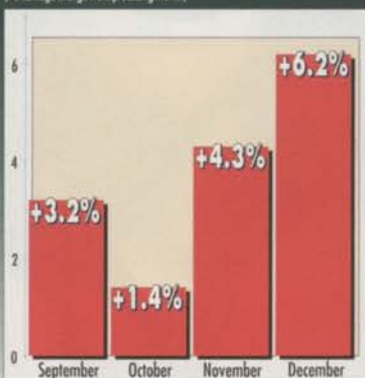


(Percentage change from preceding month)

Source: Bureau of the Census

HOUSING STARTS

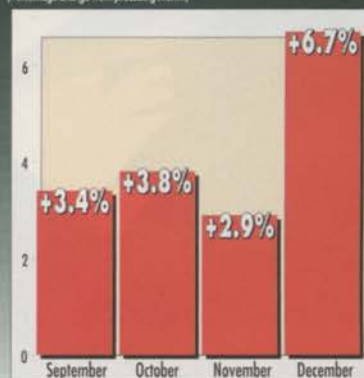
(Percentage change from preceding month)



Source: Bureau of the Census

SALES OF EXISTING HOMES

(Percentage change from preceding month)



Source: National Association of Realtors

WEATHER WATCH

HOW CLEAR SKIES AND WINDS ARE LINKED



Violent winds that kick up surf along the coasts are generally part of localized weather systems. As the spring season begins, temperatures and precipitation should be about normal through most of the country.

Source: Weather Services Corp.

The National Weather Service 60-day outlook for March and April calls for at least a 55 percent probability of below normal temperatures in the southern Plains eastward through the Gulf states and Tennessee Valley to the southeastern U.S., and then northeastward through the middle Atlantic states. There is at least a 55 percent chance of greater than median precipitation from the southern Rocky Mountains eastward through the southern half of the Great Plains, most of Texas and the immediate Gulf coast as well as all of Florida.

60-DAY OUTLOOK FOR MARCH AND APRIL

Temperature Probability



Precipitation Probability





Don't make a move without us.

Put down the shovel and let's think about how to make money in a business as tough as ours.

You're a professional and proud of your work. What's more, you guarantee it. In writing or verbally. Every job puts your reputation and your income on the line.

So, give everything you plant or transplant the advantage of ROOTS™ Concentrate. Absolutely nothing can help a plant generate strong and vigorous roots like ROOTS™.

ROOTS™ is a patented compound developed by scientists working with the Yale School of Forestry. ROOTS™ increases cell wall permeability and root mass, enhancing the plant's ability to uptake water and nutrients.

Forty-five university studies have documented the ability of ROOTS™ to improve stress tolerance and reduce dieback. ROOTS™ is non-toxic and 100% natural. That makes it perfect for environmentally sensitive clients and conditions. Remember: if you want everything you plant or transplant to thrive in its new home, don't make a move without us. For information, call us at 203-787-5472.



A Division of LISA
Products Corp.
roots inc.

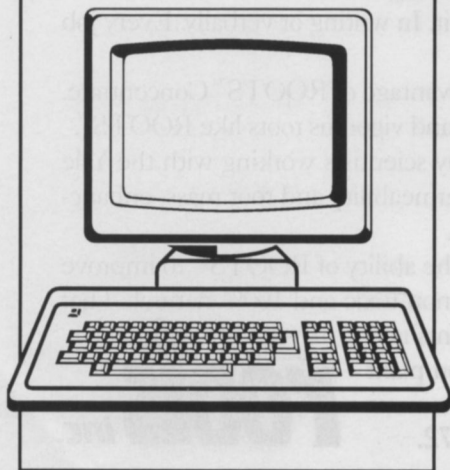
Computer Bytes

COMPUTER BYTES HOTLINE

Confused by all the computer hardware and software choices? Call the Computer Bytes Hotline at (800) 348-5886 for help in answering your questions.

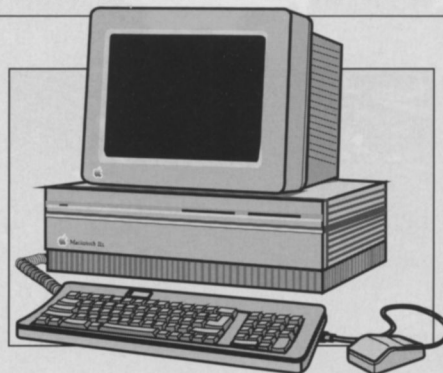
Lawn & Landscape Maintenance has established the Computer Bytes Hotline to help you work through the hardware and software maze. If you don't know who else to ask, ask us! Talk to someone knowledgeable about computers and software every Wednesday between 10 a.m. and noon and 1-3 p.m. Central Time. Your questions and problems will be shared with other readers in the monthly Computer Bytes column!

This month's Computer Bytes Hotline is sponsored by Rain Bird Sales Inc.-Contractor Division and Irrigation Technologies Inc., teamed in the development of industry specific software applications.



SHOULD I UPGRADE OR START OVER?

YOU WANT to take advantage of the latest hardware and software technology to help you manage your business better and compete more effectively. The problem is that your system is a little outdated and you don't know whether to upgrade your existing system or start over.



options to correct the problem: replace the hard drive, add an additional external hard drive or use a disk compression utility to increase your current hard drive space.

If your drive is small (under 100 megabytes) you

may not get enough extra space with a compression utility.

Compression utilities also have a couple of drawbacks. If you use DoubleSpace (included with DOS 6.0 and higher) you will find that it takes a while to defragment your drive because DoubleSpace is run each time you use the defragmentation utility. Compression utilities also use a lot of memory which can hinder your ability to run certain memory intensive applications.

Replacing the current hard drive may be a hassle because you'll have to reload all of your software. Adding an external hard drive may be the best answer for more space. Typically, you can find external hard drives for under a dollar per megabyte and the external drive will be easy to install and use.

There are several good reasons to consider upgrading your present system. Maybe you don't have enough memory to run some of the newer software programs or perhaps the programs run too slowly to meet your productivity needs. Or maybe the hard drive is too small to store applications.

If your system is a 386 or 486 machine, you may be able to upgrade at a very low cost and enjoy improved performance.

If your present system is a 286 class machine or older, however, you should probably consider buying a new system. Even though some 286 machines can be upgraded, the process may cost about the same as buying a new computer yet the end performance may suffer in comparison.

CPU. Many 386 systems can be upgraded to 486 performance by changing out the central processing unit. Cyrix makes a chip that replaces the original CPU with a 486 class processor (Cx486DRx2). The chip includes only 1K of cache but can still boost performance by 200 percent or more.

The Cyrix chip has a list price of \$299 to \$399, depending on the type of chip, but can be purchased for less from your dealer. Replacement is easy; simply use the chip puller (included) to carefully pry out the old 386 chip and replace it with the new chip.

Cyrix also offers math-coprocessors for \$79 to \$99 list price. If you want to run CAD applications you will likely need to add the co-processor as well.

If you are using a 486 class machine and want to upgrade from a 25 or 33 Mhz SX to a full DX class processor, you can order an upgrade directly from Intel for \$309 to \$499.

The Intel chip is known as an OverDrive processor and typically snaps right on top of the current CPU chip. The OverDrive processor not only speeds performance substantially, but it includes the math-coprocessor as well.

HARD DRIVE. If you lack room on your current hard drive, there are a couple of

MEMORY. Many times additional memory is all you need to run the applications you want. Currently, memory is selling for about \$40 per megabyte. The key is to be sure you get the correct size of SIMM chip (single inline memory module) for your computer. Four megabytes of memory is the minimum you should consider.

When making the decision to upgrade, keep in mind that a new 486DX class machine running at 33 megahertz can be purchased loaded for under \$1,500. If you upgrades cost more than half what a new computer costs, consider buying new.

The best buys on the market right now are 486/33s and 486/66s. If you buy new, be sure the system can be easily upgraded and don't expect to pay more than \$1,500 for the 486/33 or \$2,300 for the 486/66. These prices include fully loaded systems with 212 to 424 megabyte hard drives, software, mouse and 14- to 15-inch SVGA monitors.

— John Elliott

The author is a director with Irrigation Technologies Inc., Houston, Texas. Readers are welcome to write to the author via LLM with questions or topics for discussion in future Computer Bytes columns.

Lawn & Landscape MAINTENANCE

- Payment Enclosed Bill Me
 1 Year \$25.00 2 Years \$35.00
 Canada 1 Year \$29.00 Foreign \$82.00

Date _____

Name _____

Title _____

Phone _____

Company _____

Address _____

City _____ State _____ Zip _____

WHAT IS YOUR PRIMARY BUSINESS AT THIS LOCATION? (Please check only one)

I. CONTRACTOR or SERVICES:

1. Landscape Contractor
(maintenance & installation)
 2. Chemical Lawn Care Company
(excluding mowing maintenance)
 3. Lawn Maintenance Contractor
 4. Ornamental Shrub & Tree
Service
 5. Irrigation Contractor
 6. Landscape Architect
 7. Other Contract Services
(please describe) _____

III. DISTRIBUTOR/ MANUFACTURER:

1. Dealer
 2. Distributor
 3. Formulator
 4. Manufacturer

N. OTHERS ALLIED TO THE FIELD:

1. Extension Agent, (Federal, State,
County, City, Regulatory
Agency)
 2. School, College, University
 3. Trade Association, Library
 4. Others (please describe) _____

II. IN-HOUSE LAWN CARE/ MAINTENANCE:

1. In-House Maintenance Includ-
ing: Educational Facilities, Health
Care Facilities, Government
Grounds, Parks &
Military Installations,
Condominium Complexes,
Housing Developments,
Private Estates, Commercial &
Industrial Parks.

What Best Describes Your Title?

- Owner, Pres., Vice Pres.,
Corp. Officer
 Manager, Director, Supt.,
Foreman
 Agronomist, Horticulturist
 Entomologist, Plant Pathologist
 Serviceman, Technician
 Scientist, Researcher
 Company, Library copy only
 Other (please specify) _____



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

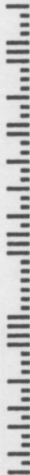
BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO 1322 CLEVELAND OH

POSTAGE WILL BE PAID BY ADDRESSEE

Lawn & Landscape
MAINTENANCE

PO BOX 5817
CLEVELAND OHIO 44101-9867



the PROficient Performers

by LandPride® Turf



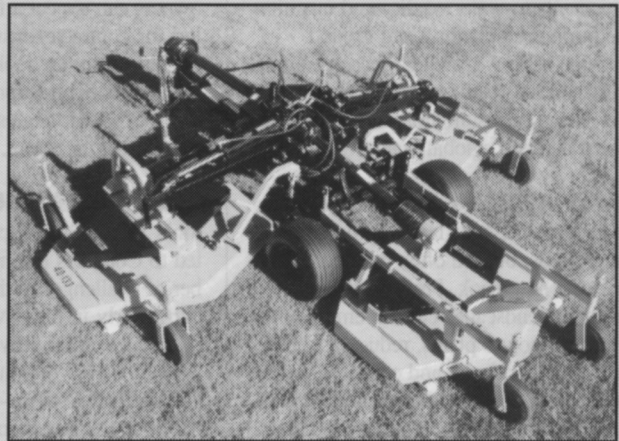
Overseeder 48" or 72"



10' Primary Seeder

All-Flex Mowers 11' or 16½'

- Zero turn cutting without skips
- Stays put on slopes – in-line wheels
- Floating decks with anti-scalp rollers
- Rear discharge passes ANSI safety tests
- Designed with the commercial operator in mind



11' All-Flex Mower



100 Gallon Sprayer

The Seeder Leader

- Rugged, dependable, precise
- Non-corrosive, easy to calibrate seed cups
- Tapered aggressive or curved slicing blades on the Overseeders
- 30 bushel hopper on the Primary Seeders
- Pull type or 3 point Primary Seeders
- Seed rates of 5 to 425 lbs. per acre

ChemPro® Sprayers

- Vehicle mounted or trailer sprayers
- 20' level float booms - stops boom bounce
- Metercone™ nozzles - excellent pattern, long life
- Whirlfilters™ - self cleaning
- 100 - 370 gallon capacities

LAND PRIDE  TURF

The choice in professional turfcare.

CALL
1-800-255-0132
for your nearest
LANDPRIDE TURF DEALER

Environmental Forum

ENVIRONMENTAL HEROES.

Properly maintained turfgrass is among America's top "environmental heroes," members of Congress were told last month during a Capitol Hill briefing by the Professional Lawn Care Association of America.

According to PLCAA's position paper "Environmental Benefits of Properly Maintained Turfgrass," scientists throughout the world are increasingly documenting the significant role turf plays, especially in urban/suburban settings where the removal of turf and other vegetation has amplified problems such as the "urban heat-island effect."

Moreover, properly maintained turfgrasses offer the environment a wide range of benefits, PLCAA said, ranging from production of oxygen, temperature control and allergy control to pollution absorption, fire retardation and improvements to water quality and quantity.

In addition, tree planting and ground covers such as low-growing, dense perennial turfgrass sod in urban areas and communities reduces energy consumption and contributes to efforts to reduce global warming trends.

PROMOTE LANDSCAPE BENEFITS. The environmental benefits of landscaping are not only enormous, but are often overlooked, according to a new book. Properly designed and installed landscapes can cut emissions from electric-power plants, reduce air pollution as well as acid rain and conserve water.

The analysis, developed from government resources and other sources is detailed in "Energy-Efficient and Environmental Landscaping: Cut Your Utility Bills By Up To 30 Percent and Create a Natural, Healthy Yard." The current book draws on four sources: "Household Energy Consumption and Expenditures 1990," published by the U.S. Department of Energy; "The 1993 Information Please Almanac;" the newsletter of the Rocky Mountain Institute; and the "Alternative Energy Handbook."

According to "Energy-Efficient and Environmental Landscaping," energy-conserving landscapes could yield the equivalent of closing 23 large power plants or taking more than 26 million cars off the road. Such designs also conserve water and encourage recycling of yard wastes, according to the authors.

Proper planning and installation of landscapes can reduce heating cost by 30 percent, air conditioning costs by 50 percent to 75 percent and outdoor water consumption by 80 percent.



Green industry professionals have an obligation to promote the benefits of turf, trees and ornamentals. Photo: Clean Cut

According to the book, set for March publication, strategic landscaping can save most home owners \$200 to \$750 per year. Research conducted in Florida has shown home owners can expect a four-year payback period for contractor-installed landscapes.

Included in the book is an appendix of plant recommendations and descriptions and a chart of solar angles at varying latitudes to aid in tree placement.

TACKLING CHALLENGES. President Clinton's \$1.5 trillion fiscal 1995 budget, submitted to Congress last month, will offer a number of challenges to the lawn care industry, particularly in the environmental arena.

Included in the Environmental Protection Agency's \$6.7 billion funding is continued support for pesticide-reduction programs.

"It's nothing new for the EPA, but it's just a new push," according to Tom Delaney, PLCAA director of government affairs. "Some people think they're going overboard in their regulatory duties."

While EPA may be pressing for less use of toxic pesticides, the green industry is making its own inroads in addressing the perception that pesticides are overused, Delaney said.

"Sometimes use of a more toxic pesticide results in less overall exposure," he said. "It works better and in a smaller quantity. This is possibly a better choice than using less-toxic chemicals, and it's beginning to be acknowledged."

An alternative, Delaney stressed, is the integrated pest management approach.

Still, the proper maintenance of healthy turf is the best approach, he said. "The idea is plant health. If there is proper fertilizer, proper seeds and proper soil preparation before seeding, healthy turf will minimize the need for treatment with pesticides. You take care

of the plant upfront. Arborists and the ornamental plant people have been practicing that for many years."

However, pesticides become an important part of lawn care professionals' obligations when they take on maintenance of a property which has not been properly mowed or watered, or where incompatible grasses have been mixed.

GROUND WATER PROBLEM?

The Revised Clean Water Act Reauthorization Bill, now before Congress, may be the lawn care industry's Achilles' heel, according to PLCAA. Testimony last month revealed that lawn chemicals are being targeted as one of the

contributors to pollution of rivers, lakes and streams.

"We have scientific proof from universities that fertilizer and chemicals get caught up in the thatch and don't contribute to runoff pollution," said PLCAA's Delaney.

Yet in testimony on Capitol Hill last month, Carol Browner, EPA administrator, said "polluted runoff that streams into our waterways from city streets, lawns, farms and industrial plants...is the biggest barrier we face to cleaning up the nation's waters."

"Do-it-yourself treatments applied by homeowners, however, may be contributing to both the problem and the perception," Delaney said. "Applications to sidewalks, bare patches and just before it rains have created situations where runoff has occurred and tests have shown water contamination as a result. Yet the trained professional applicator is not to blame."

STAYING AHEAD OF THE GAME. Among 253 small- and medium-sized firms surveyed by a national consulting firm, 37 percent said environmental regulations were their "most burdensome" they had to deal with, according to a report in *The Wall Street Journal*.

Other respondents cited tax rules (16 percent) and work place regulations (15 percent) as the most difficult to deal with.

Not unlike small manufacturing firms, landscape professionals need to keep up to date on the ever-changing rules of the game.

According to Michael Cantwell of the Grant Thornton consulting firm, quoted in *The Journal*, as environmental law gets more complex, "it places an enormous burden on business just to keep abreast of it, much less interpret it and fill out all the compliance forms." ■

With REWARD® herbicide, there's no waiting for it to go to work.

Because REWARD is absorbed by broadleaf and grass weeds just minutes after application. On golf courses, around greenhouses and nurseries, in right-of-ways — wherever you have a weed problem. And because it works much faster than Roundup and other herbicides, REWARD can be used in a lot more situations. Plus it's rainfast in only 30 minutes.



Also with REWARD, there's no worry about the surroundings. It stays where you spray it, controlling weeds without affecting non-target vegetation.

NO WAIT. NO WORRY.

REWARD herbicide. For broad-spectrum weed control without the wait — and without the worry.

For more information, contact your distributor or call Zeneca at 1-800-759-2500.

ZENECA
Professional Products

Always read and follow label directions.
REWARD® is a trademark of a Zeneca Group Company.
Roundup is a trademark of Monsanto Company.
A business unit of Zeneca Inc.
©1994. Zeneca Inc.

News in Brief

NEWS DIGEST

Kawasaki Motors Acquires Kawasaki Loaders

Kawasaki Motors Corp. acquired Kawasaki Loaders Inc., formerly owned by Sumitomo Trading Co. (holding 65 percent ownership) and Kawasaki Heavy Industries (35 percent ownership).

Kawasaki Loaders, established in 1981, sells and distributes midrange and larger wheel loaders for a number of industries.

Kawasaki Motors also acquired North American distribution for Staffa hydraulic motors, formerly performed by Vickers Inc., a subsidiary of TRINOVA Corp. The move follows the sale of Vickers' Staffa motor business to Kawasaki Heavy Industries.

Sales and service will be performed by the newly formed Precision Machinery Division of KMC in Grand Rapids, Mich.

Henry Ono, vice president of KMC's engine division, is also now vice president of the Precision Machinery Division.

Encore Announces Rental Distribution

M.T.A. Distributors in Nashville, Tenn., signed an exclusive agreement for rental distribution of the Encore Pro-Line.

Per the agreement, MTA will handle all marketing and distribution to rental stores throughout the United States. Encore's Pro-Line includes mowers, dethatchers, slicers, blowers and edgers.

Terra Purchases Androc Products

Terra International acquired Androc Products, a marketer and distributor of specialty and vegetation management products.

Four salesmen from Androc joined Terra's staff.

The acquisition enables Terra, which manufactures fertilizer, crop protection products and seed, to better serve customers in its northern division.

EcoScience Seeks Insecticide Registration

EcoScience Corp. is seeking U.S. Environmental Protection Agency registration of Back-Off™-1, a fungal-based sprayable system for the control of soft-bodied insects in greenhouses. The product is said to control aphids and whiteflies which are known to cause significant damage to ornamental crops grown in greenhouses, particularly poinsettias, chrysanthemums and cut and potted flowers.

A registration for additional uses of the product for nursery and specialty crops will most likely be filed later this year.

Monsanto, Rohm and Haas Strike Deal for Dimension

Monsanto Co. of St. Louis signed a letter of intent to sell its worldwide pyridine family of chemistry — including Dimension turf herbicide — to Rohm and Haas Co. of Philadelphia. The sale is expected to be completed midyear.

Other products involved in the sale include thiazopyr, a new herbicide used for control of weeds in orchards and olive groves in Spain as well as for tree fruit and forestry uses in South Africa (registration is pending in the United States); and thifluzamide, a fungicide in development for use in a number of crops. The sale includes all compounds, intellectual property, trademarks and registrations.

"It's a family of related chemicals essentially based on fluorine chemistry," said Jim Budzynski, product director, dithiopyr, Monsanto new products division. "Frankly, it would be difficult, if not impossible, to sell one and not the other. They have common manufacturing steps and it makes sense to sell them as a package."

Bob Gordon, turf and ornamental product manager for Rohm and Haas, said the company is excited by the acquisition of Dimension and the opportunity to enhance its presence in the lawn maintenance market.

"It broadens our turf and ornamental product line by including a major herbicide, particularly one for the crabgrass and goosegrass markets which is significant in lawn care," Gordon said. "Dimension represents a technically superior product."

Budzynski said it was a series of difficult decisions that led Monsanto to divest itself of this chemistry. The primary reason is based on Monsanto's desire to focus its resources on products that have technical fits in key agricultural crops such as corn, soybeans and wheat.

But he was quick to interject that Monsanto is not abandoning the turf and ornamentals market.

"Monsanto will vigorously develop products for the turf and ornamentals market as an extension of technical pursuit for one of its core agricultural uses," he said. Roundup is a prime example of this expansion. Limit, sold to PBI Gordon; No-Mix, sold to an independent firm; and Manage, a new postemergent herbicide for control of yellow and purple nutsedge, yet to gain registration, are all examples of products developed by Monsanto specifically for the specialty pesticides market.

"It's increasingly tough for any company to develop technology targeted primarily to the specialty business. The industry is maturing and as it matures margins erode," he said.

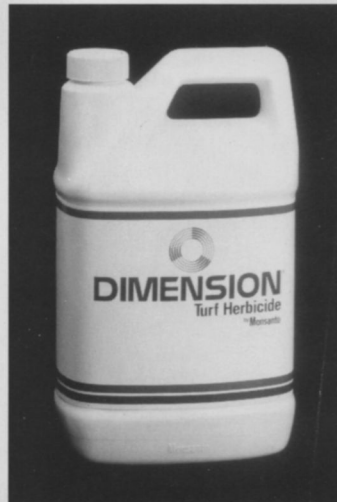
Budzynski said that the end-user should not notice any change in product, distribution and service because Monsanto is committed to ensuring an orderly and uninterrupted transfer to Rohm and Haas.

Dimension, after several years of anticipation, finally received federal Environmental Protection Agency registration in 1991 for both pre- and postemergent control of annual grasses and broadleaf weeds in both cool- and warm-season grasses.

The product was accepted in the lawn and landscape market, but the herbicide got caught up in a crowded pipeline at Monsanto. About five or six years ago, the company had about 20 new products in development. However, in the last couple of years, the products all got bigger demanding more funds in the development area, Budzynski explained.

Additionally, the competitiveness of the preemergent market led to a smaller piece of the market than anticipated.

"It's probably better that it was divested to someone willing to make a go of it than to let it limp along," he said.



Rohm and Haas should own Dimension by midyear.

GCSAA Pesticide Study Raises Questions

Industry officials are questioning the conclusiveness of a preliminary university study reporting that golf course superinten-

dents exposed to certain pesticides show elevated levels of non-Hodgkin's lymphoma.

The preliminary findings, compiled for the Golf Course Superintendents Association of America, are significantly greater than other recent studies have found among pesticide

applicators, according to the Responsible Industry for a Sound Environment.

The research team, led by Dr. Burton Kross, associate director of the University of Iowa's Institute of Agricultural Medicine and Occupational Health, statistically analyzed death certificates among 618 superintendents who died between 1970 and 1992. The team determined that the superintendents had a higher rate of mortality from lung cancer and other cardiovascular illnesses than the general population.

They also found higher-than-average incidences of a number of other cancers, including brain, large intestine, non-Hodgkin's lymphoma, pancreatic and prostate.

After reviewing the results, Allen James, executive director of RISE, quickly issued a statement pointing out that the study is preliminary and is in no way conclusive that golf course superintendents are at risk.

"We must caution everyone on the very preliminary nature of the University of Iowa study regarding golf course superintendents and the fact that the researchers themselves have not determined cause-and-effect relationships for these results," James said.

In reporting the study's results, Kross stated, one "cannot establish any cause-and-effect relationship from this data. It is also important

to stress that these results cannot be interpreted to mean that golfers are at risk."

The purpose of the first phase of the study was to obtain an overall view of occupational health and safety issues that affect GCSAA members, said Stephen Mona, GCSAA executive director.

Phase 2 involves running another series of health research projects based on the preliminary data.

DowElanco, SePRO Sign Sales Agreement

DowElanco sold A-Rest plant growth regulator, Piprofluthrin fungicide and Sonar aquatic herbicide to SePRO Corp., a new company founded by Bill Culpepper, formerly director of government, industry and public affairs for DowElanco. The agreement also grants SePRO exclusive distribution rights to market Rubigan EC fungicide in the specialty horticulture markets.

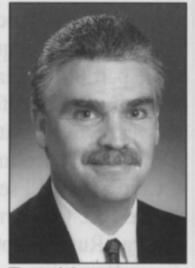
SePRO, Carmel, Ind., will provide plant

protection and plant management products to specialized markets including the horticultural and aquatics markets; markets which often fall outside of the core business strategy of large manufacturers.

"We realize the importance of these specialized markets and understand that at times, large chemical manufacturers have been unable to focus on those niche markets outside the mainstream of their core business," Culpepper said. "Our added value is providing assistance regarding technical concerns, involvement in industry, governmental and environmental affairs and product regulatory support."

DowElanco's departure from those markets allows the company to focus on key growth opportunities and new technologies, said Dick Holzschu, general manager of DowElanco Specialty Products. "It's a win/win situation for us and for SePRO."

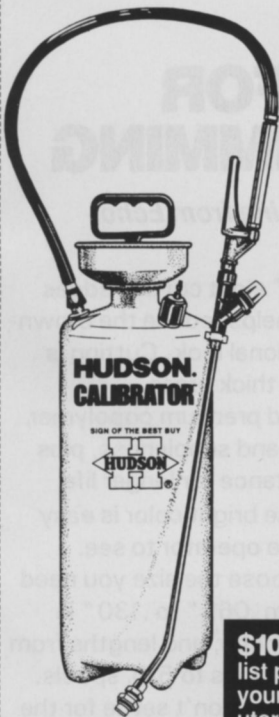
DowElanco last year consolidated its turf, pest and retail organizations into a single Urban Pest Management group to synergize the matchup between sales representatives,



Ruschhaupt



Culpepper



Hudson® Calibrator™ Sprayer...

- Heavy-duty poly tank with pressure release valve.
- High-efficiency pump with Viton® valve and gasket.
- Long-reaching Kem Oil® hose.
- Wide, non-absorbant strap.

...and Spray Wand

- 24-inch for on-target spraying; keeps spray from applicator.
- Thrustless brass shut-off; 6-inch, in-line 60-mesh nylon strainer.
- 15 psi Hudson Calibrator Spray Management Valve.
- Delavan® 80-5R low-drift nozzle.

Sprayer complete with wand, or buy wand separately.

\$10 OFF sprayer or **\$5 OFF** wand list prices when you present this ad to your participating Green Garde distributor prior to June 1, 1994.

We will credit distributor for amount with each original ad included with order.



Green Garde Division
H.D. HUDSON MANUFACTURING COMPANY
500 N. Michigan Avenue • Chicago, IL 60611-3748
312-644-2830 FAX: 312-644-7989

USE READER SERVICE #12

We do Windows

At SoftQuest, we have one job to do. Make life easier for the people who use our software. That's why we do Windows. With push-button controls and picture-based screens, SuperScape™ for Windows and Macintosh is a snap to use. See for yourself with live working version of our software.

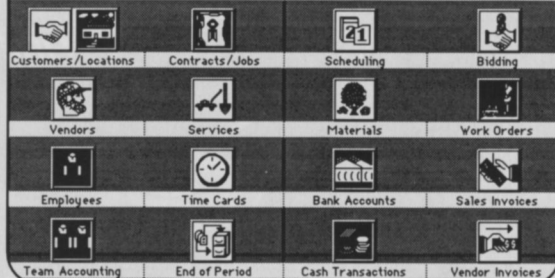
Call today for more information.

(512) 452-4500 (800) 299-9919

WINDOWS™ Apple Macintosh®

SuperScape

Landscape Management Software



USE READER SERVICE #32

customers and products.

The products acquired by SePRO were all once part of the Elanco business owned by Eli Lilly & Co. before the merger between the respective plant science operations of Dow and Elanco in 1989.

Culpepper will serve as president and CEO of SePRO. Other management includes George Ruschhaupt, vice president of operations; Roger Storey, sales and marketing manager, horticultural products; David Tarver, aquatic botanist and Sonar manager; and Dr. Doug Pullman, limnologist and Sonar specialist. All are former Dow/Elanco employees.

Council Drops Proposed Equipment Restrictions

The Metropolitan Council of Governments has at least temporarily abandoned its proposal to restrict gas-powered lawn and garden equipment during ozone alert days, following protest from manufacturers and industry groups.

The restrictions were part of the council's overall plan to reduce ozone contaminants by 15 percent.

The Associated Landscape Contractors of America, the American Association of Nur-

serymen and other groups formed a coalition to protest the provisions of the proposal, saying the restrictions placed unreasonable burden on professional equipment operators. They also pointed out that gas-powered lawn equipment only contributes a small portion of emissions pollution.

"The proposed restrictions simply employ 'smoke and mirrors' in shifting the numbers around to give nothing more than the artificial appearance of emissions reductions," said a statement from the coalition.

The air quality committee now plans to establish work groups consisting of local officials and industry representatives to develop a plan for voluntary compliance.

"We have to wait and see what the industry is willing to do," said Travis Markle, director of MCOG's department of environmental programs.

EPA Expands Toxic Report List

The U.S. Environmental Protection Agency proposed adding 170 new pesticide chemicals whose release into water or air must be reported to the agency by manufacturers.

In a rule issued under the 1986 Emergency Planning and Community Right-To-Know

Act, the EPA is considering adding a total of 317 chemicals to its annual toxic release report. There are already 320 chemicals on the list, including 24 pesticides.

The added requirements especially target pesticide manufacturers and processors. Other affected industries include chemical manufacturers, metal fabricators and food processors.

GIE Attendees Comprise A Diverse Group

Almost 70 percent of attendees at the 1993 Green Industry Expo in Baltimore, Md., were lawn and landscape professionals, according to an independent survey.

The survey showed that of 1,532 respondents, 67 percent identify themselves as lawn and landscape maintenance professionals. In addition, 51 percent of respondents offer chemical services; 45 percent perform landscape installation; 28 percent offer design/build; 23 percent provide irrigation; 11 percent offer arbor services; 9 percent work at garden centers and nurseries; 6 percent work for governments or institutions; and 17 percent offer other related services.

Also, according to the survey, 45 percent of

(continued on page 20)

EIGHT CUTTING EDGES FOR CLEANER, SHARPER TRIMMING

*Cross-Fire® Premium Trimmer Line from Echo.
The shape of things to come.*

Not your ordinary line, Cross-Fire's® eight cutting edges shear rather than tear grass. That helps reduce the browning of grass tips for a more professional look. Cutting is easier and faster, too, even in long, thick grass.

Made from a specially designed premium copolymer, Cross-Fire® has excellent flexibility and suppleness, plus exceptional split and tip wear resistance for longer life.

Cross section of line shows the eight cutting surfaces that shear rather than tear grass.

Also, the bright color is easy for the operator to see.

Choose the size you need from .065" to .130" in diameter, and lengths from 40' loops to 5 lb. spools.

This year, don't settle for the same old line.

For the Echo dealer near you, call 1-800-432-ECHO(3246). Or write: Echo Incorporated, 400 Oakwood Road, Lake Zurich, IL 60047.

ECHO
Ask Any Pro!

All Echo trimmers, brushcutters and replacement heads are equipped exclusively with Echo Cross-Fire® line.

USE READER SERVICE #16



NOW YOU CAN GET SAFE, LONG-LASTING FUNGUS CONTROL AND PROTECT YOUR BUDGET, TOO!



Nothing controls fungus problems longer — or at less cost — than DYRENE 4 Turf Fungicide, now available through The Andersons and their distributors.

DYRENE is a safe and effective contact fungicide specifically for the prevention of leaf spot, snow molds, rhizoctonia brown patch, sclerotinia dollar spot and copper spot. And since DYRENE is in a fungicide chemical family that's different from most other fungicides, it's the ideal choice where rotational fungicide programs may be required for successful disease management.



The Andersons offers DYRENE in two proven and effective forms:

- Tee Time 5% DYRENE in granular form
- DYRENE 4 in 2 1/2 gallon jugs

Either way you choose, Dyrene will help you keep your reputation — and your golf course — spotless.

For more information about DYRENE and where you can get the professional fungicide products you need, call The Andersons at 1-800-225-ANDY.



The Andersons



News in Brief

(continued from page 18)

the attendees are company owners and/or presidents, while 22 percent said they are managers and superintendents. Nearly all — 92 percent — play a major role in the decision-making process for purchasing new equipment and services. About 55 percent said they make the final decisions; 35 percent recommend purchases. Less than 8 percent of the attendees play no role in their companies' decision-making processes.

EXPO Attracts More Contractors

A slightly higher number of landscape contractors and commercial mowing operators attended the International Lawn, Garden & Power Equipment Expo in 1993 compared to 1992.

An EXPO 93 survey shows 18 percent (about 3,250) of more than 18,000 attendees were lawn and landscape maintenance contractors, compared to 15 percent (about 2,570) of 17,163 attendees last year.

Other segments of the industry represented at EXPO include dealers/retailers, 45 percent; distributors, 18 percent; manufac-

turers, 14 percent; merchandisers/buyers, 3 percent; and equipment rental dealers, 2 percent.

About 27 percent of the distributors exhibiting at the show handle strictly commercial products; 19 percent handled only consumer and 54 percent handled a mix. On the dealer side, only 3 percent sell just commercial products; 25 percent handle consumer and 72 percent sell both.

The survey showed that 76.5 percent of attendees talked to more than 10 exhibitors; 91.4 percent watched more than three product demonstrations; 77.6 percent were assisted in their decision to attend the Expo by a manufacturer or representative; and 41.7 percent would like to see more tools and service equipment in the future.

In other news, EXPO is offering a 10-minute preview video, available at no charge, to provide a visual overview of the show's size and scope.

Norand Forms Mobile Systems Division

Norand Corp. established a mobile systems division to expand the company's focus on distribution systems.

The new business, headed by Thomas Miller, vice president, Mobile Systems Division, addresses the development and implementation of mobile computer solutions.

Miller, who joined Norand in 1982, formerly headed the company's DSD strategic business unit.

Over the past 18 months, Norand has developed new hardware systems and applications software for wireless computer systems.

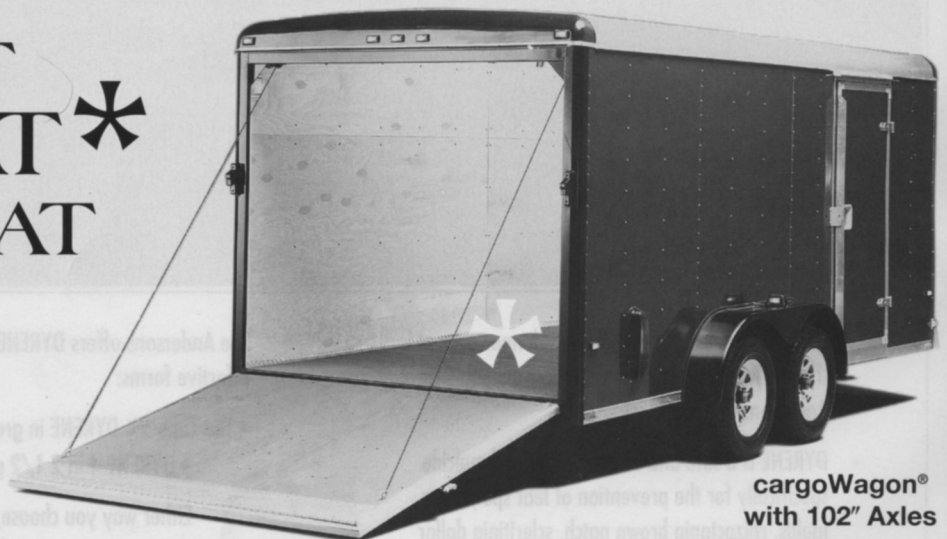
The new business unit "will be instrumental in helping us target our markets and focus our resources on systems development and market responsiveness," said Robert Hammer, Norand president and chief executive officer.

IANJ Retains Management Group

The Irrigation Association of New Jersey is now being managed by Alampi & Associates Management Corp., Springfield. The company currently manages 12 other associations including the Golf Course Superintendents Association of New Jersey. Judy Policastro is the executive secretary for the state irrigation association. ■

WELLS CARGO

JUST
FLAT*
GREAT



cargoWagon®
with 102" Axles

Look inside our trailer. The big asterisk shows you our 6'9" wide interior floor is **Flat!** No wheel boxes inside. Perfect for motorized Lawn & Garden equipment, and plenty of "walk-around" room, too.

Wells Cargo offers you great Options for customizing like: FLOW-THRU VENTILATION eliminating fuel fumes, WOLMANIZED 1-1/2" FLOORS and 3/4" INTERIOR SIDEWALLS, for "guts." All backed by a Warranty that really works for you!

Call 1-800-348-7553 for Catalog & Pricing

WELLS CARGO, INC. PO BOX 728-1172 Elkhart, IN 46515

Factory Service Points: GA, IN, TX & UT. Nationwide Dealership Network.

"With a Wells Cargo Behind... You Never Look Back!"

USE READER SERVICE #14



Pull more profit with the Ryan family of aerators

Healthy business growth for you. Healthy, vigorous grass for your customers. Aeration is the way to accomplish both. For aerators that can handle everything from small residential lawns to wide open commercial grounds, there's nothing like a Ryan. Ryan has been

helping professional lawn care operators pull in new business since 1960. It can do the same for you.

Lawnaire IV—The Lawnaire IV is the highest-quality roll-type aerator on the market, covering up to 21,000 square feet per hour.

Lawnaire V—The Lawnaire V's wide 26-inch aerating width provides excellent stability for aeration on sloped surfaces and can aerate up to 29,000 square feet per hour.

Lawnaire 28—The Lawnaire 28 features 2.5-inch coring depth, up to 12 holes per square foot and aerates up to 24,000 square feet per hour.

For a free brochure on aeration or the name of the Ryan dealer nearest you, call 1-800-228-4444.



All Ryan aeration equipment is backed by Ransomes America Corporation Performance Engineered Parts Program.



RYAN

Driven to be the best.

Getting better weed control in your turf and ornamentals doesn't require the use of more herbicides.

In fact, like most turf and landscape managers, you probably want to use less

herbicide. Which is why you should use Gallery® herbicide.

The unique chemistry of Gallery can reduce the need for multiple applications of herbicide. Because Gallery is a preemergent herbicide, it stops the emergence of weed seedlings. So they never even break the surface of the soil.

In a single, low-rate application, Gallery can control the growth of 95 broadleaf weeds in



A Story Straight
From Crooked Stick.

By switching to Gallery the superintendent at Crooked Stick Golf Club in Carmel, Indiana, reduced herbicide applications on his fairways from five a year to one. The very particular PGA officials who inspected those fairways for the 1991 PGA Championship raved about their outstanding condition.



ornamentals or turfgrasses for up to *eight months*. That means you can go all season long without worrying about whether spurge, oxalis, plantain or other weeds will show up to mar your landscapes and turf.

Other herbicides would require five applications to deliver season-long control. Gallery delivers all season long with only one application.

Although Gallery is activated by water, it remains stable on the

soil surface without rain for up to 30 days. It resists breaking down by sunlight, so you can be assured of maximum performance even under dry conditions. Gallery doesn't have any of the harsh effects of other

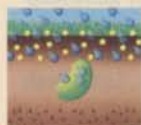


Gallery. For the to do more



application of woody ornamentals.

Of course, you've got more than broadleaf weeds to worry about. To



Activated by water, Gallery creates a control area around weed seedlings.



Gallery shuts down the growth process for up to 8 months.



With Gallery, seedlings die before you ever see them.

prevent grasses that invade beddings, combine Gallery with Surflan herbicide to create the ideal long-term weed management program. Surflan is gentle on labeled established plants, as well. And when used according to label directions, it can be sprayed over the top of more than 200 different species of established ornamentals, trees, shrubs, ground covers and field-grown fruit trees.

Our 40-page book, The Nursery And Landscape Guide To Responsible Pest Control can fill you in on developing your own weed management strategy. It also contains useful information on controlling insects and turf diseases more effectively. For your free copy, return the coupon or call our toll-free number. And learn more about using less herbicide.

ose who want e with less.

long-residual herbicides. And there's minimal risk of off-target damage.

When you use Gallery along with Snapshot* and Surflan*, you can now get the long-term weed control you want in sensitive areas

where ornamentals, shrubs, trees, perennial flowers or turfgrasses are growing. Snapshot controls both broadleaf and grassy weeds in ornamental beds for up to eight months. It is labeled for over-the-top

Send me the following Management Guide(s):

- Cool Turf
 Warm Turf
 Nursery and Landscape

Mail to: DowElanco,
 P.O. Box 33489,
 Indianapolis, IN 46203-0489.
 Or call: 1-800-548-5034



03

Name _____

Company _____

Business Category: Nursery Lawn Care
 Municipal Landscape Contractor Golf Course

Address _____

City _____ State _____ Zip _____

Phone (_____) _____



The chemistry is right.™

*Trademark of DowElanco. © 1994 DowElanco. Always read and follow label directions.

USE READER SERVICE #83

Association News

THE FLEDGLING **Ecological Landscaping Association**

formed one year ago, elected officers at its first meeting and conference in Boylston, Mass., last month.

Susan Storer, Hort Services, Millis, Mass., was elected president, and M.L. Altobelli of M.L.'s Greenery In Motion, Westminster, Mass., was elected vice president.

The association serves as an information source on sustainable landscaping options such as ecological design, natural organic lawn care, integrated pest management, soil building, optimal cultural practices and biological controls.

The association's plans for 1994 include developing and implementing a test pilot certification program for ecological landscaping and organic lawn care.

ELA currently has 125 members in the United States and Canada. The annual membership fee is \$50 for landscaping professionals and \$100 for vendors.

The **Professional Grounds Management Society** plans to implement its first pesticide certification training program, beginning with a five-hour block on Nov. 13., to kick off its annual conference and the Green

For more information...



ELA

P.O. Box 1561
Greenfield, MA 01302
617/436-5838

PGMS

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

ALCA

12200 Sunrise Valley Dr.
Suite 150
Reston, VA 22091
703/620-6363

PLCAA

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

CSSA

Dept. of Crop & Soil
Sciences
Plant Science Building
University of Georgia
Athens, GA 30602
706/542-0931

Industry Expo in St. Louis.

PGMS hopes to solicit state requirement information from surrounding states, including Missouri, Illinois, Tennessee, Kansas, Iowa and Arkansas, to ensure participants can receive credits for state certification.

"State requirements are getting pretty deep. Our training program, starting in November, will meet most state requirements for recertification and go a long way toward initial certification," said John

Gillan, executive director of PGMS.

PGMS hopes to offer the certification program in conjunction with each of its annual conferences. The next is tentatively slated for November 1995 in Fort Worth, Texas.

More than 200 people attended the **Associated Landscape Contractors of America's** fourth annual Executive Forum held in Waikoloa, Hawaii. The forum provided educational roundtables surround-



"GROUNDS FOR THE FUTURE"

- TURN LANDFILL COSTS INTO PROFITS
- SOLID, RELIABLE, HEAVY STEEL CONSTRUCTION
- FIVE POWERFUL WOODCHIPPER MODELS AVAILABLE
- ASK ABOUT THE NEW "TASMANIAN DEVIL"
THE TOUGHEST IN CHIPPER/MULCHER MACHINERY

800-365-3999

4032 Johnson Rd. • Chanute, KS
800-568-6553 • Fax (316) 431-4227

SEEKING NEW DISTRIBUTORS NOW!

USE READER SERVICE #35

Questions!! Questions!!



FACT: There is no status quo in grounds management. You either move ahead or fall behind.

Question: What is your profession, and what should you do about it?

Answer: If you are an institutional grounds professional or independent landscape contractor, you belong with the *full range* of your fellow professionals, as represented by the Professional Grounds Management Society, where you are an *individual*, not just part of a member organization. (PGMS is the oldest, most fully inclusive organization of grounds professionals.)

Question: So, what are the steps to getting ahead?

Answer: Join *and participate* in YOUR professional society
Read Green Industry publications
Attend Educational conferences
Become certified

Let PGMS join you in your future.

We don't just expect you to join us for joining's sake. We're vitally interested in our members' futures. Let us add our expertise and strength to you for your greater attainment.

BOTTOM LINE

Your industry is moving ahead. Are you moving ahead with it? The only way you really know is if you're involved. If you're in grounds management, you belong with other grounds managers, and not trying to do everything alone.

Take the first step by contacting: PGMS
120 Cockeysville Road, Suite 104
Hunt Valley, Maryland 21031
Tel. (410) 584-9754
FAX (410) 584-9756



USE READER SERVICE #118

ing the theme, "The Exceptional Landscape Employee: How to Select and Develop Quality People."

The four-day event included three sessions presented by Stephen Carline, author of the training video, "How to Interview and Hire the Right People," followed by small, roundtable discussions with industry peers. Carline outlined how to put together a successful job interview, evaluate resumes for success, accurately define the job description to find the right employee and assess candidates' talents.

Additional sessions focused on how to design and develop effective orientation and training programs, and how different types of incentive and awards programs motivate workers.

Forum participants derived benefits not only from the larger, educational sessions but also from the networking opportunities provided in the individual groups, according to Debra Atkins, ALCA executive director.

"The best part was that forum attendees also had the opportunity to compare their experience with others in the industry. This was an opportunity to learn from — and with — the experts at small discussion groups where they could zero in on the topics that most concerned them."

The **Professional Lawn Care Association of America** hired Eleanor Ellison as marketing and sales manager to promote the Green Industry Expo. PLCAA has been the managing partner of GIE since its inception in 1990.

Ellison has worked for several green industry companies, including Penagro Turf and Ornamental Products; Zeneca, formerly ICI Amercas Agricultural Products; and Union Carbide Agricultural Products.

The Turfgrass Science Division of the **Crop Science Society of America** is compiling a Turfgrass Management Teaching Resource Guide which will list ordering information on all sorts of teaching aids to be used in high school, two- and four-year programs, extension programs and private industry turfgrass courses.

The society is soliciting information on teaching materials available for listing, including videos, slides, computer software, computer services, books, periodicals, posters and teaching resources on irrigation, plants, insects, seed and fertilizer specimens. All information should be directed to Dr. Keith Karnok at the society.

The guide will provide complete ordering information including individual company

or agency names, addresses, phone and fax numbers and costs of the materials.

NEWS IN BRIEF...The Ohio Nurserymen's Association changed its name to the **Ohio Nursery and Landscape Association** during its annual meeting at the Central Environmental Nursery Trade Show, Columbus, Ohio. The name change reflects the fact that 50 percent of ONLA's member firms offer landscape services. In other news, an estimated 9,786 people attended CENTS, held Jan. 24-26. A total of 550 exhibitors rented 904 booths, compared to 401 exhibitors requesting 556 booths last year. About 8,100 people attended the 1993 show...The **Sports Turf Management Association** published a booklet titled "Sports Turf Topics: A Compendium of STMA Articles." The booklet comprises more than 20 articles covering management, cultivation practices, fall sports turf management and weed control. The manual is available from STMA by calling 312/644-6610.....The **Virginia Nurserymen's Association** Research Committee granted \$25,900 to help fund wetland plant availability, market development and other projects at Virginia Tech's department of horticulture. ■

Small ad. Big software value.



CompuScapes is the proven value leader in lawn and landscape management software. Comprehensive and easy to learn, CompuScapes software provides powerful profit-building benefits.

- Job Costing
- Routing & Scheduling
- Estimates & Workorders
- Complete Accounting

CompuScapes

2653 Gravitt Rd
Duluth, GA 30136
(404) 447-5858

USE READER SERVICE #17

Less work, more play.



The **Gandy Field Groomer** takes the work out of sports field renovation. It combines the action of a scarifier, leveling blade and brush to restore safe play to ball diamonds, running tracks and other sports areas. The unit can be pulled behind most utility vehicles. Electric or manual lift allows use of forward blade or scarifier. Electric or hydraulic lift positions finishing brushes for a professionally groomed area. This year, work less and play more with the Gandy Field Groomer.



Gandy Company
528 Gandrud Road
Owatonna, MN 55060
1-800-443-2476

USE READER SERVICE #19

Day on the Hill

FIFRA LOSES TOP BILLING; WATER QUALITY BECOMES LEAD ISSUE

FIFRA IS OUT. Water quality is in.

That's the general consensus on which lawn care issues are garnishing the most attention on Capitol Hill.

Members of the Professional Lawn Care Association of America convened in Washington during their fifth annual Legislative Day on the Hill, hoping to address industry concerns such as the Federal Insecticide, Fungicide and Rodenticide Act which regulates preemption, posting and notification and the establishment of registries, among other things.

Some members got to say their piece, but a good number also received sermons on Clinton's health care proposal, the federal budget and Superfund — the real issues filling the frenzied slates of federal legislators.

Only one lawn care-related issue appeared to receive near-top billing: amendments to the Clean Water Act which regulate fertilizer, pesticide and manure runoff. A section of the Water Pollution Prevention and Control Act of 1994 would amend the CWA to allow municipalities to develop their own methods



Rep. Thomas Ewing, R-Ill.

for controlling fertilizer and pesticide contributions to surface water and groundwater.

"Groundwater protection, especially, is a hotbed issue right now," said Victor Kimm, the EPA deputy assistant administrator.

Kimm cited an EPA study showing that nearly 40 percent of U.S. rivers, lakes and estuaries are polluted by pesticides and other chemicals. The report conflicts with a U.S. Department of Agriculture study that

showed much lower numbers.

Tom Delaney, director of governmental affairs for PLCAA, agreed runoff should be reduced, but questions the methods cities will establish to do it.

"There has to be a consistency between how cities choose to impose regulations," he said. And the laws need to apply to home owners as well, since 80 percent of residential lawns that receive pesticide applications are treated by home owners, he added.

To reduce water pollution in the Chesapeake Bay, local officials are restricting lawn fertilization. Other cities are setting up volunteer programs.

The federal water pollution prevention bill was approved by the Senate. A House draft bill was expected by March 1.

In other news, the EPA proposed altering its pesticide licensing process so that the pesticides come up for re-registration every 12 years.

Other proposals include modifying fees and enforcement of pesticide registration and changing pesticide labeling laws so that

(continued on page 28)

PROBLEM:

FINDING EFFICIENT, DEPENDABLE
COMMERCIAL MOWING
EQUIPMENT AT A REASONABLE PRICE.



SOLUTION: Dixie Chopper zero-turning radius mowers. "I'm gradually replacing my entire mowing fleet with Dixie Choppers. My crews maintain more than 700 acres of parks and playgrounds and the Dixie Choppers are the most durable mowers I've ever used," explains Ken Messerschmidt, senior foreman for the city of Detroit's recreation department.

DIXIE CHOPPER
(800) 233-7596

USE READER SERVICE #40

BILLMASTER®

THE COMPLETE BILLING SOFTWARE!

- Quick professional invoicing.
- Track multiple businesses.
- Easy & reliable.
- General ledger & inventory.
- Chemical tracking for D.E.C.
- Tax & financial reports.
- Contracts & proposals.
- Scheduling, routing, & mailing lists.
- Unlimited TOLL FREE training & support.
- MUCH MORE FOR ONLY \$695.00
(Easy payment plan available)

CALL FOR FREE DEMO DISK!

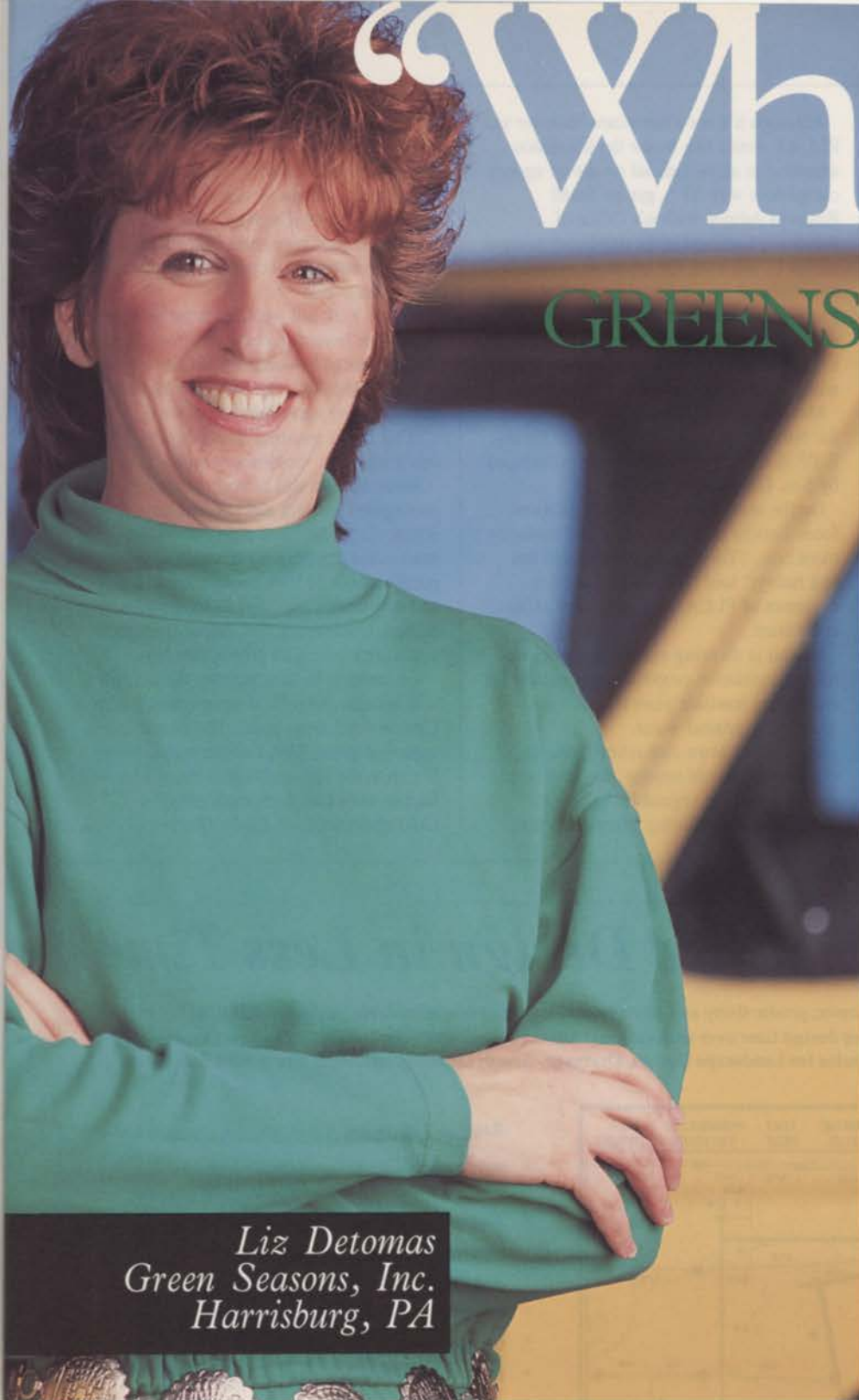
PLEASE SPECIFY DISK SIZE 3 1/2 OR 5 1/4

1-800-572-8713

CUSTOMIZED BUSINESS SOFTWARE, GLEN ROCK, NJ



USE READER SERVICE #18



*Liz Detomas
Green Seasons, Inc.
Harrisburg, PA*

“Why DO I USE GREENSKEEPER SEED?”

QUALITY,
SELECTION
& SERVICE
FOR STARTERS.
And They
Give Me A
Great Deal..”

The company that brings you Greenskeeper homogeneous fertilizers and Lebanon SCU blends now offers a complete line of professional seed with exceptional benefits. We produce a variety of standard mixes and can custom blend to your specifications. All Greenskeeper mixes provide outstanding germination rates and color. And many contain NTEP's number one ranked perennial ryegrass, "AFFINITY." Like our fertilizer products, Greenskeeper Seed is backed by a nationwide sales staff and superior service. For more information call Lebanon Turf Products at 1-800-233-0628.

greenskeeper
 **Seed**

Day on the Hill

(continued from page 26)

all label changes in a given year take effect at one time.

The proposals come under the FIFRA bill which is not expected to be reauthorized in full this year. A partial reauthorization may come up dealing strictly with food safety.

The jury is still out on whether Sen. Joseph Lieberman of Connecticut will reintroduce his Notification of Chemical Application Act. Lieberman suggested changes to the act to the EPA's now defunct Lawn Care Pesticide Advisory Committee in December 1992, but "has not been very cooperative in sharing specific changes," Delaney said.

Industry observers don't expect Lieberman to take action unless some study or news article raises a public outcry against pesticides, such as was expected after the Golf Course Superintendents Association of America released the preliminary results of its pesticide exposure study in February.

PLCAA also plans to carefully monitor the Regulatory Flexibility Amendments Act, which would alter a 1980 bill requiring federal regulatory agencies to review and minimize the potential effects of new regulations on small businesses.

Although it's not a lawn care issue per se, PLCAA would like to see the legislation amended to allow judicial review of agency compliance with RFA, get the Small Business Administration's Office of Advocacy involved in the regulatory process earlier by allowing the advocate to review new rules 30 days before they are first proposed and published in the federal register; and allow the Office of Advocacy to file a "friend of the court" amicus briefs when the courts review federal regulations.

More than 240 representatives co-signed the bill introduced by Rep. Thomas Ewing, R-III. A similar bill was recently introduced by Sen. Orris Hatch, R-Utah.

On the state level, pesticide regulations focus heavily on water policy and management bills. "They're coming through hot and heavy," said Norman Goldenburg, chairman of PLCAA's government affairs committee.

Hawaii is showing excessive pesticide-related legislation proposals, particularly on controlling roadside plant material and monitoring ground water.

Though not lawn care-related, one such extreme bill would require any retail store selling fruits and vegetables to post a conspicuous sign listing every pesticide

applied to any part of the plant or surrounding soil at or after the time of planting.

Maryland introduced a bill that would prohibit registration of organochlorine or organophosphate (Dursban) after Dec 31. "A lot of pesticides have some element of chlorine in them so it could be a problem," Goldenburg said.

A New York bill would pass the authority to regulate lawn care pesticides from the state Department of Environmental Conservation to local legislators. The DEC would retain authority over agricultural pesticides.

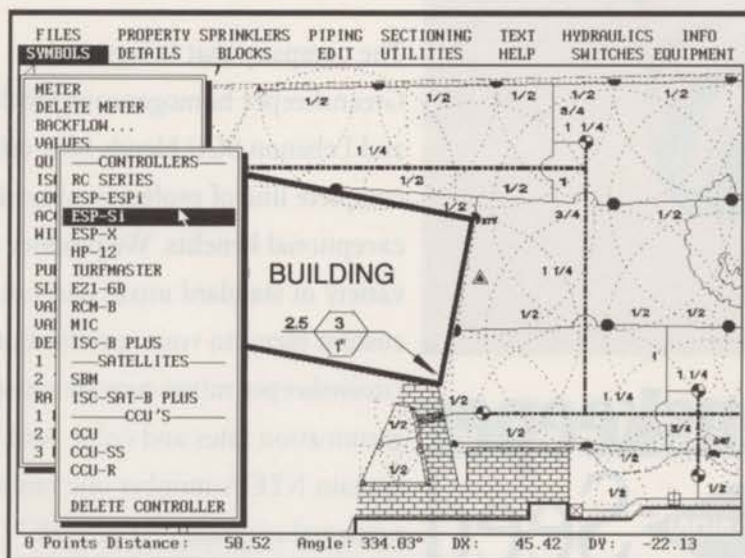
"That bill is awaiting Senate action. That one's still hot," Goldenburg said.

States are also still actively pursuing preemption, posting and notification and registry laws. Seven or eight states have established registries for pesticide sensitive people, about 24 have implemented posting and notification laws and 39 have preemption rulings, Goldenburg said. About five other states are working on preemption bills.

It remains to be seen whether the U.S. EPA will become the federal government's 15th Cabinet-level department. The Senate approved giving EPA Cabinet status. Now it's up to the House. "I don't know what will happen with that. It changes daily," Goldenburg said. — *Cathy Hoehn* ■

RainCAD™: Simplified Design in Less Time

RainCAD Irrigation Design Software is power, productivity and professionalism all in one affordable package. RainCAD is easy to learn, and increases productivity by cutting design time over conventional "on the board" drawings. RainCAD allows expansion for the future with additional add-on modules for Landscape Design, Drainage, Accent Lighting, and other equipment data bases.



RainCAD includes:

- Full function CAD capabilities with no additional software requirements
- Automated material takeoffs and legends
- Full on-line tutorial included
- Automatic and manual pipe sizing
- Supports more than 300 printers and plotters
- Comprehensive system hydraulic calculations
- More than 800 easy to customize symbols
- Compatible with other popular CAD programs
- Complete product installation details
- Expertly staffed toll-free support line

Join the hundreds of users who have made RainCAD the standard in the industry!

Call 1-800-348-3243 NOW

RAIN BIRD

Rain Bird Sales, Inc., Contractor Division, 155 North Grand Ave., Glendora, CA 91740

Be sure to ask for a copy of the RainCAD working demo (it's FREE).

1994

LLM CONGRESSIONAL DIRECTORY

A Guide to the 103rd United States Congress



ALABAMA

SENATORS

HEFLIN, Howell (D); 728 SH; 224-4124
SHELBY, Richard (D); 509 SH; 224-5744

REPRESENTATIVES

BACHUS, Spencer (R,6); 216 CHOB; 225-4921
BEVILL, Tom (D,4); 2302 RHOB; 225-4876
BROWDER, Glen (D,3); 1221 LHOB; 225-3261
CALLAHAN, H.L. "Sonny" (R,1); 2418 RHOB; 225-4931
CRAMER, Robert (D,5); 1318 LHOB; 225-4801
EVERETT, Terry (R,2); 208 CHOB; 225-2901
HILLIARD, Earl (D,7); 1007 LHOB; 225-2665

ALASKA

SENATORS

MURKOWSKI, Frank H. (R); 706 SH; 224-6665
STEVENS, Ted (R); 522 SH; 224-3004

REPRESENTATIVES

YOUNG, Don E. (R, at large); 2331 RHOB; 225-5765

ARIZONA

SENATORS

DeCONCINI, Dennis (D); 328 SH; 224-4521
McCAIN, John (R); 111 SR; 224-2235

REPRESENTATIVES

COPPERSMITH, Sam (D,1); 1607 LHOB; 225-2635
ENGLISH, Karan (D,6); 1024 LHOB; 225-2190
KOLBE, Jim (R,5); 405 CHOB; 225-2542
KYL, Jon (R,4); 2440 RHOB; 225-3361
PASTOR, Ed (D,2); 408 CHOB; 225-4065
STUMP, Bob (R,3); 211 CHOB; 225-4576

ARKANSAS

SENATORS

BUMPERS, Dale (D); 229 SD; 224-4843
PRYOR, David (D); 267 SR; 224-2353

REPRESENTATIVES

DICKEY, Jay (R,4); 1338 LHOB; 225-3772
HUTCHINSON, Tim (R,3); 1541 LHOB; 225-4301
LAMBERT, Blanche (D,1); 1204 LHOB; 225-4076
THORNTON, Ray (D,2); 1214 LHOB; 225-2506

CALIFORNIA

SENATORS

BOXER, Barbara (D); 112 SH; 224-3553
FEINSTEIN, Dianne (D); 331 SH; 224-3841

REPRESENTATIVES

BAKER, Bill (R, 10); 1724 LHOB; 225-1880

BECERRA, Xavier (D, 30); 1710 LHOB; 225-6235
BEILENSON, Anthony C. (D,24); 2465 RHOB; 225-5911
BERMAN, Howard (D,26); 2201 RHOB; 225-4695
BROWN, George E. Jr. (D,42); 2300 RHOB; 225-6161
CALVERT, Ken (R,43); 1523 LHOB; 225-1986
CONDIT, Gary A. (D,18); 1123 LHOB; 225-6131
COX, Christopher (R,47); 206 CHOB; 225-5611
CUNNINGHAM, Randy (R,51); 117 CHOB; 225-5452
DELLUMS, Ronald V. (D,9); 2108 RHOB; 225-2661
DIXON, Julian (D,32); 2400 RHOB; 225-7084
DOOLEY, Calvin (D,20); 1227 LHOB; 225-3341
DOOLITTLE, John (R,4); 1524 LHOB; 225-2511
DORNAN, Robert K. (R,46); 2402 RHOB; 225-2965
DREIER, David (R,28); 411 CHOB; 225-2305
EDWARDS, Don (D,16); 2307 RHOB; 225-3072
ESHO, Anna (D,14); 1505 LHOB; 225-8104
FARR, Sam (D,17); 1216 LHOB; 225-2861.
FAZIO, Vic (D,3); 2113 RHOB; 225-5716
FILNER, Bob (D,50); 504 CHOB; 225-8045
GALLEGLY, Elton (R,23); 2441 RHOB; 225-5811
HAMBURG, Dan (D,1); 114 CHOB; 225-3311
HARMAN, Jane (D,36); 325 CHOB; 225-8220
HERGER, Wally (R,2); 2433 RHOB; 225-3076
HORN, Steve (R,38); 1023 LHOB; 225-6676
HUFFINGTON, Michael (R,22); 113 CHOB; 225-3601
HUNTER, Duncan L. (R,52); 133 CHOB; 225-5672
KIM, Jay (R,41); 502 CHOB; 225-3201
LANTOS, Thomas P. (D,12); 2182 RHOB; 225-3531
LEHMAN, Richard (D,19); 1226 LHOB; 225-4540
LEWIS, Jerry (R,40); 2312 RHOB; 225-5861
MARTINEZ, Matthew (D,31); 2231 RHOB; 225-5464

KEY TO THE GUIDE:

All phone numbers are in the 202 area code. U.S. Senate Building Codes and Street Addresses:

SD - Dirksen Senate Office Building, 1st & C Sts., NE

SH - Hart Senate Office Building, 2nd & C Sts., NE

SR - Russell Senate Office Building, 1st & C Sts., NE

The zip code for all U.S. Senate offices is 20510

U.S. House of Representatives Building Codes and Street Addresses:

CHOB - Cannon House Office Building, 1st St. & Independence Ave., SE

LHOB - Longworth House Office Building, Independence & New Jersey Aves., SE

RHOB - Rayburn House Office Building, Independence Ave. & S. Capitol St., SW

The zip code for all U.S. House of Representative offices is 20515.

MATSUI, Robert T. (D,5); 2311 RHOB; 225-7163
McCANDLESS, Al (R,44); 2422 RHOB; 225-5330
McKEON, Howard (R,25); 307 CHOB; 225-1956
MILLER, George (D,7); 2205 RHOB; 225-2095
MINETA, Norman Y. (D,15); 2221 RHOB; 225-2631
MOORHEAD, Carlos J. (R,27); 2346 RHOB; 225-4176
PACKARD, Ron (R,48); 2162 RHOB; 225-3906
PELOSI, Nancy (D,8); 240 CHOB; 225-4965
POMBO, Richard W. (R,11); 1519 LHOB; 225-1947
ROHRBACHER, Dana (R,45); 1027 LHOB; 225-2415
ROYBAL-ALLARD, Lucille (D,33); 324 CHBO; 225-1766
ROYCE, Edward (R,39); 1404 LHOB; 225-4111
SCHENK, Lynn (D,49); 315 CHOB; 225-2040
STARK, Fortney H. "Pete" (D,13); 239 CHOB; 225-5065
THOMAS, Bill (R,21); 2209 RHOB; 225-2915
TORRES, Esteban (D,34); 1740 LHOB; 225-5256
TUCKER, Walter (D,37); 419 CHOB; 225-7924
WATERS, Maxine (D,35); 1207 LHOB; 225-2201
WAXMAN, Henry A. (D,29); 2408 RHOB; 225-3976
WOOLSEY, Lynn (D,6); 439 CHOB; 225-5161

COLORADO

SENATORS

BROWN, Hank (R); 716 SH; 224-5941
CAMPBELL, Ben N. (D); 380 SR; 224-5852

REPRESENTATIVES

ALLARD, A. Wayne (R,4); 422 CHOB; 225-4676
HEFLEY, Joel (R,5); 2442 RHOB; 225-4422
McINNIS, Scott (R,3); 512 CHOB; 225-4761
SCHAEFER, Dan (R,6); 2448 RHOB; 225-7882
SCHROEDER, Patricia (D,1); 2208 RHOB; 225-4431
SKAGGS, David (D,2); 1124 LHOB; 225-2161

CONNECTICUT

SENATORS

DODD, Christopher (D); 444 SR; 224-2823
LIEBERMAN, Joseph (D); 316 SH; 224-4041

REPRESENTATIVES

DeLAURO, Rosa (D,3); 327 CHOB; 225-3661
FRANKS, Gary (R,5); 435 CHOB; 225-3822
GEJDENSON, Samuel (D,2); 2416 RHOB; 225-2076
JOHNSON, Nancy L. (R,6); 343 CHOB; 225-4476
KENNELLY, Barbara B. (D,1); 201 CHOB; 225-2265
SHAYS, Christopher (R,4); 1034 LHOB; 225-5541

DELAWARE

SENATORS

BIDEN, Joseph (D); 221 SR; 224-5042
ROTH, William V. (R); 104 SH; 224-2441

REPRESENTATIVES

CASTLE, Michael (R; at large); 1205 LHOB; 225-4165

FLORIDA

SENATORS

GRAHAM, Bob (D); 524 SH; 224-3041
MACK, Connie (R); 517 SH; 224-5274

REPRESENTATIVES

BACCHUS, Jim (D,15); 432 CHOB; 225-3671
BILIRAKIS, Michael (R,9); 2240 RHOB; 225-5755
BROWN, Corrine (D,3); 1037 LHOB; 225-0123
CANADY, Charles (R,12); 1107 LHOB; 225-1252
DEUTSCH, Peter (D,20); 425 CHOB; 225-7931
DIAZ-BALART, Lincoln (R,21); 509 CHOB; 225-4211
FOWLER, Tillie (R,4); 413 CHOB; 225-2501
GIBBONS, Sam M. (D,11); 2204 RHOB; 225-3376
GOSS, Porter J. (R,14); 330 CHOB; 225-2536
HASTINGS, Alcee L. (D,23); 1039 LHOB; 225-1313
HUTTO, Earl D. (D,1); 2435 RHOB; 225-4136
JOHNSTON, Harry A. II (D,19); 204 CHOB; 225-3001
LEWIS, Tom (R,16); 2351 RHOB; 225-5792
McCOLLUM, Bill (R,8); 2266 RHOB; 225-2176
MEEK, Carrie (D,17); 404 CHOB; 225-4506
MICA, John (R,7); 427 CHOB; 225-4035
MILLER, Dan (R,13); 510 CHOB; 225-5015
PETERSON, Pete (D,2); 426 CHOB; 225-5235
ROS-LEHTINEN, Ileana (R,18); 127 CHOB; 225-3931
SHAW, E. Clay Jr. (R,22); 2267 RHOB; 225-3026
STEARNS, Clifford B. (R,6); 332 CHOB; 225-5744
THURMAN, Karen (D,5); 130 CHOB; 225-1002
YOUNG, C.W. "Bill" (R,10); 2407 RHOB; 225-5961

GEORGIA

SENATORS

COVERDELL, Paul (R); 200 SR; 224-3643
NUNN, Sam (D); 303 SD; 224-3521

REPRESENTATIVES

BISHOP, Sanford (D,2); 1632 LHOB; 225-3631
COLLINS, Mac (R,3); 1118 LHOB; 225-5901
DARDEN, George "Buddy" (D,7); 2303 RHOB; 225-2931
DEAL, Nathan (D,9); 1406 LHOB; 225-5211
GINGRICH, Newt (R,6); 2428 RHOB; 225-4501
JOHNSON, Don (D,10); 226 CHOB; 225-4101
KINGSTON, Jack (R,1); 1229 LHOB; 225-5831
LEWIS, John (D,5); 329 CHOB; 225-3801
LINDER, John (R,4); 1605 LHOB; 225-4272
McKINNEY, Cynthia (D,11); 124 CHOB; 225-1605
ROWLAND, J. Roy (D,8); 2134 RHOB; 225-6531

HAWAII

SENATORS

AKAKA, Daniel (D); 720 SH; 224-6361
INOUE, Daniel K. (D); 722 SH; 224-3934

REPRESENTATIVES

ABERCROMBIE, Neal (D, 1); 1440 LHOB; 225-2726
MINK, Patsy (D, 2); 2135 RHOB; 225-4906

IDAHO

SENATORS

CRAIG, Larry (R); 313 SH; 224-2752
KEMPTHORNE, Dirk (R); 367 SD; 224-6142

REPRESENTATIVES

CRAPO, Michael (R, 2); 437 CHOB; 225-5531
LaROCCO, Larry, (D, 1); 1117 LHOB; 225-6611

ILLINOIS

SENATORS

MOSELY-BRAUN, Carol (D); 320 SH; 224-2854
SIMON, Paul (D); 462 SD; 224-2152

REPRESENTATIVES

COLLINS, Cardiss R. (D, 7); 2308 RHOB; 225-5006
COSTELLO, Jerry (D, 12); 119 CHOB; 225-5661

CRANE, Philip M. (R,8); 233 CHOB; 225-3711
DURBIN, Richard J. (D,20); 2463 RHOB; 225-5271
EVANS, Lane (D,17); 2335 RHOB; 225-5905
EWING, Thomas (R,15); 1317 LHOB; 225-2371
FAWELL, Harris W. (R,13); 2342 RHOB; 225-3515
GUTIERREZ, Luis (D,4); 1208 LHOB; 225-8203
HASTERT, J. Dennis (R,14); 2453 RHOB; 225-2976
HYDE, Henry J. (R,6); 2110 RHOB; 225-4561
LIPINSKI, William O. (D,3); 1501 LHOB; 225-5701
MANZULLO, Donald (R,16); 506 CHOB; 225-5676
MICHEL, Robert H. (R,18); 2112 RHOB; 225-6201
PORTER, John E. (R,10); 1026 LHOB; 225-4835
POSHARD, Glen (D,19); 107 CHOB; 225-5201
REYNOLDS, Mel (D,2); 514 CHOB; 225-0773
ROSTENKOWSKI, Daniel (D,5); 2111 RHOB; 225-4061
RUSH, Bobby (D,1); 1725 LHOB; 225-4372
SANGMEISTER, George (D,11); 1032 LHOB; 225-3635
YATES, Sidney R. (D,9); 2109 RHOB; 225-2111

INDIANA

SENATORS

COATS, Dan (R); 404 SR; 224-5623
LUGAR, Richard G. (R); 306 SH; 224-4814

REPRESENTATIVES

BURTON, Dan (R,6); 2411 RHOB; 225-2276
BUYER, Steve (R,5); 1419 LHOB; 225-5037
HAMILTON, Lee H. (D,9); 2187 RHOB; 225-5315
JACOBS, Andrew Jr. (D,10); 2313 RHOB; 225-4011
LONG, Jill (D,4); 1513 LHOB; 225-4436
McCLOSKEY, Frank (D,8); 306 CHOB; 225-4636
MYERS, John T. (R,7); 2372 RHOB; 225-5805
ROEMER, Tim (D,3); 415 CHOB; 225-3915
SHARP, Philip R. (D,2); 2217 RHOB; 225-3021
VISCLOSKEY, Peter J. (D,1); 2464 RHOB; 225-2461

IOWA

SENATORS

GRASSLEY, Charles E. (R); 135 SH; 224-3744
HARKIN, Tom (D); 531 SH; 224-3254

REPRESENTATIVES

GRANDY, Fred (R,5); 418 CHOB; 225-5476
LEACH, James (R,1); 2186 RHOB; 225-6576
LIGHTFOOT, Jim Ross (R,3); 2444 RHOB; 225-3806
NUSSLE, Jim (R,2); 308 CHOB; 225-2911
SMITH, Neal (D,4); 2373 RHOB; 225-4426

KANSAS

SENATORS

DOLE, Robert (R); 141 SH; 224-6521
KASSEBAUM, Nancy (R); 302 SR; 224-4774

REPRESENTATIVES

GLICKMAN, Dan (D, 4); 2371 RHOB; 225-6216
MEYERS, Jan (R, 3); 2338 RHOB; 225-2865
ROBERTS, Pat (R, 1); 1126 LHOB; 225-2715
SLATTERY, Jim (D, 2); 2243 RHOB; 225-6601

KENTUCKY

SENATORS

FORD, Wendell H. (D); 173A SR; 224-4343
McCONNELL, Mitch (R); 120 SR; 224-2541

REPRESENTATIVES

BAESLER, Scotty (D,6); 508 CHOB; 225-4706
BARLOW, Tom (D,1); 1533 LHOB; 225-3115
BUNNING, Jim (R,4); 2437 RHOB; 225-3465
MAZZOLI, Romano L. (D,3); 2246 RHOB; 225-5401
NATCHER, William H. (D,2); 2333 RHOB; 225-3501
ROGERS, Harold (R,5); 2468 RHOB; 225-4601

LOUISIANA

SENATORS

BREAUX, John (D); 516 SH; 224-4623
JOHNSTON, J. Bennett (D); 136 SH; 224-5824

REPRESENTATIVES

BAKER, Richard, (R,6); 434 CHOB; 225-3901
FIELDS, Cleo (D,4); 513 CHOB; 225-8490
HAYES, James (D,7); 2432 RHOB; 225-2031
JEFFERSON, William (D,2); 428 CHOB; 225-6636
LIVINGSTON, Robert L. "Bob" (R,1); 2368 RHOB; 225-3015
McCRERY, Jim (R,5); 225 CHOB; 225-2777
TAUZIN, W.J. "Billy" (D,3); 2330 RHOB; 225-4031

MAINE

SENATORS

COHEN, William S. (R); 322 SH; 224-2523
MITCHELL, George J. (D); 176 SR; 224-5344

REPRESENTATIVES

ANDREWS, Thomas (D,1); 1530 LHOB; 225-6116
SNOWE, Olympia J. (R,2); 2268 RHOB; 225-6306

MARYLAND

SENATORS

MIKULSKI, Barbara (D); 709 SH; 224-4654
SARBANES, Paul S. (D); 309 SH; 224-4524

REPRESENTATIVES

BARTLETT, Roscoe (R,6); 312 CHOB; 225-2721
BENTLEY, Helen Delich (R,2); 1610 LHOB; 225-3061
CARDIN, Benjamin (D,3); 227 CHOB; 225-4016
GILCHRIST, Wayne (R,1); 412 CHOB; 225-5311
HOYER, Steny H. (D,5); 1705 LHOB; 225-4131
MFUME, Kweisi (D,7); 2419 RHOB; 225-4741
MORELLA, Constance A. (R,8); 223 CHOB; 225-5341
WYNN, Albert (D,4); 423 CHOB; 225-8699

MASSACHUSETTS

SENATORS

KENNEDY, Edward M. (D); 315 SR; 224-4543
KERRY, John F. (D); 421 SR; 224-2742

REPRESENTATIVES

BLUTE, Peter (D,3); 1029 RHOB; 225-6101
FRANK, Barney (D,4); 2404 RHOB; 225-5931
KENNEDY, Joseph (D,8); 1210 LHOB; 225-5111
MARKEY, Edward J. (D,7); 2133 RHOB; 225-2836
MEEHAN, Martin (D,5); 1223 LHOB; 225-3411
MOAKLEY, Joe (D,9); 235 CHOB; 225-8273
NEAL, Richard E. (D,2); 131 CHOB; 225-5601
OLVER, John (D,1); 1323 LHOB; 225-5335
STUDDS, Gerry E. (D,10); 237 CHOB; 225-3111
TORKILDSEN, Peter (R,6); 120 CHOB; 225-8020

MICHIGAN

SENATORS

LEVIN, Carl (D); 459 SR; 224-6221
RIEGLE, Donald W. (D); 105 SD; 224-4822

REPRESENTATIVES

BARCIA, James (D,5); 1717 LHOB; 225-8171
BONIOR, David E. (D,10); 2207 RHOB; 225-2106
CAMP, Dave (R,4); 137 CHOB; 225-3561
CARR, Bob (D,8); 2347 RHOB; 225-4872
COLLINS, Barbara-Rose (D,15); 1108 LHOB; 225-2261
CONYERS, John J. Jr. (D,14); 2426 RHOB; 225-5126
DINGELL, John D. (D,16); 2328 RHOB; 225-4071
FORD, William D. (D,13); 2107 RHOB; 225-6261
HENRY, Paul B. (R,3); 1526 LHOB; 225-3831
HOEKSTRA, Peter (R,2); 1319 LHOB; 225-4401
KILDEE, Dale E. (D,9); 2239 RHOB; 225-3611
KNOLLENBERG, Joseph (R,11); 1218 LHOB; 225-5802
LEVIN, Sander (D,12); 106 CHOB; 225-4961

SMITH, Nick (R,7); 1708 LHOB; 225-6276
STUPAK, Bart (D,1); 317 CHOB; 225-4735
UPTON, Fred (R,6); 2439 RHOB; 225-3761

MINNESOTA

SENATORS

DURENBERGER, David (R); 154 SR; 224-3244
WELLSTONE, Paul (D); 717 SH; 224-5641

REPRESENTATIVES

GRAMS, Rod (R,6); 1713 LHOB; 225-2271
MINGE, David (D,2); 1508 LHOB; 225-2331
OBERSTAR, James L. (D,8); 2366 RHOB; 225-6211
PENNY, Timothy J. (D,1); 436 CHOB; 225-2472
PETERSON, Collin (D,7); 1133 LHOB; 225-2165
RAMSTAD, Jim (R,3); 322 CHOB; 225-2871
SABO, Martin (D,5); 2336 RHOB; 225-4755
VENTO, Bruce F. (D,4); 2304 RHOB; 225-6631

MISSISSIPPI

SENATORS

COCHRAN, Thad (R); 326 SR; 224-5054
LOTT, Trent (R); 487 SR; 224-6253

REPRESENTATIVES

MONTGOMERY, G.V. (D,3); 2184 RHOB; 225-5031
PARKER, Mike (D,4); 1410 LHOB; 225-5865
TAYLOR, Gene (D,5); 215 CHOB; 225-5772
THOMPSON, Bernie (D,2); 1408 LHOB; 225-5876
WHITTEN, Jamie (D,1); 2314 RHOB; 225-4306

MISSOURI

SENATORS

BOND, Christopher (R); 293 SR; 224-5721
DANFORTH, John (R); 249 SR; 224-6154

REPRESENTATIVES

CLAY, William L. "Bill" (D,1); 2306 RHOB; 225-2406
DANNER, Pat (D,6); 1217 LHOB; 225-7041
EMERSON, Bill (R,8); 2454 RHOB; 225-4404
GEPHARDT, Richard A. (D,3); 1432 LHOB; 225-2671
HANCOCK, Mel (R,7); 129 CHOB; 225-6536
SKELTON, Ike (D,4); 2227 RHOB; 225-2876
TALENT, James (R,2); 1022 LHOB; 225-2561
VOLKMER, Harold L. (D,9); 2409 RHOB; 225-2956
WHEAT, Alan (D,5); 2334 RHOB; 225-4535

MONTANA

SENATORS

BAUCUS, Max (D); 511 SH; 224-2651
BURNS, Conrad (R); 183 SD; 224-2644

REPRESENTATIVES

WILLIAMS, Pat (D, at large); 2457 RHOB; 225-3211

NEBRASKA

SENATORS

EXON, J. James (D); 528 SH; 224-4224
KERREY, Bob (D); 303 SH; 224-6551

REPRESENTATIVES

BARRETT, Bill (R,3); 1213 LHOB; 225-6435
BEREUTER, Douglas K. (R,1); 2348 RHOB; 225-4806
HOAGLAND, Peter (D,2); 1113 LHOB; 225-4155

NEVADA

SENATORS

BRYAN, Richard (D); 364 SR; 224-6244
REID, Harry (D); 324 SH; 224-3542

REPRESENTATIVES

BILBRAY, James (D,1); 2431 RHOB; 225-5965
VUCANOVICH, Barbara (R,2); 2202 RHOB; 225-6155

NEW HAMPSHIRE

SENATORS

GREGG, Judd (R); 393 SR; 224-3324
SMITH, Robert C. (R); 332 SD; 224-2841

REPRESENTATIVES

SWETT, Dick (D,2); 230 CHOB; 225-5206
ZELIFF, Bill (R,1); 224 CHOB; 225-5456

NEW JERSEY

SENATORS

BRADLEY, Bill (D); 731 SH; 224-3224
LAUTENBERG, Frank R. (D); 506 SH; 224-4744

REPRESENTATIVES

ANDREWS, Robert (D,1); 1005 LHOB; 225-6501
FRANKS, Bob (R,7); 429 CHOB; 225-5361
GALLO, Dean A. (R,11); 2447 RHOB; 225-5034
HUGHES, William J. (D,2); 241 CHOB; 225-6572
KLEIN, Herbert (D,8); 1728 LHOB; 225-5751
MENENDEZ, Robert (D,13); 1531 LHOB; 225-7919
PALLONE, Frank Jr. (D,6); 420 CHOB; 225-4671
PAYNE, Donald (D,10); 417 CHOB; 225-3436
ROUKEMA, Marge (R,5); 2244 RHOB; 225-4465
SAXTON, Jim (R,3); 438 CHOB; 225-4765
SMITH, Christopher H. "Chris" (R,4); 2353 RHOB; 225-3765
TORRICELLI, Robert G. (D,9); 2159 RHOB; 225-5061
ZIMMER, Richard (R,12); 228 CHOB; 225-5801

NEW MEXICO

SENATORS

BINGAMAN, Jeff (D); 110 SH; 224-5521
DOMENICI, Pete V. (R); 427 SD; 224-6621

REPRESENTATIVES

RICHARDSON, Bill (D,3); 2349 RHOB; 225-6190
SCHIFF, Steven H. (R,1); 1009 LHOB; 225-6316
SKEEN, Joe (R,2); 2367 RHOB; 225-2365

NEW YORK

SENATORS

D'AMATO, Alfonse M. (R); 520 SH; 224-6542
MOYNIHAN, Daniel Patrick (D); 464 SR; 224-4451

REPRESENTATIVES

ACKERMAN, Gary (D,5); 2445 RHOB; 225-2601
BOEHLERT, Sherwood (R,23); 1127 LHOB; 225-3665
ENGEL, Eliot L. (D,17); 1433 LHOB; 225-2464
FISH, Hamilton Jr. (R,19); 2354 RHOB; 225-5441
FLAKE, Floyd (D,6); 1035 LHOB; 225-3461
GILMAN, Benjamin A. (R,20); 2185 RHOB; 225-3776
HINCHEY, Maurice (D,26); 1313 LHOB; 225-6335
HOCHBRUECKNER, George (D,1); 229 CHOB; 225-3826
HOUGHTON, Amo (R,31); 1110 LHOB; 225-3161
KING, Peter (R,3); 118 CHOB; 225-7896
LaFALCE, John J. (D,29); 2310 RHOB; 225-3231
LAZIO, Rick (R,2); 314 CHOB; 225-3335
LEVY, David (R,4); 116 RHOB; 225-5516
LOWEY, Nita M. (D,18); 1424 LHOB; 225-6506
MALONEY, Carolyn (D,14); 1504 LHOB; 225-7944
MANTON, Thomas J. (D,7); 203 CHOB; 225-3965
McHUGH, John (R,24); 416 CHOB; 225-4611
McNULTY, Michael R. (D,21); 217 CHOB; 225-5076
MOLINARI, Susan (R,13); 123 CHOB; 225-3371
NADLER, Jerrold (D,8); 424 CHOB; 225-5635
OWENS, Major R. (D,11); 2305 RHOB; 225-6231
PAXON, William (R,27); 1314 LHOB; 225-5265
QUINN, Jack (R,30); 331 CHOB; 225-3306
RANGEL, Charles B. (D,15); 2252 RHOB; 225-4365
SCHUMER, Charles E. (D,9); 2412 RHOB; 225-6616
SERRANO, Jose (D,16); 336 CHOB; 225-4361
SLAUGHTER, Louise (D,28); 2421 RHOB; 225-3615
SOLOMON, Gerald B.H. (R,22); 2265 RHOB; 225-5614
TOWNS, Edolphus (D,10); 2232 LHOB; 225-5936

VELAZQUEZ, Nydia (D, 12); 132 CHOB; 225-2361
WALSH, James T. (R, 25); 1330 LHOB; 225-3701

NORTH CAROLINA

SENATORS

FAIRCLOTH, Lauch (R); 702 SH; 224-3154
HELMS, Jesse (R); 403 SD; 224-6342

REPRESENTATIVES

BALLENGER, Cass (R,10); 2238 RHOB; 225-2576
CLAYTON, Eva (D,1); 222 CHOB; 225-3101
COBLE, J. Howard (R,6); 403 CHOB; 225-3065
HEFNER, W.G. "Bill" (D,8); 2470 RHOB; 225-3715
LANCASTER, H. Martin (D,3); 2436 RHOB; 225-3415
McMILLAN, Alex (R,9); 401 CHOB; 225-1976
NEAL, Stephen L. (D,5); 2469 RHOB; 225-2071
PRICE, David (D,4); 2458 RHOB; 225-1784
ROSE, Charles III (D,7); 2230 RHOB; 225-2731
TAYLOR, Charles (R,11); 516 CHOB; 225-6401
VALENTINE, I.T. "Tim" Jr. (D,2); 2229 RHOB; 225-4531
WATT, Melvin (D,12); 1232 LHOB; 225-1510

NORTH DAKOTA

SENATORS

CONRAD, Kent (D); 724 SH; 224-2043
DORGAN, Byron (D); 713 SH; 224-2551

REPRESENTATIVES

POMEROY, Earl (D, at large); 318 CHOB; 225-2611

OHIO

SENATORS

GLENN, John (D); 503 SH; 224-3353
METZENBAUM, Howard (D); 140 SR; 224-2315

REPRESENTATIVES

APPLEGATE, Douglas (D,18); 2183 RHOB; 225-6265
BOEHNER, John (R,8); 1020 LHOB; 225-6205
BROWN, Sherrod (D,13); 1407 LHOB; 225-3401
FINGERHUT, Eric (D,19); 431 CHOB; 225-5731
GILLMOR, Paul E. (R,5); 1203 LHOB; 225-6405
HALL, Tony (D,3); 2264 RHOB; 225-6465
HOBSON, David (R,7); 1507 LHOB; 225-4324
HOKE, Martin (R,10); 212 CHOB; 225-5871
KAPTUR, Marcy (D,9); 2104 RHOB; 225-4146
KASICH, John R. (R,12); 1131 LHOB; 225-5355
MANN, David (D,1); 503 CHOB; 225-2216
PORTMAN, Rob (R,2); 238 CHOB; 225-3164
OXLEY, Michael (R,4); 2233 RHOB; 225-2676
PRYCE, Deborah (R,15); 128 CHOB; 225-2015
REGULA, Ralph (R,16); 2309 RHOB; 225-3876
SAWYER, Thomas (D,14); 1414 LHOB; 225-5231
STOKES, Louis (D,11); 2365 RHOB; 225-7032
STRICKLAND, Ted (D,6); 1429 RHOB; 225-5705
TRAFICANT, James A. (D,17); 2446 RHOB; 225-5261

OKLAHOMA

SENATORS

BOREN, David L. (D); 453 SR; 224-4721
NICKLES, Don (R); 133 SH; 224-5754

REPRESENTATIVES

BREWSTER, Bill (D,3); 1727 LHOB; 225-4565
ENGLISH, Glenn (D,6); 2206 RHOB; 225-5565
INHOFE, James (R,1); 442 CHOB; 225-2211
ISTOOK, Ernest Jim (R,5); 1116 LHOB; 225-2132
McCURDY, Dave (D,4); 2344 RHOB; 225-6165
SYNAR, Mike (D,2); 2329 RHOB; 225-2701

OREGON

SENATORS

HATFIELD, Mark O. (R); 711 SH; 224-3753
PACKWOOD, Bob (R); 259 SR; 224-5244

REPRESENTATIVES

DeFAZIO, Peter (D,4); 1233 LHOB; 225-6416
 FURSE, Elizabeth (D,1); 316 CHOB; 225-0855
 KOPETSKI, Mike (D,5); 218 CHOB; 225-5711
 SMITH, Robert (R,2); 108 CHOB; 225-6730
 WYDEN, Ron (D,3); 1111 LHOB; 225-4811

PENNSYLVANIA**SENATORS**

SPECTER, Arlen (R); 530 SH; 224-4254
 WOFFORD, Harris (D); 521 SD; 224-6324

REPRESENTATIVES

BLACKWELL, Lucien (D,2); 410 CHOB; 225-4001
 BORSKI, Robert A. Jr. (D,3); 2161 RHOB; 225-8251
 CLINGER, William F. (R,5); 2160 RHOB; 225-5121
 COYNE, William J. (D,14); 2455 RHOB; 225-2301
 FOGLIETTA, Thomas M. (D,1); 341 CHOB; 225-4731
 GEKAS, George W. (R,17); 2410 RHOB; 225-4315
 GOODLING, William F. (R,19); 2263 RHOB; 225-5836
 GREENWOOD, Jim (R,8); 515 CHOB; 225-4276
 HOLDEN, Tim (D,6); 1421 LHOB; 225-5546
 KANJORSKI, Paul E. (D,11); 2429 RHOB; 225-6511
 KLINK, Ron (D,4); 1130 LHOB; 225-2565
 MARGOLIES-MEZVINSKY, Marjorie (D,13); 1516 LHOB; 225-6111
 McDADE, Joseph M. (R,10); 2370 RHOB; 225-3731
 McHALE, Paul (D,15); 511 CHOB; 225-6411
 MURPHY, Austin J. (D,20); 2210 RHOB; 225-4665
 MURTHA, John P. (D,12); 2423 RHOB; 225-2065
 RIDGE, Thomas J. (R,21); 1714 LHOB; 225-5406
 SANTORUM, Rick (R,18); 1222 LHOB; 225-2135
 SHUSTER, Bud (R,9); 2188 RHOB; 225-2431
 WALKER, Robert S. (R,16); 2369 RHOB; 225-2411
 WELDON, Curt (R,7); 2452 RHOB; 225-2011

RHODE ISLAND**SENATORS**

CHAFEE, John H. (R); 567 SD; 224-2921
 PELL, Claiborne (D); 335 SR; 224-4642

REPRESENTATIVES

MACHTLEY, Ronald K. (R,1); 326 CHOB; 225-4911
 REED, Jack (D,2); 1510 LHOB; 225-2735

SOUTH CAROLINA**SENATORS**

HOLLINGS, Ernest F. (D); 125 SR; 224-6121
 THURMOND, Strom (R); 217 SR; 224-5972

REPRESENTATIVES

CLYBURN, James (D,6); 319 CHOB; 225-3315
 DERRICK, Butler (D,3); 221 CHOB; 225-5301
 INGLIS, Bob (R,4); 1237 LHOB; 225-6030
 RAVENEL, Arthur (R,1); 231 CHOB; 225-3176
 SPENCE, Floyd (R,2); 2405 RHOB; 225-2452
 SPRATT, John (D,5); 1536 LHOB; 225-5501

SOUTH DAKOTA**SENATORS**

DASCHLE, Tom (D); 317 SH; 224-2321
 PRESSLER, Larry (R); 283 SR; 224-5842

REPRESENTATIVES

JOHNSON, Tim (D, at large); 2438 RHOB; 225-2801

TENNESSEE**SENATORS**

MATHEWS, Harlan (D); 506 SD; 224-4944
 SASSER, James R. (D); 363 SR; 224-3344

REPRESENTATIVES

CLEMENT, Bob (D,5); 1230 LHOB; 225-4311
 COOPER, Jim (D,4); 125 CHOB; 225-6831

DUNCAN, John J. (R,2); 115 CHOB; 225-5435
 FORD, Harold E. (D,9); 2311 RHOB; 225-3265
 GORDON, Bart (D,6); 103 CHOB; 225-4231
 LLOYD, Marilyn (D,3); 2406 RHOB; 225-3271
 QUILLEN, James H. "Jimmy" (R,1); 102 CHOB; 225-6356
 SUNDQUIST, Donald K. (R,7); 339 CHOB; 225-2811
 TANNER, John S. (D,8); 1427 LHOB; 225-4714

TEXAS**SENATORS**

GRAMM, Phil (R); 370 SR; 224-2934
 HUTCHISON, Kay Bailey (R); 703 SH; 224-5922

REPRESENTATIVES

ANDREWS, Mike (D,25); 303 CHOB; 225-7508
 ARCHER, Bill (R,7); 1236 LHOB; 225-2571
 ARMEY, Dick (R,26); 301 CHOB; 225-7772
 BARTON, Joe L. (R,6); 1514 LHOB; 225-2002
 BONILLA, Henry (R,23); 1529 LHOB; 225-4511
 BROOKS, Jack (D,9); 2449 RHOB; 225-6565
 BRYANT, John (D,5); 205 CHOB; 225-2231
 CHAPMAN, Jim (D,1); 2417 RHOB; 225-3035
 COLEMAN, Ronald (D,16); 440 CHOB; 225-4831
 COMBEST, Larry (R,19); 1511 LHOB; 225-4005
 de la GARZA, E. (D,15); 1401 LHOB; 225-2531
 DeLAY, Tom (R,22); 407 CHOB; 225-5951
 EDWARDS, Chet (D,11); 328 CHOB; 225-6105
 FIELDS, Jack (R,8); 2228 RHOB; 225-4901
 FROST, Martin (D,24); 2459 RHOB; 225-3605
 GEREN, Pete (D,12); 1730 LHOB; 225-5071
 GONZALEZ, Henry B. (D,20); 2413 RHOB; 225-3236
 GREEN, Gene (D,29); 1004 LHOB; 225-1688
 HALL, Ralph M. (D,4); 2236 RHOB; 225-6673
 JOHNSON, Eddie Bernice (D,30); 1721 LHOB; 225-8885
 JOHNSON, Sam (R,3); 1030 LHOB; 225-4201
 LAUGHLIN, Greg (D,14); 236 CHOB; 225-2831
 ORTIZ, Solomon P. (D,27); 2136 RHOB; 225-7742
 PICKLE, J.J. (D,10); 242 CHOB; 225-4865
 SARPALIUS, Bill (D,13); 126 CHOB; 225-3706
 SMITH, Lamar (R,21); 2443 RHOB; 225-4236
 STENHOLM, Charles W. (D,17); 1211 LHOB; 225-6605
 TEJEDA, Frank (D,28); 323 CHOB; 225-1640
 WASHINGTON, Craig A. (D,18); 1711 LHOB; 225-3816
 WILSON, Charles (D,2); 2256 RHOB; 225-2401

UTAH**SENATORS**

BENNETT, Robert (R); 241 SD; 224-5444
 HATCH, Orrin G. (R); 135 SR; 224-5251

REPRESENTATIVES

HANSEN, James V. "Jim" (R,1); 2466 RHOB; 225-0453
 ORTON, William (D,3); 1122 LHOB; 225-7751
 SHEPARD, Karen (D,2); 414 CHOB; 225-3011

VERMONT**SENATORS**

JEFFORDS, Jim (R); 513 SH; 224-5141

SANDOZ
TURF & ORNAMENTAL

1300 East Touhy Ave.
 Des Plaines, Ill 60018
 800/435-TURF

Manufacturers of:
Barricade, Sentinel,
Mavrik, Steward

LEAHY, Patrick J. (D); 433 SR; 224-4242

REPRESENTATIVES

SANDERS, Bernie (Independent, at large); 213 CHOB; 225-4115

VIRGINIA**SENATORS**

ROBB, Charles (D); 493 SR; 224-4024
 WARNER, John W. (R); 225 SR; 224-2023

REPRESENTATIVES

BATEMAN, Herbert (R,1); 2350 RHOB; 225-4261
 BLILEY, Thomas J. Jr. (R,7); 2241 RHOB; 225-2815
 BOUCHER, Frederick C. (D,9); 2245 RHOB; 225-3861
 BYRNE, Leslie (D,11); 1609 LHOB; 225-1492
 GOODLATTE, Robert (R,6); 214 CHOB; 225-5431
 MORAN, James (D,8); 430 CHOB; 225-4376
 PAYNE, Lewis F. (D,5); 1119 LHOB; 225-4711
 PICKETT, Owen (D,2); 2430 RHOB; 225-4215
 SCOTT, Robert (D,3); 501 CHOB; 225-8351
 SISISKY, Norman (D,4); 2352 RHOB; 225-6365
 WOLF, Frank R. (R,10); 104 CHOB; 225-5136

WASHINGTON**SENATORS**

GORTON, Slade (R); 730 SH; 224-3441
 MURRAY, Patty (D); 302 SH; 224-2621

REPRESENTATIVES

CANTWELL, Maria (D,1); 1520 LHOB; 225-6311
 DICKS, Norman (D,6); 2467 RHOB; 225-5916
 DUNN, Jennifer (R,8); 1641 LHOB; 225-7761
 FOLEY, Thomas S. (D,5); 1201 LHOB; 225-2006
 INSLEE, Jay (D,4); 1431 LHOB; 225-5816
 KREIDLER, Mike (D,9); 1535 LHOB; 225-8901
 McDERMOTT, Jim (D,7); 1707 LHOB; 225-3106
 SWIFT, Al (D,2); 1502 LHOB; 225-2605
 UNSOELD, Jolene (D,3); 1527 LHOB; 225-3536

WEST VIRGINIA**SENATORS**

BYRD, Robert C. (D); 311 SH; 224-3954
 ROCKEFELLER, Jay (D); 109 SH; 224-6472

REPRESENTATIVES

MOLLOHAN, Alan B. (D,1); 2242 RHOB; 225-4172
 RAHALL, Nick Joe (D,3); 2269 RHOB; 225-3452
 WISE, Robert E. Jr. (D,2); 2434 RHOB; 225-2711

WISCONSIN**SENATORS**

FEINGOLD, Russell (D); 502 SH; 224-5323
 KOHL, Herbert (D); 330 SH; 224-5653

REPRESENTATIVES

BARCA, Peter (D,1); 1719 LHOB; 225-3031
 BARRETT, Thomas (D,5); 313 CHOB; 225-3571
 GUNDERSON, Steve (R,3); 2235 RHOB; 225-5506
 KLECZKA, Gerald (D,4); 2301 RHOB; 225-4572
 KLUG, Scott (R,2); 1224 LHOB; 225-2906
 OBEY, David R. (D,7); 2462 RHOB; 225-3365
 PETRI, Thomas E. (R,6); 2262 RHOB; 225-2476
 ROTH, Tobias "Toby" (R,8); 2234 RHOB; 225-5665
 SENSENBRENNER, F. James (R,9); 2332 RHOB; 225-5101

WYOMING**SENATORS**

SIMPSON, Alan K. (R); 261 SD; 224-3424
 WALLOP, Malcolm (R); 237 SR; 224-6441

REPRESENTATIVES

THOMAS, Craig (R, at large); 1019 LHOB; 225-2311

QUALITY YOU CAN DEPEND ON!

PERFORMANCE YOU CAN TRUST!

"I shopped around and found Tuflex to be very quality oriented. They fulfilled our needs, were extremely accommodating and priced right. Tuflex stands behind their products; we have already ordered another truck from Tuflex and will look to them to satisfy our future truck needs."

*Bob Parenti
Palm Beach Exterminating
West Palm Beach, Florida*



"I was looking for something unique; a style that would help us stand out from the crowd.

Custom trucks from Tuflex provided us with a look so sleek and professional that I ordered a second truck a year later."

*Russell Potter
Turf Specialties, Inc.
Midland, Texas*

Tuflex will customize a spray system to meet your needs, from a pick-up to a 2 ton cab and chassis. Select a single or multiple tank operation; include a mixing tank, dry box, fertilizer tank, one or two hose reels, fiberglass bed, sideboards. Just tell us what you need and we'll build a spraying system that will provide years of worry free service.



Tuflex®
FIBERGLASS PRODUCTS

TUFLEX MANUFACTURING CO.
1406 S.W. 8th Street
Pompano Beach, Florida 33060

Toll-Free: 1-800-327-9005
Florida Customers: 305-785-6402
FAX: 305-785-6404

USE READER SERVICE #123

The Quality Difference

In a market dominated by competitiveness, price-cutting and weather adversity, Northern Lawns succeeds by operating under one simple philosophy: Well-served clients recognize the value of quality over quantity.

By Cathy Hoehn

DALE AMSTUTZ isn't out to grow Northern Lawns Inc., Omaha, Neb., into the biggest lawn care service in his region. He does aim to contend with the best, however.

Determined not to be overshadowed by major competitors like Barefoot Grass and TruGreen/ChemLawn, Amstutz denounces measuring success by company size or revenue. Instead he emphasizes the ability to meet customer needs. Every business decision he makes effecting growth or change boils down to one question—how well will it serve existing clients?

"The key has to be with the quality of service, or the value the customer places on it," Amstutz said. "If I'm offering you the same thing that some of the larger companies offer — the same product, the same timing — the only difference I can offer you is the personal contact and the responsiveness to your needs.

"I need to know what it is you want me to accomplish on your lawn. And I need to ask you that. If I can't meet your expectations then I'm not any different than Joe Blow down the street with a

spreader in the back of his car."

Though small potatoes (about \$500,000 revenues) compared to many of its major competitors, Northern Lawns takes pride in its size and ability to provide customized service.

"I would not consider us a low-end, cheap service. Our focus is only quality and responsiveness to customer needs. That's what we've earned a reputation for."

GETTING STARTED.

Amstutz never planned on owning a lawn care firm. His prior job experience as a sales representative for Ciba's agricultural chemical division wasn't geared to grooming him for business ownership, and he had never applied fertilizers or pesticides professionally. But when the offer came in 1981 from long-time acquaintance Chip Doolittle to jointly purchase the two-year-old Northern Lawns, Amstutz' curiosity and sense of adventure told him to go for it.

"It sounded like a challenge; something interesting," he said. "Prior to coming to Omaha, I spent two years in the New England states, during which I spent about a third of my time in the specialty pesticide area. I had a pretty good feel for what the pesticide end of the business might entail."



Dale Amstutz views his job as being the "coach" or motivator for his team of technicians. Photo: Doug Walton



Doolittle and Amstutz pooled their resources to produce \$50,000 cash starting capital. With new contract in hand, they leased two trucks, bought two spreaders and two backpack sprayers, and enthusiastically went to work cultivating their neophyte company into a blooming lawn maintenance firm.

The first year, they pulled in

roughly \$60,000 revenue. Second year sales crept close to \$100,000. Within three years they bought the lawn care division of Brandeis, an Omaha department store where Doolittle once worked, tripling Northern's size and revenue.

"It was like the tail wagging the dog. We were the small guy and they were the big guy, but they

wanted out of the lawn care business, so we bought it," Amstutz said.

Northern Lawns later purchased the lawn care division of a pest control business, adding about 200 clients to its repertoire, and then took on the accounts of a one-man lawn care operator in 1989.

The latter two acquisitions, though not big boosters of rev-

enue, broadened the company's service base. "They solidified some areas we were in, and made us more efficient in certain geographic areas of town," Amstutz said.

The growing company continued to offer standard fertilization and a five-application, granular pest control program (focusing on spot treatments rather than broadcast ap-

NORTHERN LAWNS INC.

HEADQUARTERS: Omaha, Neb.

BRANCHES: None

FOUNDED: 1979. Previous owner sold business to Dale Amstutz and a partner after two years due to health-related problems.

Amstutz' partner left after seven years to pursue selling his own computer software for lawn care.

OWNER: Dale Amstutz

PRIMARY SERVICES: Fertilization, weed control, core aeration, landscape design and installation and tree and shrub care for commercial (25 percent of the business) and residential (75 percent) properties.

EMPLOYEES: 10 full-time

1993 SALES: \$500,000

ACQUISITIONS: Three. The lawn care division of Brandeis department store, followed by the purchase of two other small, privately owned lawn care operations.

EXECUTIVE SUMMARY

THE CONCEPT: Treat customers and employees well and they'll stay with you.

PROJECTIONS: Expect 5 percent to 10 percent growth in 1994.

HURDLES: Overcoming poor public perception of the lawn care industry; training employees in quality customer service.

THE OWNER

DALE AMSTUTZ

AGE: 42

FAMILY: Wife, Nancy; one daughter; one son

EQUITY HELD: 100 percent stock in company

EDUCATION: Bachelor of science degree in agricultural economics from

The Ohio State University.

OTHER COMPANIES STARTED: None

plications), but also developed a promising tree and shrub care service, a landscaping service and a computer software program for lawn care.

Northern Lawns experienced a blow in 1988 when Doolittle announced he was leaving the company, taking all tree and shrub accounts with him (since he was the only one licensed in that area), as well as rights to the software programs. Those services, if not the bread, were at least large parts of butter for the company.

Needless to say, the separation severed more than just a business relationship.

"I call that business split a divorce sometimes," Amstutz said. "Those situations are sometimes ugly, sometimes clean, but there's always some soul searching to go through."

Over time, the volatile parting worked into a different, yet equally successful business relationship and deeper friendship. "We decided we could work together and wouldn't be violent divorcees trying to kill each other. It has worked well both ways. I've given him referrals; he's done consultation for us for things he probably charges other people."

SPECIFIC SERVICES. Northern Lawns serves a 75/25 ratio of residen-

Due to fierce competition in the mowing market, Northern Lawns has chosen to keep that service to a minimum.

tial/commercial accounts throughout metropolitan Omaha, southwestern Iowa and Lincoln, Neb. It continues to concentrate on pesticide applications, including add-on treatments for white grubs, diseases, etc., but also provides landscape installation and maintenance. The latter service represents roughly 10 percent of the business (contributing about \$50,000 revenue annually). Tree and shrub care (also contributing \$50,000 in revenue), and core aeration are two other developing areas.

Tree and shrub care provides the greatest growth opportunity, Amstutz said. After Doolittle left the company, Amstutz had another employee trained and licensed in tree care.

"We were out of that for a full season. We've slowly worked our way back into it with the customers we have. We felt it was a service we needed to provide, but we couldn't because Omaha requires arborists practicing in the city to be licensed through the city. It's kind of unique. It has nothing to do with pesticide licensing."

Core aeration also proves a fruitful service, particularly given the clay soils in Omaha, and continues to grow each year.

"We have learned over the years core aeration is a real benefit to the soil and turf. Some of our maintenance problems in the past have been simplified somewhat with core aeration. Grub control, for instance. In-

secticides get caught up in a thatch layer of soil. We find core aeration opens holes through the thatch and allows our materials to reach the target."

Northern Lawns offers minimal mowing and maintenance services for some commercial accounts. A majority of that work is subcontracted.

"Mowing is an area we continue to look at. We'll see if it fits our operation. To date it has not," Amstutz said.

Most of Northern Lawns' commercial work is upscale multi-family rental unit properties. "I'd say we probably win 20 percent or less of our bids because most jobs strictly go on price. But of the commercial work we do, probably 99 percent of our clients renew with us. We don't lose business once we have it. And customers who have left us for a lower-priced company have come back to us because they felt they weren't getting the same value."

PLAN OF ATTACK. The key to Northern Lawns' business strategy is keeping outstanding debts, both long-term and short-term, to a minimum. "That approach has paid off for us. It puts us in a healthy situation when we hit a downturn like we did last year," Amstutz said.

Last year's excessive rain hurt all aspects of the business, particularly the landscape installation. Technicians were unable to work a full week for the first 15 weeks of sum-

mer, causing the company to lay off employees for the first time in its history. "It was a tough year, but we put it behind us and went on," Amstutz said.

Northern Lawn's finances are tracked quarterly, but can be accessed on the computer at any time. "What's called a profit and loss statement, we do something similar on a monthly basis, sometimes weekly. We run a full report on revenue and expenses, compared to budget. We look at where we're short, where we're long, where we need to adjust and how much," Amstutz explained.

"I think we're fairly sophisticated in that area. We know what's making us money and what's not. Sometimes we don't use the figures as wisely as we should. But we know what they are and have them accessible."

Northern Lawns prices jobs according to what the market bears, Amstutz said. "We've had a philosophy since the beginning: Raise prices a small amount every year. Don't try to maintain the same pricing structure. We made a slight exception this year because of the economy.

"The inflation rate in the economy has flattened out. So we try to tailor our price increases to that and adjust them. My philosophy is to not be the cheapest or most expensive bid. I have to sell the value."

Employees are usually kept on full salary and benefits through the winter. The downtime is spent upgrading all equipment, taking inventory, conducting employee training, attending seminars, communicating with customers and renewing contracts. "It's a rest time for all of us. The secretary, my wife and I are the only three on a regular schedule and that's with shortened hours," Amstutz said.

The staff gets back to business in February. "We get people on regular schedules again, get in the training mode, get revved for spring. We're all ready to go by mid-March, weather permitting," he said.

COMPANY IMAGE. In keeping with the philosophy that bigger isn't necessarily better, Amstutz focuses heavily on improving customer relations and determining how to better serve existing clients.

"We don't really see a great deal of growth potential in the number of customers we attain. We focus

(continued on page 40)





Work, work, work. That's all they ever do.

Whether you're mowing a lot of lawn, unloading a ton of mulch or grading off a new yard, a Ford compact diesel tractor just plain works and works. Fact is, this reliable, hardworking machine helps make all of your landscaping jobs easier.

Easy does it

With a Ford compact tractor, it's easy for you and your crew to work your best.

That's because it's easy to operate. Choose the transmission—including

hydrostatic and shuttle shift—that matches the work you do most. A 540-rpm PTO powers a wide range of implements and attachments. And optional 4WD increases your productivity on wet or muddy job sites.

It's also easy to rely on. With its bigger cubic-inch displacement engine, heavy-duty rear axles and cast iron housings, this tractor just keeps working.



Just as important, a Ford compact tractor is easy to maintain. With features like easy-to-reach routine service points and a hood that's easy to raise even with a loader or front blade attached.

Long working relationship

See your Ford New Holland dealer today and start a long-term working relationship with a Ford compact diesel tractor, available in nine models from 16 to 43 gross hp. Then get to work, work, work.



NEW HOLLAND

The winning team

USE READER SERVICE #86

You might think using less insecticide means you'll have to put up with more insects. But that's not necessarily the case. Because *how* you use your insecticide is as important as *how much* you use. With the right tactics, you can use

a lot less and still get excellent results.

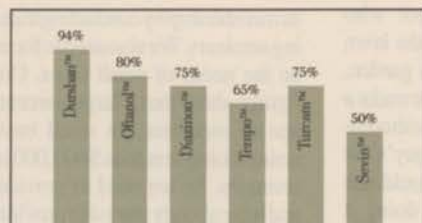
Here's an example. Mixing insecticide with insecticidal soap can reduce the amount of insecticide you need on your ornamentals by about 50 percent. Soap controls

most soft-bodied insects and mites. By adding insecticide, you'll also take care of tougher insects, like scales and worms. University studies suggest you may get better control than you get with insecticide alone.



A few ways to balance with your love for the env





Studies show that Dursban delivers better chinch bug control at lower rates than other insecticides.



Knowing exactly when to apply insecticide helps, too. One way to monitor mole crickets, chinch bugs, webworms and cutworms is by mixing 1½ oz. of dish soap in two gallons of water and sprinkling it

even controls fire ants. And Dursban also gives you plenty of application flexibility. It's available as a liquid, dry flowable, wettable powder in water soluble packets, granule, fertilizer or bait. Now, we realize you probably

Place your hate for insects in your environment.

on a four-square-foot area of turf. If eggs have hatched, this soapy mixture will flush insects to the surface, and you can apply insecticide accordingly.

Your insecticide itself can also make a difference. After all, different insecticides work at different rates. Which is why Dursban[®] insecticide could be your best choice.



have some questions. That's why we created The Turf Manager's Guide To Responsible Pest Management. It's 44 pages packed with comprehensive information on the latest techniques for controlling insects, weeds and turf diseases. For a free copy return the coupon, or call our toll-free telephone number. Because when you apply a little knowledge, you don't need to apply as much insecticide.



Why Adults Should Spend Time Catching Bugs.

If you want better results from the insecticide you use, insect traps can help. They allow you to find out when certain pest insects are present and time your insecticide applications accordingly. Insect traps are inexpensive, easy to use and they'll help you get greater control using less insecticide.



Pheromone Trap



Pitfall Trap

Just one pound active ingredient per acre gives you the most consistent broad spectrum insect control available at such a low rate. Dursban



Send me the following Management Guide(s):

- Cool Turf
- Warm Turf
- Nursery and Landscape



Mail to:
DowElanco, P.O. Box 33489,
Indianapolis, IN 46203-0489.
Or call: 1-800-883-5044

Name _____

Company _____

Business Category: _____ 03

Nursery Lawn Care Municipal

Landscape Contractor Golf Course

Address _____

City _____ State _____

Zip _____ Phone (____) _____



The chemistry is right.[™]

*Trademark of DowElanco. © 1994 DowElanco. Dursban is available in liquid, dry flowable, granular and fertilizer formulations. Always read and follow label directions.

Cover Story

(continued from page 36)

on keeping the ones we have and growing additional services customers request of us."

First priority in customer service is setting and abiding by a strict standard of professionalism. "It has to do with mental attitude. It shows in how you dress—is your shirt tail tucked in, hat on straight? Is the truck clean? Are your business forms and instructions you leave with the customers all consistent? Are you ethical and consistent through everything you do in your business? That's professionalism."

Also key to Amstutz' customer service strategy is offering guaranteed response to site problems within 24 hours, and following through on all promises. In any service industry, both of those pledges are difficult to deliver.

"We promise and live by a rule that we will be there within 24 hours to fix a problem. Every rule has exceptions of course. If a customer calls and it's raining and he wants his weeds resprayed, obviously we can't come out right away.

"Our job in that case is to make contact with that customer and, as part of the educational process, make sure they understand we didn't forget about them. We will be there immediately when it stops raining and we see that the application will perform what it's intended to do."

If what needs to be done isn't a service Northern Lawns normally provides but is within the employees' realm of expertise, technicians are encouraged to sell the additional service. Amstutz places each technician in complete charge of accounts, from bidding and estimating to handling complaints. He feels it benefits both the client and the employee.

"I don't think a technician should be able to pass the buck to a service department thinking, 'If I didn't do the job right, well, the service technician will come take care of that or someone who knows more than I do will.' That attitude really downgrades the employee, first of all. It places a lack of importance on his job. Secondly, it sends the wrong signal to the customer."

In addition to technical instruction, Amstutz promotes continuous training in people skills and communications skills for all 10 employees, including himself. He believes the industry fails to pro-

vide sufficient instruction in these areas. He is even considering hiring a leadership training firm to broaden his and other key employees' ability to motivate workers.

"That's where I see my job—learning to be a better coach, be a better positive reinforcement, a motivator. I think I can get better at that."

OVERALL MARKET. As past president of the Nebraska Professional Lawn Care Association, and president-elect of the Professional Lawn Care Association of America, Amstutz has had firsthand experience dealing with many key concerns facing the industry. In the following interview, he shares his views on what the pertinent issues are and

'I don't think a technician should be able to pass the buck to a service department thinking, if I didn't do the job right, the service technician will come take care of it.'

what changes he plans to instill as president of PLCAA next year.

Q. What do you consider to be the key issue facing the lawn care industry?

A. Employee issues are very important in our industry. PLCAA just finished an extensive market research project. DowElanco and Ciba have done some things in the past to survey the attitude of the general public.

One thing that glares out at me is the view that the industry is made up of a bunch of young kids that don't know what they're doing. That's kind of frustrating for someone like myself who's been in the business 12 years promoting professionalism, hiring what I've considered reliable, responsible employees. It's a black eye to our industry to see some young, start-up companies or old, established firms sending out unprofessional people to represent the industry.

Q. What can the industry do to improve its public image?

A. We can better educate ourselves. A lot has to do with how we handle situations. Instead of trying

to argue with a neighbor who doesn't want us to spray the lawn while he's working in his garden, why not ask if it's OK if we make a treatment? What's wrong with coming back tomorrow if the guy's not going to be there and it would suit his schedule better than doing it right now? You can adjust your scheduling to those kinds of things, if necessary.

We have not been very proactive selling the professionalism of our industry. We're learning.

Q. Is anyone doing that effectively now?

A. I am. And some of us who are in this industry to operate as

professionals have done an awful lot. There are also a lot of people in the industry who have not operated professionally, and that's really blown what the rest of us have done. It's tough to change the perception of the general public and the media because we don't have that one on one educational opportunity (that we have with our clients) with everybody.

Q. What can PLCAA do to bring change to the industry?

A. We, and I personally as a PLCAA board member, have the responsibility to facilitate continued training and elevate the professionalism of the entire industry. That's kind of how I view my job—to be part of that process and to continue to educate people to run their businesses properly. Not to tell them how to do it, but to inform them about legislation and legal issues and be part of that overall training process.

Q. What training can PLCAA and other industry associations implement, in addition to current projects?

A. PLCAA is reaching out to

its membership by conducting training seminars. We also need to focus on the needs of small firms. Our figures show that a large percentage of members are small businesses doing less than \$400,000 in revenues. So we need to provide, and have already started to provide, more educational seminars geared toward some nuts and bolts aspects of running a business, such as how to read a financial statement, how to put one together, how to buy a computer, etc.

We're (PLCAA) also looking at the possibility of expanding regional education seminars next year. That's a program that has been attempted and disbanded in the past. We have to realize that if we only get a dozen or 30 people in attendance but those 30 get something out of it, then it was a productive and successful meeting.

Q. What have you done personally to initiate positive change in the industry?

A. I was on the Nebraska Professional Landscape Contractor Association's board and served as their president for a year. I worked with that association in passing a state-level FIFRA (Federal Insecticide, Fungicide and Rodenticide Act) bill. It's the first time Nebraska has had a state law controlling or provisioning licensing for pesticide applicators. We're the last state in the country to adopt that at the state level. So we're interested in seeing how it affects (unprofessional) competitors in business.

Q. What effects do you anticipate from the legislation?

A. If the same scenario plays out as it did in Iowa several years ago, I think the unprofessional competition will kind of disappear. The industry calls them fly-by-nighters, because when the going gets tough, they just disappear.

Requiring licensing helps our entire industry. It helps my business; it helps raise the professionalism of the industry. I can go out now and talk to my customers and if they want to go to a cheaper company, I can ask, "Is he licensed? Did you know he has to be?" All those things add credibility to our industry. ■

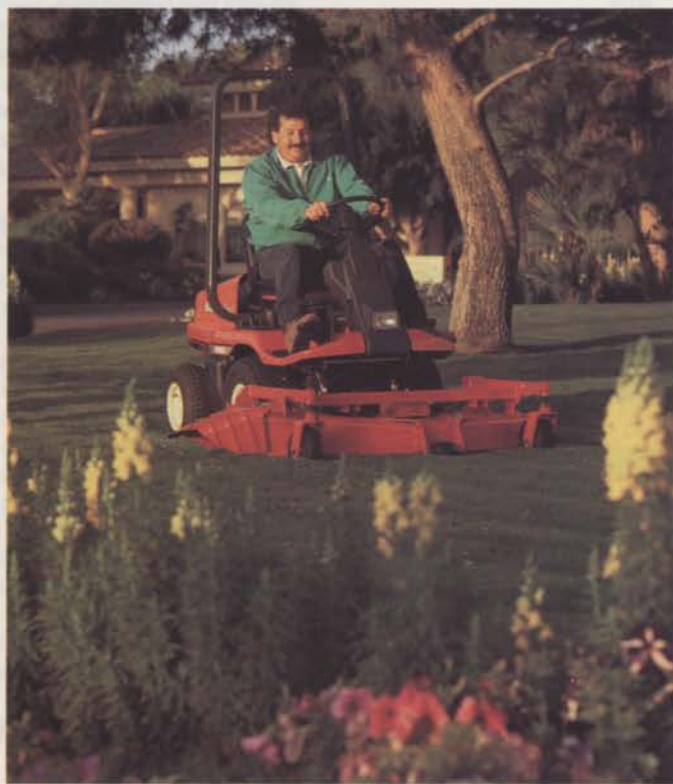
The author is Senior Editor of Lawn & Landscape Maintenance magazine.

KUBOTA RELEASES ANOTHER BEST SELLER



Kubota Tractor Corporation's new compact, yet powerful GF1800E diesel front mower is a hit with professional mowing contractors. Ideal for commercial mowing jobs that demand maximum mowing performance and efficiency from a fuel-efficient, compact machine with outstanding maneuverability.

Equipped with an 18-horsepower, liquid-cooled diesel engine, the GF1800E offers a choice of three shaft-driven, off-set mowers – 48" mulching rear discharge mower, 54" side discharge and 60" side discharge. The three mower decks feature a cutting height from 1" – 4". The GF1800E has a hydraulic brake, clutch and lift system.



The sophisticated hydrostatic transmission features a single pedal to manipulate both speed and direction, eliminating shifting and clutching. Front-wheel traction, differential lock and rear-wheel steering for tight turns lets you work efficiently on all types of grass without turf damage.

A 3-cylinder engine, "speed set control" hour meter, full-tilt steering wheel, one-touch seat adjustment, semi-flat deck and reverse air system are standard.

For the best quality cut, see your authorized Kubota dealer today.

Kubota

For information write to:

KUBOTA TRACTOR CORPORATION
P.O. Box 2992, Dept. LLM, Torrance, CA 90509-2992
Financing available through Kubota Credit Corporation.

Maximizing Insecticide Performance

Selecting a pesticide is only half the battle when fighting pest infestations. Calibration, testing the pH and watering in the product are just a few of the considerations to a successful insecticide program.

By C. Neal Howell

SUCCESSFULLY identifying a pest is the first step in determining its control. It's not like there aren't any choices.

It's very much like the tourist on

his first trip to the Amazon jungle.

"Guide," the tourist asked, "are there many snakes in the Amazon?"

The guide ruminated for a moment and replied, "Well, only about

a hundred. Ninety-nine are poisonous and the other one will eat you alive."

It may not be quite so bad in the turf and ornamental field. Out of

100 top insects, 99 will give you terrible headaches while the other one may eat your entire bank account.

Diagnosing the problem is the first and most important step. Often, disease or nutritional problems are misdiagnosed as insect problems and vice versa. Needless to say, an erroneous treatment rarely produces the desired results.

If you suspect a problem the only correct procedure is to find the insect, properly identify it, make certain it's present in large enough numbers to cause damage and then — and only then — plan your action.

If you detect a turf or ornamental insect, use your knowledge and reference tools to achieve proper identification. Consult your local extension agent for confirming diagnoses and recommendations. Base your treatment regime on knowledge, not suppositions.

Often, treatment programs are based on the need to limit damage rather than attempts to prevent infestation. Otherwise known as integrated pest management, these programs are designed to produce acceptable pest management while minimizing potential adverse environmental effects. This method relies on knowledge and technique rather than on blanket applications of pesticides.

For example, if there are fewer than four to six white grubs per square foot and the turf is healthy and not drought stressed, reconsider the need to treat.

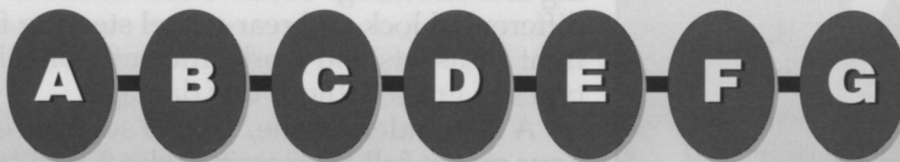
Adequate rates and proper timing based on the life cycle of the insect are critical for successful insect control. Refer to available information from your county extension agent and university research to guide you to the pest's most vulnerable stage and most effective method of insect control.

CHOOSING A CONTROL. Once the pest has been identified and the

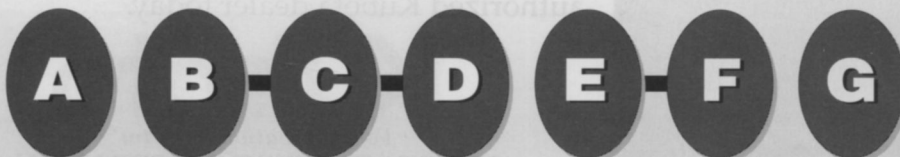
Pesticides are designed to break down. The trick is to make sure degradation doesn't begin before the application is made.

HYDROLYSIS

Long chain molecules = effective pesticide



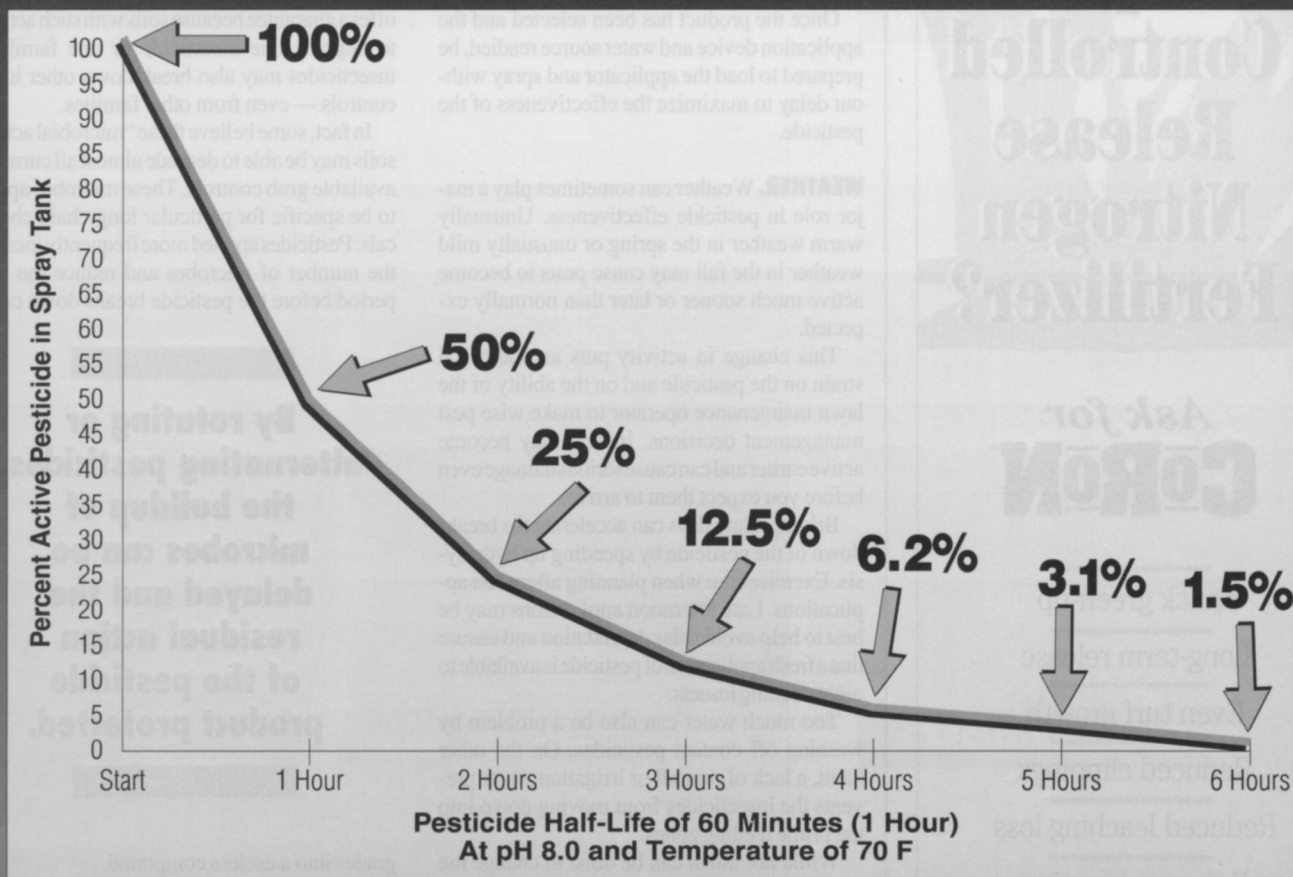
Chemical reaction in which water reacts with pesticides to form two or more substances



Pesticide no longer effective

PESTICIDE HALF-LIFE

The time required for 1/2 of a pesticide to hydrolyze or become inactive



need for treatment determined, select the proper control product. Read the product label, making certain you understand the strengths and weaknesses of the pesticide chosen for the task.

Some insecticides have a low residual and require more frequent applications. Other more persistent pesticides have a wider window of application. Make certain a program has been designed to work on the pest at the appropriate growth stage, given the current temperature and moisture conditions.

Check the product for information regarding applicator safety and cost. Consider the available formulations. Check the label not only for target pests, but also for recommendations for mixing and pH requirements for liquid applications.

Pesticides are 100 percent potent only while they are in the bag, box

or can. When they are mixed with water, they begin the process of "degradation." Pesticides are, in fact, designed to break down; otherwise they build up in the food chain and cause grave problems in higher species. DDT, for example, was an excellent insecticide, but it was not biodegradable and its use has been prohibited since 1973.

The trick to ensuring that a pesticide is as effective when it is applied as it was in the package is to make sure it doesn't break down or degrade prior to application. This breakdown in water is called hydrolysis. The reaction between the water and the pesticide creates two or more new substances.

The time required for half of the product to break down into these new substances and become ineffective is called "half-life." Half-life can be expressed in minutes,

hours, days, months or years depending on the time required for half the product to degrade.

Remember, most city water sources are required to carry a pH of 7 to 9. This minimizes the effects of lead and solder in old pipes. Such high pH values can curb pesticide effectiveness by substantially reducing half-life.

Depending on the pH of the water supply, the process of degradation can be accelerated.

Remember that pH values range from a neutral 7 up to a very alkaline 14 or down to a very acidic 0. Most pesticides operate best (have the longest half-life) in a solution with a pH of 5 to 6.9.

Use a pH meter or litmus paper to determine the water pH. If the pH is above the optimal 5 to 6.9, add an acidifying agent like liquid iron, vinegar or a buffering agent.

When working with city water sources, it's particularly important to check the water's pH before mixing in a pesticide.

Start slowly, adding the pH modifier a little at a time. Baking soda or household bleach can raise the pH if it is accidentally dropped too low.

TANK MIXING. Since labor is often the main expense in any application, tank mixing of pesticides can be a great labor-saving device. Multiple pests are often encountered — with weeds and insects frequently plaguing the same turf stand — and tank mixing can maximize labor costs and results.

Tank mixes are not to be taken lightly, however. Read the product labels, check for warnings or requirements and make sure that the pH requirements do not differ dramatically. A jar test prior to mixing a

Using Liquid Controlled Release Nitrogen Fertilizer?

Ask for
CoRoN

Quick green-up

Long-term release

Even turf growth

Reduced clippings

Reduced leaching loss

Enhanced rooting

Low burn potential

Clear liquid solution

Highly compatible

CoRoN
CONTROLLED RELEASE NITROGEN

**For All Your
Turf, Tree & Shrub
Applications**

CoRoN Corporation
Souderton, PA 18964
800-338-0836
215-723-5099

USE READER SERVICE #59

batch of chemicals can prevent a product mix from producing a cottage cheese-like mess. (See page 135 for steps for performing a jar test.)

Next, make certain that the application device has been calibrated and is clean, and is ready for the pesticide. When in doubt about the condition of the sprayer or its last load, rinse out the applicator and neutralize the tank, pump, filters, hoses and nozzles with a tank cleaner.

Once the product has been selected and the application device and water source readied, be prepared to load the applicator and spray without delay to maximize the effectiveness of the pesticide.

WEATHER. Weather can sometimes play a major role in pesticide effectiveness. Unusually warm weather in the spring or unusually mild weather in the fall may cause pests to become active much sooner or later than normally expected.

This change in activity puts an additional strain on the pesticide and on the ability of the lawn maintenance operator to make wise pest management decisions. Insects may become active earlier and can cause serious damage even before you expect them to arrive.

Bright, sunny days can accelerate the breakdown of the pesticide by speeding up hydrolysis. Exercise care when planning afternoon applications. Late afternoon applications may be best to help avoid solar degradation and ensure that a fresh application of pesticide is available to night-feeding insects.

Too much water can also be a problem by washing off contact pesticides. On the other hand, a lack of rainfall or irrigation water prevents the insecticides from moving down into the prime feeding zones.

While not much can be done to change the weather or to provide water to non-irrigated areas, several products can enhance the contact between the pesticide and the plant leaves. Surfactants help break the surface tension of the liquid providing good coverage as it flows across the leaf. Stickers accelerate the drying of the pesticide and help prevent it from washing off if rain occurs too soon following an application.

ROTATION. Rotate insecticides frequently for maximum effectiveness. Dr. Harry Niemczyk of The Ohio State University described what he calls "active" soils. Niemczyk found that soils treated with isofenfos for three years without rotation, for example, had the ability to neutralize additional treatments of the chemical in a matter of days.

He advanced the theory of "enhanced degradation" and later isolated soil microbes which actually used the isofenfos as a nutrient source.

Enhanced microbial activity has been demonstrated even when a compound has not been used for up to three years. Such increased pressures dictate the need to alternate products even within the same class of pesticides.

For example, organophosphates (OP) are among the most widely used turf and ornamental insecticides. The OPs include acephate, chlor-

pyrifos, dimethoate, diazinon, ethoprop, isofenfos, malathion, oxydemeton-methyl and trichlorfon. Even switching from one OP to another can help prevent enhanced microbial activity as well as insect resistance.

Most universities now recommend rotating grub insecticides to prevent premature failure as a result of microbial degradation. This tactic may help ensure pesticide effectiveness, but does not offer a guarantee because soils with such activity to degrade one insecticide or one family of insecticides may also break down other insect controls — even from other families.

In fact, some believe these "microbial active" soils may be able to degrade almost all currently available grub controls. These microbes appear to be specific for particular long-chain chemicals. Pesticides applied more frequently increase the number of microbes and reduce the time period before the pesticide breaks down or de-

By rotating or alternating pesticides, the buildup of microbes can be delayed and the residual action of the pesticide product protected.

grades into a useless compound.

By rotating or alternating pesticides, the buildup of these microbes can be delayed and the residual action of the pesticide product protected.

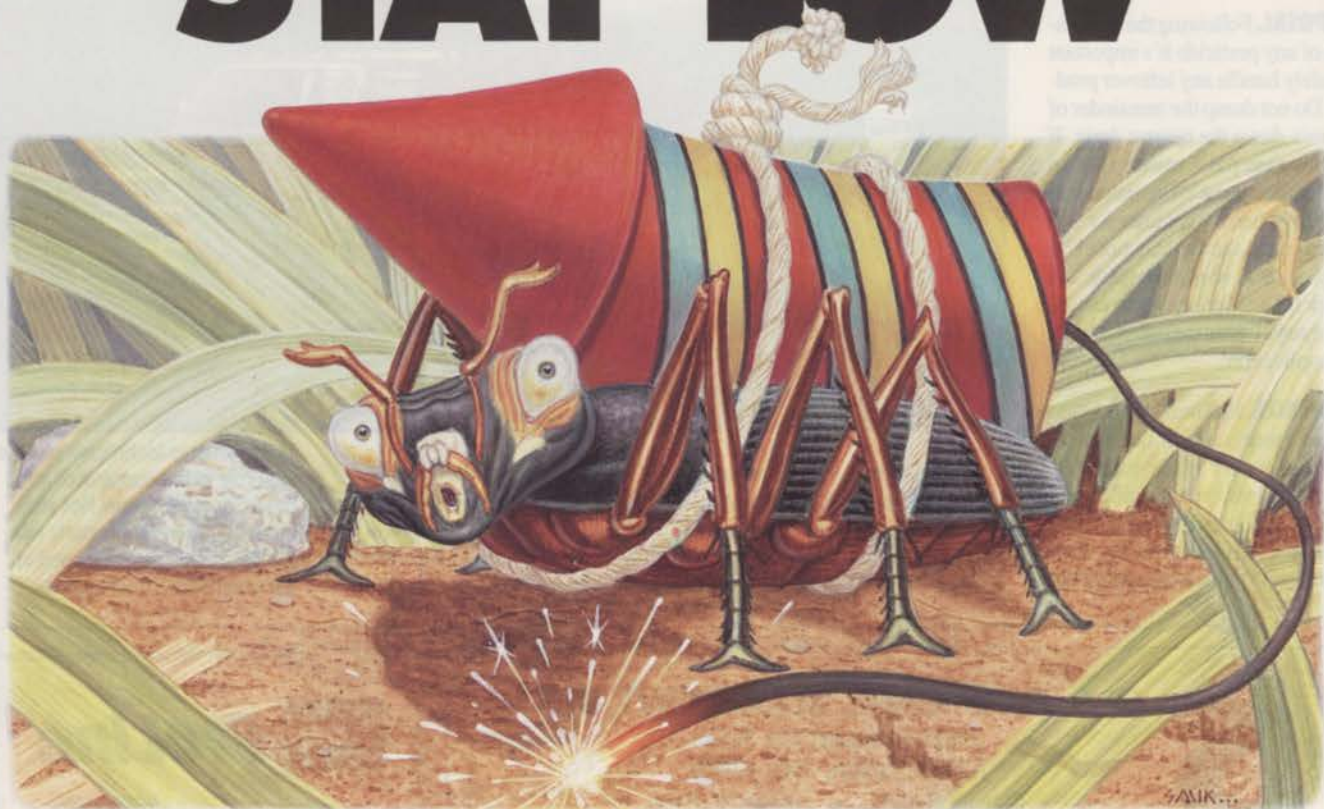
Sometimes, switching to another family of pesticides can be a real asset when problems occur with pesticide resistance. Insects begin to mutate and transform into a strain biologically resistant to the particular pesticide. The carbamate insecticide family is one of the oldest, but still highly effective group of insecticides. It contains compounds such as aldicarb, bendiocarb, carbaryl, methiocarb, oxamyl and propoxur. One of these chemicals may be used with great success if pests build up a resistance to an OP or another carbamate.

IRRIGATION. Don't overlook label instructions regarding irrigation. Irrigation moves the insecticide into the zone in which the pest is feeding. Unless the insect can ingest the insecticide, the pesticide will be unable to control the pest. Irrigation can be the most vital step in the process.

In residential insecticide applications the irrigation is often out of the control of the applicator. Few home owners realize the importance of applying a sufficient amount of water following the application, and either forget to water or do so

(continued on page 46)

THINK FAST STAY LOW



NEW SCIMITAR®

Applied at extremely low rates, rocket-fast SCIMITAR® insecticide blasts major surface feeders — chinch bugs, sod webworms, mole crickets. Even mites and aphids. While other insecticides can take up to several hours for results, SCIMITAR sends 'em soaring in just seconds — with no odor.

Fast control, low rates. Two advantages both you and your customers will appreciate.



Packaged for easy mixing, SCIMITAR is available in one-pound containers and handy water soluble packs. Plus it can be readily tank mixed with all commonly used turf and ornamental products for heightened control.

For fast control at low rates...new SCIMITAR. For more information call ICI Product Information at 1-800-759-2500.



Professional Products

Delivering the Promise

Always read and follow label directions carefully.
SCIMITAR® is a trademark of an ICI Group Company
A business unit of ZENECA Inc. © 1993. ZENECA Inc.

USE READER SERVICE #22

Pesticide Efficacy

(continued from page 44)

inadequately. Doorhangers, statement stuffers and conversations with the homeowner may help enforce the necessity of irrigation to ensure the effectiveness of the insecticide.

DISPOSAL. Following the application of any pesticide it's important to safely handle any leftover product. Do not dump the remainder of the mix down the nearest drain. If surplus material remains after an application, place the remainder in a clean, labeled container for use with the next such application. Use the product as soon as possible and check the pH before use to ensure that it stays within the optimal range for application.

MAXIMIZE. Maximizing pesticide performance is a multi-faceted job. While there are many variables: products, pests, time of application, rates of application, weather, carrier, carrier pH and so on, the most important variable is the applicator.



A technician needs to educate, isolate, calibrate, formulate and analyze the situation to become a successful, professional pesticide applicator. ■

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

The lawn care technician plays a vital role in the success of any pesticide application. Not only must the operator properly mix the product, it must be used in the most efficacious manner.



C&S TURF CARE EQUIPMENT, INC.

6207 Dressler Rd. N.W.
North Canton, OH 44720
(216)966-4511 • (800)872-7050

TURF TRACKER

SS8030



FEATURES:

- Spreads and sprays over 4000 sq. ft. per minute.
- Zero turning radius for maximum maneuverability.
- Full hydrostatic drive.
- 12' break away spray boom.
- 150 lb. capacity; 3 speed electric spreader.
- Designed for residential and commercial properties.

USE READER SERVICE #70

TORO ProLine

MODEL 22040
SALE PRICE
\$680.00



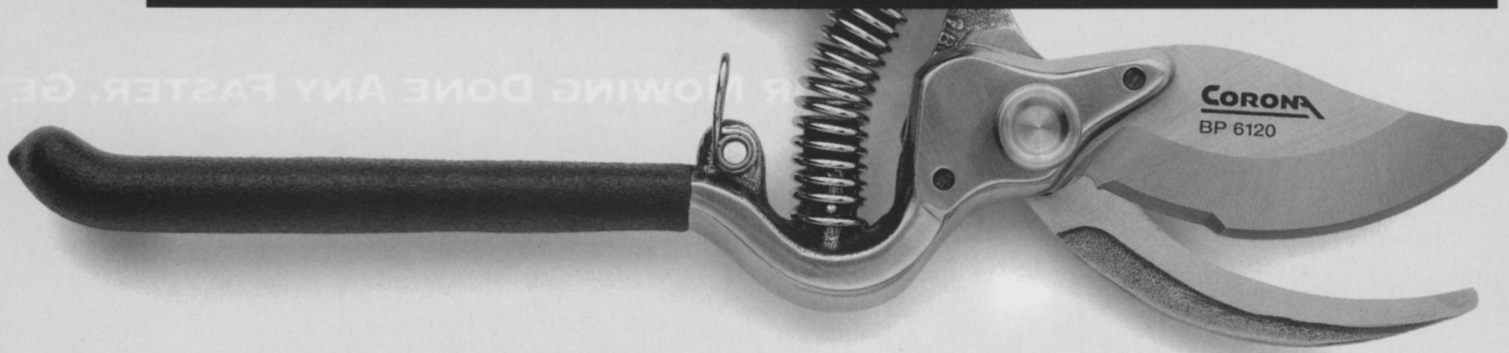
21" COMMERCIAL
SELF-PROPELLED
RECYCLER II MOWER
REAR BAG INCLUDED

LONGHORN

IRRIGATION
LANDSCAPE
WHOLESALE
ONLY

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

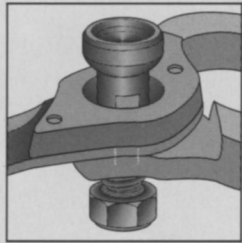
USE READER SERVICE #68



WHEN YOU MAKE THE BEST TOOLS, IT'S HARD TO MAKE THEM BETTER WITHOUT MAKING THEM MORE COMPLICATED. BUT WE'VE DONE IT.

For 1994, every Corona professional grade pruning tool has been improved. Simply.

Take our new precision-machined pivot bolt design, for instance. For 60 years we've employed a reverse-threaded machine bolt and lock nut. Simple, reliable, but requiring two wrenches and a little dexterity to adjust.

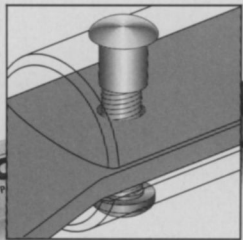


Self-aligning pivot bolt

Our new design is self-seating, self-aligning and right-threaded. It won't work loose. And it makes blade changing in the field a one-tool, one-minute job.

We've also switched to barrel nuts in place of machine screws for mounting the hardwood handles on our loppers and hedge shears. They protect the threads and make changing handles easier. And we've gone to more comfortable, textured non-slip grips on our hand tools.

All of our forgings are now of Coronium™ a new, higher



Barrel nut mounting

alloy steel milled to our specifications. This change, combined with refinements in our heat treating, puts blades in your hand that cut cleaner and hold an edge longer.

Without changing our tools basic, proven designs, we've streamlined and strengthened our forgings. And we're spending more time polishing metal parts to give them greater rust resistance and to make them easier to clean and disinfect.

On the service side, we've simplified our model numbering and figured out a way to lower prices on replacement parts.

All of this is pretty basic stuff, we admit. No gimmicks. Nothing complicated.

But that's what you'd expect of Corona. We're simply doing what we started out doing 60 years ago. Listening to you, the people who earn a living with pruning tools. Then designing, engineering and forging rugged, American-made tools that cut clean, hold an edge and outlast others by far.

Put our latest generation of tools to the test. If you like them, tell others. If you think they need improvement, tell us. To do so, or for the name of your nearest Corona dealer, call 1-800-234-2547.



CORONA

C L I P P E R

1540 East Sixth, P.O. Box 1388, Corona, CA 91718-1388

A Harrow Company

© 1994 Corona Clipper

IF YOU CAN'T GET YOUR MOWING DONE ANY FASTER, GET



GET UP TO \$80 CASH BACK WHEN YOU BUY PRIMO.



Now through April 1, 1994, you're eligible to receive \$15 cash back when you buy one quart of Primo®. Or, \$80 cash back when you purchase one quart along with two 1-gallon containers of Primo.

Just fill out the information below, and mail it to Ciba Turf & Ornamental, Primo Rebate, P.O. Box 19900, Greensboro, N.C. 27419-9900. And be sure to attach a distributor's invoice to verify your Primo purchase.

Limit one rebate per customer. *To be eligible, purchase must fall between December 1, 1993 and April 1, 1994. All submissions must be postmarked by April 15, 1994. Allow 6-8 weeks for rebate return. Offer limited to states where Primo is registered and to turf management professionals only.*

\$15 for 1 quart

\$80 for 1 quart and 2 gallons

Name _____

Business Name _____

Address _____

City _____ State _____ Zip _____

SSN/Tax I.D. _____

For Ciba Use Only _____

6150TT90A0 RAMAC 58960 Program 40304

Primo is a registered trademark of Ciba-Geigy Corporation. Always read and follow label directions.

LLM 3

YOUR GRASS TO GROW A LITTLE SLOWER.

When most people work nights, it's to get ahead. In your job, unfortunately, it's usually in order to catch up.

It's times like these when Primo® for turf growth management could prove most useful.

Because Primo reduces turf growth by half. Which can cut your work load considerably. Not to mention that an extended mowing cycle can give you much more scheduling flexibility.

So if you want to keep your mowing from getting ahead of you, or if you just want to reduce your labor costs, contact your Ciba representative or authorized Primo distributor.

Who knows, they just might help you get your evenings back.



Always read and follow label directions.

USE READER SERVICE #90

Reformulations Prevail

In Competitive Market

Specialty pesticide manufacturers say they're working hard to produce new and reformulated products and packaging to encourage lower use rates, higher efficacy and "reduced risk" to the applicator and to the environment.

By Julie A. Evans



Lawn care professionals are increasingly calling for lower-use-rate pesticides, according to manufacturers. Photo: Monsanto.

FOLLOWING A PLETHORA of product introductions in the late 1980s and early 1990s, the flow of new herbicides, fungicides and insecticides into the lawn maintenance market appears to have slowed, according to university researchers and specialty pesticide manufacturers.

"There doesn't seem to be a lot of new chemistry in the pipeline right now," said Bruce Branham, associate professor of crop and soil sciences for Michigan State University. "I think in the past there was a flurry of activity in the green industry because it was a new marketplace and companies were looking at new chemistries that looked good in turf," he said.

According to Branham, some specialty pesticide companies now are more likely to invest their research dollars first into corn, soybeans and other agricultural markets, before testing those products for any potential turf applications.

Peter Dernoden, a professor of agronomy at the University of Maryland, offered another explanation for the slowdown of new product introductions.

"A few years ago, there were a lot of materials in the pipeline. The late '80s and early '90s were the most active years," Dernoden said. "There may be a slowdown on that trend, especially with herbicides, because there are so many effective products and too much competition."

Pat Vittum, an associate professor at the University of Massachusetts, said she's hearing about many interesting developments in the area of insecticides, but that it would be premature to comment on them now. "There are a lot of neat ideas coming down the road, but they're a year or two away from their release," Vittum said.

HERBICIDES. One new product showing great potential for the lawn maintenance market is Manage, a new postemergent herbicide from Monsanto that controls yellow and purple nutsedge.

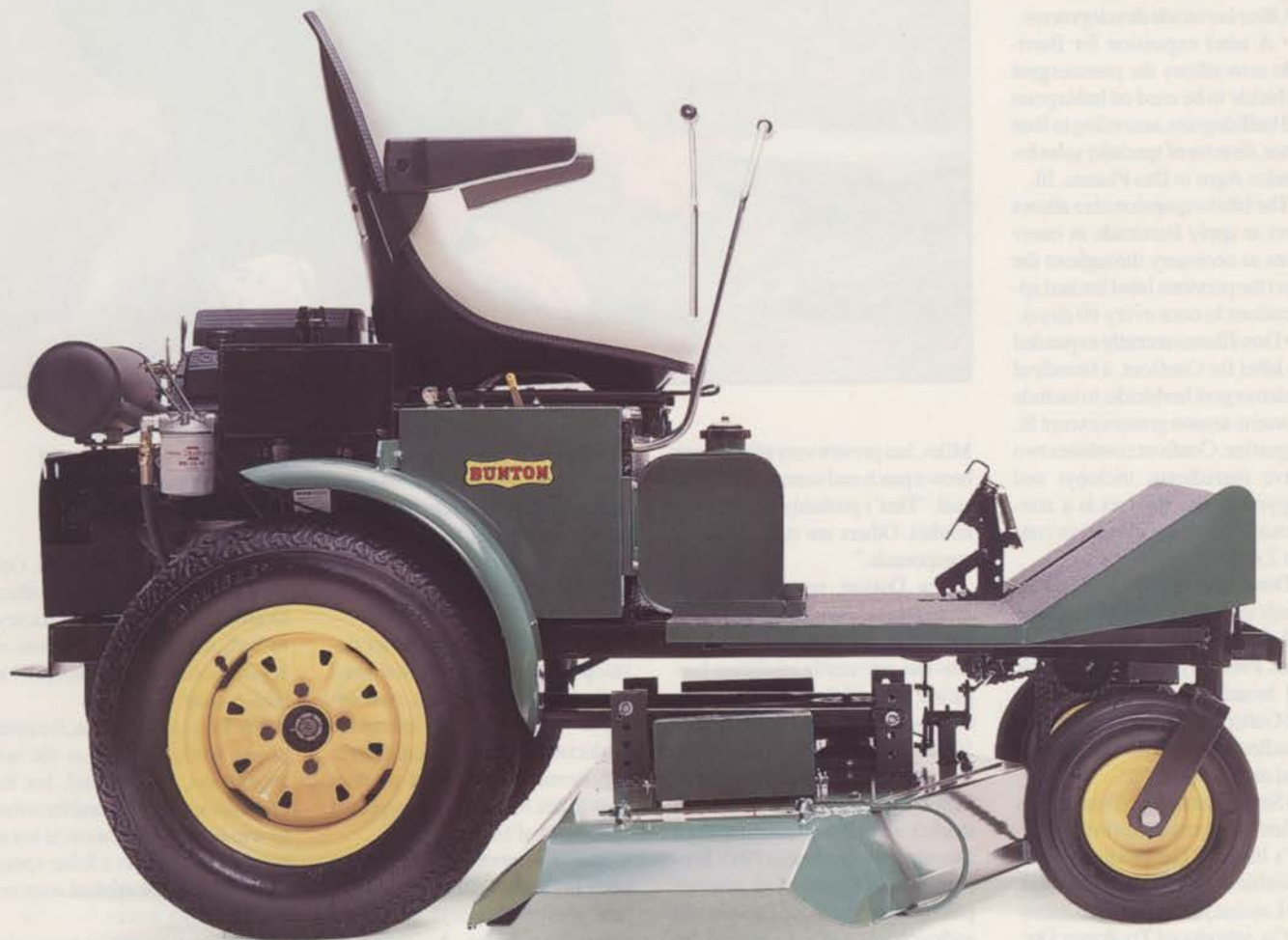
(continued on page 52)



1991



1992



1993

At This Rate, Our Next Hydrostat Mower May Be Available With A Hot Tub.

Every year since 1991, Bunton has improved and expanded our Hydrostat line. This year, we've complemented our Riding and Walk-Behind Hydrostat Mowers with our new Commercial Zero-Turn Hydrostat.

Now, no matter what your cutting needs are, Bunton has the right hydro for the job. We offer versatility, with 18 models to choose from in cutting decks that range from 36" to 71". We offer maneuverability, with wider rims and 4-ply tires. And we offer technology, with patented air-induction systems and state-of-the-art engines.

With or without a hot tub, Bunton is the best choice for you. For more information or a demonstration, contact your Bunton representative or call us at 502-966-0550.



Insecticide Trends

(continued from page 50)

According to local area development manager Domingo Riego, yellow and purple nutsedge are especially troublesome in the transition zone of the United States and also in some northern turf.

Manage is available commercially this year under an experimental use permit. The company targets 1995 for distribution.

Other herbicide developments:

- A label expansion for Barricade now allows the preemergent herbicide to be used on bahiagrass and buffalograss, according to Ron Fister, director of specialty sales for Sandoz Agro in Des Plaines, Ill.

The label expansion also allows users to apply Barricade as many times as necessary throughout the year (the previous label limited applications to once every 60 days).

- DowElanco recently expanded the label for Confront, a broadleaf postemergent herbicide, to include all warm-season grasses except St. Augustine. Confront combines two active ingredients, triclopyr and clopyralid. The product is a non-phenoxy (meaning it does not contain 2,4-D).

DowElanco also recently added weeds to the labels of its Snapshot and Gallery preemergent herbicides. Presently, Snapshot controls 111 broadleaf and grassy weeds; and Gallery controls or prevents 95 broadleaf weeds and can also be used on ornamentals.

- Sevin from Rhone Poulenc has its first new formulation in the product's history. The product is now available as a water soluble packet.

- Late last year, Riverdale Chemical Co. introduced Tri-Power Dry, a broadleaf weed herbicide comprised of MCPA, mecoprop and dicamba. According to Sean Casey, Riverdale marketing manager, it offers an option to those seeking alternatives to products with 2,4-D.

"National lawn care companies are the first to get targeted when something negative comes out about 2,4-D," Casey said. "If they can reduce any potential roadblocks to service, in terms of what products they're using, typically they're picking non-2,4-D products."

FUNGICIDES. Fungicide product introductions have been few lately, but materials in the pipeline look "promising," according to Demoden.

One new fungicide, Lynx from



A number of materials being researched for specialty pesticides are showing a lot of promise, particularly in insecticides.

Miles, has proven very effective on brown patch and summer patch, he said. "That's probably closest to the market. Others are still numbered compounds."

Jim Dotson, research product manager for Miles, described Lynx (common name tebuconazole) as a low-use-rate sterile inhibiting fungicide. He said the company hopes to have it registered sometime in 1995.

In January, Sandoz introduced Sentinel fungicide to the golf course market, with plans to reach the lawn care market sometime in 1995. Sentinel provides control of summer patch, brown patch, dollar spot and anthracnose; and is registered for use on bentgrass, ryegrass, bluegrass and zoysia grass.

Product features include a low-use rate — Sentinel is applied in fractions of an ounce per 1,000 square feet — and a wider window of application, about 28-plus days, according to Sandoz' Fister.

In other fungicide developments, DowElanco is awaiting registration for new packaging of its Rubigan. The old AS (aqueous suspension) formulation will be available as 50 WSP (water soluble packaging). The premeasured packets promise more convenient use and reduced exposure for applicators, according to Mark Urbanowski, communications manager for technical and turf and ornamentals at DowElanco.

Rubigan is a systemic fungicide labeled for many turfgrass diseases, including brown patch, dollarspot and summer patch, as well as some ornamental diseases such as powdery mildew and apple scab.

INSECTICIDES. New product development appears to have slowed in the insecticide market. According to Vittum, the only insecticide product nearing registration is Merit, a systemic grub control product from Miles. Registration is expected by the end of March.

Merit (common name amidocloprid) is the first compound in the new choloronicotinyl chemistry group from Miles. According to Dotson, the compound stands out not only for its systemic grub control efficacy, but for its systemic activity against foliar feeding pests.

"Unlike many grub control products which are soil insecticides, Merit is a systemic insecticide that happens to have excellent grub activity, but also shows excellent systemic activity against a whole range of foliar feeding pests," he said, including sucking insects such as aphids, whitefly, leaf hoppers and lace bugs; most leaf beetles; and internal feeders such as leaf liners.

On turf, the product is active against not only grubs, but also crown-feeding pests such as billbugs and annual bluegrass weevil. It also appears quite effective in

controlling the mole cricket. One strong attribute of the product, Dotson said, is its residual efficacy. In turf, the projected window of application extends from April 1 to mid-August.

For foliar applications, the compound works as well as the soil application, Dotson said, but the systemic application, and therefore its window of application, is not as prominent. Used as a foliar spray, Merit needs to be applied once every four to six weeks.

Merit also boasts an especially low use rate of 0.3 pounds per acre, Dotson said. That represents at least an 85 percent reduction in the amount of pesticides used per unit, as compared to other available grub control products, Dotson said. Merit's average percent grub control is 94 percent.

BIOLOGICALS. Although there's plenty of behind-the-scenes activity in the biologicals market, few products have been introduced that provide control at generally acceptable levels, according to manufacturers and university professors.

"Companies have been trying to find alternatives to conventional pesticide technology," said Scott Mof-

(continued on page 54)

NUTRALENE®

The Key to Your Dual Release Nitrogen Needs



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

areas as well as for landscape ornamentals. Straight NUTRALENE is sold in chip and granular forms and is also available in blends from your distributor or blender.

For more information on NUTRALENE®, write to: NOR-AM Chemical Company, 6 Mt. Vernon St., Suite 249, Winchester, MA 01890.

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

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

Little Falls Centre One, 2711 Centerville Road, Wilmington, DE 19808

USE READER SERVICE #89

Insecticide Trends

(continued from page 52)

fitt, a product manager for Ciba. "Anytime you start pioneering new technology, it doesn't happen overnight. You're going to run into deadends." Ciba has a "fairly extensive program in basic research" in biologicals, Moffitt added.

Among the most effective and widely used biological products currently available are the insect parasitic nematodes. These nematodes come packaged live and seek out host insects to infect. Best results have been achieved for cutworm, sod webworm and billbug larvae control.

To date, grub control using insect parasitic nematodes has not proven as effective as users would like. But Biosys of Palo Alto, Calif., plans to introduce Vector WG (steinememaglesi), soil-penetrating nematodes labeled for grubs, this year. Vector WG joins Biosys' Vector TL, a soil surface nematode product (in wettable, dispersible granules) that is labeled for cutworms, billbugs and other sur-

face pests. Vector TL also provides some grub control. (Vector is also marketed as Exhibit by Ciba.)

Charles Silcox, field development specialist for Biosys, cautions nematode users to follow label directions for soil moisture and temperature.

Ciba is on the verge of releasing a new formulation of Exhibit that could make the product easier to apply. A wettable, dispersible granule will replace product nematodes suspended in gel on a plastic matrix. Currently, to dissolve the product, users must add an "activator pack" to melt the gel, a process which takes 35 to 45 minutes. With the wettable, dispersible granule, users can apply the nematodes almost immediately.

The new formulation also cuts down considerably the amount of product packaging.

INDUSTRY WATCH. Researchers at chemical companies said they're working harder than ever to produce new and reformulated products and packaging that encourage lower use rates, higher efficacy and

"reduced risk" to the applicator and to the environment. Presently, the industry faces some unofficial but tough mandates from government and consumers to reduce the amount of pesticides used, and to change the way in which pesticides are applied.

"The thing that is most obvious is the current administration's goal that by 2000 we have a 50 percent reduction in pesticide use," said Thomas Watschke, professor of turfgrass science at Penn State University. "That's hardly a mandate, but it's still a clear direction."

According to Watschke, product suppliers to the turfgrass industry are working to meet that mandate by developing compounds that are very active and highly efficacious at low rates. He provided the examples of Barricade and Dimension, two preemergent herbicides introduced within the last few years. (Dimension also provides some early postemergent control.)

Both products, Watschke said, are very active at one-half pounds active ingredient per acre or less, a much lower use rate than some other

commercially available herbicides. Bottom line, said Watschke: "We're putting lower amounts of product on more acres."

But higher cost often accompanies greater efficacy, which could put a damper on some new product sales, at least initially, Watschke said. "Anytime you have new technology, you pay for it," he said.

Ron Montgomery, director of research and development for FMC Corp., also noted the trend toward lower-use-rate products. "In the old days, you were applying pounds of materials to an acre to get the control you were looking for," he said. "The present methodology is to be a small fraction of that."

According to Montgomery, an increasing amount of research and development efforts are also being channeled into product safety and environmental impact. Researchers today pay particular attention to environmental hot spots like groundwater, soil residual life and selectivity for the target pest.

The good news, Montgomery said, is that products today are more

(continued on page 56)



**EVERYTHING FOR THE
LAWN MAINTENANCE INDUSTRY**

CELEBRATING OUR 27th YEAR!



200 gal. poly baffled tank unit

- 200 gal. poly baffled tank
- 5.3 Kawasaki with D-30
- Electric reel

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

**OLDHAM CHEMICALS
COMPANY, INCORPORATED**

COMPLETE SUPPLIER OF T & O CHEMICALS

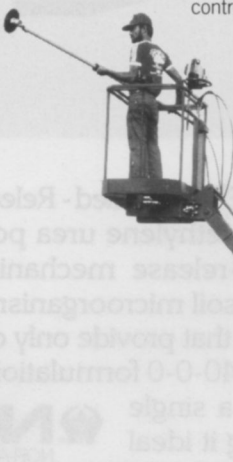

1-800-888-5502

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

THIS POLECAT CAN RAISE PROFITS PRETTY EASILY TOO.

The Polecat does more than just make it easy to do grounds maintenance. This bucket lift can also raise your bottom line by lowering operating and insurance costs while dramatically raising productivity.

You see, it's fully self-propelled and hydraulically controlled by the operator in the bucket, so you can move in any direction with unprecedented ease. Available with a variety of features, the Polecat can be configured to suit any application.

For the full story, call 1-800-8
POLECAT, In Florida: 305-226-0621
or write Polecat of Miami: 12000
SW 45th St., Miami,
Florida 33175

POLECAT

USE READER SERVICE #73

USE READER SERVICE #71



**Show insects
it's not
their turf.**

Introducing NEW ASTRO™ Insecticide.

Home owners and lawn maintenance people take great pride in their houses, lawns and the overall look of their landscape.

They spend their hard earned money to purchase and keep their property beautiful and they don't want anything to damage it. That is why new ASTRO Insecticide was created... to show lawn and ornamental insects that it's not their turf!

New ASTRO offers many important advantages:

- Excellent control of 48 different damaging turf and ornamental insects.
- Virtually no odor problems or phytotoxicity to lawns or ornamentals.
- An EPA "non-restricted use" label.
- No need for applicators to placard their trucks under new D.O.T. regulations.
- Very economical insect control.

So protect your turf!

Compare these features and benefits against the lawn and ornamental insecticides you are using now, and you will see that new ASTRO offers you a great combination of plant safety and insect control at a price that helps you truly show insects: **It's not their turf!**

For information about new ASTRO Insecticide, contact your lawn chemical supplier or you can call 1-800-528-8873.

Consult the label for complete use and application instructions and precautions.

ASTRO[™]
F&O

Another FMC Advantage!

ASTRO and the FMC logo are trademarks of FMC Corporation.
© 1994 FMC Corporation

SEND FOR A FREE INFORMATION PACKET!

For detailed information on ASTRO Insecticide, please fill in and return this coupon.

- YES I'd like an information packet.
 Please have my FMC representative contact me.

Just send us your personal or business name, full address and phone number to:

FMC INFORMATION PACKET

P.O. Box 16170
St. Louis, MO 63105-9713

If you prefer, you may call us toll-free:
1-800-528-8873

FMC[®]

Please take just a moment to answer the following questions:
WHAT INSECTS DO YOU TREAT MOST OFTEN? _____

WHAT TYPE AND SIZE OPERATION DO YOU HAVE? (Check appropriate boxes.)

- LANDSCAPE CONTRACTOR LAWN CARE OPERATIONS
 COMMERCIAL GROUNDS MAINTENANCE SOD FARMING
 OTHER (Please specify) _____

NUMBER OF EMPLOYEES _____

A3

Insecticide Trends

(continued from page 54)

effective than ever. "There's been no compromise on efficacy," he said. "Regardless of the business one is in, whether lawn and landscape or the farm business, one has to have effective products. It's a business issue, not a luxury."

LABELING AND PACKAGING.

Product labeling has become more restrictive, particularly in the area of risk mitigation to aquatic and avian species, added Dotson from Miles.

"I also think, on the other side of that coin, that companies are concentrating on 'reduced risk pesticides,'" he said. (According to Dotson, "reduced risk pesticide" is a term commonly used by the Environmental Protection Agency.)

"Everyone recognizes the value of a reduced risk pesticide, one which accomplishes the task at hand by controlling the pest of concern with minimal amount of risk to the applicator, to bystanders and to wildlife species and the environ-

ment. So we're going to hear a lot more about EPA's reduced risk pesticide," Dotson said.

According to Dotson, EPA plans to give preferred registration to reduced risk pesticides.

Ciba's Moffitt said the industry is trying to partner more closely with EPA than it has in the past. "Industry and government used to have a more adversarial relationship," Moffitt said. "As the world's changed and it's getting tougher in the marketplace, you'll see more cooperative projects between government and corporations."

Lawn care applicators can expect to see more water soluble packaging in the near future, according to Bill Broxton, vice president of marketing for PBI Gordon Corp. Container disposal has become increasingly problematic, Broxton said.

More and more landfills are refusing pesticide product containers, even when they are properly disposed. With water soluble packaging, the only waste is an outer wrap, but that contains no pesticides so it can be disposed of in any landfill.

User safety is another reason for the shift to water soluble packaging, which requires no contact between the user and the product. If used properly, Broxton said, water soluble packaging should eliminate almost completely any user contact with the concentrated pesticide product.

IPM CONTINUES. Application methods also have improved, as Watschke and others noted. Not only is equipment more precise, minimizing spill potential, but applicators are better trained in the principles of integrated pest management to provide selective spot treatment rather than blanket applications. "Blanket applications and preventive control are pretty much doomed," Watschke said.

DowElanco's Urbanowski also noted improved applicator skills and methods. Both the manufacturer and the user have become more technical in how they approach the turf market, Urbanowski said.

"In the past, applicators haven't been degreed in agriculture or hor-

ticulture," he said. "Now, companies are paying more money and hiring people with degrees, because it (lawn care) is becoming more of a specialized service."

Urbanowski said DowElanco supports IPM principles, which he defines as the "smart use of chemicals" through scouting and other tactics. To demonstrate the company's commitment to safety and IPM, the company offers to its customers tips on how to purchase safety equipment.

Although IPM has become firmly entrenched in the lawn care vocabulary, Vittum doesn't believe the concept has taken hold as strongly as some would like to believe.

"I think that everyone is talking about IPM and scouting and reducing use rates, but when push comes to shove, not too many turf managers are in the position to use them if the lawn care customer wants a perfectly clean lawn." ■

The author is a Contributing Editor to Lawn & Landscape Maintenance magazine.

Great Billing Software!

The Billing Clerk with Accounts Receivable™

Compare our features:

- **Unlimited** customers.
- **Unlimited** service/product codes for flexible one-time invoicing of special jobs like fertilizing, tree trimming/removal, etc.
- One-time invoices can be saved and recalled for future reference.
- **Recurring billing mode** (up to 14 regular recurring cycles per customer) for automatic billing of maintenance fees.
- **Complete accounts receivable.**
- Reports include: late charges, past



due notices, aging report, sales reports, customer ledgers, mailing labels, Rolodex® cards, plus much more.

- Customer notepad for miscellaneous information like special equipment needed, crew requirements, etc.
- Invoices or Statements print on pre-printed forms, blank paper or post cards.
- Requirements include:

PC/MS DOS 3.0 or higher, 640K RAM and a harddisk.

Regular Price \$179

Special Limited \$99 Offer

Expires 5/31/94

\$99

1395 Bear Creek Rd.
New Braunfels
Texas, 78132
(210) 899-2100
Fax (210) 899-2124

Call Now!
1-800-880-0887

*Plus \$10 Shipping and Handling. Texas Res. add \$7.36 sales tax.

Return policy does not apply with special limited \$99 pricing.

MARKING FLAGS

for Lawn Care & Irrigation

Plain
or
Printed

FLAG STYLE

- ▶ 12 flag colors
- ▶ 4 flag sizes
- ▶ 7 ink colors
- ▶ Plastic or wire staff
- ▶ Custom print available

This landscape has been treated by
Your name and phone number here.
For more information please call.

BANNER STYLE

- ▶ 12 flag colors
- ▶ 7 ink colors
- ▶ Bright, easy-to-see colors
- ▶ 4"x5" banner hangs straight for easy reading
- ▶ Custom print available

Millions of flags in stock for immediate delivery!
Call for a free color catalog!

LLM



BLACK BURN

MARKING FLAGS
ORDER FACTORY-DIRECT TOLL-FREE

West of Rockies
P.O. Box 276
Cambria, CA 93428
800/552-FLAG
Fax: 805/927-1601

East of Rockies
P.O. Box 86
Neligh, NE 68756
800/942-5816
Fax: 402/887-5171

USE READER SERVICE #60

WHEN IT COMES TO COMMERCIAL EQUIPMENT

John Deere plays it by the numbers

F1145



5300

755

1070

7775

6X4



F1145 . 1070 . 5300 . 7775 . 755 . 6X4 . 7300 . F1145

7

Models of front mowers

17.5 to 28 hp...48- to 76-inch cut

- Choose from two mid-size models (F700 Series) and five full-size models (F1145 and F900 Series); 2- or 4-wheel drive.
- Gas or diesel, air- or liquid-cooled, one-, two-, or three-cylinder engine.
- Patented 2-pedal hydrostatic drive gives you speed and direction control with just the touch of a toe. No clutching. No shifting.
- Hydraulic weight transfer (most models) improves traction by transferring weight of the front attachment to the traction wheels.
- Engage-on-the-go differential lock improves traction in difficult conditions.
- Cruise control on most full-size models reduces operator fatigue and improves productivity when mowing in flat, wide-open areas.
- Four-wheel drive F1145 is extra-rugged with componentry taken straight from our best-selling compact utility tractor. Four-wheel drive can be engaged on-the-go for full-time operation. Or be allowed to engage and disengage automatically as conditions warrant.



F710 . F725 . F911 . F925 . F932 . F935 . F1145



7

Models of commercial walk-behind mowers

12.5 to 17 hp...38-, 48- or 54-inch cut

- Pressure-lubricated engines with overhead valves, cast-iron cylinder liners for long life.
- Five-speed gear-drive transmission (with reverse) can be shifted on the go.
- Wet-disk clutches are lubricated and fully enclosed for durability. No external drive belts. No moisture-induced traction loss.
- Trunnion-mounted mower deck, with pneumatic casters in front and anti-scalp wheels in rear; oscillates 7 inches to follow ground contours.
- Crank-type height adjustment system is mounted in center of deck. Adjusts quickly without tools from 3/4 to 4 in.
- Color-coded controls, conveniently mounted on handlebars or handlebar console.
- Operator presence system has three positions for added safety—drive, neutral and stop.
- Hourmeter and low-pressure indicator light are standard.
- Tricycler® mulching attachment available.

3

Models of utility tractors

40-, 50- and 60-PTO hp

- 5200, 5300 and 5400 tractors have high-value features at very competitive prices.
- John Deere 3-cylinder liquid-cooled diesel engines; naturally aspirated on the 5200 and 5300, turbocharged on the 5400.
- Collar-shift transmission (9 forward, 3 reverse speeds) with in-line shift capability between forward and reverse for more productive loader work.
- Optional Top-Shaft Synchronized Transmission (TSS) for shift-on-the-go capability within each range and between forward and reverse.
- Open-center hydraulics. Tandem-gear pump (7.2 gpm for steering, 11.4 gpm for hitch and SCVs) for faster loader cycle times.
- Electronic instrumentation—hourmeter/tachometer, fuel and temp gauges, oil and alternator indicator lights, air cleaner restriction light and PTO light.
- Inboard planetary final drives spread load over three points for less stress on individual parts.
- Optional mechanical front-wheel drive with 55-degree turn angle.



5200 . 5300 . 5400



8

Models of compact utility tractors

18.5- to 38.5- engine hp

- Choose from three hydrostatic drive and five gear drive models.
- Three- or four-cylinder, liquid-cooled diesel engine.
- Hydrostatic transmission (755, 855 and 955) with patented 2-pedal control of speed and direction.
- Sliding gear transmission (8 forward and 2 reverse speeds) on 670 and 770; or collar shift or synchromesh transmission (9 forward, 3 reverse speeds) on the 870, 970 and 1070.
- Mid- and rear-PTOs can be operated separately or simultaneously. Allows such functions as mowing and fertilizing, or snow blowing and salt spreading at same time.
- Operator presence system shuts down PTO if operator leaves seat with PTO engaged.
- Quik-Tatch™ system for hookup of most implements in five minutes or less, without tools.
- Shift-on-the-go mechanical front-wheel drive (standard on the 955, optional on other models) for better traction.
- Wide variety of commercial and landscaping attachments are available.

4

New models of skid-steer loaders*

17 to 49 diesel horsepower

- Big-job versatility. John Deere diesel-powered skid-steers have more than 15 new attachments for most construction, landscaping and industrial jobs.
- Choose from: trenchers, cold planers, augers, forestry jaws, bale spear, landscape rakes, buckets, tooth bars, scrap grapple buckets, pallet forks, brooms, four-in-one buckets, hydraulic breakers, tracks and more.
- 3375 is perfect for tight quarters—stands just 36 inches wide.
- 4475, 6675 and 7775 have vertical-lift booms that keep bucket reach nearly the same at both ends of the cycle, and help stabilize the load.
- Big-man operator station on 4475, 6675 and 7775 makes entry and exit easier. Overhead electronics spell out vital functions.
- 4475, 6675 and 7775 all have heavy-duty boom arm frames and cast-iron axle housings for years of reliable performance. Dual endless drive chains that rarely need adjusting. And “all-around” engine access for easy servicing when booms are down.

* Skid-steer loaders are available only at select John Deere dealers. For the one nearest you, call 1-800-503-3373.



3375 . 4475 . 6675 . 7775

2

Models of utility vehicles

Gator® 4x2 and 6x4



- Gator 4x2 (4 wheels with 2-wheel drive) has a 10-hp air-cooled engine. Gator 6x4 (6 wheels with 4-wheel drive) has an 18-hp, liquid-cooled, V-twin engine.
- Big-capacity boxes—500 lb. on 4x2, 800 lb. on 6x4.
- Big towing capacities—750 lb. for 4x2, 1,200 lb. for 6x4.
- Two front wheels, low center of gravity, and maximum ground speed of 15.5 mph provide stability and safer operation.
- Rack-and-pinion steering and independent single A-Arm suspension for smooth, responsive control off-road.
- Exclusive wet-disk brakes on both output shafts for positive stopping and long life.
- Best flotation in the industry. With 200 lb. operator and vehicle fully loaded, ground pressure is only 7.1 psi for 6x4 and 7.5 psi for 4x2.
- Heavy-duty design, arc-welded uni-body construction for strength.
- Propane conversion kit available.



GATOR 4x2 . GATOR 6x4

#1

A corps of world class commercial equipment dealers

Dedicated to your success



- The best servicing dealer network in the business.
- Well-equipped service department with 24-hour emergency parts availability in most cases.
- Fast parts location. If you need a part not currently in stock at your dealer's, he can track it down fast through the computerized FLASH™ system and get your equipment up and running in virtually no time.
- Low monthly payments are standard equipment at John Deere. Ask your dealer about on-the-spot financing from John Deere Credit (U.S.) or John Deere Finance Limited (Canada).



NOTHING RUNS LIKE A DEERE®

GREEN INDUSTRY EXPO

WHY DID THE 1993 GIE EXPO SELL-OUT?

GIE

EXPO

Because 12 exclusive trade show hours of ONE-STOP SELLING to lawn, landscape & grounds management pros is good business!

Facts about our attendees:

- 92% make buying decisions • 67% own/manage/supervise their company
- almost 50% exceed \$500k business volume

For More Information CALL: 1-404-973-2019.

*A National Trade Show with
Educational Conferences:*

LOCATION: St. Louis, Missouri

DATES: TRADE SHOW: November 14 - 17, 1994

SPONSORED BY:

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

Tell Me More About GIE!

Send me more information on exhibiting. I want conference information only.

Mail or Fax coupon to: GREEN INDUSTRY EXPO • 1000 Johnson Ferry Road, NE
Suite C-135 • Marietta, Georgia 30068 Fax: 404/578-6071 • Phone: 404/973-2019

NAME: _____

COMPANY: _____

TITLE: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE: _____ FAX: _____

1/94 • LKD

Mowing Heights

Vary By Climate and Region

THE COMMON rule in mowing commercial and residential turf is to never cut more than a third of the aboveground grass blades, thus preventing stressed out root growth. Although scalping certain types of grasses at the start and end of the mowing season can be practiced sensibly (particularly in the South), overcutting some other varieties can burn turf and may even cause the contractor to lose an account.

Recently, new schools of thought have emerged regarding cutting heights.

Most industry experts agree that the recommended mowing height for most turfgrasses has increased in the past few years, probably as a result of new landfill restrictions reducing the options for disposing of grass clippings. Bob Tracinski, spokesman for Deere & Co., Raleigh, N.C., said the recent trend is to grow taller grass because the longer grass provides a lush look and feel, and helps contractors comply with governmental mandates to reduce yard waste.

Yet one contractor LLM contacted said that local agronomists were counseling mowing professionals to cut turf-type fescues shorter as a way to fight the problem of fungus growth in Atlanta's humid summers.

Given the wide range of opinions, all rules of thumb should be weighed carefully against the dictates of local climate (and customer

The one-third rule for mowing is no longer the top standard by which most contractors maintain turf height. Current research promotes growing most types of grass longer — except in certain conditions.

By Bob Gitlin



Recommended mowing heights have increased in recent years, most likely due to new and pending landfill restrictions. Photo: Scag Power Equipment.

demand); however, the one-third rule never loses its relevance, and is a good starting point for new people in the business.

ROOT SYSTEMS DIFFER. Tracinski said Deere & Co. recommends to its customers basic guidelines for differentiating mowing heights for

warm- and cool-season grasses.

"In general, warm-season grasses are mowed from 1 to 2 inches. They're mowed lower," Tracinski said. "And cool-season grasses are mowed 2 1/2 to 3 1/2 inches, with the exception of St. Augustine. We recommend going to the very top of the recommended mowing

height for that."

This is especially important during drought, because the higher the grass, the more it acts to shade and hold moisture in the soil.

"Some (experts) say it's a good idea to mow the grass a little bit shorter in the beginning of the season, the first couple of mowings, as the grass has been under stress during the dormant period," he said.

"You get rid of snow mold and other problems. So some people recommend mowing maybe a quarter-to-a-half-inch shorter at the outside. You do the same thing the last couple of mowings before it goes dormant in the winter just to remove a lot of the green leaf material, because that can be matted down. In the Northern states you get a lot of snow, which creates a situation where you get some snow mold."

But then there's another school of thought on strategy.

"Some people believe in just setting their mower at the highest cutting height recommended for that kind of grass, and mowing the same way every single time,"

Tracinski mused.

Research suggests it's OK to allow bluegrasses and ryegrasses to grow longer than previously recommended mowing heights, said John Crowson, national sales manager at Scag Power Equipment, Mayville, Wis.

(continued on page 68)

Our commitment to your success continues with TURFGO® products.



As part of our continuing commitment to turf care professionals, United Horticultural Supply proudly features our own TURFGO® line of fertilizers, chemicals and turf seed.

These top pros have discovered that TURFGO® products are premium quality in addition to being environmentally sound.

For example, TURFGO® Crabgrass Preventer plus Fertilizer contains TEAM,* a proven leader in crabgrass control. Regardless of weather, turf species or time of year applied, excellent results are predictable.

Recent studies conclude that TEAM is still a top performer. Plus, it's safe for all turf and it won't stain.

If you prefer it without fertilizer, we have TEAM 2G.

Whatever your need, United Horticultural Supply has a product that performs as promised and is always in good supply. Call us at 1-800-847-6417 for more information.



United
Horticultural Supply

* TEAM is a trademark of DowElanco



Mowing Strategies

(continued from page 66)

According to the Professional Lawn Care Association of America, the recommended height for Kentucky bluegrass and ryegrass is 3 inches. Crowson suggested the variety can be grown up to 3 1/2 inches.

"Their root systems are different from the rhizoid or spreading grasses like the bermudagrass (PLCAA's recommended height is 1 to 1 1/2 inches) or bahia (recommended height is 3 inches) or some of the others. The bermuda-type grasses are a lot more resilient to being cut too short. In fact in early spring, you actually want to go out and scalp that stuff."

Tom Garber, president of Colorado Landscape Enterprises, Westminster, Colo., serving the Denver area, said his customers are not letting him cut bluegrass the way horticulturists say is correct. "We have too many managers of homeowner properties wanting us to go out and cut it down real short because that's the way they did it at home with their 21-inch mowers."

Although university scientists recommend slow-release granular nitrogen and mowing every four days for bluegrass — which is all that grows around there — local property managers seem to prefer blanket applications of nitrogen on the turf for quick green-up. This causes the already explosively growing species to reach for the sky with almost visible speed. And Garber's people can only feasibly come out once a week, even during the peak growth period of spring.

"The grass is not really meant to be cut that short," he said, "but that's what customers want. We have to irrigate more as a result, and fertilization becomes a more frequent need." Once the temperature hits summer range, bluegrass slows down considerably.

Because there are a number of accepted practices for maintaining mowing heights, the beginning contractor should simply abide by the one-third rule until experience dictates otherwise, according to Tracinski.

"Turf researchers at the universities talk about the one-third rule. Mow often enough to cut only one-third of the grass blade during any one mowing. There's a real good scientific principle for that. If you mow more than one-third of the



Mowers today are increasingly employing mowing height adjustment capabilities. Photo: The Toro Co.

grass blade, you put the root system under stress," he said.

Scalping the wrong kind of lawn can be dangerous, he warned. "What you're doing is constantly shortening up the root system. A lot of the root system is dying, because you're cutting off too much of the grass blade. And that's what causes thatch. All those dead roots begin to accumulate on the soil surface, and that causes the thatch layer."

FIELD TESTS. "Generally most of our mowing is commercial, and it's pretty much kept at the same height unless we run into a season like last year's drought," said Mike Messer, vice president of Messer Landscape, Staunton, Va. Most of Messer's

lawns are turf-type fescues, although there is some bluegrass.

"We cut the number of cuts down and also raised the cutting blades on the mower to keep from stressing the turf. That's the biggest concern to us, to raise the blade to keep from shortening the turf too drastically."

Environmental concerns and a desire to have chemical treatments applied more strategically have led many large-property customers to request taller grass.

"During the drought, by raising the blades you're not cutting much, just evening things up and chopping off weeds," Messer said.

His crews normally begin mowing at the end of March, at a low height of 2 inches or less. As time

passes and rain increases, the level is raised to about 2 1/2 inches. Usually around the last week of June, the blades are raised to as high as 3 inches. That level is usually about where it's left when mowing ends in late October, Messer said.

AVOIDING BURN AND MOLD.

Bruce Wiley, division manager for Yardmaster Inc. in Painesville, Ohio, handles a blend of bluegrass, fineleaf fescues, tall fescues — a lot of combination lawns.

"There's a direct relationship between the height of the grass and the depth of the roots," he said. "When you cut the grass short on top, the roots become shortened underground, which makes them more susceptible to drought damage. You expose the crown of the plant to direct sunlight, it's going to burn."

Like many lawn management professionals, he is trying to leave as many clippings on the grass as he can. His crews do this with traditional side-discharge mowers. "We haven't yet found an effective mulching mower that's applicable to a commercial base," Wiley said.

He disputes the belief that mowing height for cool-season turfgrasses should be 2 to 2 1/2 inches. "I don't happen to agree with that. I'd say 2 1/2 to 3 1/2 inches."

(continued on page 70)

RECOMMENDED MOWING HEIGHTS FOR VARIOUS TYPES OF GRASS

Kentucky Bluegrass	3.0 inches
Fescues and Ryegrass	3.0
Bentgrass	1.0
Bermudagrass	1.0-1.5
Zoysiagrass	1.0-1.5
St. Augustine	3.0
Bahiagrass	3.0
Centipedegrass	1.5

The Professional Lawn Care Association of America set the above standards for mowing heights. Many contractors adjust the numbers according to their particular needs and climate conditions.

Mauget Micro Injection Seminars Include More Than Tree Health



Tree health, environmental protection, and new product registrations aren't the only discussion topics featured at Mauget tree care seminars.

Each Mauget seminar includes time to answer your questions. Your concerns about the environment, diseases, insects, nutrition, pruning, spraying, wounding, and product performance are important.

Mauget seminars provide the most *practical* and

most *useful* information for you to use in your business. Learn about the re-introduction of **Fungisol®** debacarb fungicide. Mauget micro injection utilizes a closed system to protect the environment.

Annual seminars are open to all Green Industry firms -- owners, managers and applicators.

Call your Mauget distributor about a seminar in your area. Current dates and locations are below:

Micro Injection Training Seminars

Pruett Tree Service
Lake Oswego, OR 97035
Oregon, Washington
(503) 635-1524 FAX
(503) 635-3916
(800) 635-4294
Mar 3, Portland, OR

Arbor Care
New Fairfield, CT 06812
NY, Connecticut
(203) 746-0776
Mar 7, Syracuse, NY
Mar 8, Albany, NY
Mar 9, Waterbury, CT
Mar 10, Armonk, NY

Tree Injection Products Co.
Knoxville, TN 37917
KY, TN, N. AL,
N. GA, MS, AR
(615) 521-6055 FAX
(615) 522-0533
Mar 8, Atlanta, GA
Mar 9, Montgomery, AL
Apr 8, Gatlinburg, TN
Jun 17, Gulf Shores, AL

Tree Clinic
Austin, TX 78763
Eastern & South Texas
(512) 454-7087 FAX
(512) 454-1411
Mar 8, Houston, TX

Warne Chemical Co.
Rapid City, SD 57702
Western SD, Wyoming
(605) 342-6990 FAX
(605) 342-7644
(800) 658-5457
Mar 8, Wyoming

Northeastern Associates
Fairfield, NJ 07004
New Jersey
(201) 227-0865 FAX
(201) 227-0359
Mar 9, Totowa, NJ

Enfield's Tree Service
Elkhorn, NE 68022
ND, Eastern SD, NE, MN,
CO, Western IA, MO, KS,
OK, WY
(402) 289-0804 FAX
(402) 289-3248
(800) 747-8733
Mar 11, Elkhorn, NE
Mar 18, Kansas City, MO
Apr 1, Bloomington, MN

Fisher & Son Co.
Malvern, PA 19355
E. PA, Delaware
(215) 644-7791 FAX
(800) 262-2127
Mar 22, Valley Forge, PA

Prof. Tree Care & Injection
Winter Park, FL 32792
Central & South Florida
(407) 647-3556 FAX
(407) 647-3335
(800) 356-4351 (Florida
Only)
Apr 11, Cocoa, FL
Apr 12, Fort Pierce, FL
Apr 13, West Palm Beach
Apr 14, Fort Lauderdale
Apr 15, Miami, FL
Apr 18, Naples, FL
Apr 19, Fort Myers, FL
Apr 20, Sarasota, FL
Apr 21, Clearwater, FL
Apr 26, Palatka, FL
Apr 27, Port Orange, FL
Apr 28, Sebring, FL
Apr 29, Orlando, FL



J. J. Mauget Company
2810 N. Figueroa Street
Los Angeles, CA 90065

Fungisol® debacarb fungicide is the registered trademark of the J. J. Mauget Company

USE READER SERVICE #26



Skid Steer or Tractor, Hitch It To a **Harley**



Hitch a Harley power rake to your skid steer. Or hitch your tractor to a 3-point- or drawbar-mounted Harley. Whichever way you do it, Harley power rakes are your number one choice in versatility.

Harley rakes can handle virtually anything you can throw at them. In one pass, a Harley rake will pulverize, level, collect, move, spread, or windrow material. Prepare a perfect seedbed -- free of rocks and debris -- in minutes.

Hitch a Harley to your next job.

Glenmac

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

Mowing Strategies

(continued from page 68)

Evidently industry professionals nationwide concur with Wiley; PLCAA's height recommendation for fescues, bluegrasses and ryegrasses is 3 inches.

"In early spring we start at 2 1/4 to cut and suck up a lot of thatch and dead grass, matted down grass and leaves that accumulated over the winter," Wiley explained. "Then as it begins to grow we begin to raise it to between 2 1/2 and 3 inches, where it stays through peak growing season (mid-April to the end of May). As the grass begins to dry out, we go to between 3 and 3 1/2 for the summer, then gradually drop during fall coolness and moisture. Finally, we cut it as low as we can to prepare for winter without scalping it, so it's less susceptible to snow mold."

That's crucial.

Contractors in Northern regions need to cut grass fairly short so the blades don't lie down and smother biotic life. The blades must be relatively short and uncluttered by dead matter in order to receive sunlight upon snowmelt. Leaves can't lie smothering the lawn under that snow either.

Contractors allowing either to happen are asking for snow mold. "They can't let that grass flop over on itself," Wiley said.

HOT AND DRY. Bruce McQuay, production manager at Maintain Inc., Fort Worth, Texas, confronts a hot, dry climate for a large part of the mowing season, which generally runs from mid-March to December. Here, down in irrigation country, is where the PLCAA chart diverges from one man's real-world tactics.

By the chart, McQuay's peak height on St. Augustinegrass is too low, and on his bermudagrass too high.

Standard wisdom counsels cutting St. Augustine anomalously high for a Southern grass, so the aboveground roots this plant features aren't hacked off. But McQuay doesn't leave his at 3 inches (per the chart) but at 2. Which happens to be the same height at which he leave his bermudagrass, in peak heat. By letting his bermudagrass top out at 2 inches, he's exceeding the PLCAA recommendation of 1 to 1 1/2 inches.

But it works.

"I don't know about Houston, where St. Augustinegrass grows a lot more readily, but down here it doesn't even grow to 3 inches," he said.

In fact he handles both varieties similarly.

In spring both grass types are scalped down to an inch or less. "Raising up in peak summer heat to the maximum of 2 inches gives a manicured look, but you have to do it in accordance with fertilizing and watering, in great precision." The biggest challenge contractors in his area have is integrating fertilizer and irrigation programs into their cutting strategies, he added.

Lush growth occurs in June and July, with the help of regular irrigation. Starting in August and ending in October, temperatures cool into the 90s. During that time crews gradually lower the mowing heights.

One grass that defies this strategy is perennial ryegrass.

"Down here we put down rye in the winter-time. We scalp those ryegrass lawns to the dirt (maybe 1/2 inch tall) about mid-September. We'll scalp down our bermudas so that they're probably at the 1 1/2-inch range. We've dropped them about half an inch."

The next couple of weeks, probably toward the end of October, McQuay's crews knock those down to about an inch, at which point they're left for the winter. "The ryes are mowed weekly once they come up, through the winter-time."

FIGHTING FUNGUS. Ray Wiedman is a division manager at Atlanta-based Scapes. His extensive background in maintenance helps him prepare his mowing fleet to handle the bermuda hybrids, zoysias (a couple of varieties) and turf-type fescues that cover most area lawns. Fescues constitute the largest amount of property.

"We start off mowing sporadically in March. By April the fescue is at its prime," he said. "We

**Industry experts
agree that
the recommended
mowing height for
most turfgrasses
has increased in
recent years.**

start at maybe 2 1/2 inches. Then the fertilizers kick in and the weather warms up, but it's still relatively cool, so you can keep it longer. It grows like crazy. We might go to 3 1/2."

In the intensity of the humid Atlanta-area summer, he diverges from the standard wisdom. With fungus taking its toll on hot humid nights for season after distressing season, scientists have begun to advise lawn maintenance professionals in the area to bring the level down some.

"You can get root and foliar fungus both," said Wiedman. "So we come down maybe to about 2 1/2 inches. The consensus out of the latest studies is to keep the fescues shorter in late June, July and August, because that fungus grows like mad at nighttime."

This flies in the face of traditional wisdom, which says grass should be kept longer in peak heat so that it shades the soil. Wiedman said he will probably not fully test the new data until this upcoming season. "It's a fairly new study. So there's a new twist."

During droughts such as the one last year in the Southeast, Wiedman allows the grass to grow up to 3 or 3 1/2 inches.

During fall overseeding, he grows the fescues to about 2 1/2 inches. Mowing season for fescues

(continued on page 72)

Here's what 35 years of studying disease, stress and pests gets you.

We've seen it all at Medalist America. For three decades, we've studied diseased turf, salt problems, soil compaction, starved turf, baked turf, cleft-to-shreds turf, dormant winter turf – and just about every other problem you can think of. But it's been worth it.



Today, Medalist offers the most comprehensive line of turfgrass formulas designed to solve the toughest problems of the professional turf manager. Look up your solution below or call 1-800-568-TURF. We'll put your problems behind you.



<i>Medalist Elite Turf Products</i>	<i>Use</i>	<i>Special Features</i>
Overseeder II Mix 70% Kentucky bluegrasses 30% perennial ryegrasses	Establishment of athletic fields, fairways and roughs.	Traffic tolerant. Superior disease resistance and cold hardiness. Rapid establishment.
Athletic Pro Mix and Athletic Pro II Mix 50% Kentucky bluegrasses 50% perennial ryegrasses	Establishment and interseeding of athletic turf, tees, fairways and roughs, landscapes.	Quick establishment, wear tolerant, shear resistant, good recuperative ability.
Renovator Pro or Medalist Gold perennial rye blends	Renovation and overseeding of tees, fairways, athletic fields, landscapes.	Endophyte enhanced. Wear tolerant. Combats <i>Poa annua</i> , summer patch and necrotic ringspot.
Scottish Links 4-way fine fescue mixture	Establishment of golf course roughs and bunkers, roadsides, landscapes.	Aesthetic, low-growing grasses. Tolerant of drought, shade, low pH, low nitrogen.
Shady Turf Mix 60% fine fescues 40% Kentucky bluegrasses	Landscape turf, golf course roughs, sod production.	Tolerates shade or sun. Excellent cold hardiness and snow mold resistance.
Landscape Pro Mix 45% Kentucky bluegrasses 30% red fescues 25% perennial ryegrass	Golf and landscape turf where environment and future management are unknown.	Adaptable, persistent. Drought tolerant, shade tolerant, quick establishment.
Boulevard Mix 40% Fults alkaligrass 30% Slender red fescue 20% Kentucky bluegrass 10% perennial ryegrass	Golf course or landscape turf stressed by saline or alkali soils or irrigation water.	Salt, high pH and alkali tolerant mix. Very persistent above 5/8".

**"He Thinks He's Lawn Skiing.
All I Know Is That He's Become
One Of My Top Performers."**



Velke—the incredible mower attachment that turns most walk-behinds into ride-behinds.

LAWN-WRIGHT, INC.
18761-A North Frederick Ave.
Gaithersburg, MD 20879

Gentlemen:

I'm sure you've heard a lot of interesting stories by now on the uses of your Velke. Let me add to your collection.

One of my employees—a 20-year old—seemed a hopeless goof-off. Numerous verbal requests, notes in his paycheck, even reducing his pay each week got me nowhere.

Well, we bought a new walk-behind and spent a lot of extra money to have hydraulic drive instead of belts and "Oh so what, while we're at it throw in a Velke."

The results were more than I hoped for. My guys now get twice the work done. And my problem kid—he won't get off the thing! He thinks he's lawn skiing. All I know is that he's become one of my top performers. He's producing so much I've not only given him back his lost pay, but a raise.

Now I just smile throughout my day watching his newfound attitude. What more can I say except thanks for making such a great product.

Gratefully yours

Steve Wilbraham
Steve Wilbraham
Condominium Grounds Maintenance



For More Information Call 301-330-0086

From Lawn-Wright, Inc., makers of the Grass Gobbler.

Mowing Strategies

(continued from page 70)

often lasts through December.

Bermuda hybrids are handled differently.

"We scalp the dormant grass in the spring-time, which is about March, get it down to an inch or less, to get rid of all that thatch and so forth and allow for a really good green. Regular mowings of hybrids don't start until May. Then we're probably up to weekly mowing." And the mowing height? "Some people like it short, but I'm going to say an inch and a half."

He keeps it that way all season. "Bermuda's really a pretty tough grass. Yet it's also sort of temperamental."

Zoysias are also scalped down low in spring.

Scapes finishes up usually at 1 1/2 inches on zoysias; bermuda as low as 1 inch "for that real fine smooth lawn."

LONGER IS BETTER. "We recommend that you cut a little taller than in the past," said Jim Wallace, manager of marketing for The Toro Co., Bloomington, Minn. This applies to side-discharge or mulching mowers.

"Basically it's better for the environment. The more grass you have around, the better you are at cooling and cleaning the environment. Also, the color of your grass tends to be better."

He said even traditional recommendations for bentgrass are changing to higher heights. "I've seen them cutting higher than the recommended 1 inch. A lot of the books used to recommend 1 1/2, 2 inches, maybe 2 1/2 for the Northern grasses—which we feel now is really too short."

What happens when people neglect the issue of proper mowing height?

"Unhealthy grass, which means you have more maintenance, more pesticides. A good growing, healthy piece of turf has disease- and insect-resistance. Cutting it short affects future growth, in effect."

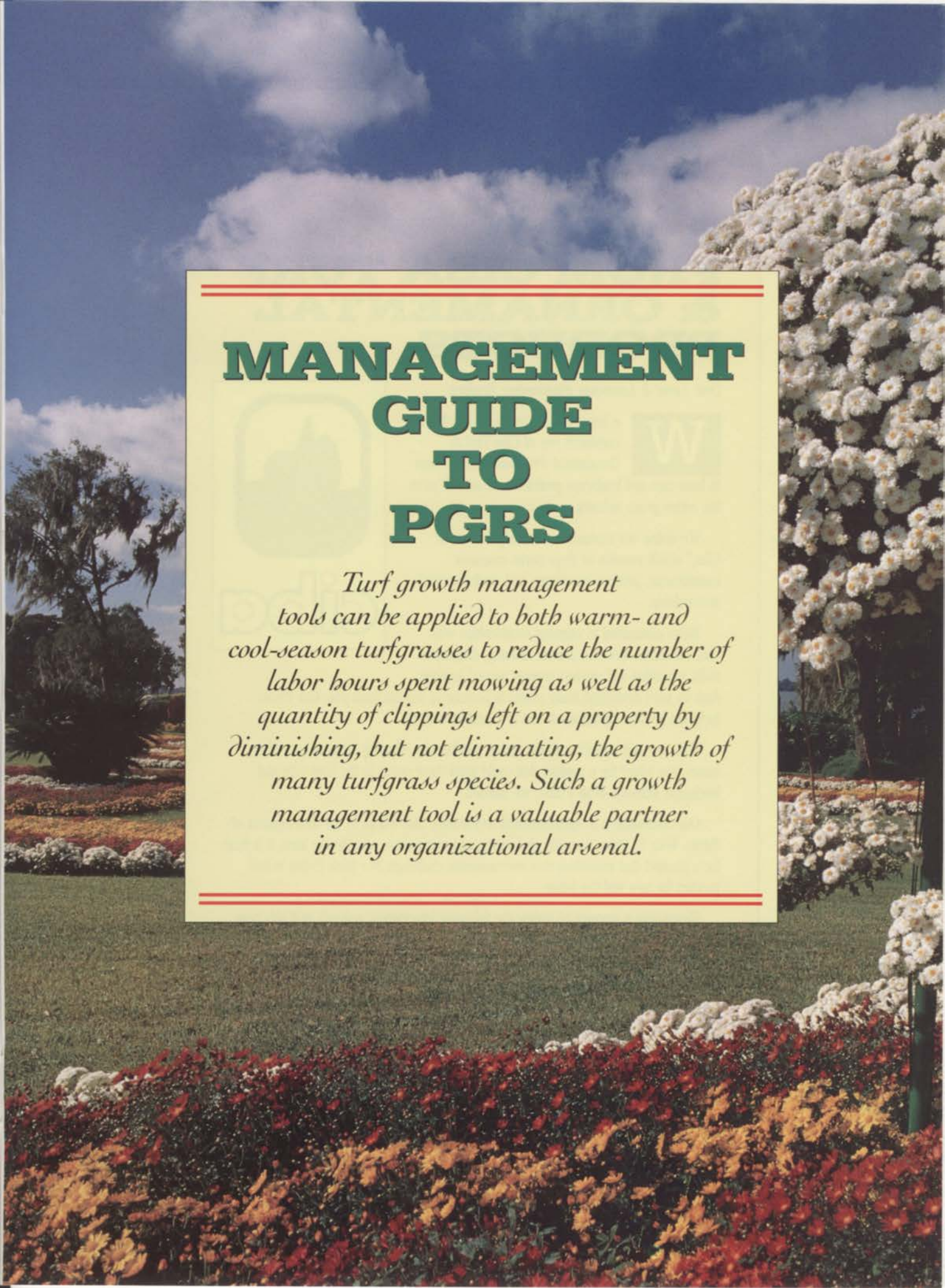
One mistake many mowing operators make after allowing grass to grow too long is to cut off a few inches at once. This practice actually harms the grass.

"They've been maintaining the thing at, let's say, 2 inches. All of a sudden they let it go to 4, 4 1/2 inches. Then they just whack it off," Wallace said. "They're whacking off a lot of the good part of the blade. The grass needs the blade for absorption as part of its living environment. The blade up on the top is what does a lot of the work. You've got your roots and everything else absorbing the nutrients, but you've also got the photosynthesis going on, carbon dioxide and oxygen exchange going on with the grass blade. If you don't have it there, it's not healthy."

The best approach to correcting the problem is reducing the grass height in increments, over a few visits.

"But leave your grass longer," Wallace summed up. "You'll get lusher grass, thicker grass. And that has a lot of benefits."

The author is a Contributing Editor to Lawn & Landscape Maintenance magazine.



MANAGEMENT GUIDE TO PGRS

Turf growth management tools can be applied to both warm- and cool-season turfgrasses to reduce the number of labor hours spent mowing as well as the quantity of clippings left on a property by diminishing, but not eliminating, the growth of many turfgrass species. Such a growth management tool is a valuable partner in any organizational arsenal.

A WORD FROM CIBA TURF & ORNAMENTAL PRODUCTS

Dear *Lawn & Landscape Maintenance* Readers:

We hope the information that follows convinces you of Ciba Turf & Ornamental Products' commitment to lawn care and landscape professionals, as well as to the entire green industry.

We define our commitment as "The Nature of Ciba," which consists of three parts: customer commitment, product excellence and environmental stewardship.

We're committed to ongoing relationships with you, our customers. We provide training, diagnostic tools, education and product support second to none. And we have developed many products because of requests from you. Our Primo turfgrass growth management tool is a perfect example.

With growing concerns about worker productivity, clipping disposal and other issues, you asked for a product that could fulfill these needs in the lawn care and landscape industry. With Primo, we listened.

Our commitment to environmental stewardship also led us to the development of Primo. With 17 states banning yard waste, and many more considering bans, it is time for a product that minimizes this environmental challenge. We think Primo is that product for now and the future.

Please take a moment to review the following information, and call us if you have questions. Thank you for your time and continuing support.

Ciba Turf & Ornamental Products
P.O. Box 18300
Greensboro, NC 27419-8300
910/547-1160

Bill Liles
Director
Ciba Turf & Ornamental Products



ACHIEVING SUPERIOR TURF MANAGEMENT

Today's business environment calls for a professional business partner to help manage the intricacies of growing and maintaining quality turfgrass.



Turf growth management products - commonly referred to as plant growth regulators - can represent a healthy part of any turf program. Often misunderstood, PGRs are most commonly associated with regular use on hard-to-mow areas, low maintenance turf sections and remote traffic patterns such as airports, cemetery reserve acreage, highway medians and parks.

PGRs were once thought to be exorbitantly priced products that controlled turfgrass growth at the expense of color, consistency and density. The prevalent theory was that once applied, the landscape manager could remove himself from the care of the property while the turf was in a dormant state, so to speak.

Naturally, this runs contrary to the typical thought process of turfgrass managers whose job it is to provide healthy, thick-growing turf. While PGRs are currently more prevalent on golf courses, landscape contractors are checking out today's vastly improved growth management tools. In fact, nearly 20 percent of the respondents to a recent *Lawn & Landscape Maintenance* magazine survey said they were currently using PGRs on the properties they maintain.

Of the 20 percent, PGR use is fairly evenly divided between applications to entire turf areas and in edging and trimming situations. However, the majority of the survey's respondents said they use PGRs most often on bushes and shrubs.

According to the survey, 80 percent of those using PGRs are applying them to commercial/industrial properties, 35 percent to

residential turf, 15 percent on roadsides, 10 percent on golf courses and 5 percent for other uses.

Although aware of PGRs, just more than 80 percent of the survey's respondents said they weren't currently using the products. Why? Nearly 61 percent said they did not understand the benefits of PGRs, 32.9 percent said growth regulators were not applicable to their businesses, 21.1 percent were worried a PGR would reduce their mowing income and 11.8 percent said PGRs are too expensive for them.

Other respondents said they previously had a bad experience with yellowing and/or striping, and some claimed they didn't find currently available products effective.

What it boils down to is that most turf managers are depriving themselves of a natural, industry partner because of a general lack of understanding.

The vast turf market, estimated at more than 5 million residential acres in addition to about 9 million commercial, industrial and other non-residential acres, provides an enormous field of opportunity for managing turf growth.

By keeping an open mind, PGRs can be your most valuable company asset - and not just for low maintenance lawns. Today, PGRs are being used on both cool- and warm-season turf, fine ornamental turf and on both commercial and residential properties throughout the United States.

This treatment used in conjunction with one or several other management tools such as regular pesticide applications, fertilization, mowing and trimming/edging services and irrigation, help maintain density and green color of the turf while slowing the growth of the turfgrass.

A NEW GENERATION. Today's PGR's - including the industry's newest, Primo, from Ciba Turf & Ornamental Products, Greensboro, N.C. - are generally not associated with discoloration. Discoloration was a downside risk that had to be overcome to prepare PGRs for acceptance in well-maintained lawns.

While the PGRs introduced in the 1950s, 1960s and 1970s struggled with control today's PGR products claim varying rates of growth reduction and control, and are becoming more widely accepted. Using Primo on highly managed turf, for instance, allows the grass to be kept in its best condition.

Ciba's Primo was commercially available one year ago, but the product itself has undergone nearly six years of field testing, both during product development and, since 1991, under the guidance of experimental use permits.

Since 1987, Ciba has had a dedicated U.S.-based turf and ornamental department. Although well-known products Triumph, Subdue and Banner were introduced in the late 1980s, Primo is considered a flagship product for Ciba's turf and ornamentals business.

While Primo is a non-food product requiring fewer tests and considerations by the U.S. Environmental Protection Agency, Ciba's corporate culture calls for exceeding EPA expectations and requirements to ensure thorough and exacting research.

Primo was thoroughly tested for nearly 10 years - including 22,000 different tests for U.S. EPA registration and 400 independent trials - before becoming commercially available. Among others, Primo was part of field dissipation testing, risk assessment examinations, acute toxicity studies, metabolism, animal tests and worker exposure studies.

In fact, since Primo is foliar absorbed research shows the PGR has virtually no chance to render soil ineffective or leach through to groundwater. Once it hits the soil, it's inactivated.

Even though the product is federally registered, research is ongoing. To understand Primo's influence on turfgrass water use,

additional research is investigating Primo-treated turfgrass under limiting and non-limiting moisture conditions. In addition, further research is being devoted to Primo's mode of action in cool- and warm-season turf.

Primo is considered a flexible product. As such, innovative turf managers can plan growth reduction from anywhere between a couple of days and eight weeks depending on how much product is applied. Less product equals less regulation for a shorter period of time. Conversely, more product provides more growth regulation over a longer period of time.

While Primo is capable of regulating turf growth to varying degrees, Ciba research advocates a standard rate promoting 50 percent growth reduction over a period of four to six weeks. To achieve 50 percent reduction, depending on the turf type, 1/4 of an ounce to 1 ounce per thousand square feet is recommended.

Primo is currently available only as a liquid, but Ciba expects to introduce a wettable powder in a water-soluble bag in the near future.

MANAGING GROWTH. PGRs

are commonly distinguished as Type I or Type II. Type I, or mitotic toxicants, inhibit or suppress growth by stopping cell division and differentiation. These are generally the older PGRs.

Type II PGRs - with more sophisticated capabilities - temporarily reduce gibberellic acid biosynthesis. Gibberellic acid is a plant hormone that is responsible for cell elongation.

The application of Primo, for instance, results in a decrease in cellular elongation and internode length, but does not in any way stunt the growth of the plant in the long-term. Since it doesn't inhibit production of plant cells, the process can be reversed with an application of gibberellic acid.

Primo is absorbed directly into the leaf upon application. It requires no watering in and is rainfast within one hour. Others, however, may require irrigation or rain to activate absorption through the root system.

Primo begins affecting plants immediately, but the results are usually not apparent until approximately three to four days after application when new growth appears with shortened internodes. Also, a user will notice that the turfgrass appears to be growing more slowly than turfgrasses in untreated areas.

It's important to note that the turf is growing, although at a much slower rate. Used according to label directions, Primo manages turf growth, rather than eliminates growth.

Turf managers may notice a color change in grass treated with a PGR. With Primo, turfgrass color will appear to change when the PGR reduces cellular elongation. Although color differences vary depending on turfgrass species, a darker green color may be evident two to six weeks after an application.



Plant growth regulators are being adapted to a variety of uses in the professional landscape industry including trimming and edging around ornamental beds.

ACCEPTING THE RECYCLING CHALLENGE

In 1983, when the Primo molecule was discovered, no one was talking about a landfill crisis or water conservation efforts. Today, more than 26 states and the District of Columbia have enacted or are in the process of establishing legislation to limit the amount of materials dumped in traditional landfills.

It's estimated that half of the 16,400 U.S. landfills will be closed by the year 2000. Landscape waste accounts for nearly 20 percent of the trash in landfills. Legislation in individual states varies from a total ban to only limited acceptance of yard-waste materials.

This presents quite a challenge for mowing maintenance contractors whose job it is to remove clippings from residential and commercial turf. But ready or not, the responsibility for development, implementation and policing of recycling programs has landed square with individuals serving the green industry.

Consequently, reducing the amount of clippings being removed from properties - better yet, leaving clippings on the ground - falls to the discretion of the lawn and landscape contractor.

Short clippings - removing only one-third of the grass blade during each cut - deteriorate quickly and return nutrients to the soil. Although professional mowers have readily jumped on the grasscycling bandwagon, obviously, it's not the answer all of the time. Particularly

in the spring when grass grows at an incredible rate, beginning to cross over driveways and sidewalks. If it's not removed, the established grass can be choked.

Many firms are striving to do away with collecting and hauling grass clippings. PGRs can accomplish this task without significantly cutting into the number of times a property is mowed.

Applying a PGR, such as Primo, on a property after the first mowing, enables the grass to be mowed on a regular schedule, but results in fewer clippings, reduced labor costs and improved profit margins.

Whether charging customers on a per-cut or annual basis, Primo represents a tremendous cost savings for the mowing contractor. The turf growth management tool enables the contractor to control spring growth, as well as unwanted top growth. As a management tool it also gives contractors the opportunity to perform grasscycling or don't bag-it programs.

In fact, before Primo was debuted to the lawn and landscape industry, Ciba's experimental use permit enabled it to test the product in all market segments. It actively took part in Texas' Don't Bag-It program, using Primo on about 8 acres of residential and commercial turf. Similar programs were conducted in Dayton, Ohio, Greensboro, N.C., and Tulsa, Okla.



Mowing maintenance contractors must educate the consumer on managing turf growth to minimize clippings.

A PGR offers a real benefit for turf managers with commercial accounts, especially those which are bid on an annual basis. The cost of the application could be more than made up with faster mowings or a reduction in mowings.

For those functioning on a per-cut basis, a PGR treatment results in reduced clippings, speeding up the mowing cycle. Instead of decreasing the number of cuts, it gives the contractor the flexibility in scheduling mowings at a time when a crew may otherwise be confronted with its heaviest workload, peak grass growth and rainy day interruptions.

It can be particularly beneficial to those contractors using mulching mowers.

Contractors have also expressed a considerable amount of interest in Primo as an edger, as a service to homeowners planning extended summer vacations and as a aid to homeowners who prefer to mow their own lawn, but don't want to be stuck in their yard every weekend.

The color change generally results from the shift to more compact cells and less total leaf tissue; a darker green color of the maturing turfgrass leaves not removed by mowing; or by a more compact turf canopy.

Historically, PGRs have been associated with turf injury such as yellowing and leaf-tip bronzing. When combining standard application rates with a healthy turf foundation, Primo avoids these problems. However, if discoloration does occur, the effects

are temporary and last only about one week. Research concludes that turf stressed from extreme dry or wet weather conditions before an application is made may be subject to injury.

Primo doesn't decrease root mass or root length. In many instances, root mass increases, usually about four to six weeks after application. Greenhouse research at Texas A&M University on Tifway bermudagrass demonstrates Primo significantly increases root mass and contributes to longer roots. ■

IT'S ALL IN THE APPLICATION

Applied every four weeks, up to seven times a season, Primo provides 50 percent growth reduction for four to six weeks.

Primo can effectively manage the growth of bentgrass, Kentucky bluegrass, red fescue, tall fescue, annual and perennial ryegrass, bahiagrass, common and hybrid bermudagrass, centipedegrass, St. Augustinegrass and zoysiagrass.

Best results are achieved when PGRs are applied to high quality turf which receive adequate moisture and fertility. In fact, Primo is easily tank-mixed with nearly all currently available pes-

ticides and fertilizers which eliminates two trips to one property and also reduces costly application expenses.

Primo should be applied after the first mowing of the season and then every four weeks up to seven times per season. Once growth slows in preparation for dormancy, Primo shouldn't be needed.

A late summer application may be desired when turfgrass growth increases during cooler temperatures after the hot, dry summer months.

The number of applications, the amount of Primo applied and the repetitions will vary depending on the turf species to

which it is applied. Most dramatic differences can be seen between cool- and warm-season turf-grasses. Generally, warm-season turfgrasses have been found to react faster and provide quicker green-up with a smaller dose of Primo than in cool-season turf.



Primo is offered in conventional packaging - 1-qt. and 1-gallon containers - as well as closed systems.

It's also been found that Primo, at rates equal to or higher than the standard application rate, will provide seedhead suppression of hybrid bermudagrasses and partial seedhead suppression of common bermudagrass, bahiagrass and St. Augustinegrass. Applications should be made prior to seedhead formation.

In other turfgrasses, Primo can effectively reduce the height of the seedheads, but does not provide complete regulation of seedhead development. One exception, according to research, Primo does not effectively suppress annual bluegrass seedheads at standard application rates.

Color differences vary depending on turfgrass species. Since turfgrass color is a subjective evaluation, preferences differ between individuals.

Primo is absorbed by leaves and shoots, and activity from root absorption is non-existent. By following Ciba's recommended use rates, no plant growth regulating activity has been observed following soil applications. Products applied in a soil-drenching application are said to be inferior to foliar applications by a factor of at least 10.

Because Primo is an ester, it has the ability to move rapidly into the plant making additives completely unnecessary. If not fully absorbed into the leaf surface, the remaining material on the leaf surface is said to rapidly degrade with a half-life of less than four hours.

Primo
New Turf Management Tool

Above-ground effects
Reduced clipping
Reduced mowing
Reduced cell elongation
More compact growth
Denser turf
Shorter stems

Application
Foliar absorbed
Rainfast in one hour
No mowing restrictions
Allows tank mixing
Grass must be actively growing
May be applied to all major turf species

Below-ground effects
Enhanced rooting
Improved drought tolerance

DON'T BAG IT.

Primo is foliar absorbed resulting in the temporary decrease in cellular elongation.

Although Primo can control turf growth from a couple of days to three months, Ciba recommends going for 50 percent reduction over a four- to six-week period. Best scenario: Make an application every four weeks for a 50 percent growth reduction.

The translocation of Primo occurs mainly from the stem to the apex to areas of formative plant growth where cellular elongation occurs. Primo is then responsible for inhibiting internode length in the plant.

Ciba reported no loss of activity when Primo was applied to turfgrass foliage and mowing was performed within one hour of application. Therefore, translocation to meristematic regions is relatively fast. Mowing varying turfgrasses does not affect its activity.

Primo is foliar absorbed within one hour. On turfgrasses whose meristems are at the base of the plant, Primo's effects are not as easily recognized since the shortened internodes are not visible.

Any Primo sprayed on the soil is inactivated. That is the reason why Primo has no residual or carryover activity in the soil. This feature allows Primo to be used in overseeding programs to promote the establishment of new seedlings.

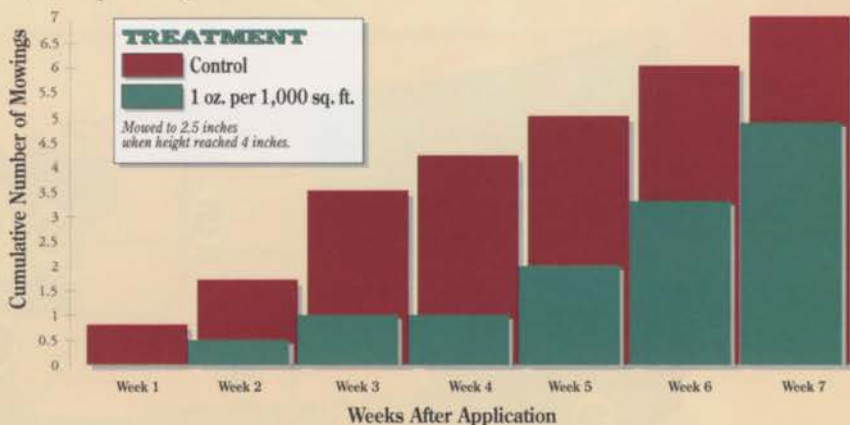
Leaching studies indicate that Primo has little chance to leach to groundwater, which means there are no cumbersome label restrictions.

Users will find that Primo takes on a personality of its own; adapting to each individual property. It's not at all like treating an insect or a weed. Instead, the turf manager must learn how it works in each setting and adapt the PGR application, along with pesticide and fertilizer treatments, to create an ideal turf setting. Irrigation timing may need to be adjusted to avoid overwatering slower-growing grass.

Water savings may be an added benefit of using Primo. By limiting shoot growth, evapotranspiration of the turfgrass may be reduced, resulting in less water usage. Because the turf manager is removing fewer clippings from the turf, more water stays in the ground where it is intended.

MOWING REDUCTION

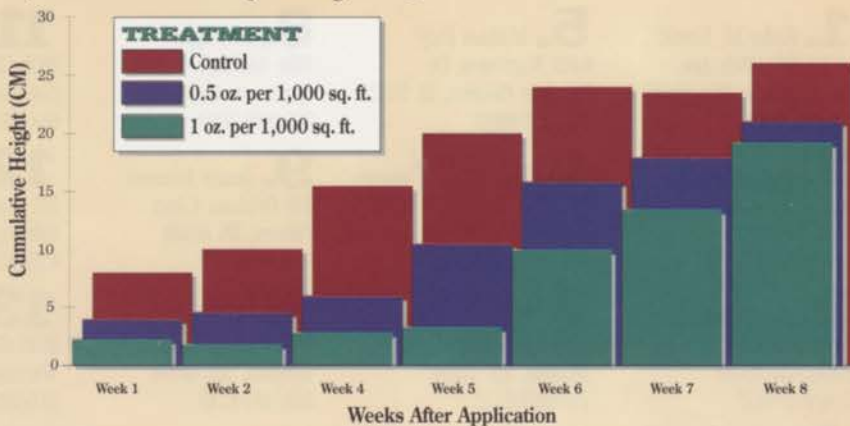
The effect of Primo 1E on number of mowings (Tall fescue)



Application rates can be adjusted to achieve the desired effect from the turfgrass.

LENGTH OF EFFECTIVENESS

(Baron Kentucky Bluegrass)

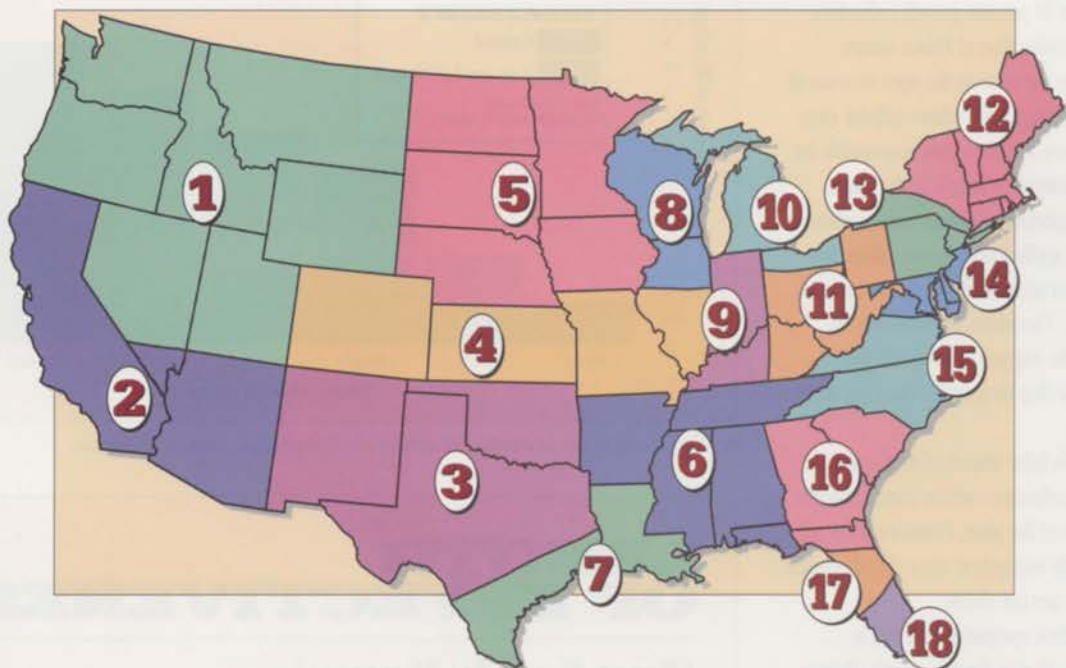


Primo can reduce turfgrass growth during the entire growing season giving contractors more flexibility

The addition of an additive or adjuvant is not needed with Primo because all formulations of Primo demonstrate similar efficacy either with or without an additive.

While its use in both cool- and warm-season grasses has brought tremendous satisfaction to a variety of lawn care and landscape contractors across the United States, operators in California and New York are still waiting for state registration. ■

CIBA TURF & ORNAMENTAL REPS



1. Kathy M. Hewitt
16702 NE 130th Ave.
Brush Prairie, WA 98606
206/253-8283

2. Nick Angelucci
1996 Cambridge Dr.
Vista, CA 92083
619/598-6481

3. Don Wilson
2800 Redfield
Plano, TX 75025
214/618-7861

4. Rick Grant
11906 Flushing Dr.
Maryland Hts, MO 63043
314/739-5936

5. Michael Daly
6403 Northwest Dr.
Windsor Heights, IA 50322
515/270-9392

6. Date "Chip" Houmes
6837 Nicole Cove
Bartlett, TN 38135
901/377-5081

7. Travis Klosterboer
19018 Dee Woods
Humble, TX 77346
713/852-9222

8. Don Spier
1004 Michael
Sycamore, IL 60178
815/895-7860

9. Jimmy Johnson
338 Brixham Court
Fishers, IN 46038
317/849-3370

10. Ellen Devick
8041 Colonial Lane
Ypsilanti, MI 48198
313/481-8140

11. Gregg Schaner
3505 Chipshot Court
Columbus, OH 43228
614/278-7601

12. Steve L. Sears
141 Baptist Hill Road
Palmer, MA 01069
413-283-7877

13. Randy Moser
2120 Grayhorse Dr.
Warrington, PA 18976
215/343-5654

14. Mike Oleykowski
209 New Jersey Ave.
Mount Holly, NJ 08060
609/267-8041

15. Ken Russell
1113 Fairweather Dr.
Kernersville, NC 27284
910/996-2973

16. Ron Johnson
301 Firebridge Road
Columbia, SC 29223
803/736-2185

17. Mickey Lovett
15709 Jericho Dr.
Odessa, FL 33556
813/920-7825

18. Chuck Buffington
2289 Backwater Court
Oviedo, FL 32766
407/366-0007

TECHNICAL SUPPORT REPS

Marcus Juby, *Midwest*
2224 Waterfield Lane
Blue Springs, MO 64015
816/254-2625

T. Don Taylor, *Southeast*
P.O. Box 666
Roanoke, AL 36274
205/863-7222

Mike Agnew, *Northeast*
2322 Buchanan Dr.
Ames, IA 50010
515/232-1895

TURFGRASS ECOLOGY & MANAGEMENT

BY T. KARL DANNEBERGER, Ph.D

NOW AVAILABLE!

FINALLY, AN ADVANCED TURFGRASS MANAGEMENT BOOK

for the turfgrass professional which goes beyond the introductory level.

TURFGRASS ECOLOGY & MANAGEMENT

...is the first professional turf management text devoted to advanced environmental ecology. This pioneering work addresses the wave of the future and is a must for all professionals. Chapter highlights include discussions of light and nutrients as resources, physiological responses to temperature, population dynamics, predator disturbances and much more.

ORDER YOUR COPY TODAY.

Hardbound, single copies only \$39 plus \$5 shipping/handling per copy. Quantity discounts available upon request.

YES, I'm interested in purchasing _____ copy(s) of **TURFGRASS ECOLOGY & MANAGEMENT**. I understand my purchase will be shipped upon payment. I also understand that I can return my book(s) within 15 days for 100 percent refund if I am not totally satisfied. (Ohio residents only add 7% sales tax.)

Payment Enclosed

Charge my VISA MasterCard

Card # _____

Expiration Date _____

Signature _____

Name: _____

Title: _____

Company Name: _____

Address: _____

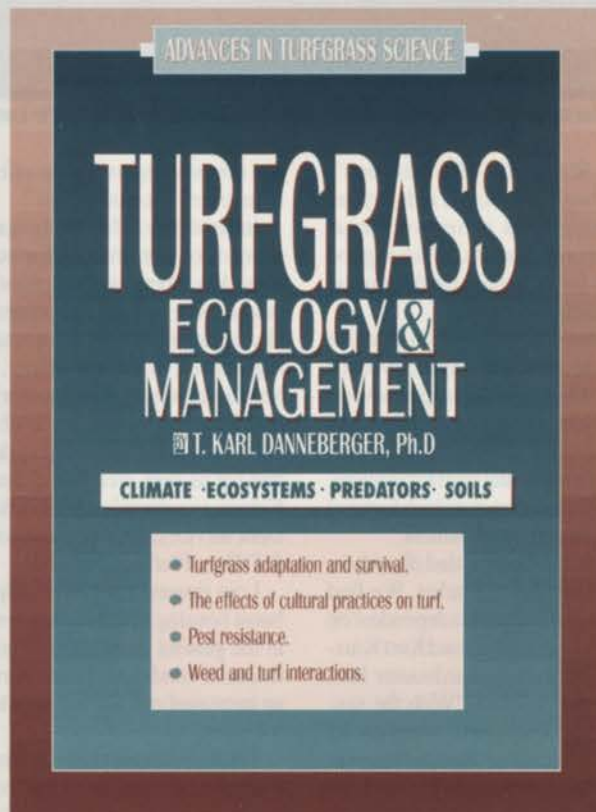
City: _____ State: _____ Zip Code: _____

Published by:

Lawn & Landscape
MAINTENANCE

4012 Bridge Ave.
Cleveland, OH 44113

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





Landscape design and installation markets depend largely on the condition of the building construction industry. Photo: The Austin Co.

ALL SEGMENTS OF the nation's building construction industry are showing signs of recovery in at least some markets, which is good news for the landscape design and installation business.

New construction took a nose dive at various times during the 1980s (it varied by region), dragging several auxiliary services down with it, including landscaping. Now that construction is on the road to recovery, landscape contractors look forward to increased new business.

"Design/build is tied directly to the construction market. We find maintenance is not as dependent on new construction," said Kurt Kluznik, president of Yardmaster Inc., Painesville, Ohio. "With the savings and loan crisis, when banks stopped lending money to commercial properties, installation for those properties just dried up. We're

just now starting to feel the effects of recovery in construction."

Interestingly, while landscaping depends on construction for business, developers say they count on landscaping to help sell property. "Landscaping is a significant selling point for us. As a developer, we need to respond to what the market is calling for. Aesthetics is obviously a key point. Landscaping does that for us very well," said Bruce Katona, vice president for development services, Gale & Wentworth & Dillon, Florham Park, N.J.

Low interest rates have helped boost housing rates, while growth in the general economy and good financial conditions have spurred an increased call for non-residential space.

The U.S. Department of Commerce reports that the overall non-residential construction market "ap-

pears to have finally passed through the trough of its recession and to have rebounded in total construction activity. (Last year) was a year of growth for this sector." The market is expected to continue growing through 1994, but some weak segments will setback overall performance.

Home building began picking up in 1992, according to the National Association of Home Builders, Washington D.C., and is expected to flourish through 1995.

NON-RESIDENTIAL. Office building construction overall fell 20.2 percent in 1991, and 25.9 percent in 1992. A decline of 14.3 percent is expected for 1993, according to Bureau of the Census figures.

The good news is that vacancy rates for downtown and suburban office space are inching downward.

However, continued downsizing in company staffing is expected to minimize demand for new office buildings.

Economists forecast a turnaround in 1995, but only 0.1 percent over the lowest point of the current downturn. They also anticipate it will take several years to return to the high growth rates seen in the 1980s.

New office construction is especially down throughout California (although Northern California shows some stirrings), according to Richard Sperber, chief operating officer, Valley Crest Landscaping Inc., Calabasas, Calif. As a result, landscape construction is down from two to three years ago.

"Construction being off affects our sales, profit margins, the whole deal. California has been in a re-



Contractors Anticipate Construction Upswing

Building construction is rebounding in most regions, particularly in the Midwest. The Northeast market is the slowest to recover in commercial, industrial and municipal work. Meanwhile, the West Coast's new housing and office segments continue to lag.

By Cathy Hoehn

cession for two or three years. But construction will come back," Sperber said.

Wayne Richards of Cagwin & Dorward, Novato, Calif., expects Northern California to improve more quickly than the south. "If you look at the indicators and talk to people in the industry, it looks like Southern California was hit harder, because they're more closely tied to the military and aerospace industries," he said.

"And of course the earthquakes didn't help any. I suppose somebody has to do the repair work, but transportation is going to hinder a lot more than it is going to help."

Investment in the U.S. industrial market fluctuated greatly during the 1980s, due largely to drops in oil industry construction, according to the U.S. Department of Commerce. A large number of Western, South-

ern and Mountain states showed dramatic dips in industrial building in 1985 following the collapse of oil prices.

The recession caused industrial investment to drop 6.9 percent in 1991, and 8.2 percent in 1992. Last year will probably show a small loss of 3.2 percent, and then positive growth is expected to return in 1994 and 1995.

Industrial vacancy rates are on a downward trend and stood at 8.6 percent in the first quarter of 1993.

Hotel and motel building construction exploded between 1984 and 1987, demonstrating more than \$8 billion dollars in revenues each year. The market dipped slightly in 1988 and 1989 before peaking at \$8.7 billion in 1990.

The market began declining after that, reversing itself only late last year. While the gains during 1993

have been substantial in percentage terms, the level of activity is actually less than half of its previous peak value.

Landscape construction firms in central Florida and Las Vegas re-

port prosperous markets in office and hotel landscape construction and renovation. "Here in Orlando, we're fortunate to have Disney World, Universal Studios, etc. There's always expansion work for everybody," said Jerry Blanchard, president and owner of Carol King Landscape Maintenance Inc.

Blanchard expects the trickle effect from the construction market to kick in for his company over the next few years. "Some projects we're looking at now are in the building construction phase right now. Our landscape work will be two to three years down the road."

REGIONAL REVIEW. The economic health of the non-residential market varies by geographic region. Some regions are showing signs of recovery while others remain in deep depression, according to Marvin Epstein, marketing consultant and former employee of The Austin Co., Cleveland, Ohio, an international design and construction firm that handles industrial, commercial and



High visibility structures, such as corporate headquarters, hotels and office buildings, depend on landscaping to help promote sales and space rentals. Photo: The Austin Co.

government accounts.

"The Eastern Seaboard has not evidenced any recuperation whatsoever in the industries we're talking about. Construction isn't anywhere near the levels found 10 years ago," Epstein said.

On the other hand, "the Midwest is thriving as never before in its entire history," he added.

Kluznik disagrees, pointing out that while housing construction "is going great guns" in the Midwest, commercial building remains tepid. "They're not building things on speculation like they used to. They have to be darn near fully leased out before they can build them, so it's hurt this area," Kluznik said. "We weren't as overbuilt as what you hear about in Texas and California. But it's still screwed up our market substantially."

Industry observers say the Southeast and Southwest non-residential markets have yet to recover fully, but are expected to pick up over the next few years. Epstein pinpointed the Pacific Northwest as a trouble spot due to Boeing laying off employees. "Aircraft orders are some-

what down. Boeing has the single greatest economic impact on the whole Pacific Northwest. No other entity, including logging and tourism, equals its impact."

California commercial building markets continue to drag. Recovery is not anticipated this year. Richards anticipates slow recovery in the state's landscape construction, "but not to the level we experienced in the 1980s. I think there will be growth, but it will be in different directions. It may not occur in new construction, but it may be in water management and renovation of older landscapes."

John Ross of John R. Ross & Co., Dallas, said new housing and retail construction jobs are increasing in Dallas and Houston, while most commercial work "continues to be very selective. There are some (segments of the market) that are still in a slump," he said. "Most of what we do is renovation work for existing clients."

Colorado contractors anticipate a slow upswing in construction, and for that trend to permeate the landscape construction market

within the next couple of years.

"In Colorado, we have vacancy rates as high as 70 percent (in commercial office buildings). But then, Marriott Hotels just came in with some high-tech headquarters. We may see a surge of growth in commercial," said Steve Hyland, Hyland Brothers Lawn Care, Fort Collins, Colo.

Overall, construction firms believe significant growth in new commercial and industrial building could take three to five years. Landscape contractors also provide cautious outlooks.

"The economy is just starting to come back. We're seeing people spend more money," Sperber said.

RESIDENTIAL REPORT. The housing industry closed 1993 in good standing, according to Dean Crist, research economist for NAHB. December starts crept to 1.54 million units, seasonally adjusted — their highest level in four years, while permits closed at an annual rate of 1.48 million.

Nearly 1.3 million new housing units were started in 1993, a gain of

7 percent from 1992. Single-family housing starts increased 2 percent to 1.12 million, their best performance since 1987.

Multifamily starts fell for the eighth consecutive year, despite some signs of life at year's end. They fell by 5 percent in 1993 to 162,000 units.

Housing statistics are often based on national figures, since the industry is governed largely by national trends in mortgage rates and the like. But economists caution that regional job growth and other local factors could deter home purchases.

The NAHB remains more optimistic, however. "We expect 1994 and 1995 to be even better than each of the previous years. Things are looking up," Crist said. Money spent on new homes reached \$139 billion in 1988, fell to \$111 billion in 1991 and then surged to \$145 billion in 1993.

The biggest housing market improvements appear in parts of the South, Central and Midwest. California and the Northeast show the least improvement, Crist said.

(continued on page 86)

OUR APPOINTMENT SCHEDULE!

Appointment Schedule For: September, 1993

File Edit View Help

Schedule For: ALL CREWS

Crew	Sun	Mon	Tue	Wed	Thur	Fri	Sat	Month
ALL				1 3	2 4	3 1	4 3	Next Prev
Truck 1	5	6 5	7 6	8 7	9 4	10 1	11	Enter Date
Truck 2	12	13 6	14 5	15 1	16 3	17 2	18 1	
	19	20	21 5	22 7	23 3	24 2	25	Zoom Exit
	26	27 5	28 4	29 1	30 1			

To Move To Desired Day Use Arrow Keys <ENTER> To Zoom

SCIS 3.0

Software For The Lawn Care Industry
With a WINDOWS® - Like Interface

Customers • Work Orders • Invoices • Estimates
Receivables • Payables • Post Cards/ Labels
Sales Reports

1-800-441-2885

MANOR SOFTWARE, INC.

199 12th St • Avalon, NJ • 08202

USE READER SERVICE #65

Built for...
Power and Comfort!

ED90 EARTH DRILL

QUALITY,
DURABILITY,
AND SIMPLICITY



MADE IN U.S.A.

Designed to put the power of a "2 man" in the hands of one. Operator fatigue is minimized as torque kick-back is all but eliminated by the unique right-angle drive design. Three handle bar positions give the operator freedom to dig up against walls, buildings, or fences, and make it easier for transporting the unit from job to job. A choice of three auger styles ranging from 2 inches in diameter to 12 inches, is available for the best results in certain soil conditions.

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

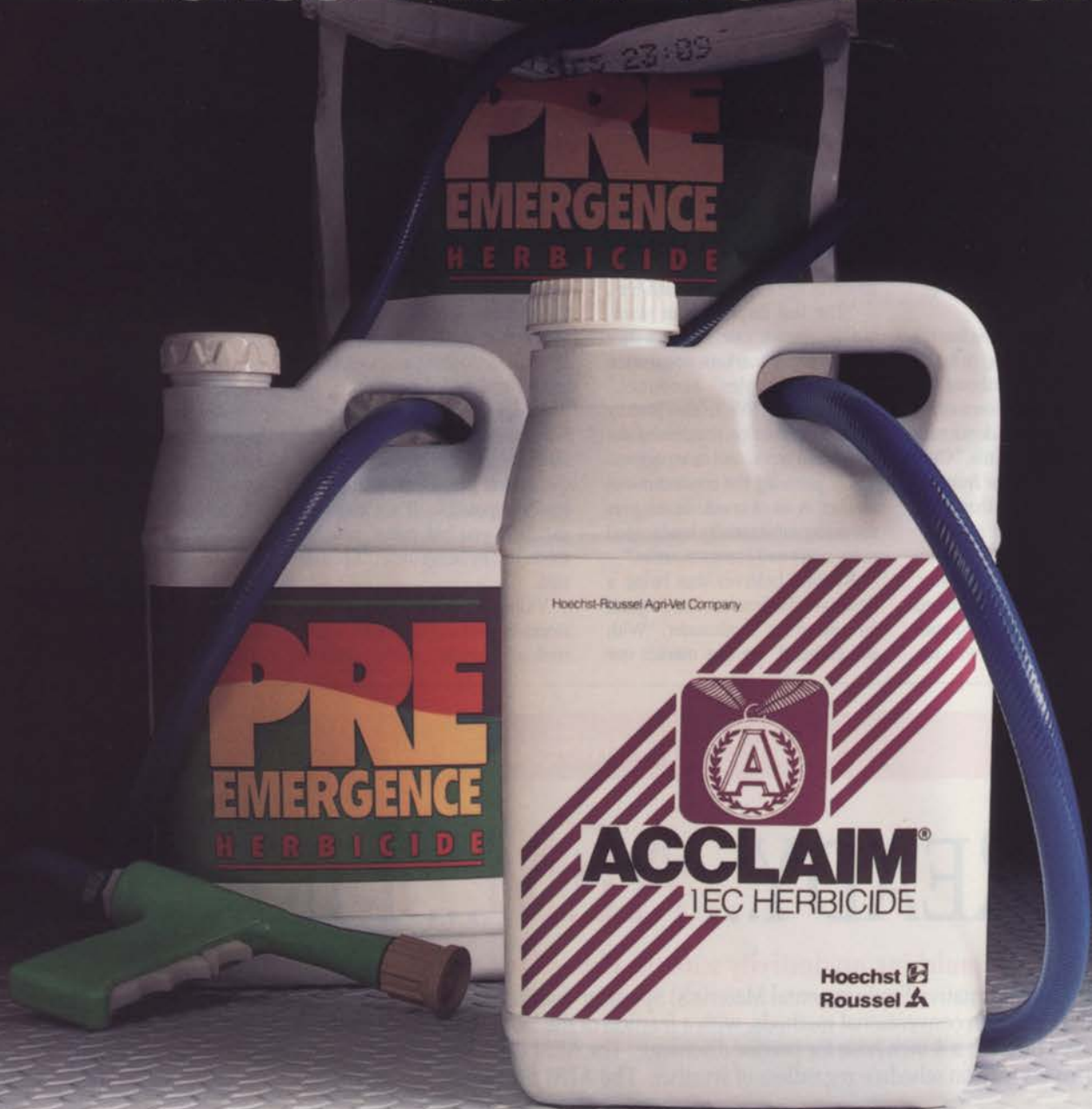


**CARLSON
INDUSTRIES
INC.**

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

USE READER SERVICE #69


BECAUSE NO PRE IS PERFECT



PAIR A PRE WITH OUR POST

Crabgrass escapes are almost impossible to avoid, even when using the best *preemergence* herbicide. But unsightly crabgrass and costly callbacks can be avoided by using the best *postemergence* crabgrass herbicide available, Acclaim® 1EC Herbicide. Crabgrass treated with Acclaim just melts away, leaving no ugly brown patches that the older arsenicals commonly leave in lawns.

Acclaim controls from the 1-leaf stage to just before seed head formation, and can be used safely on tall and fine fescue, bluegrass, ryegrass and zoysiagrass. It also lets you reseed fescue and ryegrass immediately after the spray dries.* Best of all, you can treat 1,000 sq.ft. with Acclaim for just small change.

This year, be ready for crabgrass escapes. Be ready with Acclaim... **Hoechst** 
because no PRE is perfect. *Wait 3 weeks for bluegrass, zoysiagrass, bentgrass **Roussel** 

Follow label directions carefully. ACCLAIM and the name and logo HOECHST are registered trademarks of Hoechst AG. The name and logo ROUSSEL are registered trademarks of Roussel Uclaf S.A. Marketed by Hoechst-Roussel Agri-Vet Company, Somerville, NJ 08876-1208 © 1993

USE READER SERVICE #98

Construction Market

(continued from page 84)

The Midwest remains relatively stable since it never felt the recession in housing like other states, Crist said. "Banks didn't fail in the Midwest like they did in the East and West coasts, so they had funds available to lend. And there wasn't the frantic price depreciation."

The Northeast's housing market reached bottom a few years ago and is slowly picking up. "The increase is minimal. To say it has had a major turnaround would be wrong," Crist said.

Katona, however, claims that his firm is seeing an upswing in housing purchases in the Northeast.

California continues to await recovery. "Last year was a down year for production in California," Crist said. "But they're not far from recovery. Our feeling is that 1994 will be an up year for the state."

Remodeling, both in construction building and landscaping, seems on the rise nationwide. "It used to be, 15 to 20 years ago, if spending in new construction was up,

remodeling was down. Now they're paralleling each other. If one does well, the other does well. Overall, we're looking at a fairly large increase in expenditures," Crist said.

ALTERNATIVE MARKETS. As the construction market, and thus landscape design and installation, began to decline, contractors turned to other markets and services to boost sales.

Yardmaster, for example, has increased its residential and condominium base, as well as expanded its landscape maintenance services.

"The last three to four years, we've grown our maintenance through other markets, acquisition of other peoples' accounts," Kluznik said. "We're also putting more emphasis on residential design/build work, and more aggressively pursuing the condominium market. A lot of condo developers are doing substantially landscaped entry ways and common areas."

Kluznik believes that being a design/build firm has been a great advantage for Yardmaster. "With design/build, we can market our

services ourselves; we're not dependent on what the landscape architect is putting out on the streets. We can market through dealing with builders, home owners, home shows, direct mail. We can really develop our referral business, working with previous customers, working with allied services like pool contractors, deck contractors — other people who we can piggyback with to get referral business.

"We're used to creating our own business, whereas subcontractors who are not design/build crank out estimates and work off plans sent to them from general contractors. When that work falls off, they'll have to start looking at design/build and the residential market."

Valley Crest, on the other hand, is comfortable with its ability to obtain jobs through bidding. "When the market gets tough, you bid as much as possible. It's a numbers game. If you bid more, you get more, just by being there," Sperber said.

Valley Crest is riding out the storm by picking up public work, such as freeways, parks, schools

and municipal work. "Like everybody, we're competing for less work with the same amount of people. We're trying to stay competitive, looking to keep our cost of jobs up, our margins up. We need to stay in the profit mode."

Carol King Landscape Maintenance learned the art of convincing clients they need to renovate their landscapes. "Hotels, office buildings, any areas with high visibility where they want to attract tenants or clientele, we made them conscious of what it takes to entice someone to come and look at their building. You do anything for a buck to keep your men working and to keep work from tailing off," Blanchard said.

Cagwin & Dorward continues to grow its maintenance division to stay afloat. "As landscape construction decreased, maintenance increased, so we haven't lost much in overall sales. We just changed our strategy," Richards said. ■

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

From The HydroSeeder® People

READY... AEM... FIRE...

Fire up your mulching productivity with the Finn AEM Spreader!

The AEM (Alternative Environmental Materials) Spreader distributes mulch, bark, compost or other bulk products much faster than conventional methods, with a fraction of the labor required. A patented rotary airlock conveys material through a 4-inch hose for precise discharge. The AEM does not adversely affect existing landscapes, so your crews stay on schedule regardless of weather. **The AEM Spreader:**



- Saves up to 50% on material and labor
- Handles wood mulch, compost, and other bulk material
- Allows precise, even control of material
- Provides consistent productivity from start to finish
- Has 25 cubic yard per hour capacity
- Conveys material up to 200 feet

Call 1-800-543-7166 for a FREE AEM Spec Sheet.

Leading The Industry From The Beginning.

FINN
CORPORATION

9281 LeSaint Drive, Fairfield, OH 45014

USE READER SERVICE #64



**We reduced
our trimming
labor by 50%.**

"Edging and trimming, plus timely mowing, get us many compliments for the groomed look of the turf in our parks, sports fields and community center grounds. This 'finishing touch' would be cost prohibitive without Embark, which we apply three or four times yearly. With this PGR, trimmed edges hold three times as long."

Mel Crudge
Park Superintendent
City of La Verne
La Verne, California

Get the Embark® edge!

EMBARK® LITE® FINE TURF REGULATOR

Manicured turf requires a great deal of tedious trimming and edging. Did you know that up to two-thirds of this time-consuming and costly labor can be avoided? Simply make a banded application of Embark Lite following each string trimming. Trimmed edges will generally hold for six weeks on most species.

Embark Lite can be applied with a handgun or backpack

sprayer. And now, while supplies last, we'll ship you a \$95.00 SP-1 Back-Pack Sprayer for only \$35.00 when you buy two gallons of Embark Lite.

Simply send your proof of purchase and a check for \$35.00 plus \$5.00 for shipping and handling to PBI/Gordon Corporation prior to August 30, 1994. Delivered via UPS. Limit one per customer.

Always read and follow label instructions.

**\$95.00 SP-1
Back-Pack
Sprayer**

Only \$35.00

See the details
at left.



**G pbi / Gordon
CORPORATION**

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

Apply Embark Lite where you string-trim most (but want to less).



Along fences



Around trees



Poles and posts



Walkways



Around beds



Monuments



Walls



Water's edge

How Much Is Enough?

The final product of composting can be used successfully as an organic fertilizer. But the question of quantity perpetually stumps users.

By Rod Tyler

THE 1990s HAVE been called the decade of the environment. Quite fitting, considering the waste dilemma facing the nation.

Many states have responded by enacting legislation requiring composting of organic residuals. Addi-

tionally, certain regions of rural America are facing increasing pressure to develop disposal methods that reduce non-point pollution like nitrate and phosphate runoff.

Composting is currently a leading choice among many commercial

farmers, municipalities and private companies collecting organic residuals. The final product of composting or other sound organic

residual management options can be successfully used as an organic fertilizer. When this occurs, the most often asked

question is, "How much is enough?"

Manure has been used as an organic source of nutrients for centuries. Compost and organic fertilizers may be the organic source of nutrients for the next century. Yearly applications of biosolid compost have shown increases in soil fertility and organic matter. (Tester, 1990) How realistic is it for landscape contractors to use compost on a yearly basis in various applications? Perhaps an integrated approach is the wave of the industry's future.

Many organic residual management options have spawned numerous products available to the green industry. Many more will become available as other organic residuals are converted to marketable products. Biofermentation and anaerobic digestion are available in pelleted products that may be used in combination with commercial fertilizers.

Compost, on the other hand, does not seem to be readily recognized as a source of fertilizer, yet calculating the total available nutrients in average compost applications provides pleasing results.

The single fertilizer application is being rapidly supplemented with multiple applications and combinations of fertilizer and organic products that satisfy nutritional needs.

URBAN DESTRUCTION? Urban soils (those soils native to the urban environment) are most often disturbed and destroyed by the time they are used by anyone in the green industry. Even soils on the urban fringes often undergo this change when housing developments are constructed and the topsoil is buried under the subsoil excavated from the foundations of homes.

Expecting success from such a poor beginning is being optimistic at best. Adding organic matter helps improve the physical structure of the soil by reducing compaction, increasing drainage, aeration and moisture retention and helping recharge the soil with microbial life.

(continued on page 90)





If the paper boy can hit it, so can we.



Maybe you don't know that a little bit of TEMPO® insecticide can cover a whole lot. We're talking trees, shrubs, bushes, flowers. Even lawns.

The reason is simple. TEMPO uses an advanced technology to give you the flexibility to effectively control both ornamental insect pests and surface insects infesting lawns — including ticks, which can transmit diseases such as Lyme disease.

TEMPO also provides the fast knock-down, and the residual control, you'd expect

from a top insecticide. And TEMPO does it all with 80% less active ingredient than the insecticide you may be using now.

And get this. TEMPO has a low odor. That alone should help you start breathing easier about your next job.

If you'd like to give TEMPO a shot, contact Miles Inc., Specialty Products, Box 4913, Kansas City, MO 64120. (800) 842-8020.



94S30A0009 © 1994 Miles Inc.

USE READER SERVICE #76

MILES 

FERTILIZATION REQUIREMENTS.

The equation is really quite simple. Experts have already performed thousands of research projects to determine the amount of nutrients needed for optimum plant growth for almost all landscape plants. (Look in any plant book to find a reference about ideal fertility conditions.) The hypothesis is this: We know what we need. From soil tests, we can find out what we have. The difference, logically, is what we need to apply.

The summary presented in Table 1 shows example fertilizer recommendations from The Ohio State University for various landscape plants. (See chart below.)

Keep in mind that even the experts get confused when fertility options in the landscape include organic and commercial fertilizers releasing at varying rates. (See Table 3 to identify fertility available from compost additions. The chart is based on fertility calculations of composts and is adapted from research

on composts and manures.)

Here is a sample calculation for a percentage of available nitrogen (Assuming 1 yard = 800 lbs. at 70% dry weight):

$[(yards\ of\ compost\ applied/acre) \times (weight\ of\ compost/yard) \times (\%N) \times (\% \text{ dry weight}) \times (25\% \text{ available})] / 43.56 = lbs.\ of\ N\ available\ per\ 1,000\ square\ feet\ (43.56\ is\ a\ conversion\ factor\ from\ acres\ to\ sq.\ ft.).$ For a half-inch topdressing,

COMPARISONS OF MINERAL SALTS AND COMPOSTS AS FERTILIZERS

MATERIAL	ADVANTAGES	DISADVANTAGES
Mineral Fertilizers	Convenient	May be easily leached
	Lower transport and handling costs	Continuous use may lead to breakdown of soil structure
	Quick crop response	Supply major nutrients only
Composts	Improve soil structure	Dilute nutrient source
	Controls erosion	High transport cost
	Supplies wide range of nutrients	May be difficult to apply evenly
	Hygienic disposal of pathogenic waste	High C/N ratios may rob soil N

Table 2.

Source: Dick and McCoy, 1992

with a 1% N product, the calculation is: 67.5 yards x 800 lbs./yard x 1% N x 70% dry matter x 25% available = 94.5 lbs. N per acre or 2.2 lbs. of N per 1,000 square feet (94.5 lbs. per acre/43.56).

Several challenges exist in calculating fertilizer value properly. Vast differences among N availability in products, confusing yards (volume) and tons (weight), lack of label laws listing fertilizer analysis

with 1 percent N yields: (135 yards x 800 lbs./yard x 1 lb. N/100 lbs. compost x 70% dry matter x 25% availability in year one)/43.56 = 4.33 lbs. N per 1,000 square feet (or 189 lbs. of N/acre).

Understanding these fertilizer calculations from organic matter leads to the next question: "How much fertilizer do I need if I already applied compost? Since not all composts and organic fertilizers react

using 30 percent and 85 percent availability, respectively, per yearly application. Overwhelmingly, nitrogen fertilization seems to be the driving force behind many fertilizer purchases. Since the plants being fertilized cannot possibly use all the fertilizer at once, the delayed availability from organic sources is almost a blessing in disguise.

Consider another example of calculating the fertility of a soil after five seasons of compost applications. At a 1/4-inch application rate for five years, about 55 percent of the nitrogen for the whole five years is available in year five. For a 1 percent nitrogen compost, that calculates to 11.9 pounds of available N per 1,000 square feet (1.25 in. x 135 yds. per acre x 800 lbs./yard x 70% dry matter x 1% N x 55% availability/43.56).

Flowers growing in this soil won't need additional fertilizer and will be easier to keep alive because of the increased moisture-holding capacity of the soil. The only reason they don't burn from the high nitrogen is because the N is slowly available over the entire growing season. These calculations are estimates and field data to validate accuracy are scarce.

An equal level of fertilizer in the form of urea would surely be too much for the plants to handle. The natural slow release of organic N is the key to making compost a safe fertilizer option. Most composts contain most their nitrogen in the organic form. (Fricke, 1993)

ADDED BENEFITS. Organic matter can accumulate over time in temperate climates and increase water holding capacity of a given soil.

(continued on page 94)

Average nutrient needs for optimum plant growth	-	Fertility available in current soil	=	Fertilization application requirements
---	---	-------------------------------------	---	--

and forgetting to calculate values on a dry basis have stumped even the brightest horticulturists at one time or another.

The calculation below takes these factors into account and can be followed in form by substituting appropriate numbers from any compost or organic fertilizer. (Remember some organic fertilizers are 90 percent dry matter.)

A 1-inch application of compost

the same, the answer is not as easy.

However, regarding the above example, few plants require more than 4.33 pounds of nitrogen per 1,000 square feet for the first season (Table 1). From year to year, decreasing amounts of nutrients are released from the organic matter.

The additive effect of yearly compost applications for total nitrogen is shown in Table 3. Available N (percentage available) figures are listed in the boxes, but keep in mind that their availability does not automatically render effectiveness. Theoretically, 100 percent of urea fertilizer is available. On a hot August day, however, just how much of that fertilizer actually gets used by the plant?

Organic fertilizers, on the other hand, are not prone to volatilization like some quick-release commercial fertilizers. Organic N, relying on moisture, microbes and favorable soil conditions for significant release, has extended staying vigor. Once the fertility is "used up," humus remains to further benefit the soil for many years.

Similar results can be calculated for phosphorous and potassium,

FERTILIZER RECOMMENDATIONS

LANDSCAPE PLANT	RANGE OF FERTILIZER APPLICATION NEEDED
Turfgrass	2-6 lbs. of N per 1,000 square feet
Annuals	1.5 lbs. of 5-10-5 per 100 square feet
Perennials	2-4 lbs. of 5-10-5 per 100 square feet
Woody plants (trees and shrubs)	5-6 lbs. of 24-8-16 per 100 square feet
Evergreens (narrowleaf)	4-5 lbs. of 12-4-4 per 100 square feet
Evergreens (broadleaf)	2-3 lbs. of 5-10-5 per 100 square feet (1/3 of N should be from organic form)

Table 1. Source: "Fertilizing landscape and nursery grown crops," OCES, Bulletin 650, July 1989, Dr. Elton Smith

IF YOU CAN'T AFFORD DOWN-TIME,



YOU CAN AFFORD A SCAG.

If you're looking for a new commercial mower, compare durability. Then compare features, cutting performance and serviceability. And after you've done all that, *then* take a look at the price tag.

There's a difference between Scag commercial mowers and the competition. And that difference amounts to simply a day of down-time. A day your business can't afford to lose.

Scag doesn't cut corners on quality. Scag's heavy-duty compo-

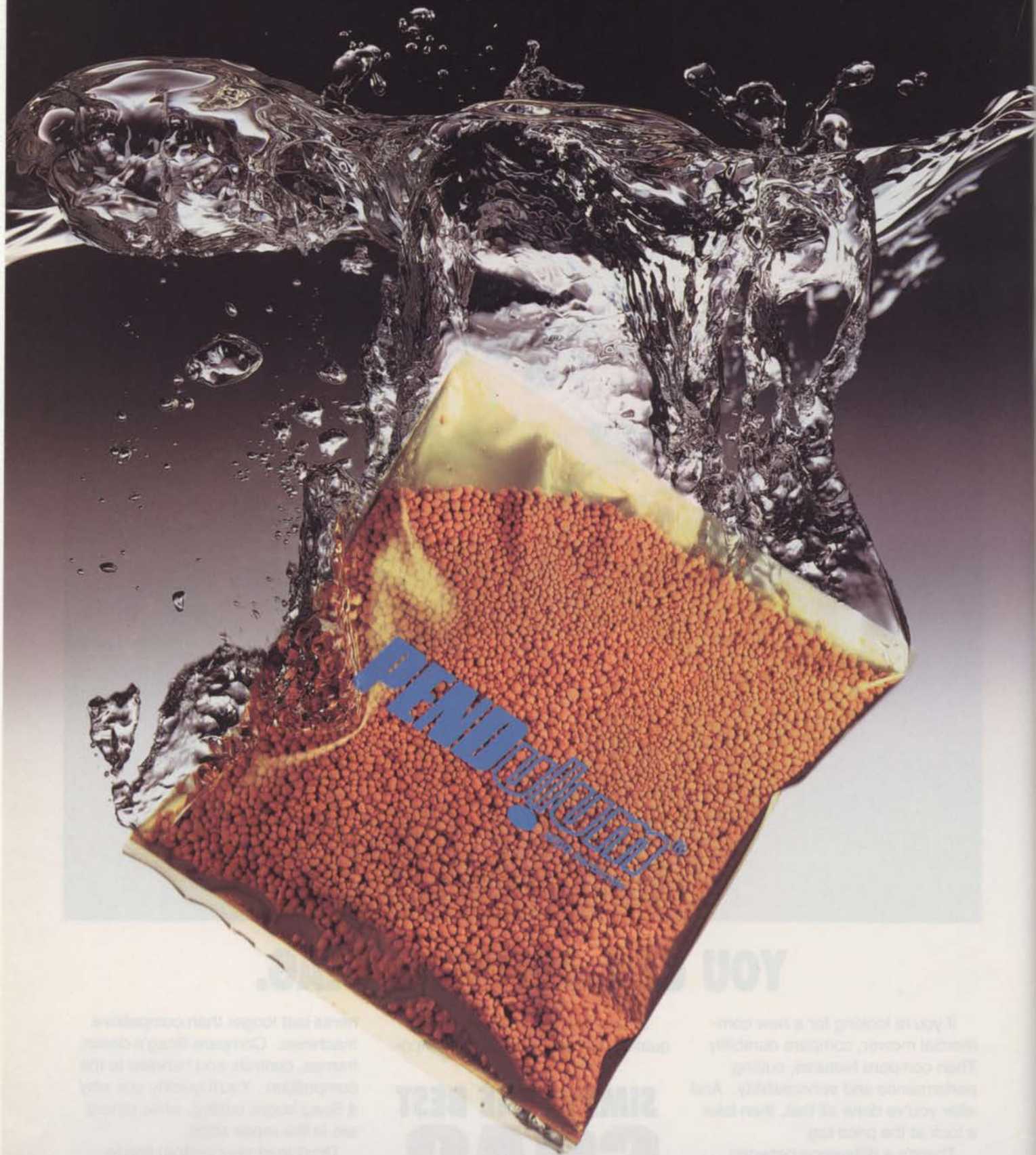
SIMPLY THE BEST
SCAG
POWER EQUIPMENT

DIVISION OF METALCRAFT OF MAYVILLE
1000 Metalcraft Drive, Mayville, WI 53030
© 1993, Scag Power Equipment 94-01

USE READER SERVICE #51

nents last longer than competitive machines. Compare Scag's decks, frames, controls and handles to the competition. You'll quickly see why a Scag keeps cutting, while others are in the repair shop.

Don't trust your bottom line to anyone else. If you can't afford down-time, you *can* afford the trouble-free performance, high productivity, and outstanding profitability of a Scag.



PENNY

YOU

If you're looking for a new com-
fortable, stylish, and durable
shoe, you've come to the right
place. The comfort, style, and
durability of our shoes are
what sets us apart from the
rest. We're a different breed.
Our shoes are made with the
best materials and the most
advanced technology to ensure
they'll last you through every
step of your journey.

Our shoes are made with the
best materials and the most
advanced technology to ensure
they'll last you through every
step of your journey. We're a
different breed. Our shoes are
made with the best materials
and the most advanced
technology to ensure they'll
last you through every step
of your journey.

Control. Convenience. Affordability. All Wrapped Up In One Neat Little Package. Introducing PENDULUM® WDG

Herbicide In New Water-Soluble Bags

PENDULUM® WDG herbicide is the over-the-top preemergent that controls more than 45 annual grasses and broadleaf weeds. At a surprisingly economical cost.

In fact, PENDULUM provides the same level of control as other leading preemergent herbicides, including Surflan¹, but for less money per treated acre. *Without* harming labeled ornamentals.

And thanks to our new pre-measured, water-soluble packages, PENDULUM is easier than ever to use. The bags dissolve entirely, and exposure to your employees is reduced.

Call 1-800-207-6910 to order, or see your distributor.



Agricultural Products Division
Specialty Products Department
Wayne, NJ 07470 ©1994

Always read and follow label directions. ¹Trademark, DowElanco
® Trademark, American Cyanamid Company

PENDulum®

WDG herbicide

Keeps weeds from emerging.

USE READER SERVICE #50

Organic Composting

(continued from page 90)

Five yearly applications of compost increased soil water almost five-fold over control soils receiving commercial fertilizer treatments. Single applications almost doubled available soil water even after five years. (Tester, 1990)

As more and more concern over water conservation becomes apparent, this benefit increases in value. In slightly arid climates where water is scarce or watering bans are in effect, compost can be used more as a long-term water management tool than a soil conditioner.

In warmer climates, additional compost is needed due to the faster decomposition of organic matter. Organic matter generally decomposes slower if incorporated into the soil. (Dick and McCoy, 1992)

Although water is "held" in the soil, i.e., at field capacity, it is not held so tightly that plant roots cannot absorb the moisture. Implications are obvious that survivability is increased in drought situations by the use of compost.

Longer periods between waterings are possible and overall plant vigor is improved. Plant roots in upper soil surfaces have greater moisture availability due to higher organic matter concentrations. However, even soil below actual contact with organic matter is positively affected by increased moisture retention and nutrient exchange. (Dick and McCoy, 1992)

Substantial increases in CEC from compost applications help hold applied nutrients longer, leading to increased fertilizer effectiveness. Compost also releases "soil glues" as it decomposes which form new aggregates.

Most horticultural books list favorable soil conditions under soil fertility, or as a "well drained garden soil that is rich in organic mat-

ter and minerals." (Smith, 1989)

All fertilizer recommendations should begin with a soil test. Due to the seasonal nature of the industry, however, this does not usually occur.

For temperate soils with organic matters below 5 percent, assume that three consecutive, yearly, 1-inch applications of compost could be made without developing complications if the compost is properly mixed into the soil. Soil tests should be consulted prior to the fourth yearly application.

Once a soil reaches an organic content of about 8 percent (by weight), compost applications may be spaced every two or three years.

COMMON QUESTIONS. Below are three interesting situations portraying real-life examples for green industry professionals. The figures expressed are approximations from experience and observation of test results over a number of years.

Q. Should green industry professionals buy topsoil amended with 20 percent compost instead of a cheaper, non-amended soil for a 5,000-square foot project requiring 4 inches of topsoil?

A. Let the figures below be your guide. Assume compost has 1 percent N-P-K and compost weighs 800 lbs. per yard compared to soil at 2,500 lbs. per yard. For this project, 62 yards of soil are needed.

Instead of comparing strictly price, consider the convenience of the fertility in the amended soil. A soil amended with 20 percent compost with an analysis of 1 percent N will be sufficient to support most annual, perennial, tree and shrub growth for the first year without additional fertilizer.

Overfertilization may stunt the root systems because of the high amount of soluble salts. Additionally, these blended soils offer micronutrients contributed by the compost.

Q. How much fertilizer is needed when 1 inch of compost is used as

% AVAILABILITY OF N PER YEAR FOR THREE CONSECUTIVE YEARLY COMPOST APPLICATIONS CONTAINING 1% N EACH

App #	Year				
	1	2	3	4	5
1	25%	10%	10%	5%	5%
2		25%	10%	10%	5%
3			25%	10%	10%
Cumulative Total	25%	35%	45%	25%	20%

Table 3

a soil amendment for annual or perennial bed construction?

A. Generally, none for at least the first year. See figures below.

1 inch compost = (135 yds./acre x 800 lbs./yard x 1% N x 70% dry weight x 25% availability)/43.56 = 4.33 lbs. available N per 1,000 square feet. Most recommendations for annuals and perennials are from 2 to 4 lbs. N per 1,000 square feet.

Because N from compost is not as available in cool weather, contractors may want to consider applying small amounts of quick-release fertilizer at planting. This ensures adequate fertility until warm weather releases latent nutrients in the compost. If fertilizer combinations like this are used, it is wise to have, at minimum, 30 percent of N from each source. (Dick and McCoy, 1992)

Q. How much fertilizer should I add to my turf if I topdress after aeration with 1/8 of an inch of compost in the spring and fall?

A. General recommendations for turf maintenance range from 2 to 6 lbs. of nitrogen per 1,000 square feet depending on turf cultivars and maintenance practices. Consult one of the available guides on turfgrass cultivars and resulting fertilizer needs or contact your local county extension agent. Calculations be-

low should help identify additional fertilizer needs.

1/8-inch compost = (16.9 yards/acre x 800 lbs./yard x 1% N x 70% dry weight x 25% available)/43.56 = 0.54 lb. N per 1,000 square feet.

Since two applications are indicated, total N applied is 2 x 0.54 = 1.08 lbs. N. Assuming that 4 lbs. of N is adequate for average maintenance, an additional 2.91 lbs. of N should be applied in at least two additional applications. (4 lbs. N needed - 1.08 lbs. N available = 2.91 lbs. needed). Since 0.54 lbs. N is probably not sufficient to satisfy N needs for a single application, the contractor may consider doubling the application rate and applying topdressing after aerating in spring or fall. Commercial fertilizer could be used the rest of the year. ■

REFERENCES

- Dick, W. A., and McCoy, E. L., "Enhancing soil fertility by addition of compost." The science and engineering of composting, Renaissance Publications, Worthington, Ohio, pp. 622-642, 1993.
- Fricke, Klaus and Vogtman, Hardy, "Quality of source separated compost," Biocycle, October 1993.
- Smith, E. M., "Fertilizing landscape and field grown nursery grown crops," OCES Bulletin 650, 1989.
- Tester, Cecil F., "Organic amendment effects on physical and chemical properties of a sandy soil," Soil Science Society of America Journal, Vol. 54, May-June 1990.

The author is a Certified Professional Agronomist and free-lance writer based in Medina, Ohio. He is employed by Kurtz Bros. Inc., in Cleveland, Ohio.

LBS. OF AVAILABLE NITROGEN PER 1,000 SQUARE FEET

% nitrogen in compost

APP RATE	YARDS/A	TONS/A	% nitrogen in compost				
			.5%	1.0%	1.5%	2.0%	2.5%
1/8"	16.9	6.8	.27	.54	.81	1.1	1.3
1/4"	33.8	13.5	.54	1.08	1.75	2.2	2.7
1/2"	67.5	27.0	1.1	2.2	3.5	4.4	5.4
1"	135	54.0	2.2	4.4	7.0	8.8	10.9
2"	270	108	4.4	8.8	14.1	17.6	21.8

Table 4

Adapted from Tester, 1990 and Fricke, 1993

PESTICIDES IN THE URBAN ENVIRONMENT

PART 4

The Calibration Rehearsal

Don't let poor preparation hinder the effectiveness of pesticides. Proper calibration, mixing and clean-up will make your crews more professional and your customers more satisfied.

By C. Neal Howell

Ed Note: This is the fourth in an ongoing series on effectively using specialty pesticides in the urban environment.

YOU'VE ALL HEARD the term "jack-of-all-trades." Anyone in charge of a spraying operation for turf or ornamentals must be just that — part chemist, safety engineer, mathematician, horticulturist, salesperson, lawyer, logistician and mechanic.



PESTICIDES IN THE URBAN ENVIRONMENT

All these skills are necessary just to establish an application system, load it and then successfully and profitably oversee its operation.

This spring, take time to review the necessary information in these areas to avoid committing one of the "7 Deadly Sins of Pesticide Spraying."

DEADLY SIN 1. Being in too big a hurry to completely clean, flush and neutralize sprayer and tank.

If your technicians sprayed a broadleaf herbicide yesterday, failure to clean and neutralize the sprayer before applying an insecticide to ornamentals will mean they'll all be dead by 12:01 p.m.

In other words, if a technician accidentally sprays something, that pesticide activity will be in direct proportion to the amount it will cost the company to replace the non-target species.

Rule 1. Always instruct technicians to start with a clean spray rig. Triple rinse the tank every evening. Flush out the pump, lines and nozzles. Use a tank cleaner to remove any residual chemicals or use a dedicated sprayer for any pesticides that cannot be universally applied without damage.

DEADLY SIN 2. Not knowing what was sprayed.

Nothing is worse than having a customer complain about a treatment only to learn no one is sure how much or what product was applied.

Rule 2. Accuracy. Accuracy. Accuracy. Make sure employees read and follow label instructions for accurate measurement.

Always keep a log book. Record all the required information concerning the material sprayed: the target pest; the rate, date and hour of application; air temperature; wind speed and direction; humidity; location; and applicator's name.

Check the equipment log to see that the previous mix is not harmful to your target species.

DEADLY SIN 3. Not calibrating equipment.

The only thing worse than finishing the day with too much product is running out of the mix halfway through the route. Not only is it inconvenient to return to the base for more product or to determine what to do with leftover product, think about what carelessness can do to efficacy.

How effective will pesticides be if they're applied too lightly? How much damage is caused to turf, ornamentals and the environment from pouring on too much of a good thing?

Rule 3. Calibrate the equipment regularly. Recalibrate if the operator or any other component in the spraying system changes.

Remember factors affecting spraying accuracy:

1. *Ground speed.* It's important to maintain a constant speed on the straightaway as well as up and down hills. Speed and application rates are inversely proportional, i.e., doubling the ground speed from 1 to 2 mph reduces the application rate by 50 percent. Encourage them to maintain a constant rate of speed.

Since ground speed is extremely important, a quick reference course should be established so each applicator can be checked against it. Find an area of typical terrain and measure off a course of 100 feet for foot applicators. Use a stopwatch to time individuals on the course. Use the formula in the next column to calculate speed in miles per hour.

2. *Nozzle selection or spray width.* It takes considerable practice to produce a uniform spray pattern width. Most applicators try for a flat figure eight motion to avoid skips and doubles.

Have applicators practice spraying water on a paved or dirt surface until they achieve a uniform width. Measure the width for future reference and to help applicators set pass widths.



Before a pesticide ever reaches the thatch layer of turf, it's important to properly calibrate and mix the product or products to be applied. Illustration: Rhone-Poulenc

$$\text{SPEED (MPH)} = \frac{\text{distance (feet)} \times 60}{\text{time (seconds)} \times 88}$$

Example:

Distance = 100 feet

Elapsed time = 34 seconds

$$\frac{100 \text{ ft.} \times 60}{34 \text{ sec.} \times 88} = \frac{6,000}{2,992} = 2.00 \text{ mph}$$

$$= 2.00 \text{ mph}$$

3. *Pressure at nozzle.* Nozzles are rated at x number of gallons of water per 1,000 square feet or gallons per acre at a given pressure. A pressure gauge at the nozzle can ensure that the system is capable of delivering the required amount at the gun.

Another quick pressure test is to measure the amount of liquid pumped through the gun in one minute or some appropriate fraction of a minute. For example, if the nozzle is rated at 4 gallons per minute and it pumps a measured 1 gallon in 15 seconds, your pressure is right on target.

4. *Weight of the solution.* All nozzles are rated with water. If applying a fertilizer/pesticide solution, recompute the weight and application rate.

For example, if the solution has a high fertilizer/pesticide content, it could weigh 9 pounds per gallon. Measure out exactly 1 gallon of the final solution and weigh it. Or, purchase a hydrometer and measure the specific gravity. A solution weighing 9 pounds per gallon has a conversion factor of 0.96. (See chart above.)

If a technician is set to spray 4 gallons per 1,000 square feet, he'll really only be spraying 3.84 gallons with that nozzle at that product weight. Check the weight before spraying.

A slightly higher spray pressure may be

Conversion Factor for High Specific Gravity Liquids

Weight of Solution	Specific Gravity	Conversion
Factor		
8.34 lbs./gal. (water)	1.00	1.00
9.00 lbs./gal.	1.08	0.96
9.50 lbs./gal.	1.14	0.93
10.00 lbs./gal.	1.20	0.90
10.50 lbs./gal.	1.26	0.87
11.00 lbs./gal.	1.32	0.85

needed to compensate for the heavier product. A quick time/volume measurement can confirm the delivery rate. (See #3 above.)

FIELD CALIBRATION. Having checked all of the traditional factors, begin calibrating.

1. Mark off a known distance. Try to use a paved area adjacent to a typical terrain about 75 to 100 feet long.
2. On a level surface, fill the spray tank with water only, or mark the water level on the sight gauge.
3. Start the pump and adjust the regulator to achieve the desired "at gun" pressure.
4. Start the measured course on typical grassy terrain and maintain an even speed throughout the walk. Using the pavement will also help gain practice in establishing swath width. Make sure that the actual timed events are from typical terrain and not from a paved or dirt area.
5. Repeat step 4 several times, counting trips.
6. Determine how much water is needed to refill the tank to the original level.

The data is now available to work out the application rate. (Use the formula on the next page.)

If the amount of water sprayed was slightly more or less, make minor adjustments at the regulator by decreasing or increasing the pressure. To make major adjustments, change the walking speed or the size of the nozzle.

CALIBRATION OF BACKPACK SPRAYERS.

In calibrating a backpack sprayer a uniform walk-



PESTICIDES IN THE URBAN ENVIRONMENT

ing speed is vital. Use either a flat-fan spray nozzle at a uniform height or use a nozzle that allows a sweeping, overlapping motion. Calibration:

$$\frac{\text{Swath Width in Feet x Length of Course in Feet x \# of passes}}{43.56} = \text{Sq. Ft.}$$

For example, if the swath width is 6 feet, the course length is 100 feet and the number of passes is 3, the equation is:

$$6 \times 100 \times 3 = \frac{1,800}{43.56} = 41.32 \text{ (1,000)} \text{ square feet}$$

If the rate was three gallons per thousand, the applicator should have used: $41.32 \times 3 = 123.96$ or approximately 124 gallons of water.

1. Measure an exact 1,000 square foot area. (Example: 50 feet x 20 feet)

2. Pour a measured amount of water into the sprayer. (Example: 3 gallons)

3. Spray the measured area.

4. After spraying the area, measure the amount of water used. The amount used is the rate per 1,000 square feet.

5. If the sprayer is opaque and the water level is difficult to see, measure the amount of water required to fill the sprayer to the original level. This is the rate per thousand.

Example: If you originally put 3 gallons of water in the sprayer and it took 1 1/2 gallons of water to re-fill the sprayer to the original level then the application rate is 1 1/2 gallons per 1,000 square feet.

DEADLY SIN 4. Dumping extras down the drain.

Maybe some applicators or owners might have done such things in the past, but not any more. Such disposal does not make good environmental, legal or economic sense. Don't just use up the material with double or triple applications on the last couple of properties or passes, either. Store the excess material in a clean, clearly marked container and use it with the next tank of the same material.

Dig Into Your Next Project With Feldmann.

THE BEST...Next to Mother Earth™

TURFVENT™

Pull-behind core plug aeration equipment

BADGER™

Portable powered earth augers

FOR MORE INFORMATION, CONTACT:

Feldmann Engineering & Manufacturing Co., Inc.
DEPT. LNL-03T, P.O. BOX 908, SHEBOYGAN FALLS, WI 53085-0908
CALL (800) 344-0712, EXT. 620

USE READER SERVICE #62



**Creative
Curb marketing**
Permanent Landscape Borders

Create
Beautiful
Concrete Borders
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

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

USE READER SERVICE #61

Rule 4. Forecast accurately. Try to accurately forecast the spray jobs so that the tank will contain just enough mix to do the jobs and no more.

DEADLY SIN 5. Incompatible tank mixes.

Rule 5. Check the compatibility of the ingredients in your tank mixes by doing a jar test. Remember, there are several products on the market today which, if mixed together in a sprayer, will assure that someone spends the next week chipping a cement-like mass out of the sprayer. Play it safe and do a jar test.

Read the labels first. Check for pH recommendations and make certain that all products fall within the optimal pH ranges. Do the labels preclude mixing with any other pesticide or fertilizer compound? If not, proceed with the jar test. You'll need the following items:

- Quart jar with lid
- Teaspoon measuring device
- Water or fertilizer solution
- Pesticides to be checked for compatibility

Follow the instructions on the label for this test, if they are available. If not, carefully measure out the proportionate amounts.

1. Put one pint of water or liquid fertilizer solution in the quart jar.

2. Check the pH of the water or water/fertilizer mixture using a pH meter or litmus paper. If the pH is 7.0 or above, adjust by adding liquid iron, vinegar or a buffering agent to adjust the pH to between 5 and 6.9 for most pesticides.

3. Following label rates, add the proportionate amount of pesticide.

Add to the mixture in the following order: liquid iron, vinegar or buffering compound; wettable powders; dry flowables; liquid flowables; emulsifiable concentrates; soluble liquids; and dry fertilizers.

4. Cover with lid. Shake gently, 10-15 seconds.

5. Let the jar stand for approximately 5 minutes. Observe the jar for any layering, gels, flakes, sludge or other abnormalities

6. If layering occurs but, after sitting for about 30 minutes, mixes readily with gentle shaking, the mix can be used in a sprayer with adequate agitation.

7. If other abnormalities occur, do not tank mix these products.

(continued on page 135)

HD8 Industrial Grinder

Manufactured by Haybuster



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

**EASILY LOADED
WITH A SKID STEER LOADER**

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

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

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

HAYBUSTER
Manufacturing, Inc.

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

■ The HD8 is completely portable and self-contained. It is easily pulled with a three-quarter ton pickup.

■ The HD8 features a variety of screen sizes to provide the desired size of end product. A heavy-duty 26" long cylinder with 3/4 inch A.B. hardened hammers easily processes yard waste, pallets, wood chips, bark and other demolition lumber into a compact, consistently-sized end product.

■ The HD8 has clearance and directional lights as standard equipment.

■ The tub can be loaded with any skid steer loader and the end product is delivered on a conveyor which is 8' 2" long and 24" wide.

■ The HD8 is powered by 110 hp diesel engine. An electro-hydraulic sensing governor maximizes grinding efficiency and prevents clogging.

■ Wide, 8 ft. tub makes it easy to feed tree limbs and pallets.

■ Ten and twelve-foot diameter models also available.

JUST AD



Roundup
Water Soluble Granule
Herbicide by **Monsanto**
DRYpak

ROUNDUP WATER

Same great weed control of Roundup®, now in premeasured packs.

Introducing Roundup® Dry Pak — a water-soluble granular formulation in premeasured packs (25 per box). These handy little packs are convenient to store, ration out, carry and use. Just pour in one pack for each finished gallon of spray solution you want, then fill with water.

Roundup Dry Pak measures faster, easier and with more accuracy than liquid herbicides — saving you time and reducing waste. It also eliminates the mess of measuring liquid herbicides. As a result, Dry Pak poses less risk of exposure. If any of the granules would spill, they're simple to clean up.

So if you thought regular Roundup gave you great peace of mind, just wait until you try Roundup Dry Pak. It provides the beautiful results and environmental profile that made Roundup the most trusted herbicide in

the world. Plus, it's packed with a lot of extra benefits, just for good measure.

To find out how Roundup Dry Pak can add convenience to your program, call 1-800-332-3111.



ALWAYS READ AND FOLLOW LABEL DIRECTIONS FOR ROUNDUP DRY PAK.

Roundup® is a registered trademark of Monsanto Company.
© Monsanto Company 1994
IND-47084 1/94



USE READER SERVICE #31

Estimating Strategies

That Work

Today's landscape

*contractors are more likely to err
by omission than by miscalculation.*

*A typical mistake is forgetting to
factor in hidden costs such as
overhead and indirect costs.*

By Julie A. Evans

ESTIMATING AND BIDDING continue to prove troublesome for landscape contractors, in part because the industry is still in its infancy, said consultant Charles Vander Kooi of Littleton, Colo.

"Thirty years ago, there were no landscape contractors. There were just nurserymen. And because landscape contractors were new on the scene, they were fairly unsophisticated in their estimating techniques."

But Vander Kooi said he's seen a great improvement over the last decade, a development which has helped to weed out unskilled or incompetent contractors.

"About 10 years ago, I predicted that there would be fewer landscape contractors. The sophisticated ones would get better at estimating and bidding, and drive the less sophisticated ones out of business. That's happened. The number of firms is coming down, and not just because of the economy," he said.

Still, Vander Kooi sees many firms, large and small, repeatedly making the same mistakes. Two gaffes in particular stand out: Contractors either use some "secret formula" to derive a multiplier or percentage for computing costs; or they use unit price estimating and apply a standard price to all jobs, even though each job differs dramatically.

"If you use one of those methodologies and go against someone who's sophisticated, you're going to be stuck with only those jobs where you lose money," he said.

Costs are costs, Vander Kooi added. When you lie to yourself about costs or devise some secret

formula based on sketchy speculation, you may get the job, but you run the risk of losing a great deal of money. A bad job can cost one to three years in company growth. No job, he said, is worth the gamble.

Industry consultant Frank Ross

of Ross-Payne & Associates, Des Plaines, Ill., agreed that knowing costs is the key. According to Ross, the biggest obstacle impeding many contractors is that they simply don't know how much it costs to run their business.

"This is one of those incredible ironies in the construction industry because you would think people who are in business for themselves would know how much material and labor a job is going to cost them."

The biggest headaches, Ross said, are caused by not knowing how much overhead to add into a job or how to manage a profit out of the job. "There's the real killer. We know our out-of-pocket, but we don't know how to supply the support costs to ensure the profit."

According to Ross, knowing costs is invaluable not only for the initial bidding stage, but also for ensuing negotiations. He gave the hypothetical example of a client who calls up the contractor and tells him he's 10 percent higher than the competition — would he go back over his numbers and try again?

"So I go back and make a value decision. But the good news is, I have all my cards on the table. I know my break-even point. I know my costs. This client has told me I'm 10 percent high. Do I want to take the job or not? There are a plethora of considerations, but no longer am I flying financially blind."

ONE APPROACH. Ross said he's amazed by how many landscape business owners don't know how to read a financial statement. "If I were to make a checklist of tools before I went into a competitive bid situation, the first thing I'd want to do is be able to read a fi-

PLANT COSTS

TO DETERMINE landscape plant material needs, contractors need to answer: How many, what size, type, variety and shape are needed. Precision is crucial because all calculations that follow will depend on this survey of material quantity.

In competitive bidding, it's important to check the landscape architect's list of materials against the actual landscape plans. After the quantity survey is complete, the material can be priced.

Prior to submitting the bid, the landscape bidder should obtain firm prices from suppliers. All plant material should be priced including freight to your yard or the landscape site. This allows for the fair comparison of costs of materials from a variety of sources. — "Competitive Landscape Bidding," National Landscape Association

INCOME STATEMENT CHART OF ACCOUNTS

Account Number	Account Number
INCOME	
3000	Earned Revenue
2900	Returns and Allowances
DIRECT COSTS	
4000	Plant Material
4100	Hard Material
4200	Material Taxes
4300	Direct Labor
4400	Direct Labor Burden
4500	Casual Labor
4600	Equipment Applied
4650	Equipment Rental
4700	Subcontracts
4900	Other Direct Costs
OVERHEAD EXPENSES	
INDIRECT EXPENSE	
5000	Bad Debt Expense
5050	Bidding Expense
5100	Job Mileage and Tolls
5200	Indirect Labor
5250	Replacement Labor
5270	Supervision Labor
5290	Premium Compensation
5300	Labor Burden
5400	Replacement Material
5500	Safety Expense
5600	Self-Insurance Expense
5700	Small Tools and Supplies
5750	Trash Removal
5800	Uniform Expense
EQUIPMENT & TRUCKING EXPENSE	
6000	Depreciation
6100	Equipment Rental
6150	Fuel and Oil
6180	Insurance-Equipment
6190	Insurance-Vehicles
6200	Lease Expense
6250	Licenses and Fees
6300	Mechanics' Wages
6350	Mechanics' Burden
6400	Outside Repairs
6500	Parts Expense
6600	Shop Maintenance
6650	Shop Tools and Supplies
6700	Tire Expense
6990	Equipment Applied to Jobs
MATERIAL HANDLING EXPENSE	
7000	Freight on Materials
7100	Inventory Spoilage
7150	Inventory Variation
7200	Source Stockpiling
7250	Inventory Supplies
7280	Travel-Buying
7300	Utilities
7320	Warehouse Maintenance
MATERIAL HANDLING (cont.)	
7360	Yard Maintenance
7400	Delivery Wages
7410	Digging Wages
7420	Inventory Wages
7430	Purchasing Wages
7440	Warehouse Wages
7450	Yard Wages
7490	Labor Burden
ADMINISTRATIVE EXPENSE	
8000	Advertising
8050	Amortization Expense
8100	Communications
8180	Contributions
8190	Conventions and Meetings
8200	Date Processing Expenses
8210	Date Processing Supplies
8250	Depreciation
8300	Dues and Subscriptions
8350	Employee Training
8380	Entertainment and Meals
8390	Facility Maintenance
8400	Insurance-Business
8450	Insurance-Employee Benefit
8500	Interest Expense
8600	Mileage and Tolls
8620	Office Expense
8640	Pension Expense
8660	Photography Expense
8680	Postage and Delivery
8700	Professional Fees
8720	Rent
8800	Salaries-Management
8820	Salaries-Office
8840	Salaries-Sales
8890	Salary Burden
8900	Special Events
8920	Taxes-Business and Property
8960	Travel Expense
8980	Utilities
OTHER INCOME	
9000	Bad Debt Recovery
9050	Discounts
9100	Gain on Sale of Fixed Assets
9200	Gain on Sales of Investments
9300	Interest Income
9400	Insurance Recovery
9450	Rental Income
9490	Miscellaneous Income
OTHER EXPENSE	
9500	Insurance Claims
9520	Insurance Audit
9550	Prior Period Adjustments
9600	Income Tax-City
9700	Income Tax-State
9800	Income Tax-Federal
9900	Income Tax-Other

financial statement," he said.

The next item on Ross's checklist is a chart of accounts, or a listing of all the categories of accounts in any given accounting system. According to Ross, contractors need to build their chart of accounts around their estimating system, rather than for accounting purposes only.

The goal in using the chart of accounts (right) is to distinguish between the two categories of expenses, direct costs and overhead, so jobs can be marked up accurately. "If I've got a chart of accounts that breaks my expenses into those two categories, then I can create a method to recover that overhead as a percentage somehow of direct costs," he said.

The third item Ross recommended is an estimating system that is highly disciplined and uses the same definition of costs from job to job. The fourth checklist item is a budget for the coming year. The purpose of the budget is to anticipate how dollars will be spent during the time put in on any job.

"If I'm going to price accurately, I need a resource that tells me how I'm intending to spend money when the job is performed," he said.

Ross discourages using last year's financial statement as the basis for next year's budget. "I've

never seen any company duplicate financial performance two years in succession," he explained.

The fifth and final item on the

checklist is a recovery method to recoup overhead as a function of what is being sold. The recovery method depends on the type of

work being performed, Ross said.

"For example, if I'm in lawn maintenance, I'm labor intensive and equipment intensive. I would want to recover overhead as a percentage of labor, because I'm selling a service," Ross explained.

"If I'm a landscape contractor, I'm selling labor and material, so it stands to reason that if I'm going to create the most accurate bid, then I want to create a mark-up for labor and a mark-up for material costs."

ALTERNATIVE APPROACH. In his book, "Estimating and Management Principles for Landscape Contractors," Vander Kooi said there are four basic benefits of a good estimating strategy. It will:

- Provide confidence in knowing that every dollar spent is going to come back through estimates and bids.

- Help compensate for the variables that exist from job to job.

- Help control job costs after a contract is signed.

- Enable you to make sound business/financial decisions now and in the future.

Vander Kooi divides his estimating strategy into three major components: producing the product, general conditions and the "ding-dong factor."

The first component, producing the product, includes the materials, labor, equipment and subcontractors that are required to build or

produce the final product.

MATERIAL costs are actual costs, not retail or prediscout prices.

LABOR costs are based on how many hours it will take a predetermined crew to do the job, multiplied by actual wages, plus any overtime and a "fudge factor" to account for unforeseen extra hours of labor.

EQUIPMENT costs are based on the number of hours that equipment will be on the job, multiplied by its costs. Estimating the costs of equipment has always posed a great problem in construction, according to Vander Kooi.

A more reasonable approach, he said, is to estimate equipment costs on a job by job basis, but to also include any equipment used for overhead purposes, such as the estimator's car, into overhead.

SUBCONTRACTORS are the actual price that they give a contrac-

tor for their portion of the work.

The second component, general conditions, is the job overhead. This includes items that are not a part of producing the product, and are not

a part of the general administrative overhead. A contractor should estimate them as part of each particular job cost, Vander Kooi said.

Like the "produce the product"

component, the category of general conditions has material, labor, equipment and subcontractor costs. Mark-ups include any taxes on materials and the labor burden on labor. A profit percentage is then added to the total of all the aforementioned costs.

The third compartment is the "Ding-Dong Factor." This is used when you need to add money because of a bad architect, owner, developer or situation.

LANDSCAPERS' VIEWS.

Doug Austreim, owner of Austreim Landscaping in Flandreau, S.D., said he follows the estimating philosophy of Charles Vander Kooi with good results. For any new bid situation, Austreim estimates the cost

of all labor, equipment, materials and overhead. Then he adds in profit, which varies from job to job depending on site conditions, loca-

(continued on page 108)

PRODUCE THE PRODUCT

MATERIAL (at actual cost)	LABOR (production hrs. times avg. wage)	EQUIPMENT (production hrs. times cost)	SUBS (at cost)
------------------------------	--	---	-------------------

GENERAL CONDITIONS

MATERIAL (same as above in every category)	LABOR	EQUIPMENT	SUBS
---	-------	-----------	------

MARK-UPS

TAX ON MATERIAL TOTAL	LABOR BURDEN ON LABOR TOTAL
--------------------------	--------------------------------

OVERHEAD PERCENTAGES ON EACH TOTAL AFTER ADDING TAX & LABOR BURDEN

MATERIAL OVERHEAD%	LABOR OVERHEAD%	EQUIPMENT OVERHEAD%	SUBS OVERHEAD%
-----------------------	--------------------	------------------------	-------------------

PROFIT PERCENTAGE ADDED TO THE TOTAL OF ABOVE FIGURES

Ding Dong Factor added if it applies.

HANDY RAMP ENDGATE PRODUCTS

- Install in seconds on full size 1/2 ton and 1 ton pickups using the same latching system — no assembly of ramp required.
- Holds 2,000 lbs., yet weighs only 130 lbs. Center leg prevents ramp from collapsing and secures safe loading.
- Load core aerators, large deck mowers, ATV's and power equipment without using planks that can slip.

Work truck accessories and specialty products include:

- Truck Bed Extenders
- Hide-Away Ramps
- Truck Bed Guards and more

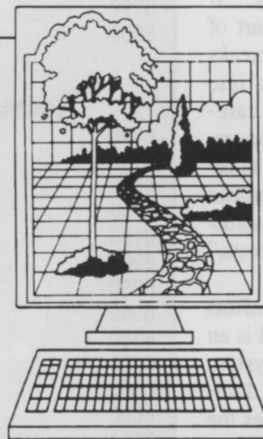
Creative Automotive Products Inc.

435 Wilson St. N.E.
Minneapolis, MN 55413
(612) 331-8600



Call today for our
1994 Endgate Product
Line catalog.

USE READER SERVICE #77



Control At Your Fingertips

Powerful Doane system computer software helps you manage your landscaping business.

- Detailed job costing
- Produces fast, accurate bids
- Prints itemized work orders
- Scheduling/Routing
- Recurring and AIA billing
- Fully integrated accounting
- Prints financial reports
- Tracks inventory and equipment
- Free brochure

1-800-367-7082

Doane Agricultural Services Co.
4900 Griffith Dr. #125
Beaverton, OR 97005
(503)646-5581



USE READER SERVICE #75



As a lawn maintenance pro, you can't afford to see it

from the smallest trimmer to the largest chain saw, is built

What's it all mean to you? Crews that are more productive. Equipment that costs less to own. And a business that's better able to deal with little things like taxes and payroll. So when you're ready to take a break from looking at grass, go see the fastest-growing

Most people see grass. You see taxes, the rent, and next week's payroll.

any other way. Sure, you appreciate a pretty yard. But it's a good bet you appreciate a healthy



for commercial use. Our equipment is light. Powerful. Refreshingly easy to use. And designed,

line of professional equipment in the industry. Visit your local Shindaiwa dealer.

business even more. So let us suggest a way to win on both fronts: Shindaiwa. We offer a complete line of hand-held power equipment. Every model,

bolt to bolt, to shrug off the harshest treatment. If you ever do need service, you're backed by a national network of independent dealers.



shindaiwa
WE SIMPLY MAKE THEM BETTER

AGRI-BUSINESS GROUP AMERICAN ASSN. OF NURSERYMEN AMERICAN CYANAMID CO.
THE ANDERSONS ARBOR AGE BASF CORP. BECKER-UNDERWOOD, INC. BECKMANN TURF &
IRRIGATION SUPPLY, INC. C&P PRESS CANNON TURF SUPPLY, INC. CIBA-GEIGY CORP.
DOWELANCO CO. DUPONT AGRICULTURAL PRODUCTS ESTES, INC. FMC CORP. GOLF
COURSE NEWS GREENHOUSE GROWER GROUNDS MAINTENANCE HELENA CHEMICAL CO.
HOECHST-ROUSSEL AGRI-VET CO. HOWARD JOHNSON'S ENTERPRISES ICI AMERICAS, INC.
INDEPENDENT TURF & ORNAMENTAL DISTRIBUTORS ASSN. ISK BIOTECH CORP. J. MOLLEMA &
SON, INC. KNOX FERTILIZER CO. KOOS, INC. LANDSCAPE & IRRIGATION LANDSCAPE
MANAGEMENT LAWN & GOLF SUPPLY CO., INC. LAWN & LANDSCAPE MAINTENANCE LEA'S GREEN
MEADOWS, INC. LEBANON CHEMICAL CORP. LESCO, INC. MILES INC. MONSANTO
AGRICULTURAL CO. MOUNTAIN LAKE VEGETATION MANAGEMENT COUNCIL, INC. NATIONAL
CHRISTMAS TREE ASSN. NATIONAL PEST CONTROL ASSN. NATIONAL ROADSIDE VEGETATION
MANAGEMENT ASSN. NICHIMEN AMERICA, INC. NOR-AM CHEMICAL CO. OLYMPIC CHEMICAL CO., INC.
PARKER FERTILIZER/PURCELL INDUSTRIES PBI/GORDON CORP. PEST CONTROL TECHNOLOGY
PEST CONTROL PROFESSIONAL LAWN CARE ASSN. OF AMERICA RHONE-POULENC AG CO.
RIVERDALE CHEMICAL CO. ROHM AND HAAS CO. ROYAL LAWNS OF MONMOUTH, INC. SANDOZ
CROP PROTECTION THE SCOTTS CO. SOCIETY OF AMERICAN FLORISTS SPORTSTURF
SPRAYING SYSTEMS CO. TERRA INTERNATIONAL, INC. TURF & NURSERY SUPPLY, INC. TURF
GRASS, INC. TURF PRODUCTS LTD., INC. TURF SPECIALTIES CORP. TYLER ENTERPRISES, INC.
U.S. GARDEN SALES, INC. UNIROYAL CHEMICAL CO., INC. UNITED HORTICULTURAL SUPPLY
UNITED PRODUCT FORMULATORS & DISTRIBUTORS ASSN. VALENT U.S.A. VIGORO
INDUSTRIES, INC. WEST VA. VEGETATION MANAGEMENT ASSN. WILBUR-ELLIS CO. ZOECON CORP.

A UNIFIED INDUSTRY WORKING TOWARD A COMMON GOAL

Nearly every key issue affecting one part of the Specialty Pesticide Industry affects the entire industry.



RISE (Responsible Industry for a Sound Environment) is bringing industry leaders together to identify critical public issues and legislation, and address them as a unified body.

We're proud of our industry's commitment to enhancing and preserving the environment. And we're committed to educating policymakers and the public about the environmental, health and safety benefits of proper pesticide use.



A wide variety of companies and organizations are already members of RISE, and have contributed to successes like we enjoyed recently in



Missoula, Montana, which demonstrates the industry is able to work constructively with local government bodies.

If you're a manufacturer, formulator, distributor, supplier or association involved with the use of specialty pesticides, we invite you to join RISE and participate in our future successes.

For more information, call RISE at (202) 872-3860, or write to 1155 15th St. N.W., Suite 900, Washington, D.C. 20005.



Strategies That Work

(continued from page 104)

tion and other variables.

Finally, Austreim decides whether to add in what Vander Kooi calls the "ding-dong factor."

To demonstrate the importance of bidding based on costs, Austreim cited a local competitor with whom he sometimes competes on bids. The competitor bases his bids on square feet — a dangerous tactic, Austreim said.

"On a small job, where it's a limited number of square feet but a lot of material, he will beat us on the bid. But if it's a larger area where the amount of material is lower, we'll beat him. The

reason? He's bidding on square foot, whereas we're bidding off of actual costs," Austreim explained.

The danger of his competitor's approach, Austreim said, is that when the competitor lands the job based on square feet pricing, his profit is sometimes small to none if plant and labor costs are high.

"You have to know item for item how much a job is going to cost you. When you use some magic formula, you're heading for trouble," Austreim said.

Gary Martin, a designer for Ireland-Gannon Associates in East Norwich, N.Y., said that the most dangerous way he's seen contractors ap-

proach an estimate is unit pricing or ratio. "It rarely works. One job might make a killing and another you could lose your shirt. We've gotten completely away from that," he said.

According to Martin, landscape contractors today are more likely to err by omission than by miscalculation. A typical mistake is forgetting to factor in hidden costs. "Most people get their raw materials and raw labor right, but lose on their overhead and indirect costs."

His company uses a series of estimating forms that covers site conditions, plant removal and transplantation, debris disposal, demolition and topsoil replacement.

"Our estimating form is preprinted with standard items, which helps to trigger things you might have forgotten about. When you're going through the format, it compels you to fill something in or cross something off."

After worksheets have been filled out manually, facts and figures are keyed into a computer. Especially helpful, Martin said, is the computer's ability to compute plant costs, including initial plant cost, freight or sales taxes and average labor required to handle a particular plant.

After the estimate is printed, the company considers the scope of the job, any risks involved and its degree of difficulty. Two or three people always review the estimate. "so if you're looking at it one way, someone else may come up with a different perspective," Martin explained.

Computers have also been a helpful tool for Scarff's Landscaping in New Carlisle, Ohio. According to landscape division manager Treva Jenkins, an estimating program for the computer lends accuracy to the company's estimating strategy. But the company is careful not to rely too heavily on the computer alone.

"A computer does a lot to shorten the time frame and can lend a tremendous amount of accuracy, but the data you input is only as good as we are at arriving at it," she said. ■

The author is a Contributing Editor to *Lawn & Landscape Maintenance* magazine.

Talk about fast turnaround



Nothing can turn a difficult situation around quicker than the Steiner 202 Zero Turning Mower. Not only does it run rings around normal mowers, the 202 floats over uneven terrain with a unique mower deck that flexes and moves for an even, clean cut. And no mower is easier to

operate. Twin hydrostatic controls provide a steady ride and smooth power transfer from the dependable 16 hp engine, while a single park lever and cutting height handle allow for fast adjustments. For easy handling and a quality cut, turn to Steiner.

STEINER

STEINER TURF EQUIPMENT, INC.

289 N. Kurzen Rd. • P.O. Box 504 • Dalton, OH 44618 • Phone: 216/828-0200

Mfg. in Dalton, OH

FOR MORE INFORMATION...

SEVERAL PUBLICATIONS are available to help landscape contractors learn more about estimating, pricing and bidding. They include:

"Estimating and Management Principles for Landscape Contractors," by Charles Vander Kooi. Contact: Vander Kooi & Associates, Box 621759, Littleton, CO 80162; 303/697-6467.

Competitive Landscape Bidding, prepared by Roy Mecklenburg. Contact: The National Landscape Association, 1250 I Street N.W., Suite 500, Washington, DC 20005; 202/789-2900.

"Pricing for the Green Industry," by Frank Ross. Contact ALCA, 12200 Sunrise Valley Drive, Suite 150, Reston, VA 22091; 703/620-6363.

USE READER SERVICE #81

Always read and follow label directions.
Curalan is a trademark of BASF Corporation.
© 1993 BASF Corporation JJ8930 CR 4 006



With Curalan, Long Lasting Control Is Par For The Course.

Finally, there's a turf treatment that works as hard as you do to keep your golf course looking its best. It's Curalan™ fungicide. With Curalan you can control eight tough turf diseases including brown patch, dollar spot, leaf spot, Fusarium patch and snow molds three to four times longer than other fungicides – up to 28 days.

And that's not all. Curalan's long lasting control is specifically designed to work on any kind of turf, at any stage of its growth, as a preventive or curative treatment.

So, whether you want to keep spots, patches or molds from invading your turf, or you need to clear up an existing problem with brown patch or dollar spot, a

treatment with Curalan can do it. This year, go for a new course record in disease control. Call 1-800-878-8060.

**Simple Solutions To
Complex Problems**

BASF

On Site *with HPV*

A Versatile New Valve

New Low Current Solenoid Option

Allows more valves per station with longer wire runs, smaller wire sizes.

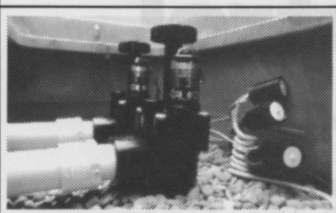
Internal Downstream Manual Bleed

Keeps valve box dry.

Double Bead Diaphragm Design

Prevents leaks and ensures longer life.

It's a Dynamo in the Dirt



Now you can build a high performance Hunter irrigation system using our reliable gear-driven rotors and the tough new HPV.

It's the most versatile 1" valve you'll find for residential and light commercial sites.

A new porting system handles the dirtiest water conditions and an optional flow control makes it easy to adjust zone pressure.

You'll also find the HPV simplifies installation. Captive solenoid plunger, bonnet screws and diaphragm assembly mean no more lost parts.

Use the HPV on your toughest sites. It's built to last!

Low-Flow Capability

Ideal for drip.

For Residential and Light Commercial

Two-Year Warranty



The Hunter full-line of irrigation products includes spray heads, rotors, valves and controllers.

Hunter® Dedicated To The Irrigation Professional

1940 Diamond St. □ San Marcos, CA 92069 □ U.S.A. □ 1-619-744-5240 □ FAX: 1-619-744-7461





IRRIGATION
TRAINING SERIES

EVALUATING EXISTING SYSTEMS

Systems more than 12 years old may be due for an evaluation. A review now may provide the opportunity to implement new equipment resulting in valuable cost savings.

By Larry Keesen

GOVERNMENT REGULATIONS, water conservation ethics and the continually increasing cost of water has spurred the landscape and irrigation industry to find creative and effective ways to save water.

The results are impressive. Improved irrigation design methods and more efficient equipment have created irrigation systems which are easier to maintain and use less water than older systems.

Still, increasing water costs are forcing owners to find ways to reduce water use. The highest water cost we have seen is \$5.82 per 1,000 or "M" gallons (\$4.35 per 100 cubic feet). Many cities across the United States have rates that exceed \$3 per M gallons. In many areas, the annual cost of water with an efficient system can easily exceed \$2,500 per acre, and \$5,000 to \$10,000 per acre if the system is poorly designed or maintained.

WHAT'S AN EVALUATION?

A system evaluation is a means of identifying the safety, life span, operating cost and efficiency of an irrigation system and preparing recommendations with cost estimates for renovation or replacement.

It includes an audit of the system to determine uniformity and efficiency, as well as recommendations for the best management practices. An evaluation of the irrigation system can usually reduce long-term maintenance and operating costs.

What sites generally require an evaluation? Sites that are more than 12 years old should be evaluated in an effort to reduce operating expenses. However, poorly designed and installed irrigation systems may require an evaluation regardless of the age of the system.

QUALIFICATIONS. The international Irrigation Association provides "landscape irrigation auditor" training programs and certification testing throughout the United States. These training programs teach landscape professionals to perform a catch-can



audit to determine the actual performance of irrigation systems, and to develop efficient irrigation schedules. This results in better management of irrigation controllers and minimal water use throughout the season.

Passing the certification test allows individuals to use the Certified Landscape Irrigation Auditor designation after their name. This is one of sev-

eral qualifications required of an individual performing a system evaluation. The evaluator also should have extensive background and training in irrigation system design, installation and maintenance.

An IA certification designation as a Certified Irrigation Designer and Certified Irrigation Manager indicates the individual has the qualifications to

Better management of irrigation controllers will minimize equipment problems and conserve water used throughout the season. A system evaluation will help a contractor identify possible pitfalls to irrigation efficiency.

perform a system evaluation.

In 1982, Keesen Water Management performed numerous irrigation system evaluations for the Denver Water Department. Sites included parks, golf courses, medians, highways and commercial locales.

We were amazed at the amount of water that could be saved if systems and scheduling were improved. In an area where the average annual evapotranspiration rate is 26 inches, we saw annual water usage ranging from 10 inches in a large park to 160 inches in a boulevard median. Average annual rainfall during the growing season is 10

inches, but more than half of the rainfall is lost because of the sudden downpours that produce runoff.

THE EVALUATION PROCESS. The first step is determining the need for an evaluation by analyzing past water usage and the age of the system. Historical water usage can be obtained from the water purveyor or the own-

er. I recommend a minimum of three years data for averaging to adjust for annual fluctuations in climatic conditions and other variables.

Water usage is measured in either thousands of gallons (M gallons) or per 100 cubic feet (CCF). Most water meters are read and clients are billed monthly or bimonthly. Using a spreadsheet, enter water consumption from water bills at the appropriate month and year and total.

If irrigation is on a separate meter and the water is used only for irrigation, enter consumption data using the irrigation meter method. If indoor and irrigation water are on the same meter, use the shared metering method.

IRRIGATION METER METHOD. To determine the amount of inches applied annually use the following formula (see box below):

SHARED METERING METHOD: If indoor and irrigation water are on the same meter, use the following steps to determine outside water use:

Add up the total water usage for several winter months (to determine inside use) and divide by the number of months to determine average monthly indoor use. Subtract this amount from the water bill amounts for the months in which irrigation occurs (irrigation season).

EXAMPLE: Bimonthly bills:

DECEMBER 114 thousand gallons

FEBRUARY 124 thousand gallons

$114 + 124 = 238 / 2 = 119$ bi-monthly average or 59.5 per month for indoor use. Subtract this amount from irrigation months and proceed to the formula under irrigation meter method above.

(continued on page 116)

1. FORMULA FOR M GALLONS:

Annual irrigation water use in M gallons: $815 \times 1,000 = 815,000$ gallons

Net irrigated area in square feet: 43,560

Annual water use divided by area covered divided by 0.6234

Note: 0.6234 is the amount of water in gallons in a square foot, 1 inch deep.

EXAMPLE: Annual water use in gallons = 815,000

Area in square feet = 43,560

$815,000 / 43,560 = 18.71 / 0.6234 = 30.01$ inches

2. FORMULA FOR CCF:

Annual irrigation water use in CCF: $1,089.5 \times 100 = 108,950$ cubic feet

Net irrigated area in square feet: 43,560

Annual water use divided by area covered times 12

Note: 12 is the multiplier used to convert cubic feet to inches

EXAMPLE: Annual water use in cubic feet = 108,950

Area in square feet = 43,560

$108,950 / 43,560 = 2.50 \times 12 = 30.01$ inches

If applying herbicide is something you'd like to do less often, we have good news for you. We can show you how to make fewer

as much control for as long as Team. Season-long control means you can use fewer applications making Team a valuable tool in your management program.



Goosegrass



Crabgrass

or call our toll-free number. And start saving some wear and tear on your herbicide applicator.

The herbicide not applying herbicides

herbicide applications and get weed control that's as good or better than you're getting now.

A single preemergent application of Team* gives you 16 weeks of broad-spectrum control of grassy weeds. University research proves that no other product gives you

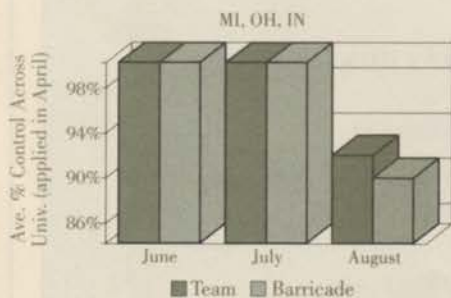
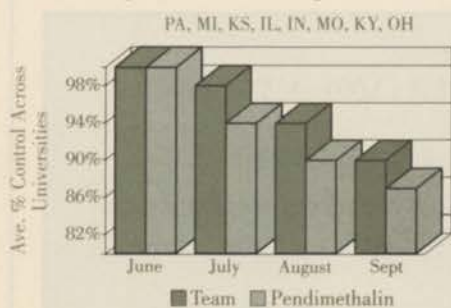
Team is your first line of defense against crabgrass and goosegrass whether you're managing warm season or cool season turfgrass. It's available in granular form for application accuracy or on fertilizer to give you full application flexibility and convenience.

Used according to label directions, Team is gentle on all major turfgrass species. University studies show it is a consistent, proven performer. It doesn't stain and won't leach into groundwater or harm nearby ornamentals and trees.

Our 44-page book, The Turf Manager's Guide To Responsible Pest Management can tell you more. It contains information you can use to control weeds, insects and turf diseases more efficiently. For a free copy return the coupon,



Team outperforms the competition



Send me the following Management Guide(s):

- Cool Turf
- Warm Turf
- Nursery and Landscape

Mail To:

DowElanco, P.O. Box 33489
Indianapolis, IN 46203-0489
Or call: 1-800-754-5064



Name _____
Business Category: _____ 03
 Nursery Lawn Care Municipal
 Landscape Contractor Golf Course
Company _____
Address _____
City _____ State _____
Zip _____ Phone _____



The chemistry is right.™

© 1994 DowElanco. *Trademark of DowElanco.
Always read and follow label directions.

for people interested in



STEPS IN THE SYSTEM EVALUATION PROCESS:

1. Historical water usage analysis for past three years. Operation site inspection of the system:
 - catch-can audits to determine efficiency
 - pressure tests
 - leak detection
 - identify potential system hazards and liabilities
 - check valve closure time
 - equipment condition
2. Review of irrigation schedule
 - determine soil type
 - determine root depth
 - existing schedule
3. Identify potential savings
 - water
 - maintenance
4. Recommendations
 - short- and long-term recommendations
 - budget cost estimates
 - operating instructions
 - cost benefits analysis
 - renovation vs. replacement

maximum water use should not exceed 30 inches. Planting beds may require 30 percent to 50 percent less water than turf areas.

Large open space turf areas are more efficient and could be at 30 percent to 50 percent of ET or less. In areas where rainfall can be absorbed by the soil, subtract effective rainfall from the annual ET before determining the 115 percent. The ultimate goal is to reduce water consumption to a level below these guidelines.

If the maximum annual usage exceeds 115 percent of ET, or 30 inches,

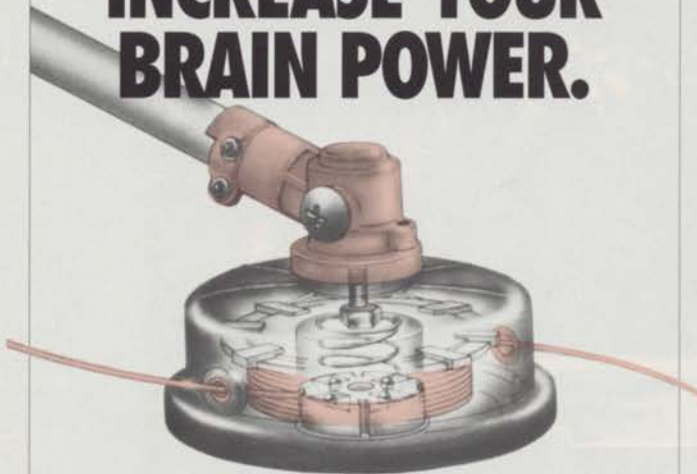
(continued on page 118)

(continued from page 113)

IRRIGATION GOALS. The maximum amount of applied water for turf

should not exceed 115 percent of the annual plant evapotranspiration rate. If the annual ET is 26 inches, the

INCREASE YOUR BRAIN POWER.



EQUIP YOUR CREW WITH TANAKA TRIMMERS.

Every Tanaka commercial trimmer/brushcutter comes with the world's finest, fully automatic cutting head: The BRAIN.® Loaded with long-lasting, Tanaka copolymer cutting line, your crew can work longer and more efficiently, without stopping to adjust length or reload. And all our commercial trimmer/brushcutters boast our proven, long-life engines, solid-steel drive shafts, electronic ignitions, anti-vibration systems and new, 1-year limited commercial warranties.

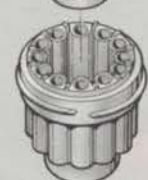
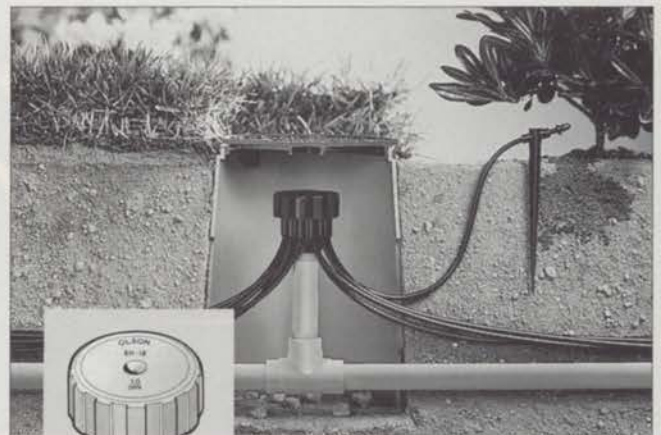


THERE'S MORE TO LIKE ABOUT

Tanaka

Buy smart. See your Tanaka dealer or call (206) 481-2000.

USE READER SERVICE #63



EH-12 HEAD

EH-12 EMITTER
A BETTER IDEA BY DESIGN

A logical idea — Drip irrigation in a head — twelve individual pressure compensating outlets. The patented filter is built right into the unit and good filtration is what makes drip work.

Drip irrigation designed for landscape — not adapted to it. Call or write for more information.



10910 Wheatlands Ave.
Santee, CA 92071
619 562-3100, 800 770LSON
FAX: 619 562-2724

USE READER SERVICE #80

Pop-Up Lite™

Unique Low-Voltage Outdoor Lighting

▶ HIDDEN BELOW GROUND DURING THE DAY

Eliminates mowing or trimming problems. Since the 'Pop-Up Lite™' is below ground during the day, it does not interfere with walkways and landscaping.

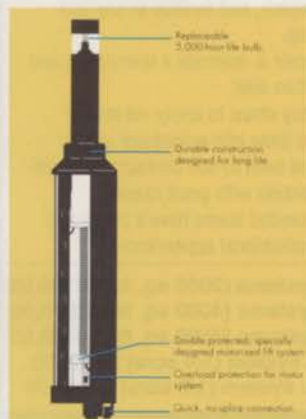


▶ POPS UP OUT OF GROUND AT NIGHT

A remote photo cell activates timer to raise and turn on the lights at sunset. At the end of a cycle (4, 6, 8 hours or all night) the light turns off and retracts into the ground.



The 'Pop-Up Lite™' is a new concept in outdoor lighting. Designed to facilitate landscape maintenance and eliminate interference with walkways and landscape features. The 'Pop-Up Lite™' remains hidden underground during daylight hours. At sunset, a photo cell raises each light on the circuit and turns it on for the cycle length you set. At the end of the cycle, the light retracts into the ground until the next evening. An 8-ft. to 10-ft. distance between lights is recommended, although this can be adjusted for individual landscaping needs. Now you can



enjoy maintenance-free outdoor lighting that you can install with ease yourself. And remember, they only come out at night.

LUMASTONES™

Glowing Stepping Stones to Light Your Way...

A new concept in low voltage outdoor illumination. Lighting that will guide you safely across your yard or through the garden. The easy to change bulb is weather protected so the LUMASTONES™ can be installed directly in a pathway or lawn and can be walked on like any other stepping stone.



LUMASTONES™ are durable. They can withstand the extremes of temperatures, from desert summers to northern winters. They resist lawn and garden chemicals and are not affected by harmful sunrays.

LUMASTONES™ can be installed in minutes to any existing 12 volt system.

TO PLACE AN ORDER OR FOR FURTHER INFORMATION PLEASE CONTACT:

CORONA PLASTICS SALES & SERVICE, INC.
 1755 Commerce Street, Norco, CA 91760
 (909) 737-7439 • FAX (909) 737-0181

(continued from page 116)

and does not exceed 150 percent or 40 inches, then an audit and a new operating schedule might reduce the use. When usage is more than 150 percent, perform an evaluation.

These are general guidelines that may vary under certain conditions.

Next, each zone in the system should be operated for at least three to five minutes to ascertain the physical condition, level of maintenance, operating pressure, efficiency, hazards and functions. This is easily done with the help of a radio remote control unit which allows the opera-

TOOLS TO SPEED THE PROCESS:

- pop-up spray head adapter and psi gauge
- pitot tube
- soil probe
- remote control
- volt/Ohm meter
- small tools

tor to turn zones on and off without going back to the controller or locating valve boxes.

As each zone is operated walk the area looking for leaks, head malfunctions, potential liability, slow closing valves and pressure problems. Carry a small pad of paper and note the problems by controller and zone (Ex:

(continued on page 134)

IRRIGATION QUESTIONS

1. What sites usually require an evaluation?

2. What are the necessary qualifications for an individual performing a system evaluation?

3. What is the first step to determining the need for an evaluation?

4. How is water usually measured?

5. What is the formula to convert annual site CCF to inches?

6. Why should slow-closing control valves be repaired?

Answers appear on page 132 of March LLM.

THE ONLY RAIN SENSOR AS DEPENDABLE AS MINI-CLIK.



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

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

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

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

© 1989 Glen-Hilton Products, Richmond, Virginia

USE READER SERVICE #79

Get a step ahead of your competition with a

TURBO TURF HYDRO SEEDING SYSTEM



SEED FASTER, BETTER, AT LESS COST

- Seed, mulch, and fertilize in one fast easy step.
- Also repair & renovate a lawn faster and better than ever.
- No messy straw to apply, no messy straw to blow into neighbors' yards.
- Excellent seed to soil contact and moisture retention with great results.
- Hydro seeded lawns have a pretty and very professional appearance.

150 gal. systems (2000 sq. ft.) \$2795.00
 300 gal. systems (4000 sq. ft.) \$3995.00
 500 gal. systems (6600 sq. ft.) \$4795.00
 750 gal. system (1/4 acre) \$7995.00
 1000 gal. system (1/3 acre) \$9995.00

BADGER ASSOCIATES 1-800-822-3437
 1108 Third Ave., New Brighton, PA 15066

USE READER SERVICE #74

WHEN IT COMES TO GUARDING AGAINST WEEDS, THINK OF US AS MAN'S BEST FRIEND.



*The Andersons
Proven Professional
Turf™ Fertilizers
Combined With
TEAM™ Broad
Spectrum Weed
Control Get You The
Results You Need To
Turn Customers Into
Friends For Life.*

Standard *Professional Turf* fertilizer formulations incorporating *Team* include:

- 25-3-8
- 20-2-6
- 20-5-5

Each product is individually designed to meet specific nutrient requirements *and* deliver up to 16 weeks of effective weed control. But you get more than effective-ness. You get efficiency, too, because you get two jobs done with one application.

Team is a proven performer when it comes to crabgrass, goosegrass and many other pesky weeds. Plus it's labeled for use on most major turfgrass species. With The Andersons superior formulating capabilities you get clean, free-flowing products for consistently great results. Use The Andersons Professional Turf fertilizers with *Team* and make your customers friends for life.

**the professional's
partner®**

The Andersons®

For more information
about our Professional
Turf products, call toll-
free 1-800-225-ANDY



™ TEAM is a registered trademark of DowElanco
© 1994 The Andersons.

Landscape News

THE INS AND OUTS OF LANDSCAPE MULCHING

MULCHING AROUND ornamental trees and shrubs is an established practice in today's landscape. Decorative mulch can perk up the appearance of any landscape.

It is even used as an ornamental feature by itself without the addition of plants. In that situation there are few, if any, guidelines necessary for the application and use of mulch.

But there are specific rules to follow when mulching plants to maximize their growth and health. And there's more to mulch than meets the eye. The selected mulch must do more than just cover up bare soil.

Aside from its obvious aesthetic qualities, mulch provides many plant health benefits.

"There are at least half a dozen important horticultural benefits to mulching and dozens of materials commonly used as mulch," said Ed Reier, sales manager for Tecza



Mulch colorants are one way to improve mulch appearance between new applications. Raking existing mulch can also help by breaking up fungus.

Brothers Inc., a landscaping firm based in Elgin, Ill.

According to Reier, mulch:

- Conserves soil moisture by reducing the rate of evaporation.
- Maintains a more uniform soil temperature by keeping soil warmer during cold

weather and cooler during hot weather. Moderating those temperature extremes reduces root damage, leaving more roots to support top growth.

- Prevents soil crusting, which in turn improves water percolation and absorption into the soil-supporting root growth.

- Reduces weed populations when properly used. It's important to use mulch that is itself weed-free and to apply the mulch deeply enough to prevent weed-seed germination and to smother existing weeds.

- Decreases water runoff and soil erosion.

- Eliminates the need for mechanical cultivation to control weeds which might otherwise be harmful to the fine surface roots of many plants.

- In some cases, mulch reduces the spread of soil-borne disease by reducing mud splashing.



Greener Pastures Inc.

Providing Organic and Natural lawn fertilizers

FINALLY

Organics without sewage sludges or animal by products!

Try "BLADE RUNNER"

15-1-9 with 1.5% iron (Best Buy)
faster green-up with staying power

Try "HUMIC PLUS"

9-1-5 with 1.5% iron
All Feed Grade Ingredients

Try Our liquid organics
100% plant derived

No offensive odors - Low Low Dust
AFFORDABLE

Call Today

800-783-1069

Receive 1994's Catalog

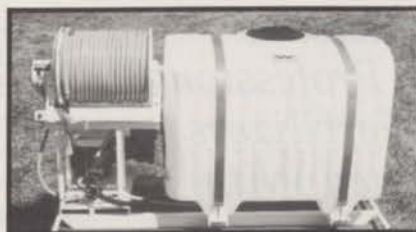
USE READER SERVICE #82

GREEN GARDE • HANNAY • SYNIFLEX •



WESTHEFFER COMPANY, INC.

P.O. Box 363 • Lawrence, Kansas 66044



NEED A SPRAYER?

We Got It!

Over 100 models to choose from.
Each built to meet your specific needs.

- Single or dual tanks
- 50-1000 gallonage
- Mechanical or jet agitation
- Diaphragm, piston or centrifugal pump
- Electric or manual hose reel
- Green Garde, Kuritec or Synflex hose
- Hypro JD9CT or Chemlawn gun

To Order Call Toll **FREE:**

(USA, Canada, Mexico) • 1-800-362-3110

FAX (913) 843-4486 • (913) 843-1633

FLOMAX • HYDRA-CELL • SPRAYING SYSTEMS • FMC • SOLO

MYERS • EMLER • TUFLEX • RAVEN • EARTHWAY • HANDCANS

• FLOJET • KURIYAMA • HYPRO • HONDA •

USE READER SERVICE #78

Mulching around ornamental plants involves covering a portion or all of the root zone with a material including organics, such as peat moss, wood chips, straw, pine hay or bark; or inert, such as stones, pebbles, rock chips or woven landscape fabric.

To select the appropriate mulching material, consider such characteristics as consistent color and texture, compaction resistance, resistance to wind and water erosion, fire resistance and slow rate of decomposition.

Also, organic mulch materials should be inspected carefully at purchase, said Ed Janesz, organic recycling development manager for Kurtz Brothers, Cuyahoga Hts., Ohio.

"It should always be odor-free. Often, bark mulch or mulches are stockpiled in winter and no air gets to them. Phenols are given off, an alcohol that will damage plants," Janesz said.

Consider too the degree to which you expect mulch to benefit various plant materials in the landscape. "Because they're derived from plant material, organic mulches provide soil modification properties not found in inert materials," Reier said.

Mulch must allow for an exchange of gases (oxygen into the soil and carbon dioxide out of the soil) and the penetration and slow

evaporation of water. If mulch slows or stops these processes, plants will decline and eventually die, according to David Whitworth, horticulturist for the Davey Tree Expert Company, Kent, Ohio.

The most important benefit of mulching plants is the conservation of soil moisture, Whitworth said. When mulch is applied cor-

Mulch is obviously aesthetically pleasing, but it also provides a number of plant health benefits including soil moisture conservation.

rectly, soil water evaporates slowly and provides plants with a consistent source of water. As organic mulches decompose, the underlying soil's ability to hold water may be improved. In most cases, mulched trees and shrubs survived the drought of 1988 better than those that did not have mulch.

Mulch can actually improve water infiltra-

tion into the soil. Raindrops falling on bare soil not only cause erosion, but also cause soil surface compaction. Mulch reduces or eliminates erosion and cushions the impact of raindrops. Water and plant roots can then penetrate to a greater depth.

Two common mistakes in using mulch, according to Whitworth, are applying it too deeply and mounding it up against tree and shrub trunks. Most mulches should be only 2 to 4 inches deep; less for heavy, clay soils and more for lighter, sandy soils.

Mulch applied too deeply reduces air and water exchange and the soil becomes an inhospitable environment for roots. Mulch that buries the base of a trunk encourages fungus growth and can soften the bark, creating entry points for pests.

Reier advised special caution when installing fabric mulch. Exposed edges could become ragged and unsightly. Rodents also can pose a problem under fabric materials.

Although the annual re-application of mulch will improve the initial appearance of the landscape, it can also lead to unhealthy plants, Whitworth said. Annual mulching causes a build-up that exceeds the maximum recommended depth. One to 2 inches of mulch applied every two to three years is adequate. New mulch should not be applied

TORO ProLine



No payments
No interest
For 90 days

Save On All Models
Thru April 10th

Sale Price
\$2889
Models 30180, 30152

- 16 HP Kohler 52 Mower
- Set-up and delivery extra.

Up to 40% off original
Toro ProLine parts



Mutton
POWER EQUIPMENT

Fort Wayne, IN Toll Free
219-432-9438 800-307-2114

USE READER SERVICE #101

"WHEN YOU SIGN YOUR
NAME TO A HYDRO-SEEDING
JOB IT HAS TO BE RIGHT - THE
FIRST TIME - YOU CAN'T AFFORD TO
GO BACK "

REFIBER WOOD
LONGER FIBERS MEAN BETTER
EROSION CONTROL - EVERYTIME!

REFIBER MIX
COMBINES THE PERFORMANCE OF
70% WOOD FIBER WITH THE
ECONOMY OF 30% CELLULOSE -
GREAT VALUE!

TERRA-MULCH
CELLULOSE PREMIUM
PAPER FIBER MULCH - LOWER
MOISTURE CONTENT - CONSISTENT
FIBER TEXTURE - HIGHER YIELD!

FOR THE DISTRIBUTOR IN
YOUR AREA CALL 800-726-6414
FAX 800-847-9398
SPITTLE ENTERPRISES, INC

USE READER SERVICE #100

**Want to
Increase Your
Landscaping
Business?
Get with the
Programs.**

*Garden Design** magazine recently called LandDesignerPro "Overall...the most impressive and well rounded program for landscape professionals..."

Call 1-800-336-3127
today and find out how our affordable landscape and irrigation design software can help you grow your business.

SOFTWARE FOR
BEAUTIFUL ENVIRONMENTS



GREEN THUMB
SOFTWARE, INC.

75 MANHATTAN DRIVE, SUITE 100
BOULDER, CO 80303
TEL. 303.499.1388 FAX 303.499.1389

*Sept/Oct 1993 issue

DESIGNED FOR DOS AND WINDOWS-BASED
IBM PCS AND COMPATIBLES!

USE READER SERVICE #104

until the existing mulch is nearly decomposed and has been lightly incorporated into the current soil base.

"Some of the older mulch can be used as a soil conditioner," Janesz said. "You can physically incorporate that material into the root structures without damaging them, but it won't magically work its way down."

Color retention is important to long-term appearance. Wood that hasn't been shredded tends to lose its original color much sooner than other materials and bleaches into a light, blondish color in the sun.

A mulch colorant spray is one way to improve mulch appearance between new applications. Also, raking the existing mulch can dramatically improve its appearance and break up any "slime mold" or fungus that develops.

"Mulches provide an excellent environment for fungus development," Janesz said. "Just stir or agitate the mulch to get rid of the slime mold."

Mulches will not eliminate the headaches of weed competition, but can reduce the density of undesirable grasses and broadleaf weeds. Maximum weed control can be achieved by applying a preemergent herbicide and/or landscape fabric (not sheet plastic) before spreading the mulch.

ORGANIC MULCHES

ORGANIC MULCHES offer soil modification properties not found in inert materials, according to Ed Reier, sales manager for Tecza Brothers Inc., Elgin, Ill. Reier supplied the following list of organic mulches and their characteristics:

- Shredded, chunk and chip bark mulches are among the most popular. They can also be used for walkways and paths.
- Mushroom compost offers good color that blends into the landscape.
- Peat is useful for mulching acid-loving plants. It is resistant to decomposition and has a very high water-holding capacity.
- Pine needles or pine straw is suggested for winter protection of new or tender plants but also serves as a mulch.
- Cocoa-bean hulls often pack down and grow molds that do not harm plants.
- Buckwheat hulls are long lasting and have a natural color, making them desirable in landscapes.
- Sawdust is commonly used where available. Nitrogen deficiency will result if additional fertilizer is not applied regularly.
- Leaf mold is a good mulch but difficult to spread evenly and keep neat looking.
- Muck is very dark brown or black and sold as peat. Derived from swamp plants, muck decomposes quickly.

Soil pH may be slightly affected by mulch but will not show a substantial change based on mulch, Reier said. Also, a small amount of nitrogen may be returned to the soil as mulch materials decompose. Depending on the mulch, nitrogen starvation may occur.

Some materials, like crushed corncobs,

sawdust, wood chips or straw will cause a substantial decrease in nitrogen levels as they decompose, Reier said. Microorganisms in the soil remove large amounts of this nutrient in the process of breaking down the mulch.

Regular additional applications of nitrogen will help prevent nitrogen starvation. ■

NEW ROYER SHREDDER MODEL 366



**Introducing the New Shredder,
Model 366 by ROYER - -
To Shred Your Way
Into the 21st Century.**

*Quality finished product * Reduces preparation costs *
Higher capacity to handle wider variety of materials * Fully
automatic * Fast set-up, simple operation

Call or fax for more information.

ROYER INDUSTRIES, INC.,
P.O. Box 1232, Kingston, PA 18704

ROYER™

Ph: (717) 287-9624

Fax: (717) 283-0578

Hedge Sweep

- Sweeps clippings off the shrub as you trim
- Allows you to see where you've trimmed for neater, straighter cuts
- Mounts easily on any model hedge trimmer



Trim-R-Sharpener



- Sharpens hedge trimmer blades in minutes
- Easy to use, on the job or in your shop
- No need to disassemble trimmer prior to sharpening

West Coast
HLS Industries
800-HLS-2510

East Coast
Precision Hedge Corp.
800-756-HEHG

Dealer Inquiries Welcome

USE READER SERVICE #112

USE READER SERVICE #113

People

THE SCOTTS CO. promoted **Richard Stahl** to senior vice president. Stahl, who joined the company in 1967, is responsible for integrating Grace Sierra, Scotts' most recent acquisition, into the organization. He is also in charge of seeking new technologies and products.

Terra International announced the following promotions: **Art De Leon** to director, energy procurement, responsible for overseeing purchasing, pricing and transporting natural gas; **Ray Miller** to director, chemical and fertilizer purchasing, responsible for securing competitive purchase contracts for chemicals and fertilizer; **Burnie Baker** to fertilizer purchasing manager, responsible for purchasing fertilizer and coordinating the sourcing of nitrogen fertilizers; and **Pam Stephan** to chemical purchasing manager, responsible for evaluating Terra's geographical coverage, among other things.

O.A. Newton & Son Co. hired **Phil Kerchner** as turf sales manager. Kerchner was formerly western regional sales manager.

ISK Biotech named **Isis Mangum Allison** formulations technician. Allison, formerly a technician at the quality control laboratory, helps develop formulations of Chlorothalonil,



Riegling



Guy

DCPA, MSMA and ISK compounds.

Jim Riegling joined Kawasaki as regional sales manager, charged with heading up Kawasaki's first dealer-direct sales program, a pilot project involving 40 dealers in upstate New York. He formerly served as a medical equipment sales executive at Damon Laboratories.

Professional Supply promoted **Robert Murphy** and **John Howard** to chief executive officer and chief operations officer, respectively. Murphy joined the company 10 years ago as manager of the landscape supply division, serving as sales manager for the past two years. Howard joined Professional Supply three years ago as general manager. Murphy and Howard replace **Mark** and **Christine Kelly**,

founders of the company, who plan to develop and run an import/export division.

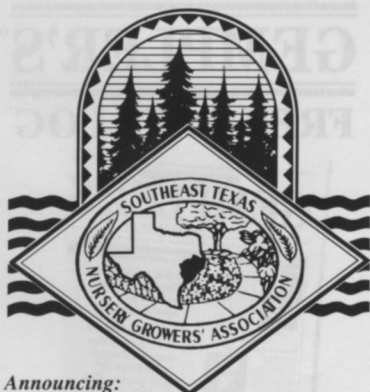
Griffin Corp. appointed **Don Guy** as southeast sales manager for the nursery and ornamental products division. Guy oversees distributor accounts for Spin Out™ brand plant growth regulator.

Ames Lawn & Garden Tools promoted **Rick Keup** to chief executive officer. Keup, president and chief operating officer since 1991, continues to serve as president. He succeeds **Douglas Cochran** who continues as board chairman.

Associates Commercial Corp. named **John Stillo** controller of transportation, equipment, manufactured housing and communications finance groups, and **Michael Sletten** senior vice president and controller of diversified services and relocation and mortgages services groups.

Stillo, also senior vice president of his division, joined the company in 1981 as controller of its fleet leasing division. Sletten formerly handled financial analysis and planning for a variety of divisions.

Woods Equipment Co. appointed **Steve Farmer** as director of national sales, in charge of about 3,800 dealers. ■



Announcing:

**1st ANNUAL STNGA
SPRING TRADE SHOW
April 8th and 9th, 1994
The Woodlands Executive
Conference Center
The Woodlands, Texas**

Call or write for show information and our free plant locator and growers directory:

Ed Ricks
Bushman Plant Farm
Route 3, Box 419
Cleveland, Texas 77327
(713) 592-7482

**FREE Admission
with your
business card!**

USE READER SERVICE #120

* ATTENTION: GRANULAR APPLICATORS *

It is a proven fact, if your trucks/vans are *not equipped* with an **External Spreader Carrier**, you are wasting valuable time, space, money, and piece of mind. Guaranteed...

Can you afford that?

As a lawn Care Service Owner,
I couldn't!

Thus the reason we developed, patented and marketed this unique quick-attach tool.



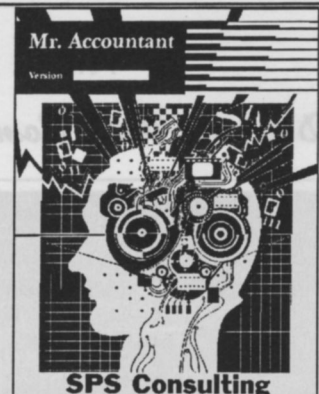
It's simple, it's effective, it's an absolute necessity once you have used one. Ask your competition who uses them or contact ESC, inc. for references near you who do.

(Money back guarantee if you are not overwhelmed with this product!)

Make a wise decision, order yours today!
ESC., inc.
201 Cherokee Circle
Little Rock, AR 72205
(501) 221-7384
FAX (501) 224-7826

\$169.00

USE READER SERVICE #121



Mr. Accountant is the time proven, complete business management system for only \$695.00.

Invoices•Statements•Job Costing•Sales Tax/Finance Charge Computation•Aging Reports•Truck Scheduling/Routing•Chemical Application Reports•Plant and Irrigation Part Inventory•Lead Tracking•Proposals Accounts Payable•Payroll•Check Writer•General Ledger•Mailing List•Equipment Maintenance•Completely Menu Driven•Simple to Use•Customization and Multiuser Version Available
Designed specifically for landscape maintenance, landscape installation, pesticide application and irrigation companies

Serving the green industry since 1987

SPS Consulting
1032 Raritan Road
Cranford, NJ 07016
(908) 272-1398
Fax: (908) 272-8729



Call for **FREE Demo Disk!**

USE READER SERVICE #122

Products

THE **EXMARK** Metro mower is a double-belted, five-speed walk-behind with cutting-height adjustment and a 36-, 48- or 52-inch TriVantage mowing deck that allows mulching, bagging or discharging.

The Metro mower features heavy-gauge handles and fully welded seams for increased ruggedness, and a padded knee shifter and soft-touch drive levers for ease of operation.

Circle 126 on reader service card

Terra International added Riverside® AMS Plus to its product line-up. AMS Plus enhances herbicide, defoliant and desiccant performance by modifying factors such as pH and hard water.

AMS Plus is a liquid ammonium sulfate activator. It is recommended for use with Diquat®, Roundup® and similar products.

Circle 127 on reader service card

Excel's Trim Steering™ control system replaces the one-hand, twin-lever control formerly used on all Hustler mowers. The system features a molded hand grip mounted on a single T-lever. The operator can control turning, braking and drive speed with one hand.

PRODUCT SPOTLIGHT


RHONE-POULENC Ag Co. offers Chipco® Sevin® brand 80 carbaryl insecticide available in water soluble packaging. The 80 WSP insecticide is approved for use nationwide except in California where registration is pending.

The premeasured packets can be placed directly into the spray tank with the product, thereby reducing worker exposure and eliminating problems with disposing of contaminated containers.

The packets contain 1.25 pounds of product and are sold in cases of 32 packets. Each case contains four mini-boxes of eight packets each.

Chipco Sevin controls more than 565 damaging pests, including foliage feeders, grubs and scale insects that damage turfgrass and ornamentals.

Circle 125 on reader service card



Excel's dual hydrostatic drive and Trim Steering should reduce back tracking on turf already cut.

Circle 128 on reader service card

AmeriQuip's 260 Chip N Mulch features a 16-h.p. engine, heavy-duty rotor engage-

ment system and a rotor with 48 independent, free-swinging flail blades and two chopper knives. An independent flexiride suspension softens vibration during operation and provides easy towing.

Mulcher and chipper feed hoppers are designed for operator safety and incorporate

RIDE A WALKER

Discover Fast, Competitive, Profitable Mowing



Most commercial mowing operations are using walk-behind mowers because they have concluded no rider mower is compact or maneuverable enough to mow landscaped areas. Now maintenance operators all across the country are discovering the compact, maneuverable *Mid-Size Walker Mower* fits their job and saves labor (usually cuts labor 1/2). The labor saving *Walker* looks good whether your business is trying to produce profit or is operating on a budget. Write or call for a free brochure. Ask for a demonstration.

Walker Manufacturing Company, 5925 East Harmony Road, Ft. Collins, CO 80525
1-800-279-8537

USE READER SERVICE #103

GEMPLER'S™ FREE CATALOG



Our 1994 112-page General Catalog is your direct source for:

- safety equipment for grounds maintenance.
- hard-to-find maintenance equipment.
- tire repair supplies and tires for turf equipment.

1-800-382-8473
Fax 1-800-551-1128

GEMPLER'S, Inc.
 P.O. Box 270 • 211 Blue Mounds Rd.
 Mt. Horeb, WI 53572

#LL4

USE READER SERVICE #105



a heavy-duty construction for commercial use.

Circle 129 on reader service card

The 5.5-h.p. Vector® rotary lawn mower engine from **Tecumseh Products Co.** features 12.6 cubic inch displacement, 27-ounce oil sump capacity and pressure lubrication, lower operating temperatures and more reliable lubrication between oil changes.

The carburetor is designed so no metal parts are submerged in fuel, thus eliminating oxidation of parts from stale fuel during off-season storage.

A large muffler, quiet intake and a modu-

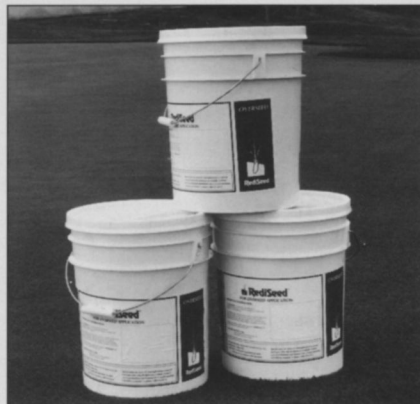
lated flywheel fin design combine to reduce overall sound levels of the engine.

The Vector is also available in a tankless model for use with a remote tank or larger capacity applications.

Circle 130 on reader service card

RediSeed Solid Matrix Priming from **Eco Soil Systems** is billed to cut seed germination time in half.

After matrix priming, the seed and matrix



are separated and the seed is dried back to its original moisture content. Priming increases the likelihood of a good stand under

temperature or water stress, while seeds show uniformity in their growth characteristics in both root and stem development.

Improved survival rates compared to untreated bentgrass seed indicate 30 percent to 50 percent more seeds will germinate. With RediSeed, an application of 3 pounds per 1,000 square feet will surpass 4- to 5-pound rates for conventional seed survival.

Circle 131 on reader service card

Isuzu's 12-foot Harbor stakebed-dump body is available on Isuzu's NPR diesel and NPR/EFI V8 gasoline truck chassis.

The body features Malaysian hardwood "apitong" deck and siding; rear dump doors; a Rugby 9-ton lift; compartmented dividers to separate transfer materials; and two sealed accessory tool boxes. The polished stainless steel stakes are corrosion resistant and backed with a three-year warranty.

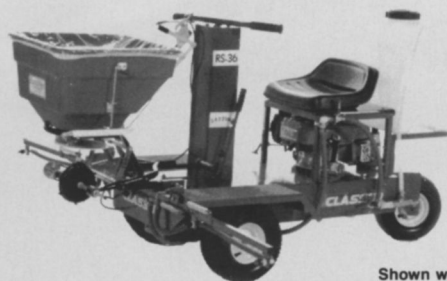
Circle 132 on reader service card

Little Wonder offers three models of edgers, two of which can be converted into trimmers.

The edgers feature painted steel handles with anti-vibration grip, steel frames, cast-iron cutter heads and grease fittings and steel hub wheels. The ratchet arm height

FERTILIZING WITH EASE

PUTTING LESS FATIGUE ON THE OPERATOR
WILL IMPROVE THE PROFITS!



Shown with optional liquid applicator.

RS-36 RIDING FERTILIZER SPREADER

- 5.5 Honda O.H.V. Engine
- Tight Turning Radius
- 5 Speed Transmission with reverse
- Fits through 36" Gates
- 100 lbs. Earthway Granular Spreader
- Optional Liquid Applicator
- 100" Spraying Width
- 2 Way Bendable Boom
- 20 Gallon Tank
- V Belt Drive to Pump
- 20' Hose with Hand Wand for Spot Spraying (not pictured)

CLASSEN

MANUFACTURING, INC.

1403 So. Pine Industrial Road Norwalk, NE 68701
Telephone (402) 371-2294 FAX (402) 371-3602

USE READER SERVICE #106

"The Dual Purpose 260" CHIP N MULCH



Are you spending too much time & money on green waste disposal?

The dual purpose 260 can help!

- ✧ Straight Line, drop through design for fast, efficient material flow.
- ✧ New, heavy duty rotor engagement system.
- ✧ Up to 20 to 1 waste reduction.
- ✧ Heavy duty design and construction for commercial use.


AmeriQuip

1480 Arrow Hwy., La Verne, CA 91750
(909) 392-2033 Fax (909) 392-4651
(800) 824-9776

USE READER SERVICE #108

TAKE SEASON-LONG, CONSISTENT CONTROL TO NEW HEIGHTS



 **SANDOZ** Use pesticides effectively. Read and follow label instructions carefully. Barricade® is a registered trademark.

DISTRIBUTED BY:	AG RESOURCES, INC. BRANDON, FL	AGRA TURF SEARCY, AR	AGRI TURF, INC. HATFIELD, MA	THE ANDERSONS MAUMEE, OH	BENHAM CHEMICAL CO. FARMINGTON HILLS, MI	CANNON TURF SUPPLY, INC., INDIANAPOLIS, IN
ESTES, INC. WICHITA FALLS, TX	FISHER & SON, CO. MALVERN, PA	E.H. GRIFFITH, INC. PITTSBURGH, PA	GEORGE W. HILL & CO. FLORENCE, KY	HOWARD JOHNSON'S ENT. MILWAUKEE, WI	KNOX FERTILIZER CO. KNOX, IN	KOOS/SHORE, INC. KENOSHA, WI

AND KEEP VALUE DOWN TO EARTH

Unsurpassed control of crabgrass and other grassy weeds tops the list of reasons to use Barricade. Add up all of Barricade's outstanding features and it's also the best value of any preemergence herbicide in the industry.

And when you combine top performance with down-to-earth value you not only satisfy customers but also your bottom line.

SEASON-LONG CONTROL

Up to 26 weeks of effective weed control with one application to give you satisfied customers and reduced labor.

MINIMIZED STAINING CONCERNS

Allows you to control crabgrass in tough-to-treat areas — curbsides, walkways, along fences and walls.

LOWER RATES

Rates up to 4 times less active ingredient for lower environmental load and less hassle in storage and handling.

LOW SOLUBILITY

Eliminates leaching concerns.

VERSATILE PACKAGING

In convenient 1/2 lb. water soluble packets and with quality fertilizers to save time and provide your customers with greener, more weed-free lawns.



For the low down on high performance Barricade, call your distributor or 1-800-435-TURF.

Barricade

HERBICIDE

Peak Performance...
Yard after Yard, Year after Year.

© Sandoz Ltd. 1993 © Sandoz Agro Inc.

LEA'S GREEN MEADOWS, INC.
TEMPLE HILLS, MD

LEBANON TURF PRODUCTS, INC.
LEBANON, PA

PENAGRO T&O PRODUCTS
BOONE, NC

PENNINGTON ENTERPRISES, INC.
MADISON, GA

PROFESSIONAL TURF SPECIALTIES, INC.
ST. CHARLES, MO

REGAL CHEMICAL, CO.
ALPHARETTA, GA

TURF INDUSTRIES, INC.
HOUSTON, TX

TURF PRODUCTS LTD., INC.
W. CHICAGO, IL

TURF SUPPLY COMPANY
EAGAN, MN

UNITED HORTICULTURAL
SUPPLY, SALEM, OR

VIGORO INDUSTRIES, INC.
WINTER HAVEN, FL

WILBUR-ELLIS COMPANY
KENT, WA

USE READER SERVICE #48



adjustments set the edging depth by adjusting the front wheels.

Circle 133 on reader service card

Aquatrols offers LeafShield anti-transpirant which, when applied to foliage, dries to a thin, flexible waxy layer that holds moisture in the leaves and reduces transpiration stress when the plants' roots don't absorb enough moisture.

LeafShield is recommended for use when transplanting and transporting plants subject to moisture stress, and as a protectant against desiccating weather conditions.

LeafShield is available in 4x1-, 2.5x2- and 5-gallon containers.

Circle 134 on reader service card

The new auger/handle coupler from **Little Beaver** is an insulated shaft coupler that decreases vibration and diminishes risk of accidental electrocution.

The coupler is available on new Little Beaver mechanical units or in kit form for equipment upgrades.

Laboratory tests show that the Elek-Pro-Tek coupler reduces the chance of electrical charge passing up the auger shaft to the operator's hands if an underground power line is struck. In addition, the coupler absorbs up to 50 percent of the auger's vibration, decreasing operator fatigue as well as wear on the earth drill's components.

Circle 135 on reader service card

Corona Clippers upgraded its line of landscaping tools using high-density Coronium steel alloy forged to provide a more uniform structure than cast or stamped metal. Corona's self-aligning Pivot bolt

meets higher tolerances. The Radial Arc blades are replaceable.

Additional upgrades include a Satin finish, laser etching for product identification, pad printing on all loppers, hedge shears, wood handled saws and new product colors.

Circle 136 on reader service card

Honda's FR600 rear tine tiller features a 5.5-h.p. overhead valve engine and a 20-inch tine width. The tiller's chain drive transmission offers three forward speeds and one reverse speed.



DESIGN IMAGING GROUP

Computer Imaging for the Landscape Industry

Drawing a landscape design takes many hours and customers still have problems visualizing what their house will look like from the plan.

"Now I complete designs in less than one hour and customers can see exactly what they are going to get when the landscape matures. In just two days of demonstrating our new imaging service at a local home show I scheduled 35 new client visits. Now I have to keep up with the demand...not a bad problem to have."

Will Long
Conceptual Creations
North Carolina

Gain the advantage on your competition!

- Redefine the way landscape designs are proposed
- Increase your bottom line by offering this key service

"Genesis," the new affordable computer imaging software from DIG, will help you grow your business and attract and excite new customers. As you know, most people (80%) cannot visualize a final design from a blueprint ... now you can easily show them your photo-realistic rendering of their finished project!

Only \$ 899.00 list price

It's easy to pay back your investment with a few jobs won with our new low priced "Genesis,"... the rest is all profit!

Produce full color renderings like this on your computer
(Shown here in black & white)



CALL US NOW at (818) 706-8786 or FAX us at (818) 706-8465 to receive information or video on how you can increase your overall sales with an imaging system from Design Imaging Group

USE READER SERVICE #115

Without advertising, a terrible thing happens...

NOTHING.

To advertise in **LLM**
call 1-800-456-0707

Name _____ Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Telephone _____

What is your primary business at this location? (Please check one.)

- I. CONTRACTOR or SERVICES:**
 1. Landscape Contractor (maintenance & installation)
 2. Chemical Lawn Care Company (excluding mowing maintenance service)
 3. Lawn Maintenance Contractor
 4. Ornamental Shrub & Tree Service
 5. Irrigation Contractor
 6. Landscape Architect
 7. Other Contract Services (please describe) _____

II. IN-HOUSE LAWN CARE/MAINTENANCE:

1. In-House Maintenance including: Educational Facilities, Health Care Facilities, Government Grounds, Parks & Military Installations, Condominium Complexes, Housing Developments, Private Estates, Commercial & Industrial Parks.

What best describes your title?:

- Owner, Pres., Vice Pres., Corp. Officer
 Manager, Director, Supt., Foreman
 Agronomist, Horticulturist
 Entomologist, Plant Pathologist
 Serviceman, Technician
 Scientist, Researcher
 Company, Library copy only
 Other (please specify) _____

III. DISTRIBUTOR/MANUFACTURER:

1. Dealer 3. Formulator
 2. Distributor 4. Manufacturer

IV. OTHERS ALLIED TO THE FIELD:

1. Extension Agent, (Federal, State, County, City, Regulatory Agency)
 2. School, College, University
 3. Trade Association, Library
 4. Others (please describe) _____

What best describes your title?:

- Owner, Pres., Vice Pres., Corp. Officer
 Manager, Director, Supt., Foreman
 Agronomist, Horticulturist
 Entomologist, Plant Pathologist
 Serviceman, Technician
 Scientist, Researcher
 Company, Library copy only
 Other (please specify) _____

Name _____ Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Telephone _____

What is your primary business at this location? (Please check one.)

- I. CONTRACTOR or SERVICES:**
 1. Landscape Contractor (maintenance & installation)
 2. Chemical Lawn Care Company (excluding mowing maintenance service)
 3. Lawn Maintenance Contractor
 4. Ornamental Shrub & Tree Service
 5. Irrigation Contractor
 6. Landscape Architect
 7. Other Contract Services (please describe) _____

II. IN-HOUSE LAWN CARE/MAINTENANCE:

1. In-House Maintenance including: Educational Facilities, Health Care Facilities, Government Grounds, Parks & Military Installations, Condominium Complexes, Housing Developments, Private Estates, Commercial & Industrial Parks.

What best describes your title?:

- Owner, Pres., Vice Pres., Corp. Officer
 Manager, Director, Supt., Foreman
 Agronomist, Horticulturist
 Entomologist, Plant Pathologist
 Serviceman, Technician
 Scientist, Researcher
 Company, Library copy only
 Other (please specify) _____

III. DISTRIBUTOR/MANUFACTURER:

1. Dealer 3. Formulator
 2. Distributor 4. Manufacturer

IV. OTHERS ALLIED TO THE FIELD:

1. Extension Agent, (Federal, State, County, City, Regulatory Agency)
 2. School, College, University
 3. Trade Association, Library
 4. Others (please describe) _____

What best describes your title?:

- Owner, Pres., Vice Pres., Corp. Officer
 Manager, Director, Supt., Foreman
 Agronomist, Horticulturist
 Entomologist, Plant Pathologist
 Serviceman, Technician
 Scientist, Researcher
 Company, Library copy only
 Other (please specify) _____

1 26 51 76 101 126 151 176
2 27 52 77 102 127 152 177
3 28 53 78 103 128 153 178
4 29 54 79 104 129 154 179
5 30 55 80 105 130 155 180
6 31 56 81 106 131 156 181
7 32 57 82 107 132 157 182
8 33 58 83 108 133 158 183
9 34 59 84 109 134 159 184
10 35 60 85 110 135 160 185
11 36 61 86 111 136 161 186
12 37 62 87 112 137 162 187
13 38 63 88 113 138 163 188
14 39 64 89 114 139 164 189
15 40 65 90 115 140 165 190
16 41 66 91 116 141 166 191
17 42 67 92 117 142 167 192
18 43 68 93 118 143 168 193
19 44 69 94 119 144 169 194
20 45 70 95 120 145 170 195
21 46 71 96 121 146 171 196
22 47 72 97 122 147 172 197
23 48 73 98 123 148 173 198
24 49 74 99 124 149 174 199
25 50 75 100 125 150 175 200

Do you wish to receive (continue to receive)
Lawn & Landscape Maintenance? Yes No

SIGNATURE (required)

DATE

1 26 51 76 101 126 151 176
2 27 52 77 102 127 152 177
3 28 53 78 103 128 153 178
4 29 54 79 104 129 154 179
5 30 55 80 105 130 155 180
6 31 56 81 106 131 156 181
7 32 57 82 107 132 157 182
8 33 58 83 108 133 158 183
9 34 59 84 109 134 159 184
10 35 60 85 110 135 160 185
11 36 61 86 111 136 161 186
12 37 62 87 112 137 162 187
13 38 63 88 113 138 163 188
14 39 64 89 114 139 164 189
15 40 65 90 115 140 165 190
16 41 66 91 116 141 166 191
17 42 67 92 117 142 167 192
18 43 68 93 118 143 168 193
19 44 69 94 119 144 169 194
20 45 70 95 120 145 170 195
21 46 71 96 121 146 171 196
22 47 72 97 122 147 172 197
23 48 73 98 123 148 173 198
24 49 74 99 124 149 174 199
25 50 75 100 125 150 175 200

Do you wish to receive (continue to receive)
Lawn & Landscape Maintenance? Yes No

SIGNATURE (required)

DATE



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

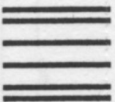
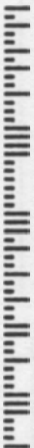
BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO 1322 CLEVELAND OH

POSTAGE WILL BE PAID BY ADDRESSEE

**Lawn & Landscape
MAINTENANCE**

PO BOX 5817
CLEVELAND OHIO 44101-9867



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

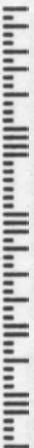
BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO 1322 CLEVELAND OH

POSTAGE WILL BE PAID BY ADDRESSEE

**Lawn & Landscape
MAINTENANCE**

PO BOX 5817
CLEVELAND OHIO 44101-9867



Standard features include a full-loop handle, three-position handle height adjustment, muffler heat protector and easy to reach controls. Options include a furrower attachment and wheel weight kit.

Circle 137 on reader service card

A line of Troy-Bilt tractors from **Garden Way Inc.** features foot-controlled hydrostatic drive, frame hung or ground supported lift system, step-through operator area, 22-inch turning radius, heavy-duty transmission and a broad range of cutting height adjustments.

The tractors, designed for rough terrain and heavy loads, are retail priced from \$2,299.

Circle 138 on reader service card

The LandDesignerPro for Windows from **Green Thumb** is a computer-aided design package that allows users to produce comprehensive proposals, full-color plans, material listings and detailed cost estimates.

LandDesignerPro, a Windows version of the Green Thumb's earlier landscape design software, features improved editing tools, such as a toolbar, status bar prompt and choice of English or metric units, and faster printing.

The software also includes a grow option,

which allows users to view how the landscape matures over time, automatic materials and cost estimation and tutorial and on-line help.

Circle 139 on reader service card

Kubota Tractor Corp. offers an automatic-mulching, rear-discharge mower deck compatible with its F-Series tractor models.

Available 60 and 72 inches wide, the mower deck features three spindles with two blades, or four cutting edges per spindle.



Automatic mulching forces the clippings down into the turf.

Circle 140 on reader service card

Bandit Industries' Model 60 tree and brush chipper has a 12-inch opening that allows it to take in all types of brush and prunings, as well



as good-sized tree limbs.

The chipper's hydraulic feed takes in material at a right angle, within inches of the chipper disc. Its highlights include a 360-degree swivel discharge and a reversible control bar.

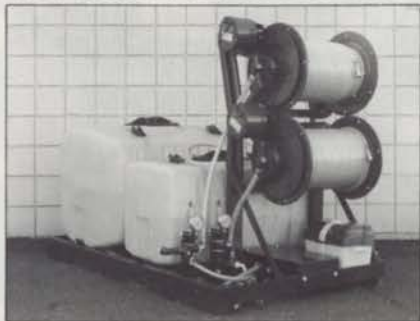
The unit is compact, easy to tow and available with a wide variety of gas and diesel power options.

Circle 141 on reader service card

National Lime & Stone Co. has begun marketing its ECOpHRST line of limestone prod-

C & S TURF CARE EQUIPMENT, INC.

BUILDING QUALITY EQUIPMENT
FOR PROFESSIONALS, BY PROFESSIONALS



C & S Protank[®] Sprayers

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

Complete Sprayers...Ready to work

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

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

Custom Orders Welcome!

USE READER SERVICE #102

BROADLEAF WEED CONTROL WITHOUT 2,4-D

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

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

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

Tri-Power[™] Triamine II[™]

Call us at 1-800-345-3330

Riverdale

USE READER SERVICE #109

ucts to professional turf commercial and residential markets. The crushed stone, available in 40- and 50-pound bags, is formulated for easy use and fast soil reaction, and is sized to blend uniformly with fertilizers. The new packaging is billed as user- and environmentally friendly.

Circle 142 on reader service card

Melnor added four all-metal sprinklers to its Heritage Edition line.

Called the 3200 oscillating sprinkler, the



3900 metal pulsating sprinkler, the 3950 pulsator and the 3800 metal revolving sprinkler, the four additions feature brass couplings that swivel for easy hose hook-up, and a wire-mesh screen inside the coupling nut to

prevent clogging and to keep the sprinkler clean.

Circle 143 on reader service card

The landscape edgings catalog from **Oly-Ola Sales** features the company's full line of poly/vinyl edgings available for 1994. The listing includes Oly-Ola's traditional round top edgings, paver restraints and specialty edgings, as well as anchoring stakes.

The company's Super-Edg can be heated and bent to form corporate logos and designs, while both the Super and Slim-Edg non-round top edgings can be used for low-profile applications.

Circle 144 on reader service card

Cooper Pegler offers a new generation of the CP 2000 backpack sprayer, featuring a leak-proof polypropylene tank, a waist belt and non-absorbent shoulder pads.

Other highlights include a built-in compartment in the pumping handle for spare parts; spray wand clip on the tank's side for easy storage; a piston pump that maintains pressure at 15 or 60 psi; and a glass-reinforced wand for durability.

The CP 2000 is available in two sizes. ■

Circle 145 on reader service card

IRRIGATION
TRAINING SERIES
LESSON TWENTY-ONE

Answers to questions on page 118.

1. Sites that are more than 12 years old or sites that were poorly designed and installed.
2. An extensive background in irrigation system design, installation and maintenance with certification as an irrigation designer (CID), landscape irrigation auditor (CLIA) and irrigation manager (CIM).
3. Historical water usage analysis.
4. Water usage is measured in units that are either in thousands of gallons (M gallons) or per 100 cubic feet (CCF).
5. Annual water use divided by irrigated area times 12 equals annual inches.
6. They can operate after the next valve starts its cycle resulting in low pressure for both zones and inadequate coverage.

**SOFTWARE!
MILLIE.
Version 6.0**

**1-800-262-9498
(516) 796-2181**

- ✓ Unlimited Companies, Accounts & Transactions
- ✓ Truck Routing & Scheduling Route Sheets & Workorders
- ✓ Estimates, Proposals, Leads Unlimited Formletters
- ✓ Income/Expenses/Budgeting Complete Financial Reports
- ✓ Job Costing Man Hours Worked Totalized
- ✓ Create Your Own Reports Bills Print on any Statement
- ✓ Check Writer Chemical Application Reports
- ✓ Mailing Lists, Post Cards, Address Labels
- ✓ Be Reminded of Events/Dates Equipment Maintenance

- ✓ Invoices, Statements, Checks Can Fit ANY Form!
- ✓ Aging/Sales Tax/Finance Chgs Extensive On-Line Help
- ✓ Mouse support, Dialog Boxes Pulldown and Popup Menus
- ✓ Automatic Phone Dialer Bar Graphs & Pie Charts
- ✓ Designed for ANY Service Business!

Competitor Upgrades Available!

**★ FREE ★
Demo Disk Available!**

**Call 24 Hours!
Credit Cards Accepted!**

Landscapes

USE READER SERVICE #110

Landscape Curb Machine



It's finally here. A curb machine that takes the work out of installing landscape curbing. The "Lil' Bubba" has a newly patented stainless auger which provides tighter compaction at a faster rate. "Lil' Bubba" has the shortest wheel base of any curb machine enabling it to turn a shorter and tighter radius when pouring curb below ground level. With "Lil' Bubba" you will add enormous profits to your current business.

Whidden Manufacturing Co., Inc.

P.O. Box 721000, Orlando, FL 32872-1000
(407) 381-9880, Fax (407) 381-2194

USE READER SERVICE #107

Calendar

APR. 8-9 1st STNGA Spring Annual Trade Show, The Woodlands Executive Conference Center, The Woodlands, Texas. Contact: Ed Ricks, Southeast Texas Nursery Growers Association, 713/592-7482.

APR. 11-12 Southeast Turfgrass Conference, Tifton, Ga. Contact: Georgia Turfgrass Association, 404/975-4123.

APR. 13 Automatic Rain Turf Day '94, Alameda County Fairgrounds, Pleasanton, Calif. Contact: Pam Grady, Automatic Rain Co., P.O. Box 2067, Menlo Park, CA 94026-2067; 415/323-5161.

APR. 23-24 California Certified Landscape Technician Test, Pierce College, Woodland Hills. Contact: Kim Heckes, California Landscape Contractors Association, 616/448-2522.

APR. 26-28 New England Environmental Expo, Hynes Convention Center, Boston, Mass. Contact: NEEE, P.O. Box 23, Belmont, MA 02178; 617/489-4199.

APR. 27 Scouting for Pests and Problems in the Landscape, Waltham, Mass. Contact: IPM

Workshops, UMass Cooperative Extension System, French Hall, Box 32910, Amherst, MA 01003; 413/545-0895.

APR. 30-MAY 2 Turf and Ornamental Communicators Association Annual Meeting, Raleigh, N.C. Contact: Lois Kocon, TOCA, 8400 Normandale Lake Blvd., Suite 500, Bloomington, MN 55437; 612/832-5000.

MAY 3 Landscape Clinic, King's River College, Reedley, Calif. Similar landscape clinics will be held May 12 in Sacramento and May 17 in Anaheim. Contact: California Association of Nurserymen, 4620 Northgate Blvd., Suite 155, Sacramento, CA 95834; 916/567-0200.

MAY 18 North Carolina State University Turf & Landscape Research Field Day, Raleigh, N.C. Contact: NCSU, 913/832-4444.

JUN. 8 California Certified Nursery Professional & Advanced Exam, King's River College, Reedley, Calif. Other dates and locations proceed throughout the month. Contact: California Association of Nurserymen, 4620 Northgate Blvd., Suite 155, Sacramento, CA 95834; 916/567-0200.

JUN. 17 Turf Merchants Inc. Research Facility Tour, Aurora, Ore. Contact: Turf Merchants, 503/926-8649.

JUN. 20-24 American Seed Trade Association Annual Convention, Hilton Hotel, Minneapolis, Minn. Contact: Bob Falasca, ASTA, 601 Thirteenth St. NW, Suite 570 S, Washington DC 20005; 202/638-3128.

JUN. 23-26 Outdoor Power Equipment Institute Annual Meeting, La Costa Hotel, Carlsbad, Calif. Contact: Lori Baker, OPEI, 341 S. Patrick St., Old Town Alexandria, VA 22314; 703/549-7600.

JUL. 13-16 American Association of Nurserymen Conference and AAN Convention/MANTS Trade Show, (Jul. 14-16), Baltimore, Md. Contact: AAN, 1250 I St. NW, Suite 500, Washington DC 20005; 202/789-2900; or Mid-Atlantic Nurserymen's Trade Show, P.O. Box 314, Perry Hall, MD 21128; 410/882-5300.

JUL. 19-21 3rd Annual Midwest Grounds Management Conference, University of Illinois, Normal. Contact: Chuck Scott, 309/438-2032.

<p>PUMPS ENGINES GUNS SWIVELS HOSE NOZZLES REELS SPREADERS TANKS TOOLBOXES FLOW METERS STRAINERS CHIPPERS REGULATORS PTO'S VALVES MEASURING WHEELS HAND SPRAYERS ROOT FEEDERS BOOMS & PARTS PH METER ROPE SADDLES PRUNERS SAWS SEALANTS GLOVES POLES</p>			
<p>TRUCK & SKID SPRAYERS</p>  <p>INCLUDES 50 GALLON TANK ALUMINUM FRAME 12V 4.5 GPM PUMP 25' 3/8 HOSE POLY SPRAY GUN \$499.00</p> <p>ALL SIZES AVAILABLE</p>		<p>SPILL KIT</p>  <p>Truck Kit Soaks Up to 30 Gallons Yellow Nylon Bag \$69.95</p>	
<p>PRUNER</p> <p>High Quality Replaceable Blade Lifetime Warranty \$16.00</p> 		<p>600 PSI HOSE 300' or 400'</p>  <p>5/8" PVC \$1.09/R. 1/2" PVC \$.53/R. 3/8" PVC \$.46/R.</p>	
<p>BACKPACK SPRAYER 4 Gal - 70 PSI</p>  <p>\$69.95</p>		<p>Climbing Ropes Bull Ropes 120', 150', 600'</p>  <p>True - Buckle - Pin</p>	
<p>PROFESSIONAL TREE & TURF EQUIPMENT</p> <p>6945 Indiana Court, #400 • Golden, Colorado 80403</p> <p>303-422-7608 800-237-7785</p>			
<p>BANJO BOOM BUSTER BRIGGS & STRATTON CHAPIN DOSTRON EARTHWAY FLOJET FMC/BEAN GATES GREEN GARDE HANNAY HONDA HUSOVARNA HYDRACELL HYPRO JAMESON KOHLER KURIYAMA LESSCO MARVIN MYERS NEW ENGLAND RADIARC RAVEN SAMSON SP SYSTEMS TEEJET TUFLEX UDOR</p>			

USE READER SERVICE #111

USER FRIENDLY WEED CONTROL

Now More Than Ever Is The Time To Go Dry!

Worker Protection, DOT Specifications and Exposure Reduction Program all mean more difficulty handling pesticides unless you use **Tri-Power® Dry** or **Dissolve®**. Water soluble herbicides in water soluble bags. Your choice of a 2,4-D based or 2,4-D free program. Just toss the bag in the tank and go!

- ✓ No Mixing
- ✓ No Measuring
- ✓ No Pouring
- ✓ No Container Disposal
- ✓ No Exposure to Concentrates
- ✓ No Freezing
- ✓ Packaged in Recyclable Cartons
- ✓ Cleared For Use On Cool & Warm Season Turf

DISSOLVE® / TRI-POWER® DRY

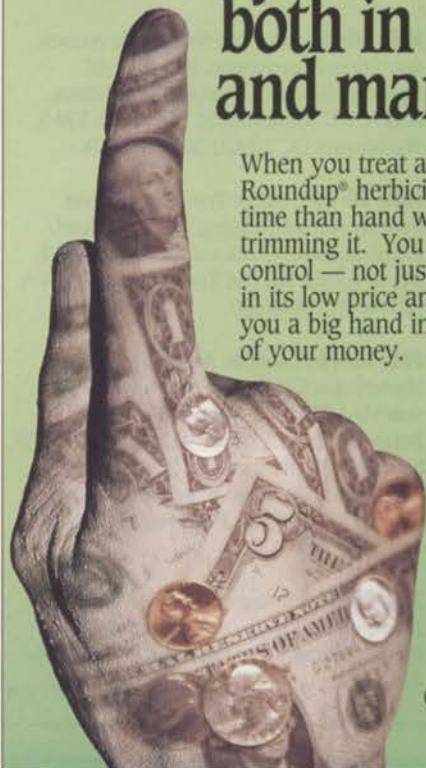
Call us at 1-800-345-3330

Riverdale

USE READER SERVICE #85

Roundup® points the way to savings - both in money and manpower.

When you treat an area with Roundup® herbicide, it takes less time than hand weeding or string trimming it. You also get complete control — not just burndown. Add in its low price and Roundup gives you a big hand in making the most of your money.



Get your FREE kit, "Weeds Are No Longer Our Only Concern." Call 1-800-332-3111.

RD-47080 2/94

Once the audit is completed, a more realistic and efficient irrigation schedule can be established.

Don't forget to jot down the existing irrigation schedule and to take soil samples. The existing schedule will indicate potential runoff and overwatering. Using a soil probe take at least 10 soil samples per acre. This will help determine root depth and soil type.

After the field work is completed, begin the written report. The report should contain the following:

- equipment type and condition
- system operating pressure
- system operating schedule
- historical water usage
- short-term recommendations
- long-term recommendations
- costs and benefits

Next month, we'll conclude the discussion of irrigation system evaluation by discussing how to make recommendations including cost benefits, budget estimates, phasing, what to reuse from the existing system and renovation vs. replacement.

The author is vice president of Keesen Water Management, 10700 E. Bethany Dr., Suite 103, Aurora, CO 80014.



Irrigation Training

(continued from page 118)

A-17) so repairs are easily identified by service personnel.

Pressure should be checked to verify the correct operating pressure for each zone and the pressure variation within the zone. Sprinkler head operating pressure should be within 15 percent of the manufacturers' recommended optimum pressure rating for the specific nozzle and spacing used in the design. The pressure variation within a zone should not exceed 15 percent.

Sprinkler heads should be checked for arc and radius of coverage, plugged nozzles, plumb, height above or below turf at rest and in operation, rotation speed, matched precipitation nozzles and malfunctions.

Potential liability issues such as broken or missing valve box covers, settled trenches, low and high heads and overspray on buildings and roadways should be identified and the property owner notified by written report.

Check for slow closing and weeping control valves. Valves that are slow closing may operate after the next valve starts its cycle resulting in low pressure for both zones and inadequate coverage. Water that continually seeps from low heads indicates a control valve that is not seating properly. Be on the lookout for a bad seat or a small particle imbedded in the seat.

Using catch-cans to audit the system performance, the variation in precipitation and uniformity of coverage can be seen.

Roundup® points the way to environmental stewardship.



The benefits of Roundup® herbicide extend beyond traditional trim and edge work. It's also being used to restore wildlife habitats. So when it comes to treating sensitive sites, Roundup gives you a big hand.



Get your FREE kit, "Weeds Are No Longer Our Only Concern." Call 1-800-332-3111.

RD-47081 2/94

Roundup® points the way to application ease.



Learning how to properly use Roundup® herbicide is a snap. For even more convenience, try new Roundup Dry Pak. Either way, Roundup gives you a big hand in simplifying worker training.



Get your **FREE** kit, "Weeds Are No Longer Our Only Concern." Call 1-800-332-3111.

IND-47082 2/94

pesticides using city water. To lower solution pH, use a liquid iron product. If staining is a problem, try some vinegar or a buffering compound until a desirable pH is reached.

The best process is to test the pH first then add approximately one quart of liquid iron or vinegar per 100 gallons of water. Test again. If it's still too high, add 1 pint of iron or vinegar per 100 gallons of water.

DEADLY SIN 7. Procrastination.

Rule 7. Don't delay. Spray. Check out the spray rig prior to spraying. Calibrate the rig, practice your walking speed and pattern, figure out the pesticide application rate, check for compatibility and review labels again, just to be sure. Then, adjust the pH, mix and spray.

Remember, no matter how carefully it's mixed, the pesticide solution in the tank will start to degrade. Whether it takes hours, days or weeks to degrade fully, it's best to get the product down immediately to be most effective.

If you are stopped by a breakdown or by the weather, try to keep the rig out of the sun since higher solution temperature means a quicker pesticide breakdown.

Recheck your calibration during the spring season. Sometimes a worn pump, regulator or nozzle can cause grave problems with application rates and, worse yet, callbacks. ■

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

The Calibration Rehearsal

(continued from page 99)

DEADLY SIN 6. Improper pH of spray solution for selected pesticides.

Rule 6. Adjust the pH of the spray solution prior to adding pesticides. Most pesticides will perform best in a solution with a pH between 5 and 6.9. Make sure a pesticide is not added to a solution with a pH of 8 or higher. Under those circumstances many products will begin to break down immediately.

This process is called hydrolysis. Some popular pesticides have a half-life (how long it takes half the pesticide to become inactive) of 1 hour or less in a solution with a pH of 9. Water treatment plants operate under an Environmental Protection Agency directive to maintain drinking water at a pH of 8/plus or minus 1.

A good pH meter is necessary for anyone who plans to spray

Jar Test Rates

Type of Pesticide	Rate/Acre	Teaspoons/Quart Jar
Wettable Powder or	1 pound	1 1/2 teaspoons
	2 pounds	3 teaspoons
Dry Flowable	3 pounds	4 1/2 teaspoons
	4 pounds	6 teaspoons
Emulsifiable Concentrates, Flowables, Liquids	1 pint	1/2 teaspoon
	1 quart	1 teaspoon
	2 quarts	2 teaspoons
	4 quarts	4 teaspoons

Roundup® points the way to beautiful results.



Used properly, Roundup® gives you a big hand in achieving long-lasting control that blends in with your surroundings.



Get your **FREE** kit, "Weeds Are No Longer Our Only Concern." Call 1-800-332-3111.

ALWAYS READ AND FOLLOW LABEL DIRECTIONS FOR ROUNDUP HERBICIDE. Roundup® is a registered trademark of Monsanto Company. © Monsanto Company 1994. IND-47082 2/94

Classifieds

RATES

All classified advertising is 75 cents per word. For box numbers, add \$1 plus six words. All classified ads must be received by the publisher before the first of the month preceding publication and be accompanied by cash or money order covering full payment. Submit ads to: *Lawn & Landscape Maintenance* magazine, 4012 Bridge Ave., Cleveland, OH 44113. Fax: 216/961-0364.

...

BUSINESS OPPORTUNITIES

LAWN CARE PROGRAM

NaturaLawn® of America provides the Green Industry a successful, growth-oriented lawn care program. Discuss the opportunities available to you by calling the leader in organic-based lawn care. The franchise opportunity of the '90s. 800/989-5444.

...

WHOLESALE DISTRIBUTOR

Needed to market environmentally friendly, liquid, slow-release fertilizer products direct from manufacturer. 800/832-9635.

...

BUSINESSES FOR SALE

LANDSCAPE FIRM

Landscaping, construction and maintenance firm. Located in eastern Washington. Business, location, home and all equipment included. Annual income of \$250,000. Asking price, \$385,000. 509/786-3865. Ask for Chuck.

...

LANDSCAPING, HYDROSEEDING, SNOW REMOVAL

15 years of profitable operation. \$500,000 to \$600,000 annual sales. \$200,000-plus in operating equipment. We do a lot of municipality work. Have only reached 50 percent of capability. Fax: 810/547-8936.

...

LAWN CARE SERVICE

EXCELLENT OPPORTUNITY. Lawn care service, well-established, 9 years old, covering three counties, room for good growth and many add ons, PLUS. Located in southern Arkansas. Call after 5 p.m., 501/725-2450.

...

LANDSCAPE BUSINESS

Active landscape business for sale. Operating in Boston, Mass., for 10 years. Accounts/vehicles/equipment. \$55,000. Tel., 617/524-6481.

...

WANTED TO BUY

LAWN CARE SERVICE BUSINESSES

If you have been thinking about selling your lawn care service business we are interested. There are

many options and possibilities. All communication is strictly confidential. Reply to *Lawn & Landscape Maintenance*, Box 363, 4012 Bridge Ave., Cleveland, OH 44113.

...

FOR SALE

LAWN CARE EQUIPMENT

Hannay reels new in-the-box, E1526s, E1530s, \$369; lawn spray hose, 275 psi and 600 psi, all sizes; original Imler measuring wheels, \$54.95; glycerin-filled gauges, 0-60 psi to 0-1,000 psi, \$19.95; ChemLawn guns, \$81.95; lawn spray boots, \$16.95; lawn spray gloves, \$1.95/pair.

Call Hersch's Chemical Inc.
800/THE-LAWN
800/843-5267—outside Michigan

...

PIPE LOCATOR

INEXPENSIVE. Locates, traces underground drain, water pipelines of clay, PVC, ABS, steel and cement. Bloch, Box 18058, Cleveland, OH 44118; 216/371-0979.

...

FINANCING

LET THE GOVERNMENT FINANCE your small business. Grants/loans to \$500,000. Free recorded message: 707/448-0270. (NK8)

...

WORK CLOTHES

TOUGH JEANS THAT CUT IT.

Warmer in winter. Cooler in summer. New Dickies Work Jeans. Last longer. Fit better on your job. Feel better on your body. Guaranteed. Call for your free catalog today.



TOLL-FREE 1-800-DICKIES

...

PROVEN STRATEGIES THAT WORK

Lawn industry professionals take notice. Impact your bottom line! Our book, *Bidding and Contracts: Your Key to Success*, over 40 pages of dynamite information, was born of experience, not theory.

Find answers to:

- Why making the right bid is important.
- How to come up with a fair and profitable bid.
- What will the market bear?
- Why using contracts means more profit.
- Plus much more.

\$42.95 includes postage and handling. Profits Unlimited, 3930-B Bardstown Road, Louisville, KY 40218; 502/495-1351. A division of Wayne's Lawn Service Inc. since 1979.

TRAINING VIDEOS

IMPROVE PROFITS and expand your business with well-trained, professional employees. Free catalog of more than 100 training videos from California Polytechnic State University. Subjects include lawn maintenance, irrigation, equipment safety, estimating for bids, pesticide use and safety and many more. Call Visual Education Productions at 1-800-235-4146.

...

INSURANCE

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

...

LAWN CARE EQUIPMENT

New and used concrete curb machines for landscape. \$2,500 - \$5,000. Used Ryan sod cutter, \$1,000. 602/730-5993.

...

GOVERNMENT LAND

GOVERNMENT LAND now available for claim (including agricultural). Up to 160 acres/person. Free recorded message: 707/448-1887. (4NK8)

...

ORGANIC FERTILIZER

Custom-blended and consultation for entry into organic lawn business. Call John, 402/733-8308.

...

GROUNDSCAPING SUPPLIES

Hot off the press. Landscapers Supply Corp.'s 1994 catalog. Save "big bucks." Buy groundscaping supplies and maintenance equipment, engines, parts and accessories at wholesale. Call 800/222-4303 for your free catalog.

PREMIUM REPLACEMENT PARTS

Premium Replacement Parts

J. THOMAS DISTRIBUTORS, INC.



SPINDLE BEARINGS

PART#: JT-101P - COST: \$4.50
(MINIMUM ORDER 10)

OUR 150 PAGE CATALOG HAS OVER 3000 PREMIUM REPLACEMENT PARTS FOR OUTDOOR POWER EQUIPMENT.

CALL FOR A FREE CATALOG
1-800-828-7980

SPRAY SYSTEMS

Two 1985 Chevy C30 600-gal. stainless steel spray systems. One with 2C95 centrifugal pump (Pro-Turf); one with bean 20/20 pump (Pro-Turf). Two hose reels on each. Asking \$7,000 each. If interested call in Pennsylvania, 717/459-1114. Ask for Steve.

REPLACEMENT PARTS

Troybilt—Genuine replacement parts discount catalog. Kelley's, Manilla, IN 46150; 317/398-9042.

IRRIGATION

Drip and subsurface irrigation systems designed at no charge. Free catalogs. Dealer inquiries invited. Submatic, P.O. Box 246, Lubbock, TX 79408. Toll free, 800/692-4100.

SPRAYERS/FIELD STRIPERS

SPRING SALE!!! Walkover Sprayers & Sitaline Athletic Field Stripers. Prices SLASHED! Paddockmaster — \$155; Professional — \$305; Sitaline25 field striper — \$395. **CANAAN INDUSTRIES.** Call 800/633-7560.

LAWN SPRAY TRUCK

1987 GMC 5000 series, rebuilt transmission, new brakes and clutch. 1,200-gallon Tuflex main tank, 200-gallon drop tank with mechanical agitation. Hannay electric hose reel; 300-foot, 800-psi hose; 18-h.p., twin-cylinder Briggs engine with 20-gmp bean pump. Good condition, currently working every day. \$9,800. Fort Myers Pest Control Inc., 800/329-3100.

BREATHABLE NURSERY TARPS

Stock and custom sizes, reinforced edges, grommets each 3 feet. Competitive prices. Fast, free delivery. We accept Visa and MC. 800/888-9669. Ask for dept. LLM 394.

FOR SALE

1. 1984 Chevy 1-ton with 350—auto-PW, PDL new paint/new 10-foot bed with 300-gallon fiberglass tank with 10-gpm bean, 8-h.p. Kohler electric start. Also: 140-gallon fiberglass tank with 10-gpm bean pump, 8-h.p. Kohler electric start. Two Hannay electric hose reels with 300 feet of hose. \$9,000.
2. 1980 Chevy with same set-up as above. \$8,000.
3. 1980 Chevy with same set-up as number 2. \$8,000.
4. 1994 Isuzu Electromatic cab/over with auto AC. 109-inch W/B with new 12-foot bed with electric start. Also, a 200-gallon FMC tank with 20-gpm bean pump and 12-h.p. Kohler and 2 Hannay electric hose reels with 300 feet of hose. Only has 4,400 miles. A steal at \$30,000.
5. 1984 Chevy box truck with ramp. Has 454 auto PW/PDL. 1-ton new rubber. "Nice truck." \$4,500.
6. 1985 Ford Ranger P/U, 5-speed, AM/FM cassette, AC, new transmission. With 100-gallon FMC fiberglass with hypro 10-gpm pump and Kohler 5-h.p. motor and Hannay electric hose reel with 300 feet of hose. \$3,750. Phone: 817/478-4871 or 817/478-3114.

ORGANIC LANDSCAPE MAINTENANCE

Reduce agrichemical use. BUGS Flyer, the premier environmental landscape quarterly, tells you how. Discover the latest environmentally sound landscape products, techniques and resources. Professional subscriptions, \$18. **BUGS, Dept. LLM, P.O. Box 76, Citrus Heights, CA 95611.**

SAVE \$\$\$ LAWN MOWER PARTS

Tired of paying too much for commercial walk-behind parts? **DEEP DISCOUNTS** on blades, belts, tires, transmissions, pulleys, filters and equipment. **EASY ORDERING, FAST DELIVERY and GUARANTEED SAVINGS!** Call Lawn Care Parts Unlimited, 800/574-6389.

FORD TRUCK

1986 Ford 1-ton, 600-gallon, stainless steel tank. Myers 7420 pump. Mechanical agitation. 55,000 miles, fully loaded. \$7,500. 702/361-5095.

LAWN CARE EQUIPMENT

Creative Curb landscape curbing machine, electric with all accessories, includes a two-axle trailer to carry sand and a two bag stone mixer. \$5,000. 813/574-4468 days or 813/574-5463 nights.

HELP WANTED SALES/SERVICE TECHNICIANS

Atlanta area lawn and tree and shrub company

seeking sales and service technicians to run and expand existing branch operations. If you are looking for a challenging new job, please send a resume including references and salary requirements to: KING GREEN, P.O. Box 1585, Norcross, GA 30091-1585 E.O.E.

CAREER OPPORTUNITIES

Chicago firm is looking for qualified, career-minded individuals who are interested in year-round employment in the following categories:

- Landscape construction project coordinator
- Tree division working department manager
- Lawn care division manager
- Landscape maintenance project director
- Landscape maintenance division manager

Please send resume and salary requirements to: Panoramic, 1470 Industrial Dr., Itasca, IL 60143.

REPS WANTED

Would you like to "Rep" for a leader in the green industry? Garick Corp. is looking for independent representatives/rep firms to call on landscape management companies, institutions and municipalities in all areas east of the Rocky Mountains. Please call for Rep Application form. Ask for Cindy at 216/581-0100. FAX: 216/581-4712.

PRUNING DEPARTMENT MANAGER

Swingle Tree Co., a Denver tradition since 1947, is looking for the right individual to manage our pruning department operations. The successful candidate will have five years minimum experience pruning shade trees and ornamental shrubs. Related degree helpful. Responsibilities to include assuring of quality, safety and profitability.

Creative leadership regarding motivation of crews, evaluation of techniques and equipment is essential. This is a leadership position with full management responsibilities.

Swingle will provide you with a drug-free, entrepreneurial work environment where performance is rewarded and mediocrity is removed. At your disposal will be the newest equipment and the best arborists in the region. Compensation will include base salary, pay for performance bonus, health, dental, disability insurance and pension plan. Send resume with references and salary requirements to: SWINGLE TREE CO., 8585 E. Warren Ave., Denver, CO 80231. ATTN.: MR. GREENE.

GARDEN CENTER MANAGER

Well-organized, self-motivated individual needed to run small garden center. Responsibilities include inventory control, customer relations, sales, seasonal displays and marketing. Perfect job for creative, friendly person who's not afraid to get his/her hands dirty. Limitless possibilities. Please send resume to D&D Tree & Landscape, 172 W. Nyack Road, W. Nyack, NY 10994, or fax: 914/624-1920.

LANDSCAPE MAINTENANCE MANAGERS

Well-established major landscape firm needs

experienced, quality-minded professionals for northern California operations. Challenge and opportunity await high-achieving, self-motivated individuals. EOE. Send resume to: Cagwin & Dorward Landscape Contractors, P.O. Box 1600, Novato, CA 94948-1600.

...

LANDSCAPE MAINTENANCE DIVISION MANAGER

An established, quality-oriented, Chicago North-Shore area design/build/maintain firm is seeking an experienced individual to manage its enlarged landscape maintenance division. A strong background in all phases of horticulture turf management and proper maintenance techniques is required. Duties include program planning and strategies, sales, servicing of accounts, scheduling and crew and site supervision. Spanish speaking ability is a plus. An exciting position with a rewarding, long-term future for a qualified individual. Send resume to the Don Fiore Co. Inc., 28846 Nagel Ct., Lake Bluff, IL 60044. 708/234-0020.

...

TREE TRIMMERS

We are a growing, well-established, Chicago area, full-service tree care company which appreciates its employees and offers a good pay and benefits package as well as steady work. If

you have rope and saddle experience in trimming shade and ornamental trees we would like to talk to you. If you have a CDL driver's license, this is a plus. Our employees take pride in their work. Contact us today. B. Haney & Sons Inc., 3344 Lincoln St., Franklin Park, IL 60131; 708/678-7809. Fax: 708/678-0617.

...

GUARANTEED INCOME

EARN MORE IN A DAY
THAN MOST PEOPLE
EARN IN A WEEK
GUARANTEED INCOME
CALL NOW
1-800-618-8554
D. & K. ASSOC.

IT PAYS
TO
ADVERTISE
IN LLM
CLASSIFIEDS.

TROMAX TROMMEL SCREENING SYSTEMS

6' diameter barrel, variable speed planetary gear drive, 49 H.P. diesel engine, 3.5 yard hopper, screw auger feed system, hydraulic lift legs, dual wheel axle, landing gear, exclusive wiper side discharge - no conveyors required, rotating cleaner brushes, fold down shoveling apron, dust suppression system, higher production ... at 1/3 the cost of competitive units!

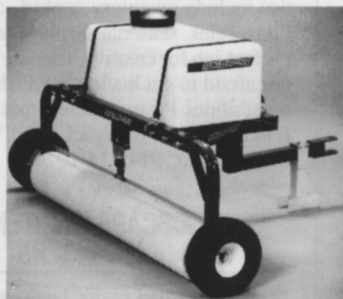
FULLY EQUIPPED • F.O.B. Your Jobsite • \$49,900.00

Norkot Mfg. Co. • 1-800-TROMAX-1 • Fax 701-228-2127 • Request free video
876-6291

USE READER SERVICE #117

NO-DRIFT CHEMICAL APPLICATOR

Now apply chemicals on windy days! Sizes range from 30" to 72". Send for free packet with complete parts information and prices.



DANVILLE INDUSTRIES

Box 8
124 W. Main
Harper, KS 67058

1 (800) 662-4212
1 (316) 896-7192

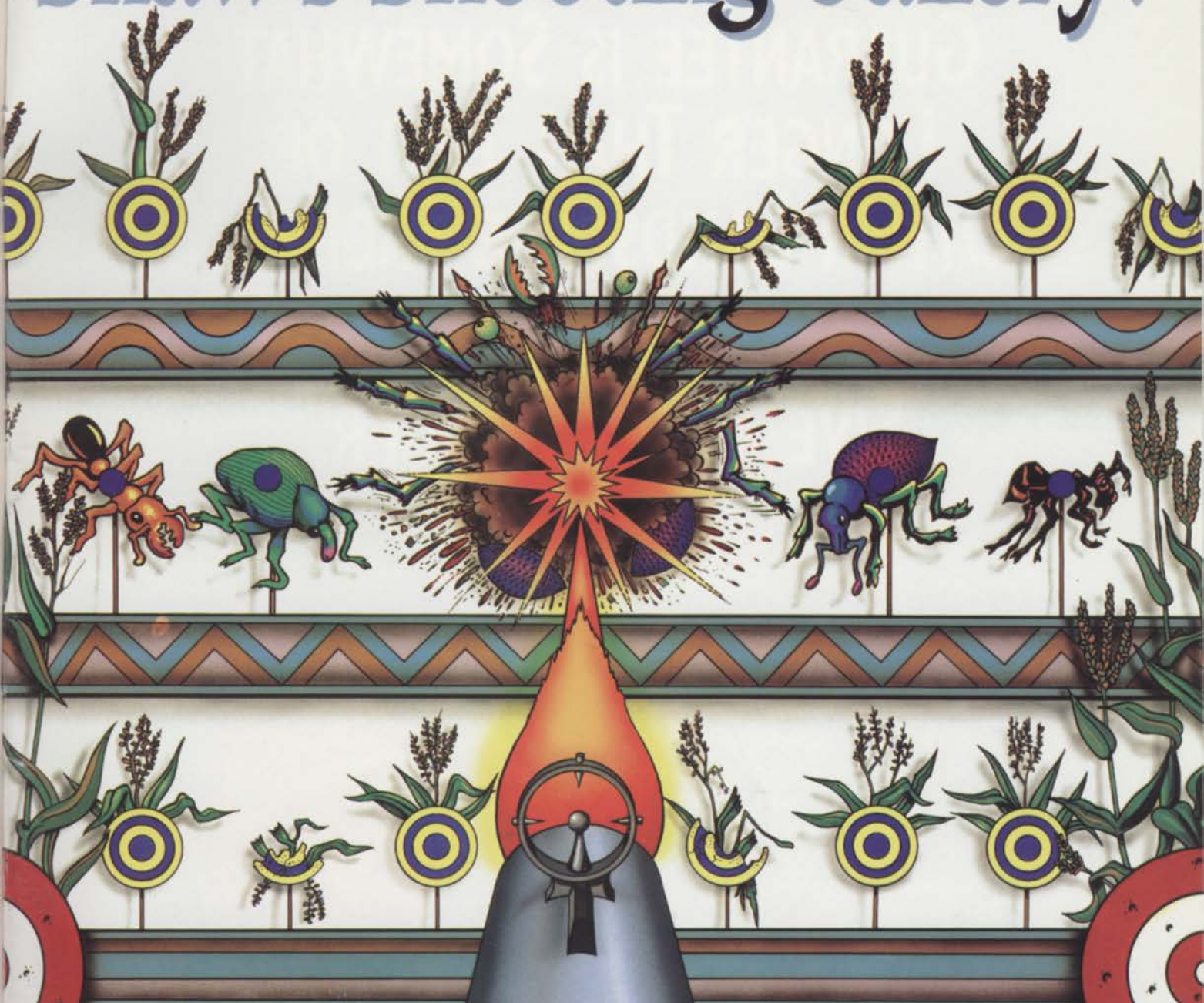
USE READER SERVICE #119

Ad Index

American Cyanamid	92, 93
Ameriquip	125
The Andersons	19, 119
BASF	109
Badger	118
Blackburn	56
Bunton	51
C&S Turf	46, 131
CBS Software	26
Carlson	84
Ciba	2, 348, 49, 73-80, 106-107*
Classen	125
Compuscapes	25
CoRoN	44
Corona Clipper	47
Corona Plastics	117
Creative Auto	104
Creative Curb	98
Dalen Products	140
Danville	138
Deere & Co.	57-64
Design Imaging Group	128
Dilloware	56
Dixie Chopper	26
Doane	104
DowElanco	22, 23, 38, 39, 114, 115
ESC	123
Echo	18
FMC Corp.	55
Feldman	98
Finn	86
Ford New Holland	37
Gandy	25
Gemplers	124
Glen Hilton	118
Glenmac	70
Great Plains	13
Green Industry Expo	65
Green Thumb	121
Greener Pastures	120
HLS	122
Haybuster	99
Hoechst-Roussel	85
H.D. Hudson	17
Hunter	110
Knox Fertilizer	139
Kubota	21
Landscapes 2000	132
Lebanon	27
Longhorn	46
Manor Software	84
J.J. Mauget	69
Medalist America	71
Miles	89
Monsanto	100, 101, 134-135*
Mutton	121
NOR-AM	53
Norkot	138
Oldham	54
Olson	116
PBI Gordon	87
PLCAA	13
Professional Tree Care	133
RISE	106-107*
Rainbird	28
Riverdale	131, 133
Roots	9
Royer	122
Ryan/Ransomes America Corp.	41
SPS	123
STNGA	123
Sandoz	126, 127
Scag	91
Sensible Software	7
Shindaiwa	105
Softquest	17
Spittle	121
Steiner	108
Still	54
Tanaka	116
Toro	4
Tuffex	33
Turftech	24
United Hort	67
Walker	124
Wells Cargo	20
Westheffer	120
Whidden	132
Wright	72
Zeneca	15, 45

* Denotes regional advertising

Shaw's Shooting Gallery!



If your present supplier isn't providing you with a foolproof pest and weed control formula, call on the SHAW'S TEAM! They're loaded and ready to BLAST your weed and insect problems away!

*Registered Trademark of DowElanco

TEAM*
DURSBAN*
GALLERY*

KNOX FERTILIZER COMPANY, INC.

P.O. Box 248, Knox, Indiana 46534
(219)772-6275 / Fax: (219) 772-5878

Shaw's™

USE READER SERVICE #30

OUR 5-YEAR WEED-FREE GUARANTEE IS SOMEWHAT LONGER THAN THAT OF OTHER LANDSCAPE FABRICS.

FIVE YEARS LONGER.

Only one landscape fabric on the market is guaranteed to stop weeds. Only one. The fabric is Weed-X[®], and our guarantee is very clear: If weeds penetrate Weed-X anytime during five years, we'll refund your money.

How can Weed-X offer such a one-of-a-kind guarantee? It's simple: Weed-X works. Seven leading universities across the country say so. When measuring weed penetration of fabrics, studies prove Weed-X to be up to ten times more effective than other fabrics! Ten times!

That's not an empty advertising claim; that's documented research.

It's not often a product stands so far out in front of its competition. But Weed-X is such a product. No other fabric comes close.

We guarantee it.



WEED-X[®]

The Ultimate Porous Landscaping Fabric

For information call or write Dalen Products, Inc.
11110 Gilbert Drive, Knoxville, TN 37932 • 1-800-GO-WEED-X (1-800-469-3339)