

SERVING THE AMERICAN LAWN APPLICATOR AND MAINTENANCE PROFESSIONAL

# ALA

OCTOBER 1985 • \$1.25

## FUN IN THE SUN

**Tampa Hosts  
PLCAA Convention**

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DR. JAMES B. BEARD  
DEPT OF SOIL & CROP SCIENCES  
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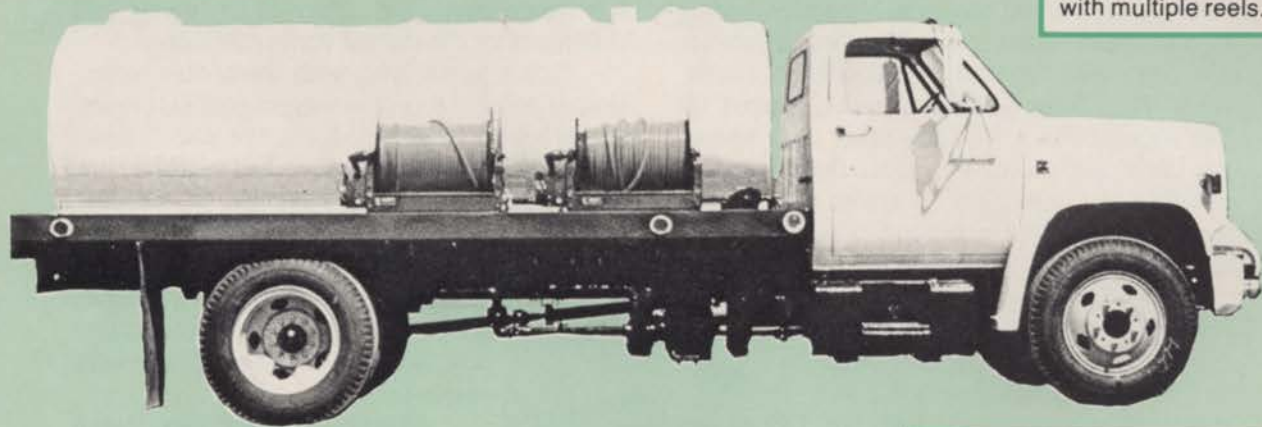
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# ALA

OCTOBER 1985  
VOLUME 6 NUMBER 10

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### COVER

If you were wavering on whether or not to go to the PLCAA conference in Tampa next month, we hope this inviting tableau on our cover will get you packing. Our model Deborah Kupar probably won't be in Tampa, but that shouldn't stop you from having "Fun In The Sun." Photographer: Barney Taxel

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\*Customer eligibility for Toro's Unit Down and Direct Ship Programs, and responsibility for freight and handling options, subject to local distributor option.

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☐ I'd like to arrange for a demonstration of Toro Commercial equipment.

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Company

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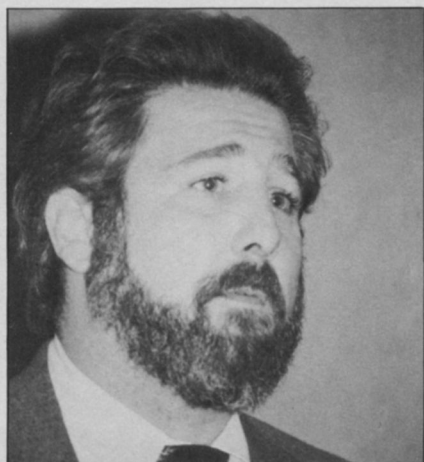


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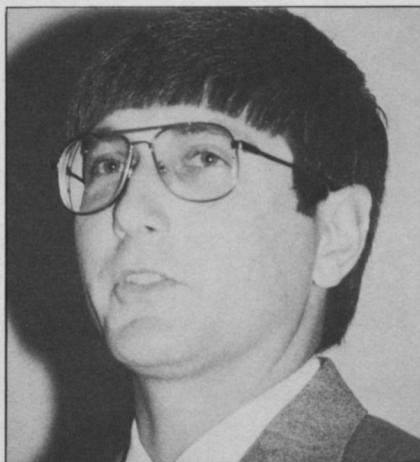


# VIEWS ACROSS THE LAWN CARE INDUSTRY

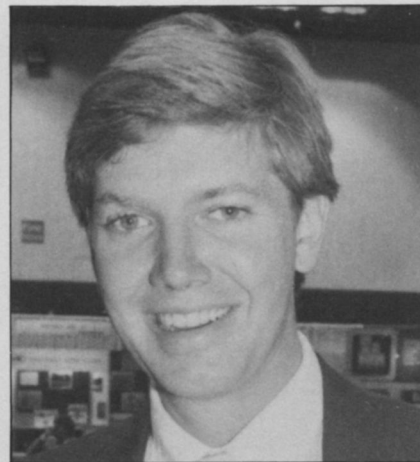
## HOW VALUABLE ARE TURF CONFERENCES TO YOU?



"I value them a lot — mainly because I am newer in the industry. We have attended the regional PLCAA seminars and I have gotten a lot out of those. Plus, I think the Ohio turf conference is an excellent conference. Between those two, basically since we have been in the business, one of us has always gone to one of them. They have been great for getting information on products." — **Glen Scherzinger, Scherzinger Lawn Care, Cincinnati, Ohio**



"First, it gives me an update on the academics and the latest techniques. Second, I pick up a lot from distributors and manufacturers in talking with them about new products or experimentals available in the next year or two. Third, you get to talk to people from other companies. Everybody is dealing with pretty much the same problems, so you see different approaches to those problems." — **Greg Mazur, Davey Landscape Service, Kent, Ohio**



"The main value is not the seminars, but talking to other professionals in the industry, finding out their trials and errors. During the year you usually don't get a chance to talk with other people within the industry around here. I think the conferences go over too many things too much. The majority of people in the industry have heard about all there is to know about core aerification." — **Paul Carlson, Central Sod Farms, Inc., Plainfield, Illinois**

## CALENDAR

### Nov. 3-7

15th Educational Conference of the National Institute on Park and Grounds Management, Holiday Inn World's Fair and Convention Center, Knoxville, Tennessee. Contact: National Institute, Box 1936, Appleton, Wisconsin 54913; 414/733-2301.

### Nov 11-13

Penn State Golf Turf Conference, Keller Conference Center, Pennsylvania State University, University Park, Pennsylvania. Contact: Dr. Joseph Duich, Department of Agronomy, 21 Tyson Building, University Park, Pennsylvania 16802; 814/865-9853.

### Nov. 13-15

1985 Oklahoma Turfgrass Conference and Trade Show, Lincoln Plaza, Oklahoma City, Oklahoma. Contact: Turf Extension Specialist, Oklahoma State University, Department of Horticulture and Landscape Architecture, 360 Ag Hall, Stillwater, Oklahoma 74078.

### Nov. 17-21

Irrigation In Action, Fresno Convention

Center, Fresno, California. Contact: Mark Baechtel, The Irrigation Association, 13975 Connecticut Avenue, Silver Spring, Maryland 20906-2976; 301/871-1200.

### Nov. 18-21

PLCAA Sixth Annual Conference and Trade Show, Curtis Hixon Convention Center, Tampa, Florida. Contact: Jim Brooks, PLCAA, 1225 Johnson Ferry Road NE, Suite B-220, Marietta, Georgia 30067.

### Dec. 2-5

New Jersey Turfgrass Expo '85, Resorts International Hotel, Atlantic City, New Jersey. Contact: Dr. Henry W. Indyk, Soils and Crops Department, Cook College — Rutgers University, New Brunswick, New Jersey 08903; 201/932-9453.

### Dec. 2-5

1985 Ohio Turfgrass Conference and Show, Cincinnati Convention-Exposition Center, Cincinnati, Ohio. Contact: John Street, Ohio State University, Cooperative Extension Service, Agronomy Extension, 2021 Coffey Road, Columbus, Ohio 43210-1086;

614/422-2601.

### Dec. 19-20

Southern Nevada Conference on Desert Landscape Management: Turfgrass, Sahara Hotel, Las Vegas, Nevada. Contact: Robert Morris, Cooperative Extension, 953 East Sahara Avenue, S.T. & P. Building #207, Las Vegas, Nevada 89104; 702/731-3130.

### Jan. 22-24

Mid-Atlantic Nurserymen's Trade Show (MANTS), Baltimore Convention Center, Baltimore, Maryland. Contact: Mid-Atlantic Nurserymen's Trade Show, Inc., Perry Hall, Maryland 21128; 301/256-6474.

### Jan. 28-29

1986 Horticulture Industries Show, Tulsa Convention Center, Tulsa, Oklahoma. Contact: Turf Extension Specialist, Oklahoma State University, Department of Horticulture and Landscape Architecture, 360 Ag Hall, Stillwater, Oklahoma 74078

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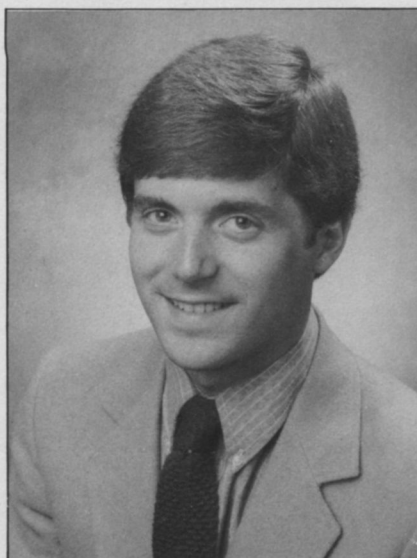
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# INSIDE STORY

It's that time of the year again! Before you know it we will be packing up and heading south for some "Fun In The Sun" when the Professional Lawn Care Association of America returns to Tampa, Florida for its 6th Annual Conference and Show on November 18-21. Assistant Editor Vivian Fotos Rose takes us on a tour of scenic Tampa and its tourist attractions in her pre-conference coverage cover story. Also featured in the article is a synopsis of conference business and social events.

But all is not fun and frolic in the October issue. We take a look at the groundwater contamination issue with an eye toward the lawn care industry's link to this growing problem. In this article, we also probe the background and details of the groundwater contamination issue. Groundwater contamination is being examined by everyone from Environmental Protection Agency officials to university researchers. So far no one can point the finger at lawn care operators without reserva-



tion, but only time will tell whether this industry is implicated as a groundwater contaminator.

In "Customer Service," contributing author Mike McKee, President of New

England Green, Inc., tells us what it takes to acquire and retain customers. McKee knows from personal experience how important the many facets of customer service really are. You can't simply sell a homeowner your service, you have to effectively communicate with him and convince him you are a cut above the rest.

And of course, we have an interesting assortment of technical research articles for you. "Fall Herbicide Applications" is authored by Nick E. Christians of Iowa State University, Ames, Iowa. "Salinity Stress" comes to us from W.A. Torello of the University of Massachusetts, Amherst, Massachusetts. "Nefarious Nematodes" is written by Leon T. Lucas of North Carolina State University, Raleigh, North Carolina. Happy Reading!

*Tim Weidner*

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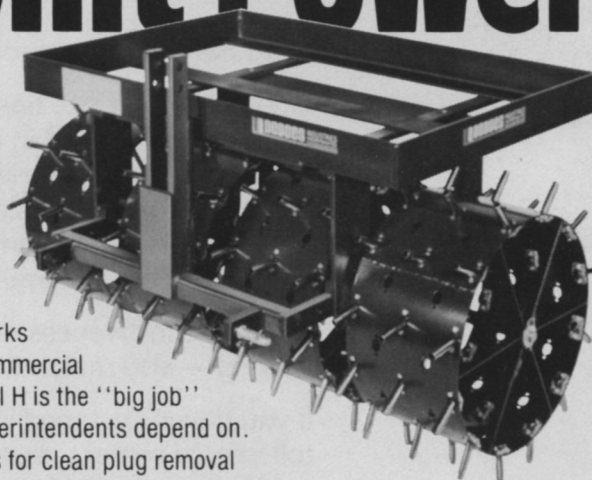
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- ☐ Golf Course
- ☐ School, College, Hospital
- ☐ Government Grounds, Parks, Military Facilities
- ☐ Housing Development or Industrial Park
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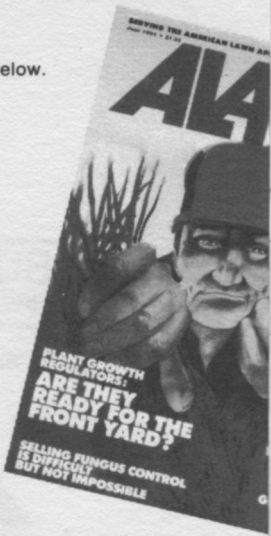
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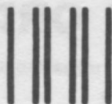
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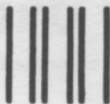
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# NEWS IN BRIEF

## VIDEO AVAILABLE FOR LANDSCAPE CONTRACTORS

A new videotape seminar for landscape maintenance contractors has been introduced by The Idea Bank. The 2-1/2 hour program is entitled, "How to Make Money in the Landscape Maintenance Business." The videotape is taken from a slide-illustrated presentation recorded by Joe Marsh for the National Landscape Association's annual conference.

Marsh is co-author of the new textbook, *Cost Effective Landscape Management*. His industry experience also includes 10 years as President of Environmental Care, Inc., where he managed 300 employees offering landscape maintenance services in four states.

The topics covered in the video seminar are aimed specifically at owners and managers of landscape maintenance firms. His subjects include: "How to Find and Train New Employees," "Saving Money on Equipment Maintenance," "How to Lower Your Labor Costs With Chemicals and Specialized Equipment," and "Organizing Your Company For Profitable Growth."

The color videotape is available on two VHS cassettes and also includes a reference manual prepared by Marsh. The cost of the tapes and manual is \$99 plus postage. To order the videotapes by credit card, call The Idea Bank toll-free at 1/800/621-1136. In Arizona, call 602/829-1233.

## SPRAYING SYSTEMS HAS CALIBRATION VIDEO

Spraying Systems Company announces the release of a new video program called, "Tune-Up for Profits." The presentation covers the subject of sprayer



Spraying Systems Co.  
Presentation



Quality Call executives: (left to right) Dean Call, John McAlister, Jack Finch, and William Darling.

calibration in an easy-to-follow personal approach. The viewer "walks" through the steps of calibration, and is provided with helpful suggestions regarding tip selection. Running time for the program is 18 minutes and the tape is non-commercial in nature. For additional information, contact: Spraying Systems Company, North Avenue, Wheaton, IL 60188.

## QUALITY CALL ENTERS FRANCHISE FIELD

The newest entry in the burgeoning service franchise field is a Columbus, Ohio company called Quality Call, according to a report in *The Columbus Dispatch*. Quality Call will offer franchises to independent retail sales and service firms that serve owners of both commercial and residential property. The company will offer franchises in plumbing, heating, electrical work, carpentry, lawn service, carpet cleaning, and other services.

"Quality Call will offer the broadest range of services in its field," stated Dean R. Call, company President. "Our franchise affiliates will cover 70 areas of service, ranging from acoustical contracting to welding. The entire thrust of our effort will be to sign up only those service dealers who are capable of offering prompt service, quality workmanship and materials, and charging a fair price."

Call pointed out that more than 40 percent of gross sales in the United States are now made through franchise firms and that the success rate for franchises is considerably higher than non-franchise small businesses. Advantages for the Quality Call franchisee, according to the company, include image recognition as part of a large system, expert advertising and marketing power and counsel, management training programs, and group purchasing power. In addition to organizing its first franchises in the central Ohio area this month, Quality Call International will be offering district franchises throughout the nation to sub-franchisers who will then set up franchises in those districts.

## DIRECT MAIL NURTURED CHEMLAWN REBOUND

ChemLawn Corporation, headquartered in Columbus, Ohio, suffered from dwindling response to its direct marketing effort in the early 1980s as it faced increasingly stiff competition, according to a recent report in *Advertising Age*. But the integration of an image and awareness television campaign with a new mail effort resulted in a 50 percent increase in response that the company has maintained ever since.

At an *Advertising Age* Creative Workshop, ChemLawn's Vice President of Corporate Marketing, Ralph Lund,



said, "Powerful factors are at work to encourage marketers to use both general advertising and direct marketing together." Lund said that in the early 1980s ChemLawn fell victim to the ever-increasing clutter of direct mail pieces clogging consumers' mailboxes, along with the growing competition that sprang up — as many as 100 competitors in some markets. And he said some of those competitors copied ChemLawn's mailing pieces so closely they even failed to remove ChemLawn's name from the body copy.

"We found that a good offer and a good (mailing) list were still essential, but no longer enough to insure the success of a direct marketing campaign," he said. "So, as direct marketers, we found the need to start breaking some rules and discover some new possibilities."

ChemLawn turned to Ogilvy and Mather Direct Response in 1982. The agency conducted research to determine what ChemLawn should stand for, what it should do to stand out, and what it should do to spur response and sales. Lund said the solution was to focus on ChemLawn's guarantee which states the consumer will be satisfied or there will be no charge.

The resulting tv spots focused heavily

on that guarantee. Aired just before the spring season, the spots were backed up with mailing pieces that featured a strong offer and long body copy to explain ChemLawn. In the three years since that campaign broke, Lund said, there have been minor revisions, but the "basic positioning and promise have not changed." The campaign reversed a three-year decline in response, which has now been growing at a rate of 50 percent each year.

## BOOK COVERS TURF DISEASES

The American Phytopathological Society now offers the *Compendium of Turfgrass Diseases*, written by Dr. Richard Smiley. This guidebook contains contributions from recognized scientists and agribusiness leaders from more than a dozen countries on all six continents. The book appeals to a broad range of audiences because it combines descriptive language with the clear and concise terminology of the plant pathologist. It is an ideal teaching aid for turf management programs.

The book reviews diseases as they occur on the most common grasses

maintained for fine turfs on lawns and other turf areas. In addition, it represents a collection of the most common diseases occurring on fine turfs throughout the world and includes a "World Checklist of Turfgrass Diseases." The book contains 102 pages, 185 color photographs, and 66 illustrations. The cost is \$14 for members of the American Phytopathological Society and \$17 for non-members. To order the handbook, write APS Books, 3340 Pilot Knob Road, St. Paul, Minnesota 55121.

## BARKER CAMPBELL & FARLEY BUYS BUILDING

Barker Campbell and Farley Advertising and Public Relations, specializing in agricultural and horticultural advertising, has announced the \$1.3 million acquisition of a 16,000 square foot office building located at 240 Business Park Drive in Virginia Beach, Virginia. The agency will relocate to the building's first floor this month. "From our new offices, we have easy access to our clients plus good access to the airport, which is important to serving our many

(continued on page 16)



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Technical data	FLOX 2½ gal.	IRIS 3½ gal.	SENIOR 5 gal.
Weight #	11	11.4	12.1
Tank Capacity	2.6 gals.	3.9 gals.	5.2 gals.
Max. Working Pressure	84 PSI	84 PSI	84 PSI

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## NEWS

(continued from page 14)

out-of-town clients," said Senior Vice President Robert Stiffler, who heads the Agricultural/Horticultural Division.

With annual billings of \$12 million, Barker Campbell and Farley is the largest advertising and public relations agency in Virginia Beach. Its clients include Estech, Inc., Stauffer Chemical Company Specialty Products, Chilean Nitrate Sales Corporation, and Reuter Laboratories.

## FREE BOOKLET FOR FAMILY BUSINESSES

This interesting 16-page booklet is based upon letters written to Frank Butrick, a leading authority on family relationships in the privately-owned business, and his replies. Presented in an almost "Dear Abby" format, the book presents letters from parents at one end and letters from heirs at the opposite end.

The author has written countless magazine articles over the past 25 years, is a frequent convention speaker, and a consultant. He has talked and



Barker Campbell and Farley Advertising and Public Relations' recently acquired office building in Virginia Beach, Virginia.

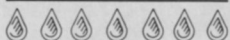
worked with literally thousands of business owners, helping work out problems between owners and their partners or co-owners, spouses, heirs, and key people. These continuous activities fuel an endless flow of correspondence from troubled business owners and their heirs. Some of the most frequently-asked questions are presented in this free booklet.

In all, 24 questions are answered. This fascinating booklet is available free to any business owner/executive or heir who sends \$1 to cover postage and handling, to the Independent Business Institute, P.O. Box 159, Akron, Ohio 44309.

Another free booklet available from the Independent Business Institute by

(continued on page 18)

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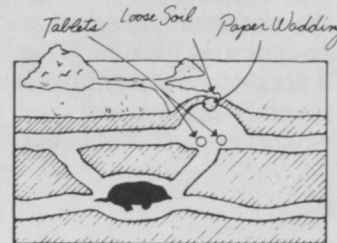


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Start off with the big 1200C Fiberglass Tank. It holds a whopping 1130 gallons. And its attractive cylindrical shape makes for easy mounting on your flatbed truck, or conveniently mount it directly to your truck frame by using the mounting legs. Plus, the 1200C can be

compartmented. It features two sets of stainless steel hatch hardware, two double seal internal hatches, outlet fitting, and two calibrated gallonage indicators.

For the finishing touch Tuflex shines with the 0100CL Torpedo Tank. Add it to your existing main tank. Or, add it to your tough 1200C for an unbeatable uniform combination. The 0100CL (105 gal.) is easy to install and features two 12" fillwells with covers, outlet fitting, ball check vent and calibrated gallonage indicator.

Best of all, Tuflex is the only manufacturer to specialize in handcrafted, seamless fiberglass spray tanks—built specifically for your industry, so you know you're getting the best.

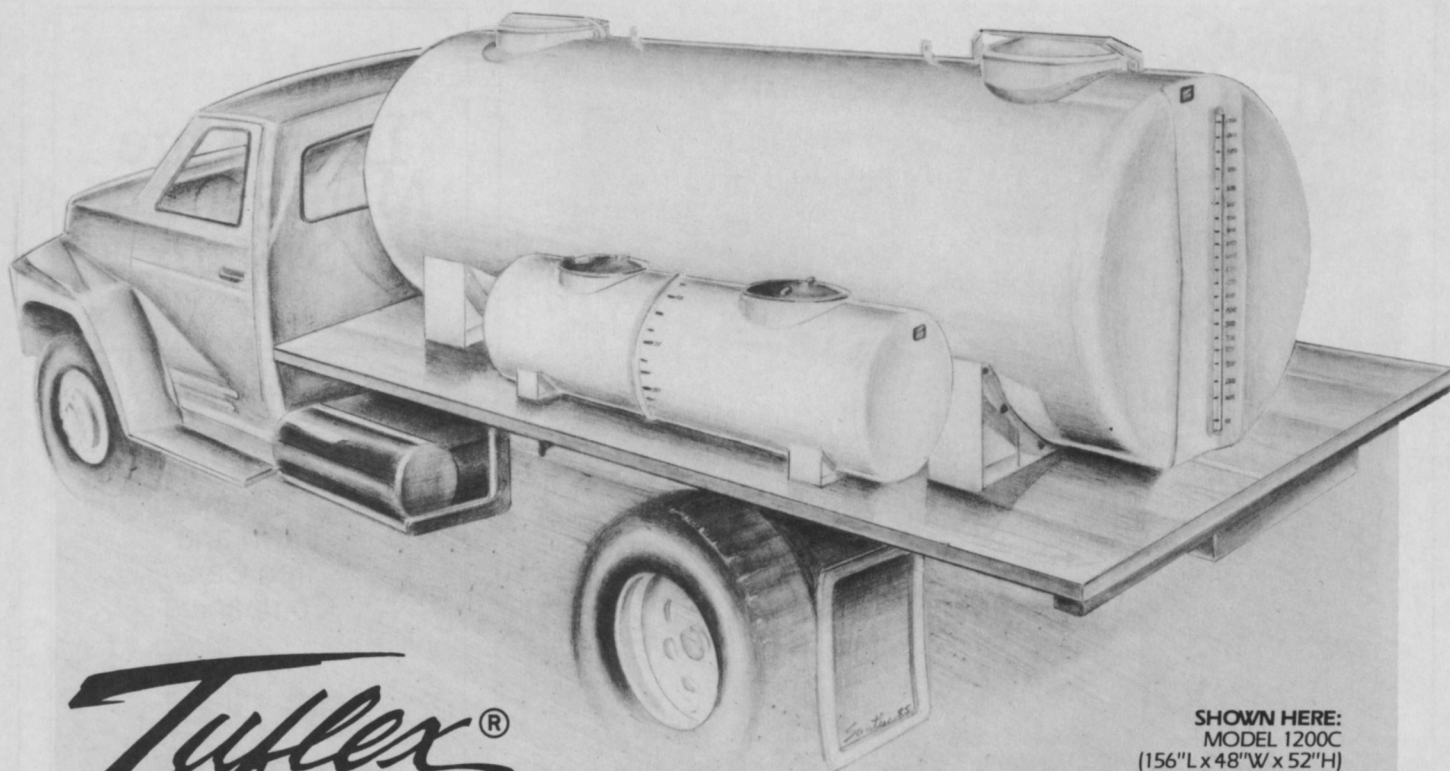
All Tuflex tanks are covered by the Tuflex five year warranty. Our personalized service includes professional assistance in determination of your specific tank needs.

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For more information on our complete line of seamless fiberglass tanks, call toll-free 1-800-327-9005, in Florida call collect (305) 785-6402.



## NEWS

(continued from page 16)

writing the above address is Tax Report 56-85. This report covers the taxable fringe benefit of leased autos, advice on picking a fiscal year, and a warning about rental income in a corporation. A new law creates the need for a new kind of payroll accounting — to increase the taxable wages by the value of the taxable benefit, withhold (federal, FICA, state, local) at that level, then deduct the amount of the fringe to provide net wages/salary.

### TURFGRASS, INC. IS ANDERSONS DISTRIBUTOR

The Andersons of Maumee, Ohio, has welcomed Turfgrass, Inc. of South Lyon, Michigan, as its newest distributor of Tee Time® lawn care products. The addition of Turfgrass, which serves lawn care professionals throughout the state of Michigan, brings to 30 the number of firms in The Andersons' distribution network. Turfgrass is owned and operated by Gene Johanningsmeier, who established the business in 1970.



Turfgrass, Inc. joins The Andersons' distributor network. Left to right: Doug and Gene Johanningsmeier, Bob Scobee, and Keith Johanningsmeier.

"Turfgrass will be a tremendous asset to The Andersons' distribution system because of the scope of the area it can serve and because of the professional knowledge and expertise of Gene Johanningsmeier and his staff," explains Bob Scobee, Professional Products Sales Manager for The Andersons Lawn Fertilizer Division. Turfgrass is now coordinating product delivery, sales, and stocking of the Andersons' Tee Time products for customers in the Michigan area.

### MAGAZINE QUESTIONS LAWN CHEMICAL SAFETY

The July issue of *Parents* magazine contains a question and response in the magazine's "Question & Answer" department under the headline, "Is Your Lawn Safe for Kids?." The reader's question asks if his lawn will be safe for his two- and five-year-old children to play on following a lawn care ap-

(continued on page 20)

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# The best show under the sun. Be there!



Tampa, one more time! The climate is perfect for business when PLCAA returns to the sunny Southland for the 6th Annual Conference and Trade Show. Don't delay—mark your calendar and send for your registration package now! **PLCAA / Tampa '85** promises to be bigger and better than ever.

## WIN, PLACE, AND SHOW WITH PLCAA/TAMPA '85

**WIN!** How can you lose? Take the warmth of Tampa's sunshine, stir in some Southern hospitality, combine it with PLCAA's 1985 Conference and Show and you have **PLCAA / Tampa '85**. This is *your* show. Over 1,000 lawn care professionals like you will be on hand to see what's new and to upgrade their skills.

The 1985 PLCAA Conference features a repeat of the popular "Early Bird" workshops, plus a lineup of seminars and speakers offering the kind of in-depth, useful technical and business information that attendees have come to expect. Here are some program highlights:

- Writing Your 1986 Marketing Plan
- Industry Operating Ratios
- Supervisory Leadership
- Ornamental Spraying and Feeding
- "What's Your Business Worth?"
- Mowing / Maintenance Management
- How to Obtain Financing
- Practical Use of a Computer
- Toxic Waste Disposal—An Update

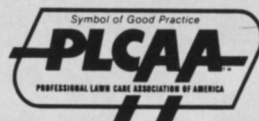
**PLACE!** Tampa means fun in the sun. Continental restaurants, first class hotels, sightseeing and entertainment make you feel welcome, pampered, and relaxed. Bring the family! A host of world-famous tourist attractions are within easy driving distance of Tampa: Walt Disney World, Sea World of Florida, Busch Gardens, Epcot Center, and much more.

**SHOW!** Over 150 companies will occupy the main exhibit hall of Curtis Hixon Tampa Convention Center. Here is your chance to see the new and exciting products and services that will shape the future of lawn care.

## New—Outdoor equipment demonstration!

**PLCAA / Tampa '85** will offer a new outdoor equipment demonstration—your chance to see and compare products in action.

**PLCAA / Tampa '85** means business. Be There!



**YES!** I'm interested in attending PLCAA's 6th Annual Conference and Trade Show. Send me more information on:

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**Professional Lawn Care Association of America**

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## NEWS

(continued from page 18)

plication made by either himself or a professional lawn care firm.

The magazine began its response to the question by citing the Environmental Protection Agency's position that there is "no unreasonable risk" presented by lawn chemicals. But it quickly noted that lawn care chemicals are not harmless and can cause "injury and even death if they are consumed by people or pets." The writer also mentioned the danger of fertilizer burn "if you stick your hand in a bag of chemical fertilizer."

Edward Krenzelok, director of the Pittsburgh Poison Control Center said, "If you are hiring a lawn care company, obtain, in writing, the dates they plan to treat your lawn, what chemicals they are applying and where, and when the lawn will be safe to play on again." The article mentioned that lawn care companies are generally state licensed and can answer any questions about the lawn treatment process. "How safe your lawn will be after being chemically treated will depend on a number of factors, such as what chemicals were used and how they were applied," concluded the writer.

## EXCEL CELEBRATES 25th ANNIVERSARY

Excel Industries, Inc., manufacturer of Hustler self-propelled rotary mowers and turf equipment, celebrated its 25th anniversary June 3-7, hosting distribu-



Product manager Dave Welfelt, center, emceed the colorful parade and demonstration of Hustler equipment.

tors, community members, employees, and the news media during week-long festivities. More than 1,300 guests attended the "Excelebration," participat-

ing in a full schedule of activities. In addition to the community open house, product demonstrations, plant tours, and special entertainment, Excel officials introduced the company's newest generation of up-front rotary mowers, featuring upgraded horsepower and new state-of-the-art components.

On Community Day, Excel President Roy Mullet accepted awards on behalf of the company from the Kansas Department of Economic Development and the Hesston Chamber of Commerce. Both presenters paid tribute to Excel's contributions to Kansas industry and its solid community orientation. The full line of Hustler tractors and mower accessories were demonstrated through the week, and attendees were treated to a barbecue and the Sixth Annual Excel Invitational Golf Tournament.

(continued on page 22)



A full line-up of Hustler equipment was demonstrated at the 25th anniversary event. Operators displayed turf and grounds models along with attachments that keep the machines working year-round.



More than 1,000 people turned out over a three-day period to participate in Excel's Silver Anniversary celebration and to take a look at its leading product line. Company officials circled the wagons for their guests' comfort.

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Up to 30,800 sq. ft. per hr., raising approximately  
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of penetration from either 5/8" or 3/4" tines.

Salsco's Tough Core Aerating Machines use the crankshaft method of aeration insuring neat, clean plug removal without jamming in the tines. Self propelled and easily maneuverable our 300 lb. machine will out perform much heavier machines without tearing up the turf. Dual rear pneumatic turf saver tires



are standard to insure traction and eliminate markings on lawns. We have 4 models available; our 30-6, 30-65, 30-12 or 36-6. Select the model which best suits your needs. All are readily available.

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## NEWS

(continued from page 20)

Beginning in a backyard machine shop in 1960 with capitalized funds of \$25,000, Excel Industries has grown into a major firm whose 1984 sales approached \$20 million. The company has gone through several key transitional periods, first fabricating combine and tractor cabs for the secondary market, then supplying cabs on an O.E.M. basis to agricultural and construction equipment manufacturers, and now producing its own proprietary product line.

One of the keys to Excel's success has been the introduction of the hydrostatic Hustler mower in 1969. The integration of dual hydrostatic pumps, direct drive wheel motors, and twin lever steering assure maximum maneuverability and a true zero-degree turning radius. This unique design helped position Hustler products at the forefront and set standards for the industry.

Since launching into the turf and grounds marketplace, Excel has developed 17 primary tractor models and more than 20 special attachments. As the company became more dominant in the mid to late 1970s, it accelerated its product development and con-

centrated on dealer development. Excel broke into the eight digit sales bracket in 1977 with an \$11 million year.

Beginning with only a handful of employees in a small Quonset hut, Excel's current workforce exceeds 20. Markets now include 50 states and eight foreign countries.

### CRABAPPLE TREES IN CONNECTICUT

The splendor of a flowering crabapple tree will enhance the town greens of all 169 Connecticut towns next spring, a 350th birthday gift to the state from the Connecticut Nurseryman's Association, Inc.

The 383-member, statewide organization of wholesale, retail, and landscape nurserymen is providing funds for the 6 to 8 foot trees to be planted the week of April 25, 1986 as an Arbor Day project involving local elementary school children. Nurserymen in each town are contributing funds for their town's tree and many are making memorial donations for trees as well.

The Connecticut Nurserymen's Association is collaborating with the

Connecticut Celebration 350, Inc., a project of the Connecticut Department of Economic Development. Celebration coordinators in each county will handle distribution of the trees to the towns, accompanied by a letter from Governor William O'Neill to the first selectman or mayor, requesting the tree be planted at a site to be chosen by the town and cared for according to CNA recommendations.

Governor O'Neill will participate in the planting and dedication of a grove of crabapple trees at the capitol, as part of the finale of the year-long birthday celebration. The state's 350th birthday party began May 1, 1985 and will end on April 26, 1986.

### PETERSON SEED COMPANY RE-ACQUIRES ITSELF

July 1, 1985 completed a 37-year business cycle that produced a range of corporate identities from Peterson Seed Company, to Pioneer Hi-Bred International Turf and Forage Division, back to Peterson Seed Company. That date marks the beginning of the new

(continued on page 24)

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- Work tickets;
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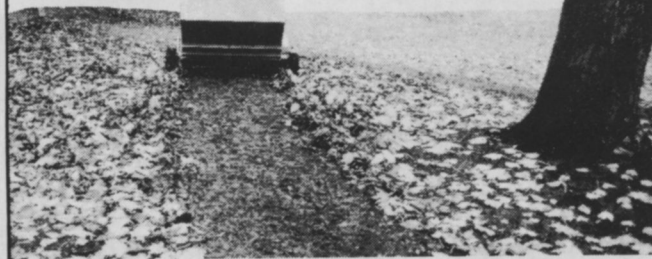
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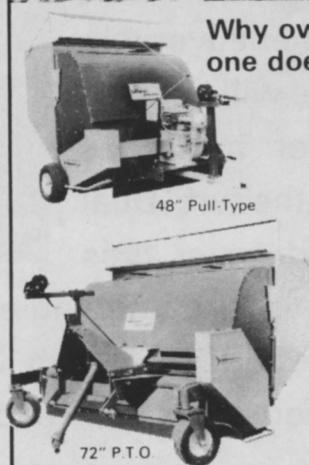
**Fall:** Clean up leaves, twigs and trash.

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The only flail pick-up mower that thatches, mows and picks up in one pass! Available in 36", 48", 60" and 72" cutting widths.



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We have more than three dozen standard fertilizer, sulphur-coated urea blends and fertilizer/chemical control products to solve just about any turf problem. But soil conditions vary, and so do your customers' requirements. Just tell us what you need, and we'll be happy to put our more than 35 years' experience to work to meet your needs. We can formulate an exclusive blend just for your company that will coax the kind of turf you want, when you want it.

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## NEWS

(continued from page 22)

seed company formed by the managers of the Pioneer Hi-Bred division which acquired Peterson Seed Company in 1973. The organization will once again be called Peterson Seed Company.

Jerry Peterson, President of the Pioneer division, will become president of the new Peterson Seed Company. Clinton A. Patterson has been named Executive Vice President. Amy Deckas will manage forage products marketing and Scott J. Patterson will manage turf seed marketing. Ronald E. Evans is controller. The new company will remain in its present location at the Savage, Minnesota address from which it has operated for the last 12 years.

Peterson Seed Company was formed in 1948 when E.K. Peterson, Jerry Peterson's father, resigned as president of Cargill's Seed Division to form Peterson Seed Company. Pioneer acquired the firm in 1973 to market Pioneer and non-Pioneer turf and forage seed products. In October, 1984, Pioneer announced its intention to discontinue the Savage operation and at once negotiations began for re-acquisition.

"We're elated about the transition," says Jerry Peterson. "The parting from

Pioneer was amicable. The association with that fine organization made us all better business people and created a solid base from which we can build the new company."

## EPA DRAWS UP RCRA IMPLEMENTATION PLAN

The Environmental Protection Agency has handed down its "1986 RCRA Implementation Plan" which is designed to guide the EPA Regions and states in implementing the RCRA program in the coming fiscal year. The plan indicates goals, priority activities, and implementation policies. There are some new EPA management initiatives described in the plan that may interest lawn care operators.

Outlined in the plan are revised RCRA reporting requirements, revised Strategic Planning and Management System (SPMS), Groundwater Enforcement Strategy, and small quantity generator requirements. Also listed are goals and priorities the RCRA program will strive to meet over the next several years. The program will ensure correction of serious violations and environmental releases, reach final permit

determinations for all land disposal facilities by the statutory deadline of 1988, and ensure compliance with groundwater monitoring requirements for RCRA regulated land disposal units.

Under the heading "Inspections," the plan calls for inspection of every hazardous waste treatment, storage and disposal facility, for which a permit is required, at least once every two years by EPA or an authorized state. During fiscal year 1986, the plan mandates inspection of at least 2 percent of hazardous waste generators and transporters, with small quantity generators receiving a share of the generator inspections.

Two other new documents are also available from EPA to help small companies learn about RCRA and what they must do to comply. One is EPA's Small Quantity Generator Survey, which identifies what types of companies are most likely to be controlled. The other is a list of 53 information reports about environmental controls that are available from EPA or other federal agencies. For a copy of these documents or the new RCRA Implementation Plan, write Small Business Ombudsman, EPA, 401 M Street, S.W. (A-149C), Washington, D.C. 20460, or call toll-free 1/800/368-5888. ■



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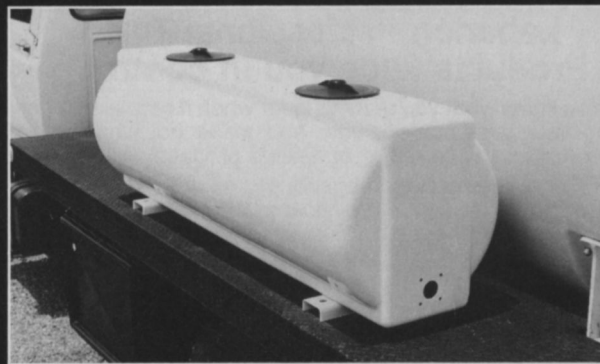
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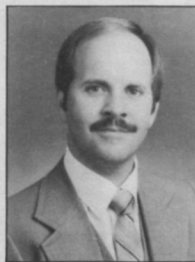


# PEOPLE

**J**ordy Smith has been appointed district sales manager for OMC Lincoln. Smith's territory includes the Northwestern United States, including Northern California, Oregon, Washington, Utah, Idaho, Montana, Wyoming, Colorado, and Nevada. He will be responsible for dealer development, sales, and marketing of the company's line of Cushman turf and industrial products and vehicles, and Ryan turf-care equipment.

Smith will be headquartered in Bountiful, Utah. He is a native of Utah and has worked for 12 years in the turf and power equipment field. He formerly operated a lawn care service, and most recently was manager of the commercial turf sales division for the Boyd Martin Company, Salt Lake City, Utah. Smith attended the University of Utah where he studied business management, sales, and advertising. He has also participated in numerous sales training and sales management seminars.

In other news from OMC Lincoln, **Richard D. Jedlicka** has been promot-



*Richard D. Jedlicka*



*Eugene R. Herz*

ed to Manager of Manufacturing Engineering. The company also announced the promotion of **Eugene R. Herz** to Manager of Industrial Engineering.

Jedlicka's responsibilities will include supervision of work standards, tool design and construction, facilities and equipment maintenance, new equipment research and other industrial engineering functions, including cost reduction programs. Jedlicka is a 1974 agricultural engineering graduate of the University of Nebraska, and has worked at OMC Lincoln for 11 years as a tool design engineer. He is a member

and former chairman of the Lincoln, Nebraska chapter of the Society of Manufacturing Engineers. In 1975, he received a James F. Lincoln arc welding award for designing a new die handling platform.

Herz's new duties will include responsibilities for the Industrial Engineering and Maintenance Departments at OMC Lincoln. A veteran of 12 years with OMC Lincoln, most recently as the plant engineering supervisor, Herz attended the University of Nebraska. He is also a member of the Lincoln chapter of the Society of Manufacturing Engineers.

**Gerald C. Ogren** has been promoted to the post of Factory Manager for OMC Lincoln. Ogren started as a mechanical draftsman for the Ryan Equipment Company while attending St. Paul Vocational School in St. Paul, Minnesota. He became Plant Manager at Ryan in 1973, until the manufacturing operations were moved to Lincoln in 1977. He then became Manager of Manufacturing Engineering for OMC Lincoln. ■

## PLCAA UPDATE

**A**s of September 10, the Professional Lawn Care Association of America (PLCAA) could boast of 743 members. "Our growth factor even continues to amaze me," says Jim Brooks, PLCAA Executive Director. "We're growing each day. We're going to meet our membership goal of reaching 800 by the end of the year without any problem." In fact, the association is growing so fast that Brooks has found he needs some help to manage things.

Douglas K. Moody has been appointed PLCAA Assistant Executive Director. "We've established this new position as a response to the tremendous growth of the lawn care industry and the increased demand for services and professional assistance by lawn care professionals," explains Brooks.

Moody previously served as Head of the Interpretive Services Division for the Hunterdon County (New Jersey) Park System since 1977. In addition, Moody is Vice President and President-elect of the New Jersey Turfgrass Asso-

ciation.

During his tenure with the Hunterdon County Park System, Moody developed a highly successful series of youth and adult programs on environmental education and outdoor exploration. He was instrumental in the development of the horticultural facilities of the Hunterdon County Arboretum. Moody's other accomplishments include direct experience in public speaking, audio-visual production, conference management, and marketing.

"Obviously, PLCAA will benefit from Doug Moody's experience in the turf industry," says Brooks. "We look forward to working with him." Brooks notes that Moody will be involved in the coordination of the association's printed matter production, educational program development, and management of both areas. He will also monitor and work with the regional seminar chairmen next year. Moody will become editor of the PLCAA's newsletter, "Turf Talks," and will work with the association's attorney Richard

Lehr on the "Legal Update" newsletter.

Moody is a graduate of North Carolina State University, with a degree in Wildlife Biology. He comments, "The lawn care industry is a young and growing profession, and I certainly hope to bring a few new ideas and energies to the national organization." Bringing Moody on board should free Brooks to worry about such things as the insurance and regulatory situations.

Speaking of the insurance situation, Brooks represented the PLCAA in a coalition including arborists and structural pest control operators at a meeting with the Commissioner of Insurance for the State of Massachusetts. "Massachusetts is the only state we know of that has laws and regulations specifically relating to pollution liability coverage," says Brooks. The group met with the commissioner in an effort to stem the current push by insurance companies to drop all pollution liability coverage (i.e., chemical spills) beginning January 1, 1986. ■

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- Penetration up to 2 3/4".
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- Convenient lift handle for raising and lowering transport wheels which provide added maneuverability.
- Covers up to 21,000 square feet per hour.
- Tine wheel shaft and water drum shaft are equipped with two grease fittings and protected by felt seals to keep out dirt.
- 3 h.p. industrial engine with rotary stop switch for easy shut-off.
- Fuel tank holds two quarts.

Designed for the professional who wants to provide quality core-type aeration at a high rate of speed, the new Lawnaire IV is the most dependable walk-behind roll-type aerator on the market.

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Engine . . . . . 4-cycle, 3 hp industrial with 6:1 gear reduction, dual air cleaner, with rotary on-off switch, low tone muffler.  
Clutch . . . . . Belt tightener.  
Driver . . . . . Primary: V-belt 4L-section to clutch idler. Secondary: #40 roller chain to tine assembly. Transport: #40 roller chain to barrel.

Lubrication . . . . . Two grease fittings in each axle hub.

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Penetration . . . . . Up to 2 3/4"  
Aeration Pattern . . . . . 3 3/4" x 7" center to center.  
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# FUN IN THE SUN

*The PLCAA returns to Tampa for the 6th Annual Conference and Show on November 18-21. Book your flights and make your reservations now for the lawn care industry's only national conference.*

**A**s the balmy breeze of summer succumbs to the crisp autumn air, the days of sun, sailing, and swimming seem like distant memories. But don't deflate that beach ball or hang up the sun umbrella just yet — the Professional Lawn Care Association of America (PLCAA) is offering you one last rendezvous in the sun before the chill of winter sets in with their 6th Annual Conference and Show in Tampa, Florida, November 18-21 at the Curtis Hixon Convention Center. Dubbed "The Best Show Under The Sun," this year's exhibition makes a return visit to Tampa, offering a winning combination of business and pleasure along the Gulf Coast.

Those turf and tree professionals who weren't at last year's show in Tampa realize they missed a good one, says Jim Brooks, Executive Director of PLCAA. Confident about attendance, he expects 2,000 people to be in Tampa for the 1985 conference. "As I've traveled across the country to the regional seminars, I have visited with many people who said they weren't in Tampa last year, but were planning on being there this year."

Trade show floor space is sold out, so convention-goers will see an exhibition hall packed with different green industry products and equipment — about 130 exhibits in all. In addition to the indoor display of lawn products and equipment, this year's PLCAA show offers a new feature — an outdoor equipment demonstration from 9 a.m. to 1 p.m. on Thursday, November 21. Over 25 leading manufacturers will be there, including Bunton Company, Dedoes Industries, Lesco Inc., OMC Lincoln, Perma-Green Supreme, Professional Turf Equipment, Salsco, Terracare Products, and The Toro Company — to name a few.

The conference gets underway on November 18 with two Early Bird Workshops — "Writing Your 1986 Marketing Plan" and "Supervisory Leadership." Advanced registration is required for these educational seminars as seating is limited; however, there is no additional charge to attend.

After an afternoon of absorbing indepth management information, you'll be eager to unwind at the Early Bird Reception Party, held at the Tampa Hyatt Regency from 6:30 p.m. to 8:30 p.m. Mingling with lawn care professionals from around the country is one of the best aspects of the conference, according to many conventioners. So why not plan to meet your old friends, make some new ones, and enjoy complimentary beer, wine, and hors d'oeuvres at this gala affair.

**KEY-NOTE ADDRESS.** On Tuesday, November 19, Conference and Show Chairman James Marria, President of Perma-Green Lawn Company, Boise,

Idaho, will greet PLCAA show-goers at the opening session and introduce this year's keynote speaker — former Pittsburgh Steeler Rocky Bleier. Bleier's agonizing two-year battle to overcome combat injuries and return to football is historic. You don't have to be a football fan to admire the courage and determination Bleier had to return from Vietnam, crippled by enemy rifle and grenade wounds in both legs, and painstakingly fight to save his athletic career. His story is described in the book *Fighting Back* and recreated in the movie of the same name, which premiered on ABC-TV in 1980.

Bleier's 12-year career with the Steelers as a leading ground gainer, contributor to four Superbowl victories, and uncannily dependable "big play man" may be over, but his ability to inspire effort and commitment from others goes on. Today, he is active in the Veteran's Administration, the United Way, and the Pennsylvania Association for Retarded Children. He serves as Honorary Chairman of the Special Olympics and supports the Civic Light Opera. Bleier is also a board member of the Vietnam Veterans Memorial Fund, and he helped make possible the erection of the monument in Washington, D.C. to the servicemen and women who died in Vietnam.

His special qualities have been recognized by many people who have honored him with numerous awards. A few of them include the Whizzer White Humanitarian Award, the Vince Lombardi Award, and the Most Courageous Athlete of the Decade Award. Currently, Bleier shares his expertise and insight as the sports anchorman at the NBC affiliate in Pittsburgh, WPXI-TV.

Highly demanded as a speaker, Bleier motivates audiences in a wide variety of organizations, corporations, and universities. PLCAA is eager to have him open its 6th annual program, and anticipates a dynamic presentation.

Following Bleier's kick-off, the exhibit hall opens and educational sessions begin shortly thereafter. Tuesday's topics include: "People, Performance, and Professionalism Turn to Profits;" "What's Your Business Worth;" "Industry Operating Ratios;" and "Ornamental Spray and Feeding." At the end of the day, participating manufacturers and distributors will sponsor an Exhibitor Social from 5 p.m. to 6:30 p.m.

The conference continues early on Wednesday with the New Member Breakfast slated for 7:30 a.m. Exhibitors will have their equipment and products on display all day as the trade show floor will be open from 10 a.m. until 6 p.m.

The educational line-up on Wednesday includes several financial, management, and safety seminars by leaders in their fields. The scheduled sessions are: "Maximizing Herbicide Program Effectiveness;" "Mowing/Maintenance Management;" "How to







Obtain Financing;" "Collecting Accounts Receivable;" "Automated Scheduling: A Success Story;" "Promotional Writing for the Non-Writer;" "Pesticide Safety: A Continuing Concern;" and "Toxic Waste Disposal: An Update."

#### **SOMETHING FOR SPOUSES.**

Spouses also have a program planned especially for them. This year's unique offering, "Christmas in November," is a special trip to Florida's famous Brooksville, where Christmas exists year-round. The first stop is a visit with a local green thumb expert. She will share her many clever holiday decorating ideas for which she is renowned. Spouses will then be whisked away to browse the many theme buildings of

Roger's Christmas House, where they'll find different holiday decorating and gift ideas. On the bus ride home, chilled Chablis and an afternoon snack

### ***About 130 exhibits will be on display at PLCAA's 6th Annual Conference and Show.***

will be served while shoppers compare purchases.

**LOTS TO SEE AND DO.** When the conference closes on Thursday after the outdoor equipment demon-

stration, think about keeping your bags unpacked for a few extra days so you can enjoy the sights of Greater Tampa and other surrounding vacationlands in Florida. The Americana Dutch Resort Hotel, located in the Walt Disney World/Epcot Center complex (Orlando area), is offering PLCAA/Tampa '85 attendees pre- and post-convention hotel accommodations at special money-saving rates.

Located not far from Sea World, Cypress Gardens, and Circus World, the Americana group savings rates are in effect from November 14 through 17 and November 21 through 25. Single or double occupancy is \$65 per room plus taxes; children are free of charge. Normal room rates run between \$80 and \$99, so you can see the significant savings. Reservations must be made directly with the Americana Dutch Resort Hotel no later than October 11, 1985. Reservation forms can be obtained by contacting PLCAA at 404/977-5222.

But you needn't venture very far from your accommodations in Tampa to enjoy tropical surroundings, theme parks, beaches, and parks — all the perks of a relaxing vacation in Florida. For starters, you might like to ogle the agile belly dancers of Marrakech or venture across the white sands of Timbuktu. It's all at Tampa's *Busch Gardens, The Dark Continent*. African romance and adventure, wild jungle animals, thriller rides, exotic gardens and birds, delicious food, authentic crafts, and dazzling shows await you at this renowned theme park.

There's plenty to see and do in the seven different regions of Busch Gardens. Try sailing the Congo River Rapids. You'll swirl past gushing geysers and through a mysterious cavern with cascading waterfalls. In the Congo you'll also see rare white tigers of Claw Island — two of only 51 in captivity in the world.

Night-stalking creatures, such as the Nile Monitor lizard and African crested porcupine, will keep you alert in Nairobi's Nocturnal Mountain. Children will enjoy the Petting Zoo where they can ride a real live elephant and pet the smaller animals. And the entire family will have fun at the theater in Stanleyville where animals perform.

The Serengeti Plain has a lot to offer Busch Garden visitors. Rare Cape buffalo, giraffes, zebras, elephants, and gazelles roam the plains and waterways. Catch the steam train or monorail and watch them romp around their natural surroundings, then stop at the Bird Gardens. There you'll see a kaleidoscope of colors — blue and gold macaws, pink flamingos, black swans, cockatoos, and amazon parrots.

For thrills and shills of a different sort, spend an afternoon at *Adventure*

## **GETTING TO AND AROUND TOWN**

**W**ith help from Delta Airlines, Avis Rent-A-Car System, and Ciba-Geigy Corporation, your transportation woes are over. The Professional Lawn Care Association has made sure that transportation to the 6th Annual Conference and Show in Tampa, Florida, is available and convenient at affordable prices for all convention-goers.

**GETTING TO TAMPA.** Delta airlines is offering a special 35 percent to 40 percent discount off Delta's round trip, undiscounted day coach fares for attendees traveling to PLCAA/Tampa '85. You can fly to Tampa and return from either Tampa or Orlando.

To take advantage of the savings, you must leave for Tampa or Orlando between November 8 and November 21 and stay no longer than 15 days. The date of ticket purchase will determine the percentage of discount. For example, if you buy your ticket 45 days prior to departure, you are entitled to a 40 percent discount. A seven-day, prior-to-departure purchase qualifies you for the 35 percent discount.

The special discount rates are only available by ordering your airline tickets through this toll-free number: 1-800-241-6760 (in the continental United States). When calling (8:30 a.m. to 8 p.m. Eastern Time), refer to file number L0034.

Your travel agent can place your reservations through the above toll-free number to obtain the same travel advantages for you. Please

note that, in some cases, the overall discount may not be the most economical fare. It will depend on routing and special promotional fares available. Delta will confirm you at the lowest Delta rate available.

#### **GETTING TO THE HOTEL.**

Once you arrive at the Tampa International Airport, no need to worry about how to get to the convention site. Ciba-Geigy Corporation will provide complimentary transportation from Tampa's airport to PLCAA/Tampa '85 hotels. The Ciba-Geigy buses will be available as follows: noon to 6 p.m., Sunday, November 17; 8 a.m. to 5 p.m., Monday, November 18; and 8 a.m. to noon, Tuesday, November 19.

#### **GETTING AROUND TOWN.**

Although an automobile is not necessary to get around from your hotel to the trade show, you may want to take advantage of Avis' special PLCAA/Tampa '85 rental rates for a little sight-seeing. Featuring GM cars ranging from economy models to standard four-door models, Avis is offering attendees daily rates from \$19.95 to \$24, and weekly rates from \$69 to \$120, depending on the model selected. All rental charges include unlimited mileage and no drop charge in Florida. Gas, taxes, and optional protection are extra.

To make your reservations, call Avis at 1-800-331-1600. To obtain the special PLCAA/Tampa '85 rate, make sure you use the convention number: A/WO49604.





The Curtis Hixon Convention Center, along the banks of the Hillsborough River in Tampa, Florida, is site of PLCAA's 6th annual show.

Island, where 10 acres of tropical paradise await the whole family. The park is an endless maze of water slides with steep, whirling water shoots for the real thrill-seekers and gentle-sloping water slides for the less adventuresome. When you're feeling a little water-logged, a sandy beach awaits you. Bask in the sun, relax under the waterfalls, sip a cool drink at the Surfside Cafe. Whatever you choose, you're guaranteed a fun-filled day at Adventure Island.

Another "must see" for Tampa tourists is Ybor City. Known as the Latin Quarter, this colorful neighborhood is home to a number of historic sites from the days of Cuban liberty, and it is where the first "clear" (pure leaf imported from Cuba) Havana cigar was hand-rolled in 1886. Named after Vicente Martinez Ybor, a Cuban cigarmaker who helped launch Tampa's famous cigar industry when Spanish oppression forced many cigarmakers to leave Cuba, the city still retains its original charm and Latin culture — even the aroma of tobacco still lingers in the air.

The V.M. Ybor Cigar Factory, renamed Ybor Square in honor of its builder, is now an extraordinary collection of shops, boutiques, and restaurants. The large brick patio outside the square was once a recreational area of the cigar workers. And the iron steps on the east entrance of Avenida Republica de Cuba mark the spot where Jose Marti, the famous Cuban patriot, stood in 1893 when he encouraged cigar workers to take up arms against the Spanish oppression in Cuba. Marti also brought notoriety to a nearby corner where the famous social meeting place, "El Liceo Cubano," once stood. Now recognized as the Cradle of Cuban Liberty, it was here that Marti gave two of his most patriotic speeches in 1891.

Seventh Avenue was the hustling, bustling shopping street of Ybor City in the 1800s. Today, it's still as exciting as yesteryear when street vendors sold their fresh fruits and vegetables, shoppers scurried in and out of stores looking for bargains, and old men swapped stories in the park, deeply inhaling the tobacco-scented air. After a walk down the street, stop in at the Ybor City State Museum, the old Ferlita Bakery Building at 9th Avenue and 19th Street. Many interesting artifacts which depict the founding of Ybor City, the cigar factories, Ybor's involvement in the Spanish-American War, and Ybor City in its heyday in the '20s can be found here.

Another point of interest in Ybor City is the St. Augustine Winery. It is the largest and most lavish winery in the Sunbelt and offers free tours and tasting daily.

If it's beer you fancy rather than wine, Tampa is home of the Pabst Brewing Company. Take a plant tour of the facilities and learn all about the beer-making process. Tours run every half hour, from 10 a.m. to 3 p.m., Monday through Friday. Make sure you visit the Hospitality House before you leave!

Architecture buffs should take note of two worthy visits — one is to the Sacred Heart Catholic Church, which is one of Tampa's most beautiful buildings of worship. Completed in



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The 18 hp 261/BAC-VAC™ is HUSTLER tough and built to last.

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The agile HUSTLER 261 with BAC-VAC grass vacuum precisely cuts, trims and vacuums turf in one operation. When full, the 16-bushel capacity hopper empties with the release of a single lever. You never leave the driver's seat, and in moments you're back mowing again.

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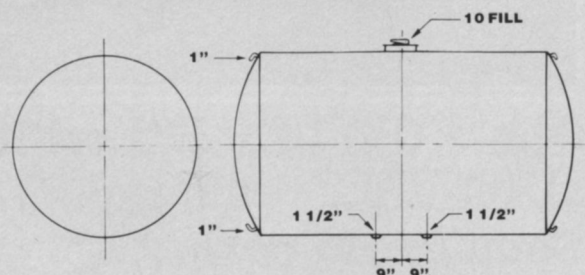




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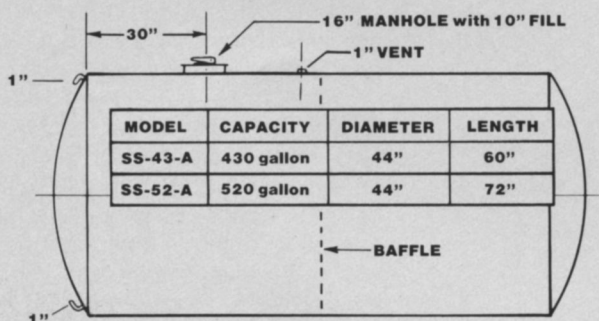
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#### SPECIFICATIONS:

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Constructed of type 304 stainless steel — equipped with standard openings as shown



MODEL	CAPACITY	DIAMETER	LENGTH
SS-43-A	430 gallon	44"	60"
SS-52-A	520 gallon	44"	72"

#### SPECIFICATIONS:

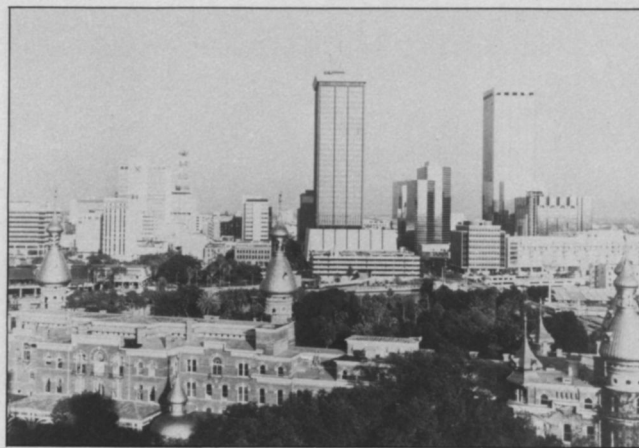
#### 830 to 1600 GALLON CAPACITY

### NON-PRESSURE MILD STEEL TANKS

MODEL	CAPACITY	DIAMETER	LENGTH	GAUGE
NT-55	550 gallon	48"	72"	12
NT-75	750 gallon	56"	72"	10
NT-100	1,000 gallon	48"	128"	10
NT-120	1,200 gallon	56"	114"	10
NT-150	1,500 gallon	56"	144"	10
NT-200	2,000 gallon	64"	144"	3/16"

#### NON-PRESSURE MILD STEEL TANKS

SINGLE - DOUBLE & TRIPLE COMPARTMENT TANKS ARE AVAILABLE. SPECIAL DESIGN TANKS WILL BE QUOTED, SO PLEASE CALL!



The skyline of downtown Tampa, Florida.

1905, Sacred Heart's architecture is Romanesque with Spanish influence. The church is located downtown on Florida Avenue at Twigg.

The *Old School House* is another architectural marvel. Built around 1858 by Jesse Carter, the frame building is the oldest documented structure in Hillsborough County. Once located on the bank of the Hillsborough River, the school was moved to its present site on the University of Tampa campus in 1932.

If you're just after some leisurely rest and relaxation, Tampa's just the place. The white sand of *Ben T. Davis Municipal Beach* is located along Tampa Bay on the Courtney Campbell Causeway, offering swimming, water skiing, boating, and picnic areas with shelters and fireplaces. Located south of Tampa in Ruskin is *Bahia Beach*, a 200-acre waterfront park. Also south of Tampa, off U.S. 41, is *Ellsworth Simmons Park*. The waterfront has more than 1,000 feet of sandy beach.

If you just want a scenic drive along the water, head for *Bayshore Boulevard*. Bordered by elegant old Tampa homes on one side and Hillsborough Bay on the other, the drive winds past fountains, palm trees, and other tropical landscape. You can walk this route, too, as the longest continuous sidewalk in the world follows the shoreline for 6.5 miles!

Tampa offers some pretty good fishing within its city limits. And you have your choice of salt water or fresh water. If you choose the latter, remember you need a fishing license before throwing your line in. A license is not required for salt water fishing.

*Ballast Point Fishing Pier*, a historic site where in-bound schooners once dumped their ballast of rocks, is open for public fishing. So is *Gandy Bridge*, a four-lane span across old Tampa Bay to St. Petersburg and the Gulf beaches. You can also drop a line anywhere along the stretch of *Bayshore Boulevard* or from *Channel Drive* on Davis Islands.

For more fun on the water, get aboard one of Tampa's fun ships. The *Island Adventure* is a two-deck, 300-passenger boat that cruises the Hillsborough River and Tampa Bay daily, except Monday. You'll find it docked on Ashley Street between Kennedy and Brorin. The *Spirit of Tampa*, a three-deck, 600-passenger cruiser is also docked on Ashley Street. Enjoy the lovely Bay by sunshine or moonlight as both boats sail afternoons and evenings.

With all there is to see and do, how can you *not be* enticed into extending your stay in Tampa? Come early, stay late — just remember to mark your calendar for this year's 6th Annual Conference and Show. PLCAA/Tampa '85 has a great schedule of events lined up — action-packed educational seminars, a full-house of exhibitors, and several social gatherings. We look forward to seeing you there! — *Vivian Fotos Rose*

The author is Assistant Editor of ALA magazine.

# FALL HERBICIDE APPLICATIONS

*Although many lawn care operations apply herbicides to cool-season lawns in the spring, it makes more agronomic sense to apply herbicides in the fall.*



**P**rofessional lawn care companies in the northern United States generally sign up many of their new customers during the winter and early spring months. These new accounts often have lawns which are heavily infested with broad-leaf weeds and, by necessity, an application of herbicides to remove these weeds is an important part of the spring treatment. Unfortunately, some of the new-comers to the lawn care business have observed this activity among their more established competitors and have assumed that spring is the proper time

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***The best control for annual grass weeds is a dense cover of lawn grasses. Openings in the lawn in the spring, even when preemergents are applied, will usually result in some increased infestation of annuals.***

---

for these applications of broadleaf weed controls. Some have even gone so far as to preferentially apply these materials in spring when fall applications are possible.

The fall always has been and will continue to be the best time to apply herbicides such as 2,4-D, MCP, dicamba, and triclopyr to cool-season lawns. Spring applications may become necessary, but they are a necessary evil that should be avoided whenever possible.

**NON-TARGET SPECIES.** The primary reason for the above statement is



the effects that these materials have on "non-target" species in the landscape, such as grapes, tomatoes, shrubs, trees, etc. These species are readily damaged if they come in contact with these herbicides through drift or volatilization. This damage is particularly a problem when these species are in the juvenile stage. As the leaves of trees and shrubs begin to emerge from buds and as garden species are just beginning to develop, they are very sensitive to

***Fall always has been and will continue to be the best time to apply herbicides such as 2,4-D, MCPP, dicamba, and triclopyr to cool-season lawns.***

even the slightest contact with the broadleaf-weed herbicides. Even if the plant survives, the damage will usually be visible through the entire season.

In the late summer and fall, these species have reached maturity. Garden species have often been harvested and the leaves of shrubs and trees are beginning to turn color and drop. This is the time when lawn care specialists can apply herbicides with the least chance for damage to surrounding plants.

If the effect on non-target species were the only reason for fall applications, it would be sufficient reason to avoid spring application whenever possible. But there are other reasons as well.

**WINTER ANNUALS.** A winter annual is a plant species that germinates in the fall of the year, lives through the winter as a mature plant, produces seed in the spring and then dies. Lawn weeds such as common chickweed (*Stellaria media*) and henbit (*Lamium amplexicaule*) fall into this category. Spring applications of herbicides to these species will kill them, but they were likely to die anyway in the late spring. These species must be treated in the fall, after late-season germination, if effective control is to be obtained.

Also, the summer often results in considerable stress to cool-season lawns. Insects and diseases will open spaces in the lawns, and weeds like dandelions and plantain begin to emerge in these openings in the late summer. A fall application easily controls them.

**ANNUAL GRASSES.** The herbicides discussed in this article have little effect on annual grasses. These troublesome weeds must be controlled in the



*Drift and volatilization of herbicides can be minimized by using the proper equipment. However, fall is still the safest time to apply broadleaf weed controls.*

spring with preemergence herbicides. The broadleaf weed controls can have an effect on annual grass infestation, however.

The best control for annual grass weeds is a dense cover of lawn grasses.

Openings in the lawn in the spring, even when preemergents are applied, will usually result in some increased infestation of annuals.

If a lawn is heavily infested with mature dandelion, plantain or other broadleaf weeds and it is treated in the spring, the death of these weeds leaves openings that are rapidly filled with crabgrass or one of the other annuals. The same area treated in the fall will produce a thick canopy of lawn species by spring to prevent the infestation of annuals and to assure a greater success of preemergence applications in the spring.

#### **HERBICIDE TRANSLOCATION.**

The broadleaf controls must translocate to the root system to effectively control perennial weeds. The more efficient this movement to the roots, the more effective is the material and the more complete the control.

In spring, perennials such as dandelion are translocating carbohydrates (stored food materials) to the surface for spring growth of leaves. In the fall, the plant prepares for dormancy by translocating carbohydrates into underground structures. Fall-applied herbicides are readily carried down into the root system for a complete kill of the plant, both above and below ground.

Again, the fall is by far the best time to control broadleaf weeds in cool-season lawns. Spring application may be necessary, particularly in the case of a new customer with a heavily infested lawn; however, fall application should be practiced whenever possible. — Dr. Nick E. Christians

*The author is associate professor of Horticulture at Iowa State University, Ames, Iowa.*







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# SALINITY STRESS

*There are certainly some disadvantages to consider when using tall fescue cultivars, but some of the newer fine-leaved tall fescues have some characteristics that may make them superior to other turf-type grasses for many applications.*



Figure 1. Differences in salt tolerance between Kentucky bluegrasses 'Ram 1' (R1) and 'Adelphi' (AD), red fescues 'Dawson' (DA) and 'Jamestown' (JA) and 'Fults' alkaligrass (AK). All grasses were irrigated for eight weeks with 1.0 percent NaCl solution which is equivalent to about 1/3 the salinity of seawater.

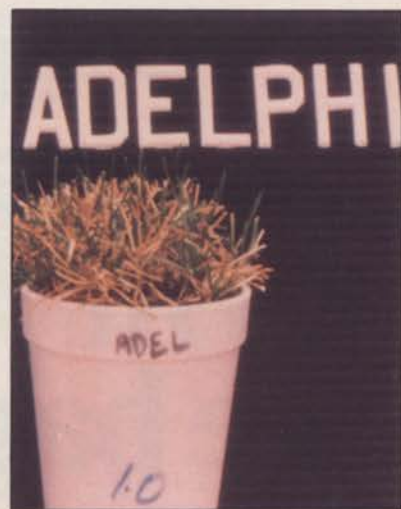


Figure 2. The effects of NaCl salinity between 'Ram 1' and 'Adelphi' Kentucky bluegrasses. Both cultivars were irrigated with water having a salinity level of about 1/3 that of seawater for eight weeks.

**P**roblems associated with salinity stress on turfgrass areas have, until recently, been either ignored or considered minor in contrast to other environmental stresses. The most obvious salinity problems arise in coastal regions subject to continuous salt water spray, areas which utilize large quantities of salts (calcium or sodium) during winter months for ice removal, and in regions where sodic or saline soils are common.

An initial impression is that salinity stress problems are mostly isolated to relatively small regions until one considers the vast amounts of coastal turf areas and the tremendous amount of salt that is deposited in the urban and suburban areas of the northern United States. The salinity problem has, in recent years, become a major concern

to environmentalists concerned with water quality.

In general, ground water quality has deteriorated tremendously over the past 10 years due to rapid increases in soluble salt content. Increased rates and frequencies of fertilizer applications coupled with a surge in the use and misuse of irrigation have been implicated as major sources of the water quality problem. Under such conditions, fertilizer and other sources of salt leach into major ground water reservoirs where they accumulate and later become recycled through the soil via pumping for irrigation.

Irrigation and rain water re-deposit original and newer sources of salt which accumulate in the soil and add significantly to salt concentration in ground water through leaching. The

cumulative effects of such a closed cycle as well as other sources of salt previously mentioned, results in higher levels of soil salinity which has become a major problem for many agricultural concerns, including turf.

The effects of salinity stress to turfgrasses are both direct as well as indirect. Direct salt injury occurs almost immediately due to exposure to very high levels of salt and is a toxic response. This type of salt injury is not very common and is limited to areas which have received extremely high levels of salt in a short period of time. The most prevalent type of salinity stress is termed indirect, in view of the wide range of problems that increasing soil salinity has on disrupting normal plant growth and development.

In general, increasing soil salinity

tends to draw water out of plant tissues, causing what is known as physiological drought. Accumulations of sodium chloride as well as other salts can also limit the normal uptake of potassium, calcium, magnesium, and other essential mineral nutrients and, therefore, cause mineral deficiencies. These and other indirect effects of salinity are cumulative stresses that will either directly kill turfgrasses or make them more susceptible to other environmental or biotic stresses.

The rapidly growing problems associated with decreased water quality and increased soil salinization have recently led turfgrass researchers toward screening existing species and cultivars for their inherent resistance to salt injury. Although much work remains in characterizing salt tolerance among the numerous turfgrasses available, results so far have shown a wide degree of tolerance between various turfgrass species and cultivars.

Among the most tolerant of turf-type grasses is 'Fulfs' alkaligrass (*Puccinellia distans* L.). Although alkaligrass is not a widely-utilized turfgrass, our results as well as numerous other reports have shown that it is far more salt tolerant than any other turfgrasses tested. However, alkaligrass apparently requires some level of soil salinity to thrive, since its growth is greatly reduced in non-saline soils and rapidly goes out of stand. Therefore, alkaligrass (which has a fine leaf texture) is well suited for sodic or saline soil areas.

Seashore paspalum (*Paspalum vaginatum*) is another relatively salt tolerant specialty grass introduced from Australia in the early 1970s. Salt tolerance among the most widely utilized cool season turfgrasses varies significantly, but is lower than those grasses described above. Among the most tolerant are the red fescues, with the slender creeping red fescues (*Festuca rubra* L. *trichophylla*) having the most salt tolerance. Of those tested, the cultivar 'Dawson' retains the highest degree of tolerance.

The strong creeping red fescues (*Festuca rubra* L. *rubra*) were rated moderately tolerant and the Chewings red fescues (*Festuca rubra* L. *commutata*) were rated the least tolerant among red fescues. Figure 1 illustrates the differences between various species and cultivars for salt tolerance. In this greenhouse test, irrigation water was salinized with 1.0 percent NaCl (w/v, about 1/3 of the salinity of seawater) and applied to turf samples three times weekly.

Results had shown 'Fulfs' alkaligrass to be the most salt-tolerant and the red

fescues being more tolerant than the Kentucky bluegrass cultivars. Our results as well as numerous other reports have shown that the Kentucky bluegrasses, in general, are the least salt-tolerant among the widely utilized cool-season turfgrasses. Field, laboratory, and greenhouse studies also have shown there is little variability among bluegrass cultivars for salt tolerance. However, one exception seems to stand out among our tests.

The cultivar 'Nugget', an ecotype discovered on the coastline of Alaska, has consistently ranked the highest in salt tolerance among all bluegrass cultivars tested. This cultivar no doubt had adapted to the somewhat saline coastal environment. Undiscovered salt-tolerant ecotypes most likely exist in similar saline environments. 'Seaside' creeping bentgrass (*Agrostis palustris* Huds.) is one other highly salt-tolerant cultivar found on a coastal environment. 'Seaside' is considered the most salt-tolerant cultivar among the widely utilized bentgrasses.

Very little work has been reported on relative salt tolerance levels of perennial ryegrasses (*Lolium perenne* L.) and tall fescues (*Festuca arundinaceae* L.), however, both are considered to retain a moderate to low level of tolerance.

Information regarding the relative salt tolerance levels between and

among warm-season turfgrass species and cultivars is limited. One recently reported study had shown that bermudagrass (*Cynodon dactylon* L.) cultivars, in general, had very little variability in salt tolerance. However, of the eight cultivars tested, 'Tifdwarf' and 'Tifgreen' were shown to be the most tolerant while 'common' and 'Ormond' were the least tolerant.

Research efforts thus far have centered mainly upon screening various existing species and cultivars for their relative salt tolerance based upon turf quality, overall growth, and persistence. Although much more work is needed to adequately characterize our existing turfgrass resources, results have led to the identification of various grasses having high or moderately high tolerance levels.

Increasing the base of useable salt-tolerant germplasm for plant breeding programs can be achieved through plant exploration to obtain grasses which have naturally adapted and evolved in saline environments such as coastal marsh areas, seawater spray zones or areas having naturally saline or sodic soils. More importantly, an understanding of the genetically controlled metabolic events which allow certain grasses to be more salt-tolerant would make breeding and other genetic manipulation efforts much more successful.

Salt Tolerance Rating	Turfgrass Species/Cultivar
Excellent	'Fulfs' weeping alkaligrass 'Common' lemmongrass 'Seaside' creeping bentgrass 'Adalayd' seashore paspalum 'Excalibre' seashore paspalum 'Dawson' red fescue
Good	Slender creeping red fescues 'Golfrood' 'Oases'
Moderate	Strong creeping red fescues Tall fescues 'Nugget' Kentucky bluegrass 'Ram I' Kentucky bluegrass 'Ensportia' perennial ryegrass 'Loretta' perennial ryegrass 'Manhattan' perennial ryegrass 'Tifdwarf' bermudagrass 'Tifgreen' bermudagrass
Poor	Chewings red fescues Kentucky bluegrasses Perennial ryegrasses Velvet bentgrasses Colonial bentgrasses
Very Poor	<i>Poa annua</i>

Table 1. Relative salt tolerance levels among various turfgrass species and cultivars.



Until recently, very little work has been reported regarding the possible mechanisms associated with tolerance or sensitivity to salinity stress in turfgrasses. In general, plants resist salt stress by either avoidance or tolerance or both. Avoidance of salt stress in plants is achieved mainly by "built in" anatomical or morphological features such as salt glands which enable the plant to extrude excess internal concentrations of salt. Other avoidance mechanisms include the ability of plant roots to exclude the uptake of harmful salts and/or develop a thick waxy epidermal cuticle on the foliage.

Tolerance, in contrast, is the ability of a plant to deal with relatively large internal concentrations of salt while continuing growth and development. Therefore, tolerance is the ability of a plant to internally cope with accumulated salt at the cellular level while avoidance mechanisms rely upon the morphological features of the plant. Truly salt-resistant plants (such as halophytes) utilize both avoidance and tolerance mechanisms whereas turf and forage type grasses rely for the most part upon internal tolerance.

Numerous studies with many different plant species have shown a high correlation between salt tolerance and accumulation of various organic com-

pounds in plant tissues during salt stress periods. We have taken a similar approach in researching the mechanisms associated with increased salt tolerance among turfgrasses. Experiments were conducted using highly salt-tolerant 'Fults' alkaligrass, 'Dawson' red fescue, moderately tolerant 'Jamestown' red fescue and salt-sensitive 'Ram I', and 'Adelphi' Kentucky bluegrass. The reason for using grasses having known tolerance levels was to compare relative growth rates, salt and nutrient fluctuations, and any differences in organic compound accumulations during periods of NaCl salt stress.

Results from a number of these studies have shown that the salt-tolerant species and cultivars greatly reduce the amount of salt that is taken up while retaining much higher levels of other nutrients such as potassium, magnesium, and calcium compared to salt-sensitive cultivars. Of equal importance is the fact that the salt-tolerant grasses accumulated from eight to 15 times more proline (an amino acid known to accumulate in salt- as well as drought-resistant plants) than did salt-sensitive cultivars.

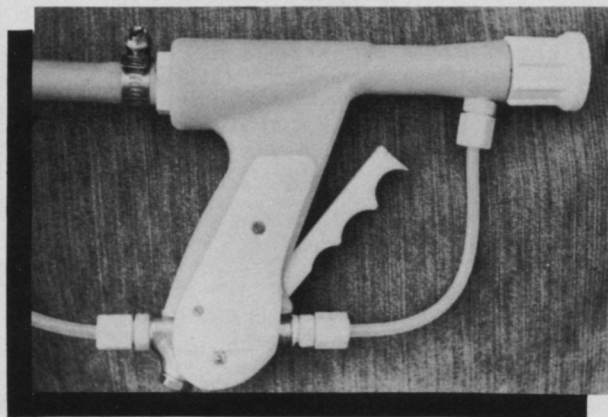
Proline accumulations are known to stabilize any internal osmotic imbalances as well as protect various enzyme

systems and organelle functions which are usually disrupted in salt-sensitive plants. Similar results were obtained with salt-tolerant and sensitive ecotypes of creeping bentgrass. More extensive research has recently shown that a natural plant hormone, abscisic acid (ABA) accumulates very rapidly during salt as well as drought stress and is responsible for the production of proline in tolerant plant species. This chain of events brought about by salt and drought stress seems to be ubiquitous throughout the literature and, as such, ABA has recently been classified as the "stress hormone."

Increasing the level of salt tolerance in turfgrasses by breeding or other genetic manipulation techniques may, therefore, result in cultivars also having increased drought resistance. Further research is needed, however, to more fully understand the precise mechanisms associated with stress tolerance. Such information will prove to be of great value in breeding and other research programs involved with increasing existing levels of environmental stress tolerances. — Dr. W.A. Torello ■

*The author is assistant professor of Turfgrass Science at the University of Massachusetts at Amherst.*

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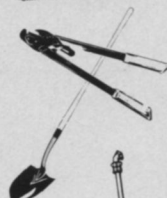
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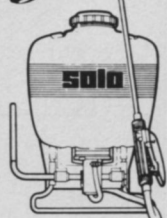
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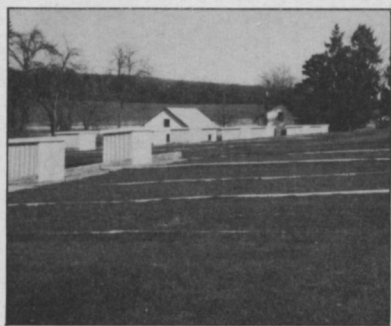
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# GROUNDWATER CONTAMINATION

*These days it seems like our health is being threatened by everything around us. It was inevitable that the lawn care industry be implicated in this universal chemical malaise. One particular bone of contention is groundwater contamination.*



The Penn State research area has buildings built over catch basins at the bottom of the slopes. Each plot has an automatic irrigation system to simulate rainfall if necessary.

**G**roundwater contamination is one of the more recent byproducts of the industrial age that has come back to haunt us. We realized in the 1960s, a little too late, that virtually any man-made compound we dump into or onto the land, water, or air will eventually end up in our bodies. Groundwater contamination is only one of the many threats to world health. Unfortunately, some people have begun to point to the lawn care industry as contributors to this form of pollution.

"It's a problem that's not going away," says Dr. Marty Petrovic, Assistant Professor of Turfgrass Science, Cornell University, Ithaca, New York. "There is more and more pressure environmentally to deal with this issue." Luckily for the lawn care industry, in the Long Island, New York area where groundwater contamination is especially critical, Petrovic notes that there has been only one documented case of nitrate poisoning. There have been no reported deaths related to nitrate poisoning. Of course, there is no way to trace the source of the nitrate in groundwater. The nitrate could have come from agricultural nitrogen applications, lawn care nitrogen applications by homeowners or professionals, septic tanks, or other sources.

The nitrates in groundwater issue, as it relates to the lawn care industry, may be less of a problem than pesticides in groundwater, but Petrovic says nitrates are still in the forefront in many people's minds. The nitrate issue is further complicated by the debate over whether nitrates in the food system can be converted into nitrosamines, which are carcinogenic. Petrovic is sceptical about the nitrate-to-nitrosamine scenario. "If that were true, we would all probably be dying from cancer by now because there are so many sources of nitrates in our diets. Any time you eat green leafy vegetables, they are loaded with nitrates." Petrovic cites celery and spinach as good examples of high nitrate accumulators.

The nitrosamine question is still open to debate, but the fact remains that nitrates are present in groundwater in some parts of the country in quantities exceeding federal health standards. But Petrovic says there is even some question about the danger of nitrates themselves. "There have been some estimates of normal dietary intake of nitrate which state that even drinking contaminated water at 10 parts per million or above would only account for less than 10 percent of the normal dietary intake of nitrates," says Petrovic.

Still, the fact that nitrate poisoning can occur has prompted authorities in places like Long Island to close contaminated wells and drill deeper and deeper wells to get away from nitrate pollution. Cornell University has done research in the past to investigate the lawn care industry's possible contribution to the Long Island nitrate problem. In the late 1970s, research was conducted to find how much nitrogen plants can take up. "Basically, they found that depending on the rate at which it was fertilized, that anywhere from as little as 40 percent up to about 70 percent could be accounted for actually in the plant," says Petrovic.

A long-term study conducted by the United States Geological Service known as the "12 Pines Study" looked at ways to control groundwater problems. Ten test wells were installed in a residential development area that had previously been a pine barrens. Surface groundwater was measured for nitrate content over a 10-year period. They concluded that all nitrates were coming from lawn nitrogen applications since the area was serviced by a closed sewage system. "Fertilizing lawns in this study showed that they could get about two parts per million of nitrate concentration where 10 is the legal limit," says Petrovic.

However, at the beginning of the 10-year period, the nitrate content was almost zero and then rose to two parts per million after 10 years. Petrovic says the researchers have attempted to extrapolate these results to mean that in a given number of years the parts per million nitrate level will reach 10 and the water will no longer be suitable for human consumption. Some research Petrovic has done recently with high rates of nitrogen fertilization disputes this earlier "12 Pines Study."

Petrovic applied urea at 4 pounds of nitrogen per 1,000 square feet per year to plots adjacent to plots treated with sewage sludge. The thrust of the study was to test the possibility of using sewage sludge on Long

Island and the effects it would have on groundwater. By actually collecting the nitrates leached out during one year, Petrovic calculated the nitrate concentration in the groundwater at 1.4 parts per million. Plots that were never fertilized (the area was a pine barrens), rated 1.1 parts per million.

"From our studies," says Petrovic, "we concluded that just having turf there, whether you fertilize it or not, will lose some nitrates because the plants can't utilize all the nitrogen being mineralized from the organic matter. But fertilizing with what we thought was a relatively high rate of a soluble solution of nitrogen really didn't show any major increase in the nitrate content."

Unfortunately, the other nitrate studies at Cornell do not concur with Petrovic's findings, so Cornell's cultural recommendations for New York State reflect a concern for limiting nitrogen fertilization levels. This year's recommendations called for lower fertilization rates with more light, frequent applications of water soluble nitrogen sources on Long Island lawns. Petrovic says clippings should be returned whenever possible to reduce fertilizer needs by 25 percent. Late fall applications of water soluble fertilizers should be avoided and slow-release forms should be used if possible.

Slightly higher rates may be used when all or part of the fertilizer is in a slow release form. "For Long Island, we recommend lawns be fertilized with between 1 and 3 pounds of nitrogen per 1,000 square feet per year," says Petrovic. "For the rest of the state, we recommend 2 to 5 pounds of nitrogen per 1,000 square feet per year."

Petrovic's colleague in the Agronomy Department at Penn State University, University Park, Pennsylvania, is looking into a problem related to groundwater contamination — run-off. Dr. Tom Watschke has just begun testing on run-off plots to keep tabs on nitrogen and pesticide movement. He says the impetus for his work has come from legal restrictions and regulations being placed by water and sewer authorities and municipalities upon lawn care professionals. "Whether or not their fears, concerns, and anxieties are justified, nobody knows," says Watschke. "That is part and parcel of why we are doing the work."

Watschke says concerns over groundwater contamination can be traced back to the situation in Long Island. He says groundwater contamination is principally influenced by the permeability of the soil. The sandy soil of Long Island makes it especially susceptible to leaching of fertilizers and pesticides. "Of course," says Watschke, "water table and groundwater table fluctuate up and down depending upon precipitation patterns. In some years it may be further down in the profile than others."

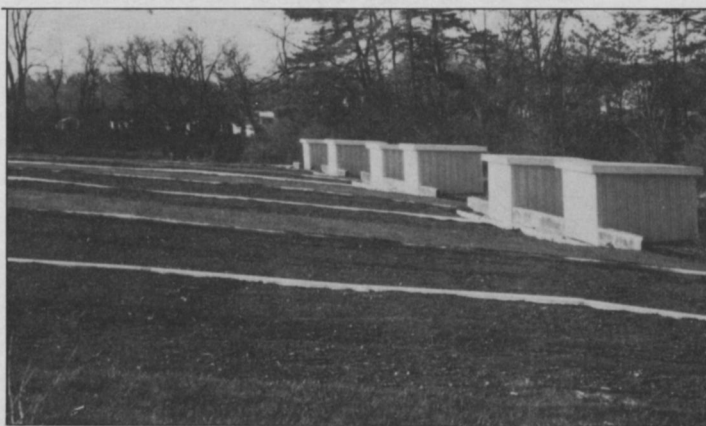
There are enough variables involved, like soil types and the water table, that universal appraisals of how lawn chemicals will move through the soil is not possible. There is no way of predicting how a given chemical will move in different parts of the country. For that reason, funding is needed at various universities around the country to get a complete picture of groundwater contamination. Watschke says the federal government would like to see a lot of work done on the problem, but Uncle Sam doesn't want to foot the bill.

"For example," says Watschke, "I just recently sent a proposal off to the Department of the Interior because in their water quality area they had some funds.

Something like 22 projects were funded at \$2-1/2 million. But they could only fund 22 projects out of some 400 that were submitted. That \$2-1/2 million isn't going to do diddle for this kind of a problem."

The federal government may not be handing money out to universities to do groundwater research, but they have decided to take the matter into their own hands. The Environmental Protection Agency (EPA) is gearing up for a national survey of pesticides in groundwater that will cost an estimated \$5 to \$6 million. Some 1,500 wells will be sampled for evidence of about 48 pesticides and a large number of "transformation products," according to a report in *Pesticide and Toxic Chemical News*.

The main purpose of the survey is to characterize the extent of groundwater contamination nationwide, according to Glenn Griser with the EPA's Office of Pesticide Programs. "Right now our information is



Penn State's runoff research area.

basically anecdotal," says Griser. "It is hit and miss whenever a state decides to go out and monitor." Griser says impetus for the study has come about in the last five years with the growing awareness of how readily pesticides can leach through the soil and end up in the groundwater.

The survey is designed to estimate the vulnerability of given areas to groundwater contamination as a result of normal, approved uses of pesticides. While the survey is not intended to identify specific applicators as sources of groundwater contamination, Griser is quick to note that if such individuals are identified, "it certainly would be a basis for follow-up activity."

Griser assures us that his assistant administrator has placed high priority on execution of the groundwater survey. "Hence, we have this agency-wide task force to develop a pesticide-in-groundwater strategy for all the offices of the Agency," says Griser. "It involves the Office of Groundwater and the Office of Enforcement, Compliance, and Monitoring." The actual survey field work will be conducted by contractors who will sample private and public wells.

The survey is scheduled to get underway next year, with sampling and analyses ending in 1987. The final report will be filed in the spring of 1988. Stay tuned...

— Tim Weidner

The author is Managing Editor of ALA.



# NEFARIOUS NEMATODES

*Nematodes may be weakening your customer's lawns and you may be misdiagnosing the damage.*

**M**ost of the damage to lawns from nematodes probably occurred during the summer in the northern and upper-southern regions of the United States. So why think about nematodes in lawns during the fall when many of the grasses are recovering from summer stress? Nematodes may have been one of the factors that contributed to summer stress of turfgrasses in many parts of the country, particularly where long droughts occurred. Nematodes may continue to

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***Nematodes are small eel-like worms that are too small to be seen with the unaided eye. They range in length from 1/10- to 1/75-inch long and their bodies are transparent. Many different species live in soil and water.***

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damage turfgrasses during the fall and winter in the warmer regions of the United States along the Gulf Coast.

The fall of the year is a good time to have soil samples from turfgrasses tested for nematodes. Results from research in North Carolina has shown that numbers of nematodes in the soil are usually higher in the fall than any other time of the year. Nematodes continue to reproduce as long as the soil temperatures are favorable (70 to 90 degrees Fahrenheit) and enough roots are present.

The number of nematodes in soil around turfgrasses will decrease during the winter and spring in regions where the soil temperatures become too cold for reproduction. Also, the damage from nematodes may be evident in the fall where cool season turfs do not recover quickly during favorable growing conditions and weeds may be more of a problem in turf weakened by nematodes. If nematodes are identified as a problem in tests, a plan to help overcome the damage from nematodes with management practices or chemicals can be developed over the winter for next year.

Nematodes are small eel-like worms that are too small to be seen with the unaided eye. They range in length from 1/10- to 1/75-inch long and their bodies are transparent. Many different species live in soil and water. Some feed on other microorganisms and are considered useful members of the ecosystem.

Some species cause diseases in plants and animals.

Nematodes that are parasitic on plants have stylets which are small spear-like structures that are used to puncture plant cells to obtain nutrients and to inject substances into plant cells. The feeding and injected substances may cause cells to change shape, enlarge, or die. Some species cause no apparent damage even at high numbers.

Plant parasitic nematodes reproduce by eggs that hatch into small nematodes called larvae. The larvae develop through four molts before becoming adults. The life cycle may be completed in three to four weeks under optimum conditions, with each adult female nematode producing several hundred eggs in a short time. Once the larvae hatch from the eggs, they must feed on a suitable host plant or they will die. Some nematodes do not hatch until stimulated by exudates from suitable exudates from suitable host plants that grow nearby.

Nematodes cannot move long distances on their own. Movement to other areas is usually in running water or soil. Most nematodes do not kill the host plants, but weaken the plants and make them more susceptible to other stresses. Nematodes that feed on the roots of turfgrasses can be separated into two groups, endoparasites and ectoparasites. The endoparasites move into the plant and move around or become stationary in the plant tissue. The ectoparasites puncture plant cells with their stylets and move around on the outside of the plant. The ectoparasitic types such as the sting nematode cause most of the damage to turfgrasses in the southeastern United States.

Symptoms of nematode damage above ground usually appear as plant stunting, nutrient deficiencies, gradual thinning of the turf, or excessive and rapid wilting during dry weather. These symptoms are typical of a damaged root system that could be caused by other factors. Symptoms of nematode damage on root systems include stunting, excessive branching, lesions, or even death of a large portion of the root system.

Symptoms on above ground parts may be in isolated areas with some nematodes and generally throughout the lawn with others. The damage to the root system reduces the ability of the plant to take up adequate amounts of nutrients and water for maximum growth. Therefore, the symptoms described above may develop. These symptoms alone usually are not adequate to identify nematode problems on turfgrasses. Similar symptoms could result from insect or grub damage, root rot diseases, soil compaction, poor nutrition, or poor soil/water relationships.

Soil samples must be tested for nematodes to determine if damaging levels of certain species are present.

Information on how to collect soil samples, information sheets, and soil boxes for nematode tests are available from several sources. Enough soil should be collected from 15 to 20 spots to accumulate at least one pint of soil for each sample. The samples should be collected from the edge of severely damaged areas or throughout thinning areas. Very low numbers of nematodes are often found in the middle of severely damaged areas because enough roots are not present to support large numbers of nematodes.

Soil samples should be collected from nearby healthy turf to compare the number and type of nematodes because nematodes may not be the primary cause of the problem. Some type or types of nematodes are likely to be found in soil from any turf area. The samples should be kept cool so that the nematodes do not die. The sample should be tested quickly to assure accurate results. Testing services are available in most states from the Agricultural Extension Service, Department of Agriculture or private laboratories.

Nematodes found most frequently on turfgrasses are ring, stunt, spiral, lance, root-knot, stubby-root, and sting. Only the sting and stubby-root nematodes have been shown to cause severe damage on turfgrasses in North Carolina. The other nematodes may be present in high numbers, but results in greenhouse and field experiments have not shown severe damage from these nematodes. The sting nematode has been associated with severe damage on both cool-season and warm-season grasses on golf courses and in home lawns in sandy soil areas of southeastern and southern United States.

This nematode does not occur in the northern states. It is difficult to grow good quality turfgrasses where the sting nematode is present. The stubby-root nematode occurs in many areas and has been shown to cause severe damage on some cool-season grasses on golf greens. The lance and ring nematodes often are found in high numbers on poor turf, but research results have not shown that these nematodes cause severe damage to turf in North Carolina.

The stunt nematode has been shown to damage turfgrass roots and has been reported to be a factor in the development of fusarium blight on bluegrass in Michigan. In other cases, damage has not been associated with high numbers of this nematode on grasses. The ring nematode is often associated with the decline of centipedegrass, but results from several research programs have not demonstrated serious damage from this nematode.

Chemicals for nematode control, nematicides, can be used to control nematodes in some cases. These chemicals are very toxic and are used most often on golf courses or commercial sod. Nematicur® and Mocap® are currently labeled for use on turfgrasses to control nematodes, but only Mocap is labeled for use on home lawns. It must be applied by someone with a commercial pesticide license. The chemical must be watered into the soil after application to reach the nematodes and insure safety to people or animals using the area.

Nematicides are usually applied during the times of the year that the turfgrasses are growing best. This is usually times that the nematodes are causing the most damage and the turf can recover quickly if damaged by the nematicides. The spring and fall has been the best time to apply nematicides to cool-season grasses and the summer is the best time for application to warm-

season grasses. One application in the summer may be sufficient for most of the southern United States, whereas several applications a year may be required in the deep South where warm-season grasses grow all year.

The soil should be tested to determine if sufficient numbers of damaging nematodes are present before treating turfgrasses with nematicides. If nematicides are used, follow the label directions carefully. In cases where nematodes are a problem and nematicides cannot be used, some management practices can be used to help overcome the effect of the nematodes. Maintaining proper soil pH, nutrition, and moisture for good turf growth will help some grasses overcome the damage from some nematodes. In some cases, an alternative to the species of grass that is being grown may be considered. For example, centipedegrass may be damaged severely by sting nematodes, whereas bermudagrass or bahiagrass may be able to survive and produce an acceptable turf in the infested area with proper maintenance.

In summary, certain nematode species are known to be a serious problem on certain turfgrasses in the southern United States. More research is needed to show the importance of several nematodes on turfgrasses. If a nematode problem is suspected, soil sam-

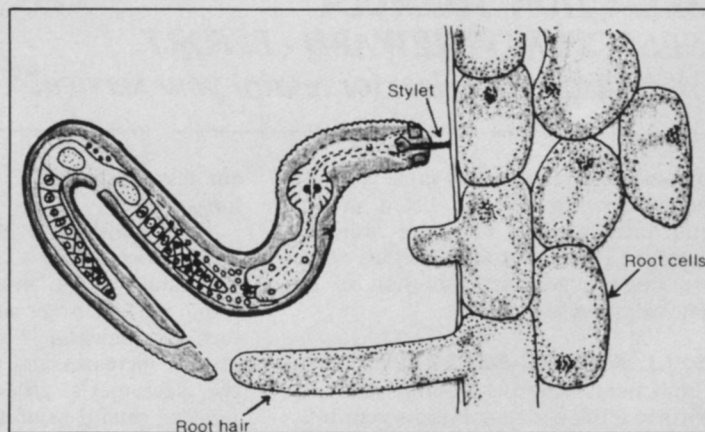
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***The number of nematodes in soil around turfgrasses will decrease during the winter and spring months in regions where the soil temperatures become too cold for nematode reproduction.***

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ples should be tested to identify the type of nematodes that might be causing the damage. Several methods of turf management may be considered in addition to chemical treatment to help overcome the effect of the nematodes. — Leon T. Lucas ■

*The author is Extension Plant Pathology Specialist, Turf Plant Pathology Department, North Carolina State University, Raleigh, North Carolina.*



*A plant parasitic nematode is ready to insert its stylet into a root cell to feed.*



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**COMMITMENT.** One of our biggest failings as professionals is not achieving the appropriate level of customer service through communications. The major reason for customer dissatisfaction is our failure to effectively communicate with these customers. This could be during the selling process as it relates to realistic expectations or in our attempts to sincerely resolve customer concerns after the point of sale.

Unless you understand the importance of "closing the loop," all your efforts are for naught. In any effective



nion/confidant. He is wooed and manipulated because his support is essential to the prosperity and even the survival of the organization. He is also courted, though, because loyalty lays the groundwork for internal stability. His input supports innovation and his satisfied responses make the effort of trying to serve him seem worthwhile. It is for all of these reasons that all lawn care employees develop a realization that

weigh the risk (or effort) invested.

In addition, many studies have been conducted on after-purchase dissonance among customers. This is also referred to as cognitive dissonance or the "post-purchase blues." The decision maker can never be sure he made the right decision and anxiety over the choice results. Hence, the impetus to sell, sell, and re-sell. To sell (and/or persuade), one must also understand communications.

**COMMUNICATIONS.** Communication means conveying any message by any means. Of the many forms of communication, the most common and most direct form is the spoken word. To be most effective, the spoken word should be used when time and directness are particularly important.

The second most common form of communication is the written word. Its primary advantage is that, with a written record, you have something set down permanently for reference and a chance to see how you are thinking. Nonverbal communication is a third important form of communication. Gestures, facial expressions, and body language convey meaning just as words do.

In communication, we either send or receive. Reading efficiently, in addition to listening carefully and courteously, are as much a part of communication as writing a letter or making a telephone call.

**TALK TO ME.** Good faith, mutual confidence, openness to ideas, and a friendly attitude are the foundations on which people will learn to talk to you. But a more specific way is for you to develop the fine art of listening.

Real communication is two-way. In the long run, people won't listen to you if you won't listen to them. But listening must be more than just a mechanical process. Most people are poor communicators. This means that you have to be an extra-good receiver to find out what customers may be trying to say.

Here are a few suggestions that may improve your listening power:

## SELECTION FORMULA

### SELECTION = REWARD - EFFORT

*Will customers select (or retain) your service?*

personal interaction, you must remember four key words: ask, listen, probe, and resolve. The operative word is resolve. In all customer service work we must strive for resolution of all mutual concerns.

**SELL AND RE-SELL!** The most fundamental motive behind your efforts to influence customers is your ultimate dependence on them. The customer is both meal ticket and compa-

our relationship with our customers is long-term.

To establish yourself as a personalized service within a potentially uncaring industry, you must better understand the customer and the selection formula: selection = reward - effort. If reward increases and effort decreases, the customer's propensity to select (and/or retain) your service improves dramatically. The perceived benefits (value) of the service must far out-

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- *Don't assume anything.* Although it helps to anticipate, don't let him/her think you know what he's going to say.
- *Don't interrupt.* Let the homeowner have his full say. If you stop him, he may feel he has never had a real chance to get it off his chest.
- *Try to understand his reason.* The real need for his talking to you. Often this is quite different from his immediate purpose. It is imperative that you empathize with your customer by placing yourself in his/her position.
- *Don't react too quickly.* We all tend to jump to conclusions. The customer may have expressed himself poorly. Be patient in trying to be sure you and he are talking about the same thing and that you understand his viewpoint.

#### OVERDOING LISTENING?

Listening should make up at least a third of your communications. But it shouldn't take the place of definite actions and answers on your part. Always summarize with your mutually acceptable resolution.

When a customer begins to ramble too far afield in his discussions bring him back to his point with astute questioning. If a customer is clearly wrong on a point of fact, set him straight — even if it means contradicting him. But watch your tone!

Finally, when a customer comes to you with a problem and its solution is clear to you, give him a straightforward reply. It does help him, if you have the time, to permit him to develop his own solution. But when he has come to you by virtue of your knowledge and experience, chances are he wants a direct answer, not a session of hand-holding.

**COMMON COURTESY.** Etiquette is the cornerstone from which an environment of mutual respect is built. Please and thank-yous are a way of life. Addressing customers and people of authority by Mr./Mrs. is critical to establishing a basis for mutual appreciation. Remember you never get a second chance to make a good first impression.

One must always be sure to thoroughly document all pertinent information. It is perfectly acceptable to repeat your notes in an effort to verify spelling of name and contact information. Regardless of the quality of the exchange, the customer service representative must always close on a positive note. Examples might include:

- Thank you for bringing this oversight to our attention.
- Thank you for your cooperation in this matter.
- I'm glad we had the opportunity to review your concern.
- Thank you for your patronage.
- I'm sorry for any inconvenience and I'm glad we'll have the opportunity to satisfy our mutual concerns.

## CUSTOMER SERVICE LOOP

1. Ask
2. Listen
3. Probe
4. Resolve

**CONFLICT RESOLUTION.** Conflict is viewed as a natural result of the interaction of more than one party. It is important to recognize the existence of

conflict and view it as healthy (and even creative), provided it is dealt with openly. There are four basic strategies for dealing with conflict:

- *Avoidance* — unfortunately, despite popular belief, problems do not go away, they only manifest themselves in direct proportion to the untimely fashion in which they are dealt.
- *Win/lose* — competitive in nature, tends to produce high anxiety and produces a victor and a victim.
- *Lose/lose* — requires very little creativity, fosters the "one-half loaf of bread is better than no bread" scenario. Overall it is regarded as a total

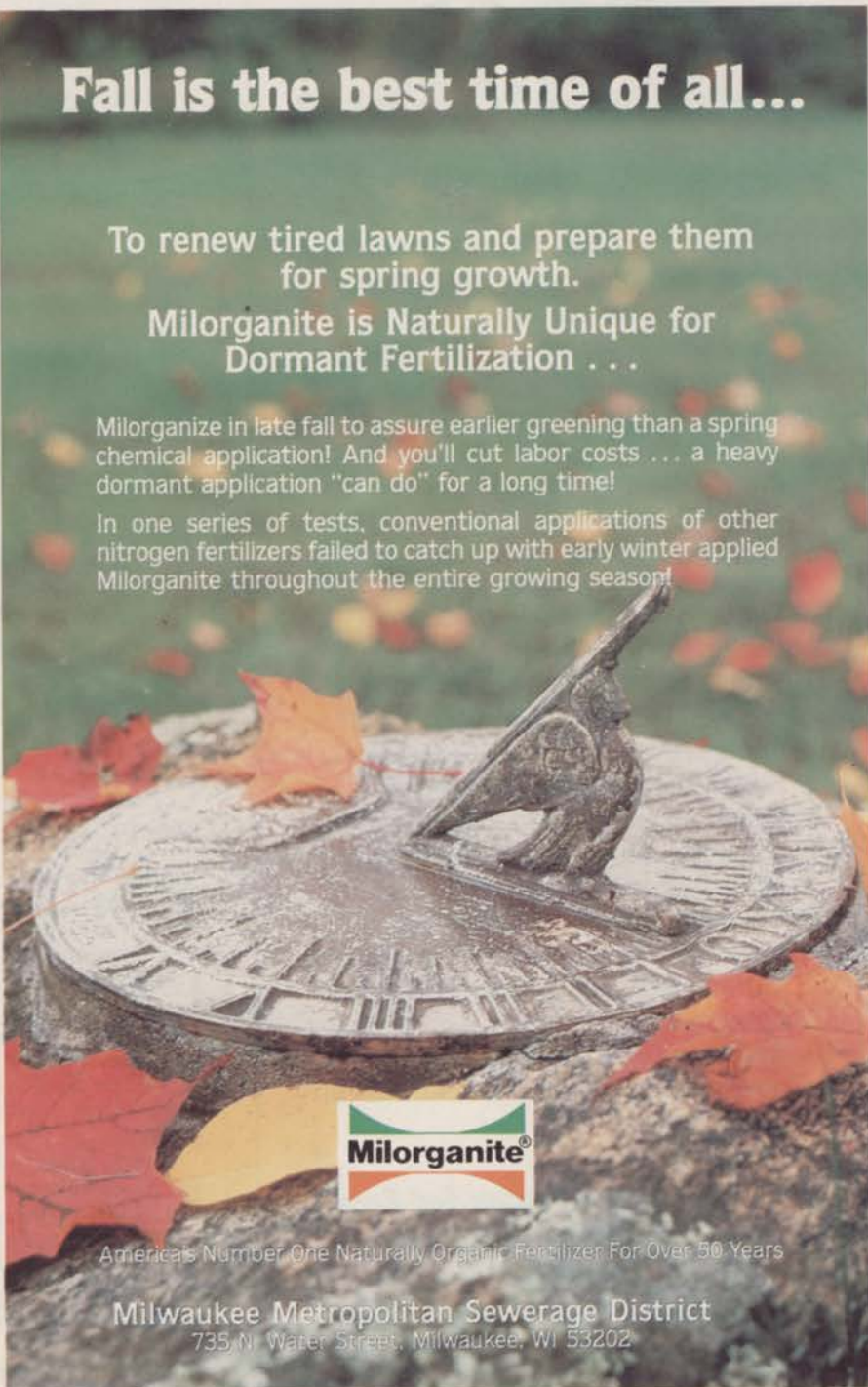
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compromise.

• Win/win — goal-oriented problem solving develops a complex of mutual expectations.

The only viable option to a long-term relationship is the win/win approach. The others are the focus of a we/they philosophy. To best fine tune your conflict resolution skills, you must practice the following:

- Confrontation — define and address the problem head-on.
- Smoothing — deemphasize the problem involved.
- Compromise — bargain for the best mutually acceptable solution.

To become a master of customer service, the employee must resolve himself to eight common beliefs. They are as follows:

- There are mutual solutions to problems.
- There must be a desire to come to an acceptable solution.
- One must cooperate rather than compete; as competition creates more conflict than it resolves.
- All individuals have equally valuable contributions.
- Others can legitimately represent their beliefs.
- Differences of opinion are helpful.
- An atmosphere of mutual trust can be reached.
- Cooperation is a freedom of choice given the correct environment.

**"CLOSING THE LOOP"** A service call can be initiated in one of two ways. The most obvious being when the customer contacts you with a problem. The second being initiated by a technician while visiting a property for another reason. The latter of the two is an excellent example of proactive (rather than reactive) service.

Appropriate customer service procedures happen out of design, not by accident. Get a commitment from whomever is going to do what, and when, to solve the problem. As a matter of policy, the employee should always complete the appropriate paper work regarding the service call. Documentation is critical to a successful customer service foundation.

**SERVICE REMINDERS.** First impressions are critical. Personal appearance/grooming habits and clean equipment/uniforms are very important.

Voice articulation includes your ability to speak loud enough, clearly, slowly, confidently, and directly to the customer. Positive mental attitude (PMA) requires that you are friendly, courteous, enthusiastic, and express a sincere interest in the customer's concern. Create a participative atmosphere that gets the customer's attention and involvement. Ask open ended questions.

Listen carefully while remaining calm, tolerant, and empathetic. Put yourself in the customer's position. Probe further to identify the real problem and the extent of customer dissatisfaction. Don't intimidate or be sarcastic with the customer. Allow the customer to "clear the air," but only once. Do not allow the customer to intimidate you. Address and depersonalize the problem. Strive for a common solution. Follow through on *all* commitments!

**SUMMARY.** It takes a substantial period of time for an organization (or individual) to build a reputation for which you can be proud. However, it takes very few mishandled (or missed) commitments to shatter a well-earned foundation of credibility.

Selling is not a talent, but a developed skill. You must know and believe in what you are selling. Never say, "Can we do it?," rather, "How can we do it?" Many would-be achievers approach problems identifying the reasons why a common solution is not possible. Instead, concentrate your energies on bringing 100 percent of your problems to final resolution. Be a problem solver! — Michael C. McKee

*The author is President of New England Green, Inc., a lawn care company in Springfield, Massachusetts.*



# PRODUCTS

**P**erma-Green Supreme introduces a new low volume (1 gallon per 1,000 square feet) spray system with granular storage capacity. The GL2001 hatchback is designed with the flexibility to go from a total liquid fertilizer program to a total dry fertilizer program — or any combination in between.

Sixteen cubic feet of locked dry storage and a locking spreader bracket make granular handling fast, easy, and secure. The main tank can carry enough solution to treat 200,000 square feet of lawn area. Naturally, the GL2001 comes equipped with the patented Perma-Green Supreme twin hose Injection Gun System for target application of pesticides.

Other trucks or vans can't compete with the low cost and efficiency of a heavy-duty, high mileage Ford Ranger, Toyota, etc., outfitted with the GL2001. The sleek aerodynamic styling makes a positive statement about your professionalism that will be seen by your customers, employees, and competitors. The all-fiberglass exterior withstands the ravages of chemicals, dirt, and scratches, season after season without painting.

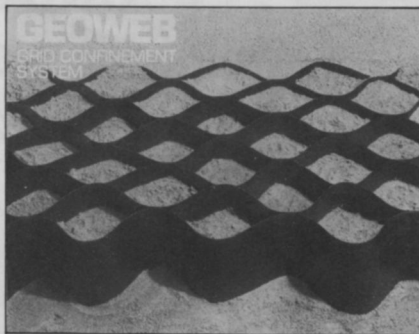
Easy operation and maintenance extends to the battery-powered pumps, agitator, and hose reel. Each GL2001 comes with a video tape training film covering equipment operation, repair, and spray techniques. Accessing technical assistance or parts is as easy as dialing a toll free number.

The GL2001 is available for direct purchase or on a lease/purchase plan that includes truck and equipment for about \$340 per month. For more details contact Tom Jessen at 1/800/346-2001 or see the GL2001 on display at the PLCAA conference on November 18-21 in Tampa, Florida.

**Write 100 on reader card**



**Presto Products Inc.** presents Geoweb Grid Confinement System employing the principle of strength by confinement. The Geoweb Grid Confinement System is an expandable honeycomb structure used to confine cohesionless or unstable soils, sands, or gravel. Developed by the United States Army Engineers Waterways Experiment Station and Presto Products, Inc., this system is simple to install and extremely durable. The material has been used



successfully to build roads, control erosion, construct boat ramps, and to construct barrier walls.

Also from Presto Products, are the "indestructible" Geoblock Landscaping System. An attractive and effective alternative to hard surface pavements, Geoblock supports pedestrian and vehicular traffic while maintaining a thick cover of grass. Made from lightweight, high-strength, reinforced plastic, the interlocking system creates a strong, flexible pavement which is being used for access roads, parking lots, footpaths, and golfcart paths.

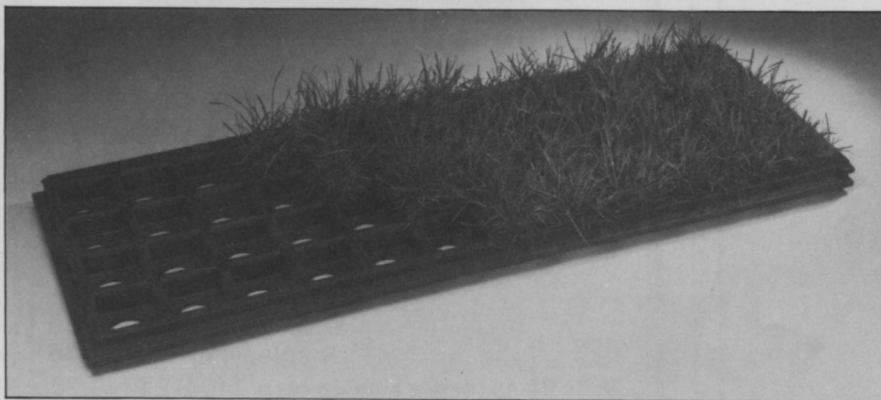
**Write 145 on reader card**

The Model 96 from **Olathe Manufacturing, Inc.** is a compact aerator featuring 70-pound castings for deep penetration, three-point hitch hookup, and a choice of 1/2-inch or 3/4-inch coring tines or 4-inch slicing blades.

**Write 140 on reader card**

The rugged, easy-loading, easy-towing single or tandem axle **Mighty Moover** equipment hauler, with bed lengths from 11 feet through 20 feet and load capacities up to 5 tons, is available in eight sizes from **Beck Corporation**. Constructed of heavy gauge steel plate body and steel tubing crossmembers and featuring a reinforced A frame, **Mighty Moover** is tough enough for daily use. A low bed height and steel mesh on ramps make loading and unloading equipment fast, easy and safe.

With a low center of gravity, and widths up to 96-inches, a passenger car



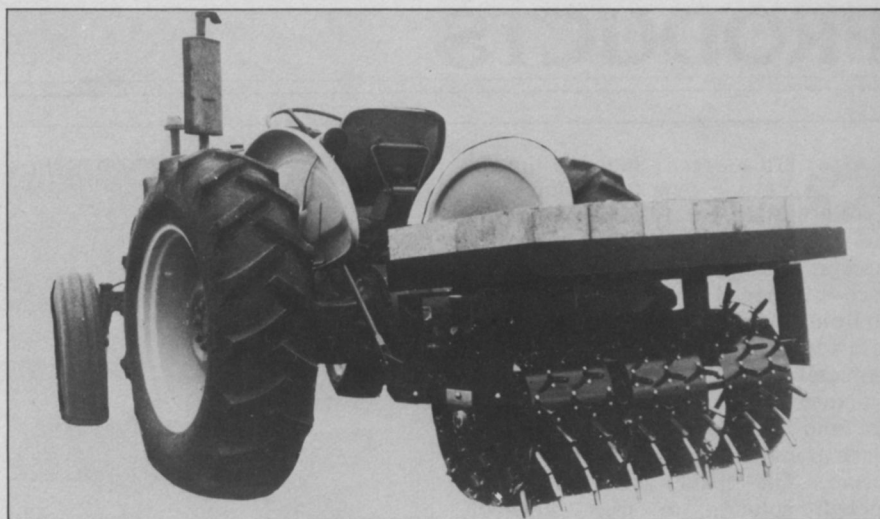
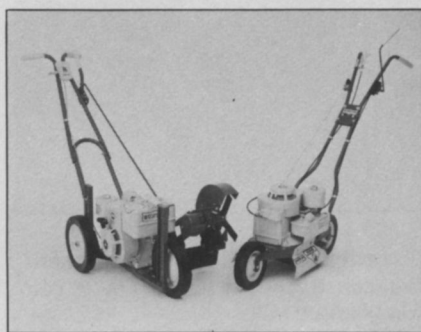


or pickup truck is an adequate towing vehicle. The ramps feature a durable hinge and pin locking assembly and loading stabilizers. Axles and rims are industrial quality and complete lighting is standard.

**Write 142 on reader card**

The **Buntun Company's** 12-inch rotary trimmer/edger has a horizontal blade for trimming and edging and balance, which permits tilting when edging flush walks, curbs, markers, and roadways. Steel guards direct clippings away from monuments, walls, trees, and fences, and prevents the blades from marking or chipping monuments.

The 10 inch trimmer/edger blades can be adjusted to five positions, from



vertical to horizontal. In addition, the front and rear wheels are adjustable to allow curb edging. The machines are powered by three horsepower Briggs and Stratton engines which are equipped with stopping devices that meet or exceed mandatory CPSC lawn mower safety regulations for consumer mowers.

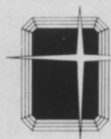
**Write 121 on reader card**

**Dedoes Industries, Inc.**, announced the introduction of the Model H

Mounted Aerator. It is designed for easy attachment to all tractors with category 0 or 1 hydraulic three point hitches.

The model is available as a two, three, four, or five drum unit allowing aerating swathes from 25 to 72 inches. It features the patented Dedoes hinged tines in five sizes for clean removal of plugs. Optional drum sizes allow the lawn care operator to collect plugs where needed. The solid steel weight

*(continued on page 52)*



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## PRODUCTS

(continued from page 50)

box is designed to utilize 12 solid 8 by 16 inch cement blocks. This puts the weight where it's needed at a very low cost.

**Write 125 on reader card**

**Rain Bird Sales, Inc.** has just expanded its line of polyethylene tubing. The new line now includes tubing sized from 1/8-inch up to 1-inch. Also, included in this new family of tubing is a small diameter emitter distribution tubing. Rain Bird tubing is manufactured from only the finest, linear, low density polyethylene resin and is subjected to rigorous testing to meet established ASTM standards. The tubing is also compatible with Rain Bird compression and insert fittings and is backed by an extended warranty.

**Write 136 on reader card**

**Morrison Industries, Inc.** introduces a new line of platform bodies known as "4 for 1." They are specifically designed to reduce the distributor's inventory requirements. All bodies include as standard features, 6-inch structural steel



longsills, 7-inch rubrails, and 10 gauge crossmembers. This permits the distributor to stock one body for any of four applications: regular platform body, platform body with hoist, stake body, and stake body with hoist.

"4 for 1" bodies are available in three floor options: smooth steel, tread-

plate, and dense southern yellow pine — in lengths from 8 feet to 24 feet. A host of standard and custom options for the platform as well as various types of racks and bulkheads allows the distributor to literally customize a "4 for 1" body to the customer specifications.

**Write 132 on reader card**

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**Al-Ko Kober International**, the European lawn and garden products company, has recently introduced a line of home shredders to the United States market. The shredders come in six sizes, electric and gas powered models. Al-Ko hopes to appeal to the organic gardening market with the shredders with turn sticks, brush, branches, and leaves into bits and chips that can be easily disposed of or turned into a garden fertilizer by heap or surface composting.

**Write 144 on reader card.**

An innovative new edging tool is being manufactured for the lawn care industry by **Nama Trading Corporation**. This easy-to-use product has a blade made from high grade stainless steel, ensuring years of rust-free use. Its serrated cutting edge makes a good clean cut.

**Write 131 on reader card**

A new hand-held, 25-power microscope, **Macroscope 25**, is now available from the Research and Testing Company, Inc. subsidiary of **United States Testing Company**. The scope provides 25X magnification over an 8 millimeter-wide field of view.

**Write 114 on reader card**

**Lebanon Chemical Corporation** has announced the introduction of **Country Club 19-4-4** with **Oftanol®**, a combination fertilizer and insecticide. It is recommended for use on lawns and other turfgrass areas.

**Write 113 on reader card**



Model 82 Slit Seeder Aerator is a new out-front slit seeder-aerator from **Olathe Manufacturing** for Grounds-master 72 tractors. It uses less seed and relieves compaction.

**Write 112 on reader card**

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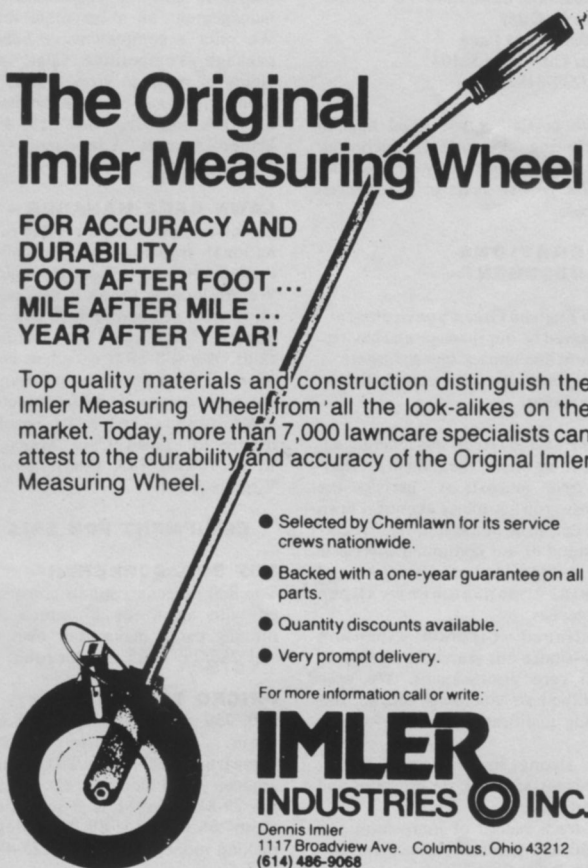
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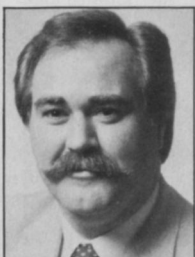
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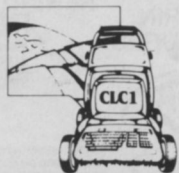
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