SERVING THE AMERICAN LAWN APPLICATOR AND MAINTENANCE PROFESSIONAL

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RCRA FALLOUT

HOW ARE YOU DISPOSING OF YOUR PESTICIDES?

LAWN CARE AND THE ENVIRONMENT

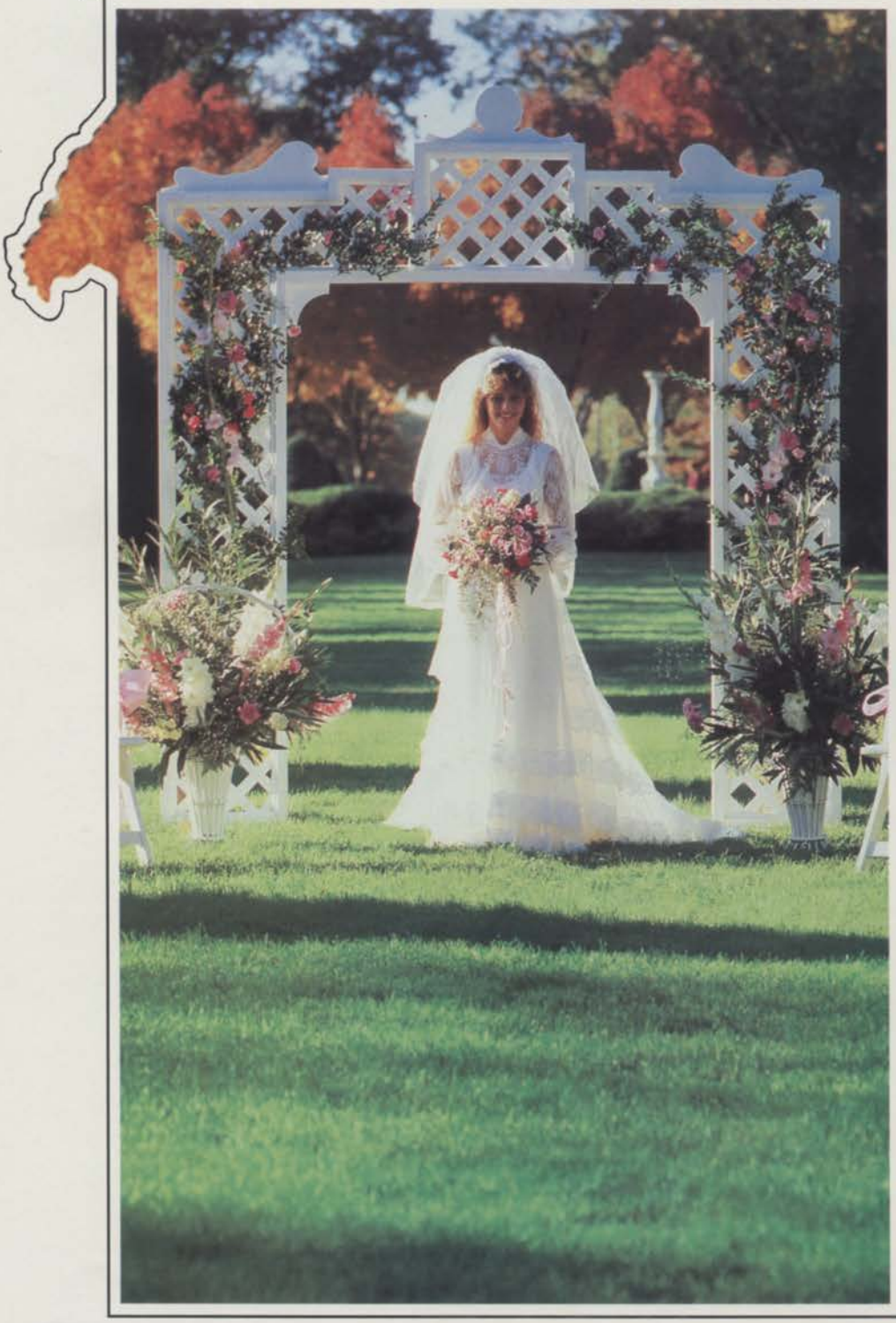
PESTICIDE POLITICS AND PERCEPTIONS

REGULATORY REVIEW

PUTTING DOWN ROOTS

LAWN CARE IN MONTREAL

A thing of beauty is a joy forever. Unless there are mole crickets in there.



Mole crickets. They're spoilers. Give them an inch and they'll take a lawn.

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OFTANOL works in the top 1-1½ inches of soil, where the mole crickets are, and remains active up to 120 days.

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MAY 1986
VOLUME 7 NUMBER 5

ALA

BPA MEMBERSHIP APPLIED FOR 10/85.

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COVER

How do you dispose of left-over pesticide solution? The new RCRA regulations may make you change your ways.
(Cover photo by Barney Taxel)

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What could be more economical than a Toro?

You can find cheaper equipment on the market, but how much will it cost you in the long run?

Would you rather build a business on reliable equipment that gets the job done on time, or on cheap equipment that breaks down and produces unhappy customers. It's a simple formula: happy customers equal profitability.

And if you're serious about your customers, your reputation for cutting on schedule, and your competitive prices, few grass cutters can be as economical or provide as much value as a Toro.

How can we keep your charges competitive when your competition is buying cheaper machines? By designing more productive, labor-saving mowers. With out-front cutting units and rear steering for better maneuverability. With more up-hill and hillside stability and balanced designs. With more efficient grass collection systems. And with comfort and safety designed into every machine for less driver fatigue.

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For unplanned maintenance needs, your Toro distributor has the parts you need most often in stock. For other parts needs, our Unit Down Program can get them to you as quickly as 48 hours.*

When it comes to economy and value, Toro commercial equipment is unequalled in the industry. Our competitors' equipment may cost you a little less up front, but in terms of reliability, may cost you your customers in the long run. And that's a price no business can afford.

For more information on Toro economy and value, contact your local Toro distributor. Or send in the coupon.

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

All 48-hour Unit Down parts delivery orders must be placed with Toro by 12:00 p.m., Minneapolis time.

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8111 Lyndale Avenue S., Minneapolis, MN 55420

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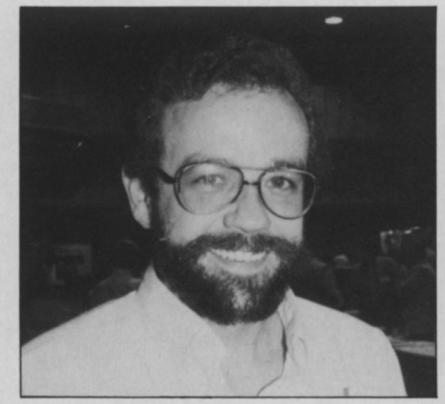
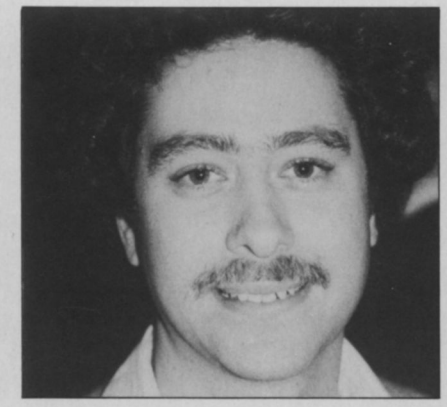
VIEWS ACROSS THE TURF INDUSTRY

HAS THE PESTICIDE CONTROVERSY AFFECTED YOUR AREA?



"It certainly has! For a short time, we suspended service in the Village of Wauconda, until the Wauconda ordinance was ruled invalid. Another village that we operated in required a disclosure to the village board of the constituent parts of our lawn spray material, which we chose to do voluntarily. And now one of our state representatives has sponsored a bill in the Illinois legislature that will allow municipalities to prohibit the application of pesticides." — **Jay McNallis, Turf-treet/Country Gas Company, Crystal Lake, Illinois.**



"Our concern is whether the laws that have gone into effect will spread through all the counties and states, so that in the future we'll all have to be posting signs on the lawns we treat. That hasn't happened in my area yet, but it could hamper our ability to run a lawn care business. Knowing that we are putting down material, the public might feel that we are a danger to them. That's obviously not the case at all, but now the public is taking a negative view of all chemical use." — **Arnie Linzer, Lawn Doctor of Valley Stream, Valley Stream, New York.**

"There hasn't been any problem with notification or posting lawns here in Ontario. We've mainly been wrapped up with the spills bill and the scramble to get insurance. We only have to notify owners after we've sprayed. We leave a note in the door saying what's in our tank and what we've put on their lawn. It's in the form of a bill as well, so we get notification and billing done at the same time. We've always had to label our sheets when we spray a lawn as to what we have applied." — **Rhonda Rathbun, F.A.F. Enterprises, Hillsburgh, Ontario.**

CALENDAR

May 21
North Carolina Turf and Landscape Field Day, NCSU Turf Field Center, Raleigh, North Carolina. Contact: J.M. DiPaola, Box 7620, North Carolina State University, Raleigh, North Carolina 27695; 919/737-2657.

June 26
Turf Research Field Day, University of Massachusetts, Turfgrass Research Center, South Deerfield, Massachusetts. Contact: Dr. Rich Cooper, Department of Plant and Soil Sciences, Stockbridge Hall, Amherst, Massachusetts 01003; 413/545-2353.

July 10-11
Plant Industry Day and Animal Industry Day, Agri-Tech '86, Virginia Tech's College of Agriculture and Life Sciences. Contact: Dr. Jack Hall, Virginia Polytechnic Institute and State University, College of Agriculture and Life Sciences, 703/961-5797.

July 28-30
Expo '86, Kentucky Fair and Exposition Center, Louisville, Kentucky. Contact: Cheryl A. Van Vliet, The Outdoor Power Equipment Institute, Inc., 1901 L Street NW, Suite 700, Washington, D.C. 20036; 202/296-3483.

July 29-31
National Fertilizer Solutions Association Mid-Year Dealer Conference "Round-Up," Hyatt Regency O'Hare, Chicago, Illinois. Contact: Bob Wanzel, National Fertilizer Solutions Association, 10777 Sunset Office Drive, Suite 10, St. Louis, Missouri 63127; 314/821-0340.

Aug. 6
Maryland Turfgrass Field Day and Equipment Exhibition, UM Turf Research and Education Center, Silver Spring, Maryland. Contact: P.H. Dernoeden, Department of Agronomy, University of Maryland, College Park, Maryland 20742; 301/454-3717.

Aug. 12
Turf and Ornamentals Field Day, Georgia Station, Griffin, Georgia. Contact: Dr. Gilbert Landry, Jr., Extension Agronomist-Turf, Extension Agronomy Department, University of Georgia, Athens, Georgia 30605; 404/542-5350.

Aug. 20
Turf Research Benefit Golf Tournament, Golf Club of Oklahoma, Broken Arrow, Oklahoma. Contact: Michael P. Kenna, Extension Turf Specialist, Cooperative Extension Service, Oklahoma State University, 335 Agricultural Hall, Stillwater, Oklahoma 74078; 405/624-5404.

Sept. 20
Oklahoma Turf Research Field Day, Lincoln Plaza, Oklahoma City, Oklahoma. Contact: Michael P. Kenna, Extension Turf Specialist, Cooperative Extension Service, Oklahoma State University, 335 Agricultural Hall, Stillwater, Oklahoma 74078; 405/624-5404.

Oct. 23-24
Southwest Turfgrass Conference, Holy Cross Retreat, Las Cruces, New Mexico. Contact: Charles R. Glover, Extension Agronomist, New Mexico State University, College of Agriculture and Home Economics, Box 3AE, Las Cruces, New Mexico 88003.

Nov. 17-20
1986 Professional Lawn Care Association of America Annual Convention, Baltimore Convention Center, Baltimore, Maryland. Contact: Jim Brooks, Executive Vice President, PLCAA, 1225 Johnson Ferry Rd. NE, Suite B-220, Marietta, Georgia 30067; 404/977-5222.

Over 1,000 companies have discovered the benefits of membership in the Professional Lawn Care Association of America.

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PROFESSIONAL LAWN CARE ASSOCIATION OF AMERICA

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Where else can the small lawn care company get quality health care insurance at a reasonable cost? And where else can you get PLCAA's exclusive line of publications? PLCAA's Technical Resource Manual, the Safety Manual, and the Management Monograph booklets, our handy series of lawn care business guides, are all FREE to PLCAA members.

How else can you stay in touch with news you need to know? PLCAA members receive Turf Talks, our bimonthly newsletter, full of member news and management tips. PLCAA's Legal Update bulletin, written by General Legal Counsel Richard I. Lehr, is targeted to the green industry. And PLCAA's Environmental Update bulletin keeps members in touch with legislative issues —issues that could threaten your business.

What else do you get for your low PLCAA dues? Access and price breaks on local seminars, audio/visual training programs, sales aids, networking, and much more.

Who else but PLCAA offers all this to the lawn care businessman? Find out for yourself what 1,000 other companies already know—that membership in the Professional Lawn Care Association of America helps your industry and your business. Mail the coupon below or call (404) 977-5222.

P.S.—Don't forget to mark your calendar—**PLCAA/Baltimore '86,** our big 7th Annual Conference and Show, takes place Nov. 17-20, at the Baltimore Convention Center.

I'm interested. Send me more information!

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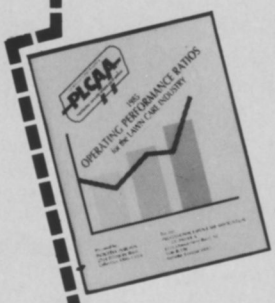

Mail to:
James R. Brooks, Executive Vice President
Professional Lawn Care Association of America
1225 Johnson Ferry Rd., N.E. Suite B-220
Marietta, GA 30067

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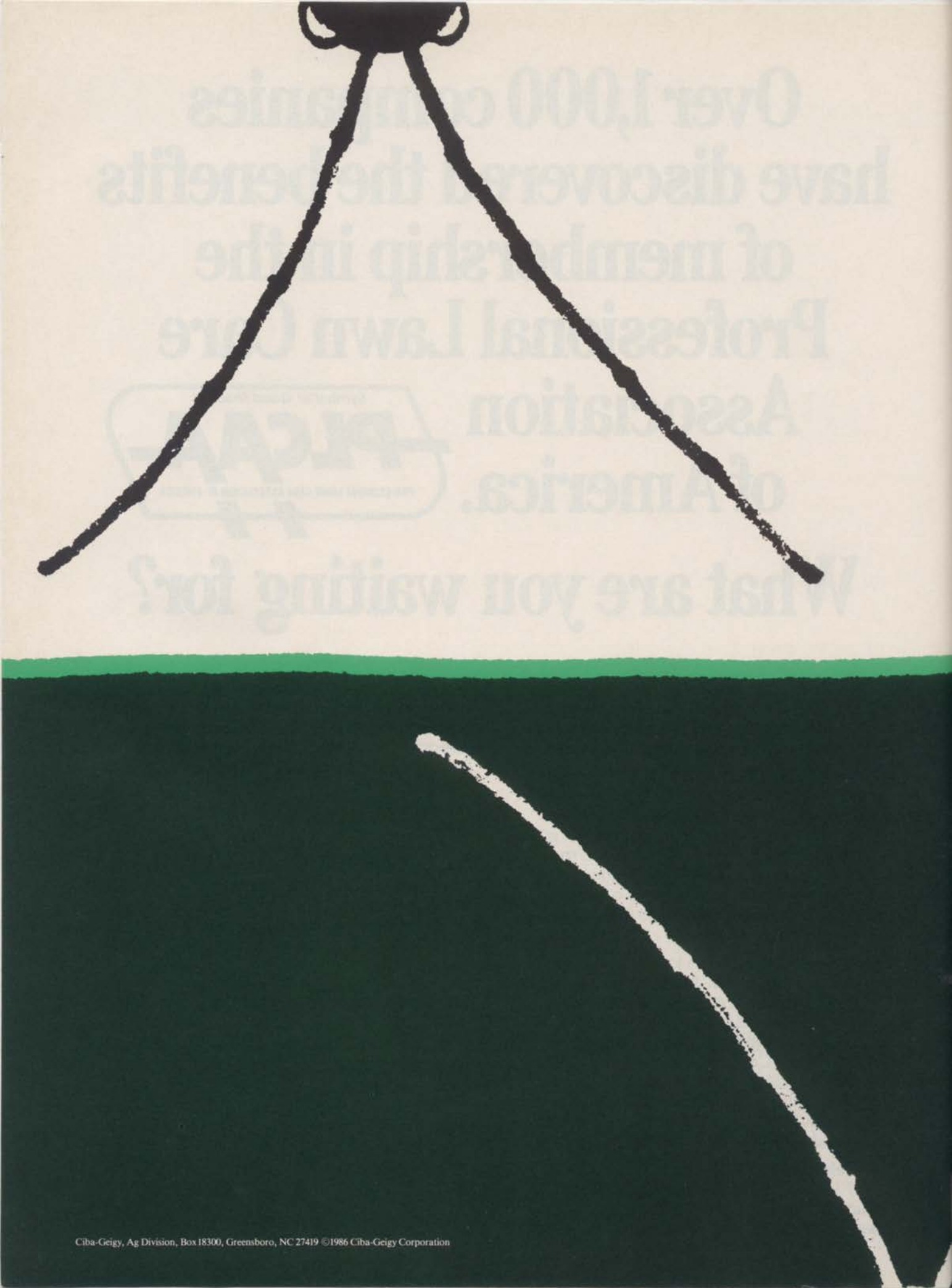
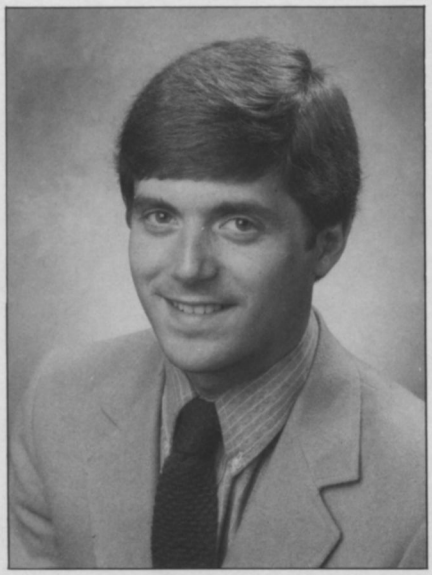


INSIDE STORY

Think of this as our regulatory issue. In this May issue we have two business features and two technical features that deal with regulating the use and disposal of pesticides. Our cover story concerns the Resource Conservation Recovery Act (RCRA), how it affects us now and how it will affect us in the future. On September 22, the RCRA regulations will be changed to include everyone who generates between 100 and 1,000 kilograms of hazardous waste in a calendar month as small quantity hazardous waste generators. These generators have to obtain a U.S. EPA identification number. They also have to use a uniform hazardous waste manifest and use licensed hazardous waste transporters, and they have to insure that the waste gets to a facility that is permitted to handle their hazardous waste. So to be on the safe side, you had better reuse all spray residues in your tank the following day so you can avoid generating any hazardous waste.

Assistant Editor Vivian Rose checks in this month with a report on regulatory activity around the country. It's no surprise that more and more proposed and actually adopted local ordinances are cropping



up, but the big news is that state legislatures are now considering bills that would give municipalities free reign in adopting their own ordinances. Needless to say, we will be keeping an eye on this situation.

David Jones, Director of Environmental Safety at Tru Green Corporation, talks about how lawn care relates to environmental issues. Today many people question whether lawn care is compatible with the environment. Jones tells us we should stick up for the safety and value of our service when challenged.

In the same vein, Dr. Roger Funk, Vice President of Technical and Human Resources at the Davey Tree Expert Company, discusses the public's perception of pesticides. Funk also tells us it is time to stand up and fight for our right to use pesticides. This article includes a valuable chart which compares peoples' perception of pesticide hazard with reality.

Getting back to more strictly technical information, Tony Koski at the Department of Agronomy, Ohio State University, asks the question, "Grass Root Growth: How Important Is It?" Koski says we should be caring for turfgrass roots, not just turfgrass foliage.

Finally, we have a market report on the Montreal lawn care market. Montreal is something of a new frontier for professional lawn care. The lucky businessmen who got in on the ground floor are now reaping the profits. As always, enjoy!

Jim Weidner

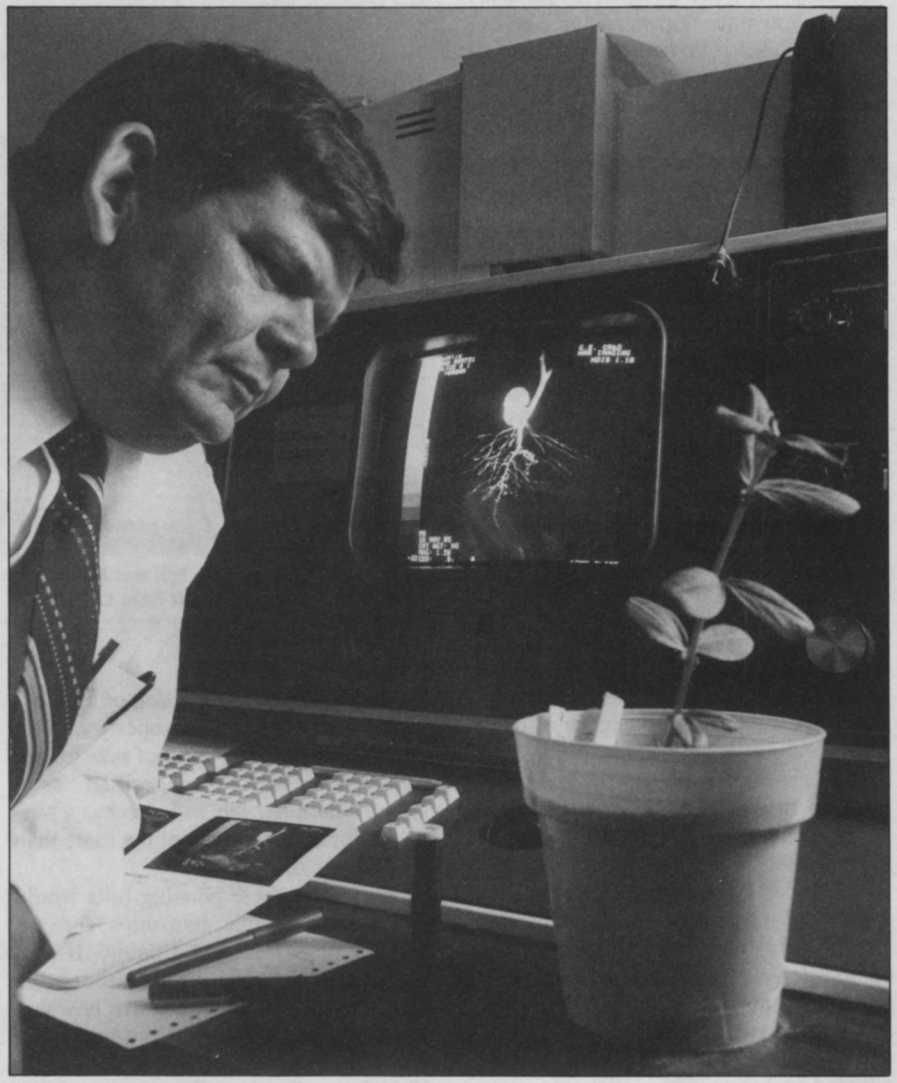
NEWS IN BRIEF

MEDICAL TECHNOLOGY PROBES PLANT GROWTH

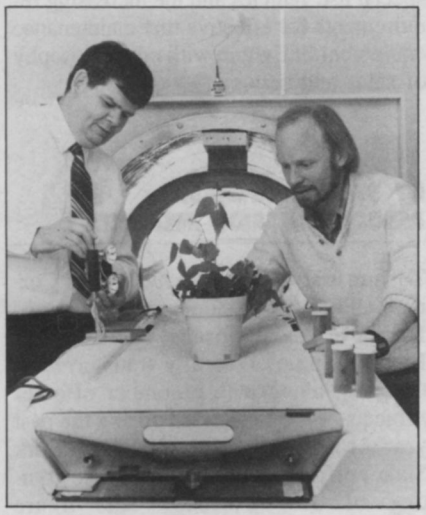
Scientists from the General Electric Company and the U.S. Department of Agriculture are using an advanced medical technology — magnetic resonance imaging — to help unravel the mysteries of plant growth. Employing a magnetic resonance (MR) scanner at GE's Research and Development Center in Schenectady, New York, the team is studying the structure and functioning of the roots of living plants in search of ways to optimize growing conditions. The scanner allows the researchers to "see through" the soil and container, and watch the roots grow, absorb water, etc., without disturbing them in any way.

The scanner employed for the plant root studies is very similar to those marketed by GE's Medical Systems Group, Milwaukee, Wisconsin, for producing images of the organs and structures within the human body. It is based on a large, doughnut-shaped superconducting magnet capable of producing a magnetic field of 1.5 Tesla — 30,000 times the strength of the earth's natural magnetic field — within its one-meter-wide bore.

In an imaging procedure, the object — in this case, a living plant — is positioned in the powerful magnetic field within the bore of the magnet and probed with high-frequency radio signals. Under the magnetic field's influence, these radio signals (transmitted by a special type of antenna) serve to "excite" selected atoms in the object under study, causing them to resonate. The resonance signals are picked up by another antenna and transmitted to a special-purpose computer for interpretation. The computer employs the resonance data to construct a picture of the object being imaged. (The image is actually a computer-screen "map" showing the location and concentration of the excited atoms.)



Employing a magnetic resonance scanner at GE's Research and Development Center, Dr. Hugo Rogers is viewing an MR image of a bean plant on the scanner's computer screen.



Employing a magnetic resonance scanner at GE's Research Center, Dr. Hugo Rogers (left), and Dr. Paul Bottomly are studying the structure and functioning of roots of living plants in search of ways to optimize growning conditions.

In this first known application of MR imaging to intact root systems, the GE/USDA researchers used hydrogen imaging (i.e., they looked at the hydrogen atoms in the root system) to study water transport, root pathology, seed growth, and other factors. The members of the research team are Dr. Paul A. Bottomley, a physicist, and Thomas H. Foster, a program intern, both of whom specialize in MR studies at the GE Research and Development Center, and Dr. Hugo H. Rogers, a plant physiologist with the National Soil Dynamics Laboratory of the USDA's Agricultural Research Service in Auburn, Alabama.

PENDING STATE REGULATORY BILLS

State legislatures in Ohio and Illinois are pondering the passage of bills which would regulate the application of pesticides in those states. In Ohio, State Senator Lee Fisher (D-25) of Shaker

Heights plans to introduce legislation next month requiring advance notice to homeowners before applying pesticides to lawns. Fisher says he was made aware of the issue when the Lyndhurst, Ohio ordinance was first adopted and then vetoed and was later followed by a successful Lakewood, Ohio ordinance. In an interview with the Cleveland Heights/Shaker Heights *Sun Press*, Fisher said, "The major concern is really with the use of lawn care chemicals. They have a potentially harmful effect. I'm concerned about people who are chemically sensitive."

The law to be proposed by Fisher would require commercial applicators to provide customers with a list of pesticides to be used. Notice would be required to neighbors 24 hours in advance, listing the time and date of spraying. Also, lawn care companies would have to register with local communities. Unlike similar laws that have been proposed and passed at local levels, Fisher's proposed legislation would also require homeowners who apply their own pesticides to post signs on treated lawns for at least three days following applications. The signs would list the chemicals used, and the telephone numbers of the Ohio Department of Agriculture and the servicing company or individual.

Fisher's proposed bill will stand in opposition to a bill currently in the Ohio House which was originally introduced by State Senator Gary Suhadolnik (R-24) of Parma. This bill has already passed the senate and would prohibit municipalities from passing their own legislation on the chemical lawn care issue. If passed, it would overturn Lakewood's right-to-know ordinance, which was the second of its kind in the country when it was adopted in June, 1985.

In Illinois, House Bill 2686 was introduced to the 84th General Assembly on February 10 by House Representative Klemm. If adopted, the bill would authorize municipalities to prohibit the application of pesticides by professional applicators or anyone else intending to apply pesticides in a public building, unless certain licensing, notice, and other requirements are met. The term "public building" will be interpreted as any "building to which the public is invited for the sale of goods or services."

Under the bill, applicators would have to register and obtain a permit from the municipal clerk, pay an annual application fee of not more than $25, and comply with "reasonable" requirements which the municipality may impose by ordinance. Those "reasonable requirements" may include restrictions under certain wind velocity conditions, posting of signs, notification of and permission from ajoining property owners prior to applications, proof of state license possession, and other unspecified "safety" precautions. The bill also has a provision for levying a fine of not more than $1,000 per offense.

Obviously, these pending bills would create considerable hardships for applicators in Ohio and Illinois. If you would like more information about this legislation or would like to know how you can support applicators in these states, in Illinois, contact John Crossmock, ChemLawn Services Corporation, 2500 West Higgins Road, Suite 305, Hoffman Estates, Illinois 60195; 312/490-1300. In Ohio, contact Lauren Lanphear, Forest City Tree Protection Company, 1884 South Green Road, Cleveland, Ohio 44121; 216/381-1704.

Brent Bonham (on mower, left) and President Stan Bonham (far right, on vehicle) with employees of Stan Bonham Company, Salt Lake City, Utah.

SALT LAKE DEALER APPOINTED BY OMC LINCOLN

Stan Bonham Company, headquartered in Salt Lake City, Utah, has been appointed a full-time dealer by OMC Lincoln, a division of Outboard Marine Corporation. Bonham will handle the Cushman® line of specialized vehicles for industrial, commercial, and municipal use, Cushman turf vehicles and attachments, and the Ryan® line of turf maintenance equipment. The Bonham Company's territory includes Utah, eastern Idaho, western Wyoming, and eastern Nevada.

Stan Bonham Company has been a major agricultural equipment distributor since 1958, when they began as a distributor for M and W Gear products. The company subsequently added several other lines of farm equipment.

"We believe our experience with several lines of farm equipment provides an excellent background for us to handle Cushman and Ryan products," says General Manager Brent Bonham. "The special use vehicles and the increasing requirements for effective turf maintenance equipment fit right in with our philosophy of sales and service."

NY STATE TURFGRASS ASSOCIATION AIDS RESEARCH

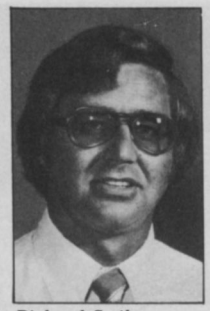
Turfgrass research and education at Cornell University conducted by Drs. A. Martin Petrovic, Norman Hummel, and Richard Smiley (recently transferred to Oregon), along with a number of other projects, have been aided during the past year through the efforts of the New York State Turfgrass Association and the granting of over $45,000. This figure represents a 35 percent increase over the previous year's efforts.

The research extends over many areas of turfgrass interest and includes turfgrass cultivar evaluations, compaction studies,

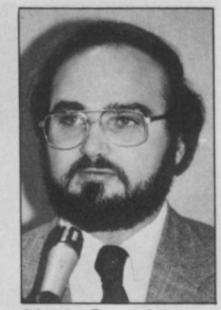
effects of herbicides, control of fusarium blight syndrome, nitrogen sources, moss control, low maintenance, growth regulator studies, soil test calibration, soil fertility with respect to wear tolerance and water use, drought tolerance, and ground water contamination. As a part of this research undertaking, NYSTA is funding a Cornell University graduate student. They will also be assisting with the underwriting of costs of the AREST (Automated Rain Exclusion System for Turfgrass), which is part of a study of water use properties which controls the input of water and collects water lost from the root zone. The first Cornell Turfgrass Short Course was also spearheaded by NYSTA.

In other areas, NYSTA has and will continue to fund the construction of a learning center for turfgrass at the State University of New York at Cobleskill. NYSTA has contributed funds toward the publication of a new book on turfgrass insects, authored by Dr. Haruo Tashiro, formerly of the NYS Agricultural Experiment Station. NYSTA is also underwriting a survey updating the economic value of the turfgrass industry in New York State.

Funds were made available by a number of chemical manufacturers, seed companies, and local golf course superintendents associations, plus direct contributions from NYSTA. Part of the NYSTA contribution was funded by a series of golf tournaments held throughout New York last fall.



Richard Smiley



Martin Petrovic

LANDSCAPE EXPOSITION LAUNCHED SUCCESSFULLY

The first annual Landscape Exposition, held in Valley Forge, Pennsylvania, March 4-7, drew industry professionals from a wide geographical area, with the mid-Atlantic states being the most heavily represented. Nevertheless, only 13 states were totally unrepresented. Nearly 2,600 people registered for the show. Of these, the majority fell into the "owner" or "president" category, and came from the ranks of landscape contracting. They accounted for 35.5 percent of the attendance; 26 percent came from the public sector.

A concurrent seminar program was held during the Expo and attracted a sizable number of registrants. Twelve seminars presented by industry experts and consultants covered a broad range of management issues, including marketing, diversification and expansion, writing specs, personnel issues, litigation, budgeting, insurance, and financial management. Virtually all of the attendees expressed an interest in an expanded conference program in subsequent years.

The Professional Grounds Management Society, Professional Lawn Care Association, and the Associated Landscape Contractors of America all benefited from the show as well. All three of these supporting industry associations reported gains in membership as a result of their presence at the Expo.

The 1987 Landscape Exposition is

scheduled for March 3-5 at the O'Hare Exposition Center in Rosemont, Illinois. The Expo was produced and managed by HBJ Expositions and Conferences, a division of Harcourt Brace Jovanovich, Inc.

BRIGGS AND STRATTON PRODUCES VIDEO

How to keep engine-powered equipment working longer is the topic of a 35-minute videotape produced by the Service Department of Briggs and Stratton Corporation. This video is designed especially for Industrial/Commercial rental equipment professionals. "Maximizing Engine Life Through Preventive Maintenance" can help eliminate the constant struggle with overused, under-maintained engines and decrease machinery down-time.

Users of lawn and garden equipment can maintain more productive equipment over a longer period of time with a regular maintenance schedule. "All that is required is a willingness to develop a discipline and a positive state of mind to make a preventative engine maintenance program succeed," says Briggs and Stratton Administrative Manager Timothy Schreiber. "Because it is impractical for an equipment operator to keep track of engine hours worked, a calendar maintenance system makes more sense."

Included in the videotape are fuel and oil recommendations, storage tips, directions for air cleaner servicing, and carbon deposit removal. Also included is the recommended calendar maintenance system. The videotape is available in VHS and Beta formats. It can be ordered through the Service Department of Briggs and Stratton Corporation, P.O. Box 702, Milwaukee, Wisconsin 53201. The cost is $18.95, which includes prepaid shipping.

SEDAKA AND OSMOND TO PERFORM AT EXPO 86

An evening that sparkles with the excitement of Neil Sedaka and the vibrant talent of Marie Osmond is planned for participants of the International Lawn, Garden and Power Equipment Expo '86. Sedaka and Osmond will be the stars of the Expo's Great Kentucky Picnic on Tuesday, July 29, 1986. The picnic, held at the Commonwealth Convention Center in downtown Louisville, will begin with a cash bar at 6:30 p.m. The $15 ticket price will include the show, which will begin at 8 p.m., and a gourmet box dinner.

Marie Osmond will open the concert with the characteristic energy that has charmed audiences since she was a child. Her hits include "Paper Roses," "Blue Skies Shining," and "Meet Me In Montana." When Neil Sedaka takes the stage, exhibitors, and their guests will be treated to a versatile performance of favorites like "Breaking Up Is Hard To Do," "Love Will Keep Us Together," and "Happy Birthday Sweet 16." Throughout his varied and dynamic 30-year career, Sedaka has written more than 1,000 songs and scored countless hit singles, and platinum and gold records.

Other top names at the Expo will include Willard Scott, NBC News' "Today" show weatherman and personality, adding to the Expo seminar program his "barometric reading" on modern America — the good, the bad, and the absurd. He will speak Wednesday, July 30, at 10 a.m. Admission will be free.

On Monday night, July 28, the Glenn Miller Orchestra will entertain during an informal moonlight dance cruise for dealers, retailers, distributors, and their guests aboard the sternwheel steamer Belle of Louisville. The famous orchestra has been delighting fans of big-band music for nearly 50 years. Of course, new band members have come on board during that time, but the group is the only one that plays the authentic arrangements of the original Glenn Miller band. Tickets for the three-hour cruise are $10 each or $125 for a limited number of reserved tables for eight on the dance floor deck.

Tickets to the Great Kentucky Picnic and the cruise are available through the official show pre-registration form, which may be obtained by calling Expo '86 projects manager Mary Jane Reynolds, at 1/800/558-8767 (in Kentucky, 502/582-1672).

B.D. WILHELM PARTICIPATES IN MISS LIBERTY'S REBIRTH

The Statue of Liberty will be surrounded by healthy, properly cared-for trees, thanks in part to the efforts of the B.D. Wilhelm Company of Denver, Colorado. Wilhelm is a third-generation tree service/landscape care firm in Denver, employing over 100 people. On April 19, 1986, representatives of Wilhelm participated in an industry-wide effort to trim and repair the badly neglected trees surrounding the Statue of Liberty, in preparation for its centennial celebration in July, 1986. The B.D. Wilhelm Company is the only arborist company in the Rocky Mountain region to take part in the project.

The trimming is part of an effort started last November by the National Arborist Association (NAA), which was asked by the Statue of Liberty-Ellis Island Foundation to donate trimming services to the surrounding trees. The November effort centered around the trees on Ellis Island, as 88 professional arborists pruned trees up to 80 feet tall to help correct 30 years of neglect. The April trimming took place on Liberty Island, on trees surrounding the Statue of Liberty.

MONSANTO LAUNCHES PGR TEST PROGRAM

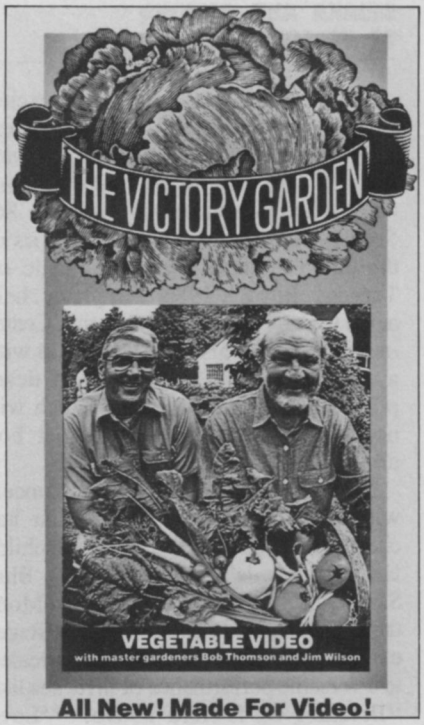
Grounds managers in 10 northeastern and north-central metropolitan areas can see first-hand the grass suppression potential of turf growth regulators under a new program launched this spring by Monsanto Company. The metropolitan areas include: Boston, Philadelphia, Baltimore/Washington, Cincinnati, Indianapolis, Chicago, Detroit/Saginaw, St. Louis, Kansas City, and Louisville.

Throughout the spring, Monsanto representatives will put out demonstration plots treated with Limit® , a turf growth regulator introduced last year. Limit will slow down the growth and suppress seedhead formation of cool season grasses, such as Kentucky bluegrass, perennial ryegrass, tall fescue, and fine fescue. The purpose of this program is to demonstrate the regulator's ability to curb grass growth, and significantly reduce mowing requirements at a variety of sites, including cemeteries, golf courses, industrial and office complexes, shopping malls, and municipal parks.

Distributors and Monsanto sales representatives will host tours of the sites throughout the spring and summer to observe the results with other local grounds managers. "To our knowledge, this is the first coordinated effort to work with grounds managers on a one-to-one basis to develop turf regulator trials," says Domingo Riego, Monsanto product development associate in Indianapolis and a coordinator of the program. "We want our prospective customers to see for themselves that Limit will regulate cool-season grass growth and seedhead development for up to six weeks, without causing injury or discoloration of the turf, which has been a problem with many other turf regulators. If managers can effectively suppress growth of turf, they can reduce the frequency of spring mowing and re-distribute their workload during this particularly busy time of the year."

VICTORY GARDEN PROGRAM AVAILABLE IN VIDEO

Bob Thomson and Jim Wilson, master gardeners and co-hosts of "The Victory Garden" (produced for PBS by WGBH Boston), bring you 60 minutes of all-new tips and techniques in The Victory Garden home video. Crown Video, distributed by



Crown Publishers, Inc., is pleased to introduce The Victory Garden as part of its WGBH how-to video series. The video covers 31 gardening sections, each filled

with gardening tidbits; from testing the soil in a new garden to starting seeds indoors, from transplanting broccoli and lettuce to controlling weeds and pests. The video is available for $24.95 in VHS and Beta from Crown Publishers, Inc., 225 Park Avenue South, New York, New York 10003.

CORNELL PUBLISHES TURF RECOMMENDATIONS

Cornell University has published two turf recommendation pamphlets: "Cornell Cultural Recommendations for Commercial Turfgrass Management" and "Cornell Pest Control Recommendations for Commercial Turfgrass Management." The cultural recommendations include advice on turfgrass establishment, turfgrass varieties and species, characteristics of turfgrass varieties, seeding and sodding information, postplanting care, and advice on fertilizers and maintenance. The pest control recommendations include information about pesticide compatibility, recommended amounts, disease control, insect control, weed control, and turf renovation. Copies of the reports may be obtained from Cornell University, Department of Floriculture and Ornamental Horticulture, 20 Plant Science Building, Ithaca, New York 14853.

USA TODAY PUBLISHES LAWN AND GARDEN GUIDE

A recent issue of *USA Today* contained a special lawn and garden supplement entitled, "Rite of Spring." Inside were reports on a Gallup survey, a psychologist's analysis of lawn work as therapy, statistics on increased property value through landscaping, plant expert Dr. Ellen Henke's tips for revitalizing lawns, and other features. According to the 1984-85 National Gardening Survey conducted by Gallup for the National Gardening Association, lawn and garden care is America's third most popular leisure activity.

In rating leisure time activities, the Gallup survey found that more American households engage in gardening and lawn care than reading books, motoring on pleasure trips, or even going to the movies. As a leisure preference, gardening was virtually tied with listening to music. Only watching television ranked higher in the poll. The survey found that 71 million United States households, or 83 percent of the total, participated in at least one indoor or outdoor lawn and garden or plant care activity in 1984.

The article also reports that Americans are spending nearly $16 billion a year, or an average of more than $185 per household, on lawn and gardening materials. And total spending for lawn and garden products is growing at better than 17 percent a year.

As an illustration of manufacturers' interest in the retail lawn and garden market, *USA Today* cites The Anderson's newest retail product, Greensweep®. This product is a premeasured and premixed liquid lawn food in a container which attaches directly to a garden hose for easy spray-on application.

Another interesting aspect of the supplement was a chart listing the "true" cost of home exterior remodeling work. The chart lists the typical cost, increased home value, and true project cost of such home improvements as landscaping, siding, roofing, and building additional space. They concluded that properly landscaping the front of a home can give a homeowner a 100 percent return on in-

vestment when the house is sold, as long as the total landscaping cost does not exceed 10 percent of the home's market value.

STAUFFER'S PR EFFORT SCORES WITH PORTER

Stauffer Chemical Company's cooperative effort on behalf of the PLCAA to generate positive publicity for professional lawn care has scored something of a coup recently. "The Continuing Case for Professional Lawn Care," is the second-year embodiment of Stauffer's on-going public relations effort aimed at the American homeowner and designed to help lawn care operators increase their business by promoting safe lawn care.

In February, Sylvia Porter's syndicated newspaper column, "Your Money," drew upon a story created by Stauffer as part of the PR package. Porter's column is read by millions of homeowners daily in nearly 400 daily and weekly newspapers across the nation. The article presented a convincing argument for the use of professional services by the homeowner. Much of the information in the article was attributed to the PLCAA. Stauffer is particularly proud of this accomplishment.

The publicity package is free to all lawn care businessmen and is available from Stauffer Chemical. Articles in the publicity kit are designed as public information messages to be submitted to local newspapers by interested lawn care businessmen. The kit contains instructions to the lawn care operator on how to use the information most effectively.

You can obtain Stauffer's publicity kit by contacting Gregory T. Bushman, Business Manager, Specialty Products, Stauffer Chemical Company, Westport, Connecticut 06881; 203/222-3000.

MILFORD MICHIGAN GETS ORDINANCE

On January 31, 1986, Milford, Michigan was added to the list of communities that have enacted right-to-know ordinances. The ordinance states that all pesticide applicators must register with the city, pay a fee, list generic names of pesticides they are using, and if they apply pesticides to commercial businesses or public buildings, a decal has to be put on the entrance to that building, showing the date of the application. The decal must remain in place for 90 days after the application. Residents of Milford who are certified as being chemically sensitive can be placed on a registry. Before applying pesticides to the neighbor of a chemically sensitive person, the applicator must give oral communication 24 hours in advance of the application. Applicators also must post a yard marker that says, "Chemically treated lawn, keep children and pets off for 72 hours."

According to Tim Dopple of Atwood Lawnspray, Inc., Sterling Heights, Michigan, only two or three of the dozen companies serving Milford have registered with the city. The rest have refused as a group to register. The Michigan Department of Agriculture has handed down a decision to Milford declaring their ordinance preempted by state lawn, but Dopple says the town has ignored the MDA's opinion.

"A number of communities in this area have requested copies of the Milford ordinance from Milford to possibly use as a model for their own type of ordinances," says Dopple. ■

PLCAA UPDATE

A preliminary schedule of the dates and locations for the 1986 series of regional seminars sponsored by the Professional Lawn Care Association of America (PLCAA) has been announced. The seminars have been designed as one-day workshops combining technical and agronomic classes and an outdoor equipment demonstration. Participation in the seminars is open to PLCAA members and non-members alike, affording prospective members the opportunity to join with other lawn care professionals from their region.

Seminar Date	Regional Location
5/29/86	Florida
7/10/86	Georgia
7/15/86	New Jersey
7/17/86	Massachusetts
7/22/86	New York
7/24/86	Ohio
7/29/86	Indiana
8/5/86	Michigan — East
8/7/86	Michigan — West
8/12/86	Missouri — East
8/14/86	Missouri — West
8/19/86	Colorado
8/21/86	Texas

The format for the seminars will allow for both technical and management topics in the morning, followed by lunch, an update presentation on the PLCAA, and a new feature of outdoor equipment demonstrations. Indoor tabletop displays will be utilized by various manufacturers and suppliers of lawn care chemicals and equipment for review by attendees.

Specific registration information is available from the PLCAA office for the seminars. The daily fee for PLCAA members is $30; for non-members, $45. Membership information is also available from the PLCAA office at 1225 Johnson Ferry Road NE, Suite B-220, Marietta, Georgia 30067; 404/977-5222.

The program for the May 29, 1986 Florida Regional Seminar sponsored by the PLCAA has been announced. The day-long event, to be held in conjunction with the University of Florida's Turf Field Day, is scheduled to begin at 8:30 a.m. at the Gainesville Hilton Hotel.

Following registration, the seminar will open with a RCRA update from Mike Redig, of Florida's Department of Environmental Regulations. Redig will be followed by Bob Rehberg of Estech, Inc. who will speak on fertilizer nitrogen sources for the lawn care industry.

After a short break, Dr. David Hall of IFAS Herbarium will give a presentation on weed identification. Following lunch, Robert Earley of HBJ Publications will speak on trends in the lawn care industry. Then Dr. Don Short, IFAS Extension Entomologist, will give a presentation on insect identification.

Following a final break, Dr. Bill Becker, an IFAS Safety Extension Specialist, will give a talk on safe handling of pesticides. Dr. Charles H. Peacock, IFAS Extension Turf Specialist, the final speaker of the day, will address computer use in turf management. ■

PEOPLE

The Specialty Products Group of Mobay Corporation has appointed **Sue Ann Brown** as sales representative in its central sales region. Brown will represent Mobay's line of pesticide products to the turfgrass, ornamental, pest control, and other specialty chemical markets. Her sales territory covers Ohio, Michigan, Kentucky, West Virginia, and western Pennsylvania. Brown had previously worked in sales for Mallinckrodt, Inc. and ChemLawn Corporation.

In a related Mobay career move, **Douglas Z. Soper** has joined the Specialty Products Group as a sales trainee in the company's southeast territory. Soper's territory covers Florida, and he is training under Fred Schmidt, a Specialty Products Group senior sales specialist living in Jonesboro, Georgia. Soper earned a bachelor of science degree in horticulture from the University of Missouri-Columbia in 1982, and recently completed a master's degree in horticulture from the same university.

The Jacobsen Division of Textron Inc. has made several personnel announcements. **Steve Ramig** has been appointed Commercial Products Marketing Manager. He will be responsible for overseeing Jacobsen's expanded marketing effort in commercial products, which includes new dealer development, new product introduction, and program development. Ramig previously held the position of Market Research Manager for Jacobsen. He has been with the company since 1977. Prior to joining the firm, he held various marketing, manufacturing, finance, and sales positions with Bucyrus Erie, Harris Metals, and Racine Hydraulics.

Ted Pankau has joined Jacobsen's marketing staff. As Marketing Communications Writer, he will be responsible for writing sales literature, news stories, press releases, feature articles, and video tape promos. After graduating from the College of St. Francis in Joliet, Illinois, Pankau worked in Chicago in the marketing/public relations field.

Mike Hensen also has joined Jacobsen. As Manager, International Administration, he will assist with all of the department's sales programs and manage day-to-day administrative details of export shipments. He previously held positions at the University of Wisconsin, Milwaukee, as Assistant Director of International Studies and Programs, and as Program Specialist for the Center for Latin America. He was also Export Coordinator for Wacker Corporation in Milwaukee. He has a bachelor's degree in Spanish and Latin American studies from the University of Wisconsin, Oshkosh, and a master of arts degree in foreign language and literature from the University of Wisconsin, Milwaukee.

Rhone-Poulenc Inc. has appointed **Bill Riden** as Chipco® Turf and Ornamental Product sales specialist, covering eastern Pennsylvania and New York State. Riden joins Rhone-Poulenc from Mobay Chemical Company. ■

(Left to right) Robert Carrow, UGA Experiment Station Agronomist; Bud White; Randy Nichols; William Colville, UGA Agronomy Division Chairman; Steve Mona; and Gil Landry, Extension Turfgrass Specialist.

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RCRA FALLOUT

If you thought you were already a hazardous waste generator, you are wrong. The EPA has given you a reprieve until September 22, when the new RCRA regulations go into effect.

Someone once commented on the tendency of rules to change the moment you thought you understood them. On September 22, the Environmental Protection Agency will again change the hazardous waste disposal rules under the provisions of the Resource Conservation and Recovery Act (RCRA). So pay especially close attention to the next couple paragraphs because we are going to tell you how Big Brother will change the way he watches you.

As of last August 5, every hazardous waste shipment had to be accompanied by a uniform hazardous waste manifest, EPA Form 8700-22, but the shipment *did not* have to be sent to an EPA-approved hazardous waste landfill. The shipments could be sent to virtually any waste handling facility, such as a municipal landfill. "That single copy of the manifest was really intended by Congress to provide notification to emergency response personnel, in the case of a truck accident or a fire, or to transporters or facilities, to make those people aware that they were handling a hazardous waste," says Bob Axelrad, Special Assistant to the Division Director, Characterization and Assessment Division, Office of Solid Waste, federal EPA. "It didn't alter the allowances for the management of that waste at a non-hazardous waste facility."

As the person who was instrumental in the drafting of RCRA's small quantity generator regulations, Axelrad explains that statutory requirements established last August 5 set a deadline that EPA had to meet by March 31, 1986 or certain requirements would go into effect automatically. One requirement stated that all hazardous waste generators, who generated between 100 and 1,000 kilograms of hazardous waste in a calendar month, must dispose of their wastes at a facility that is permitted to handle hazardous waste. EPA met its deadline before March 31, so now this requirement will not take effect until September 22, the new and final deadline.

The September 22 regulation changes include many breaks for small businessmen.

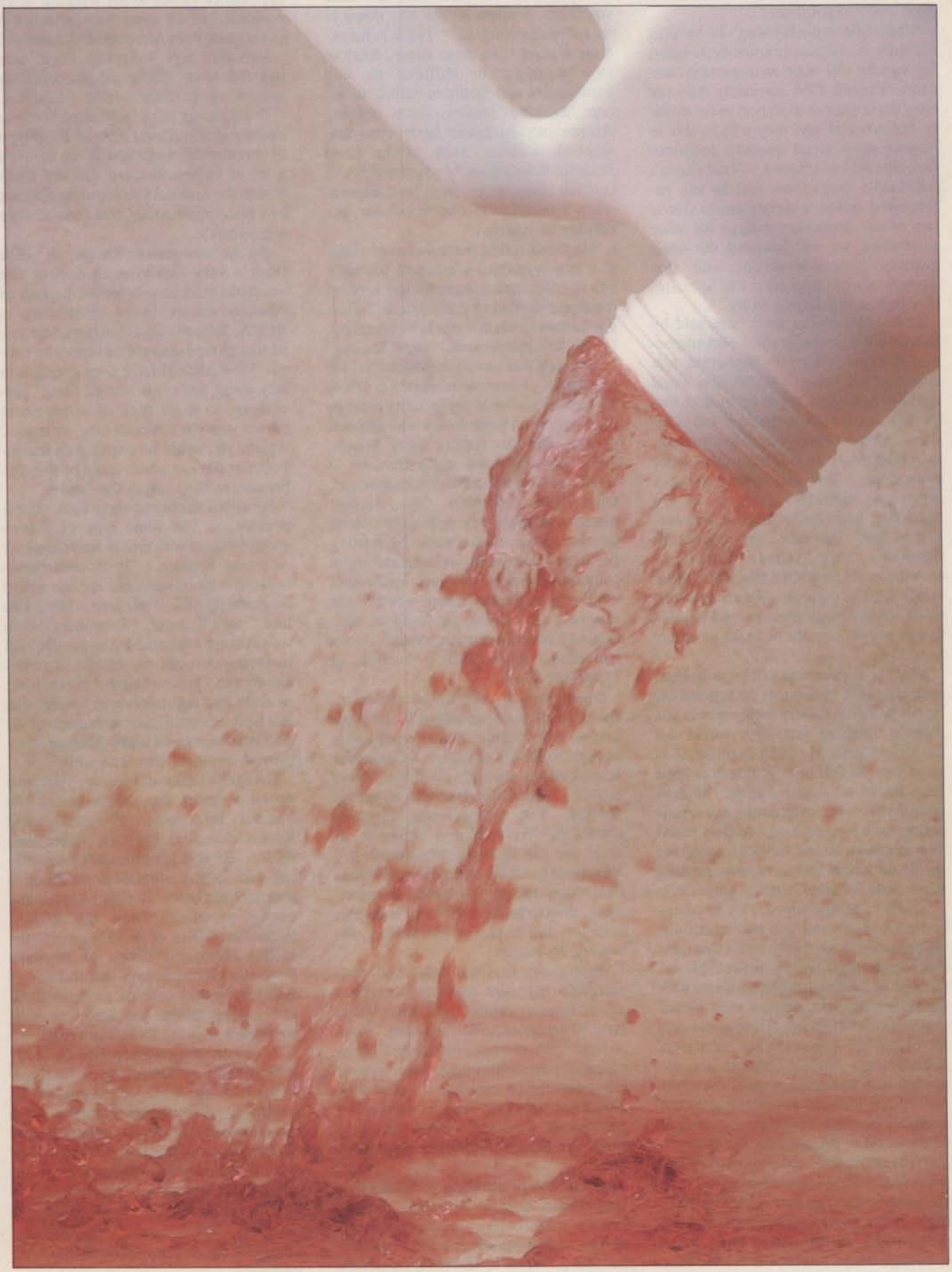
"The key date is September 22," says Axelrad. "On that date, everyone who generates between 100 and 1,000 kilograms of hazardous waste in a calendar month has to have a U.S. EPA identification number. They also have to use a uniform hazardous waste manifest and fill it out entirely; they have to use licensed hazardous waste transporters; and they have to insure that the waste gets to a facility that is permitted to handle their hazardous waste. For those generators who store waste on-site before they ship off-site, for disposal or treatment, they do have six to nine months to hold that waste on-site without having to become a fully-permitted RCRA facility." Those who wish to store hazardous wastes only have to conform with certain kinds of storage standards, according to Axelrad.

The September 22 regulation changes include many breaks for small businessmen, says Axelrad, simply because they are small businessmen and therefore are not equipped for sophisticated hazardous waste handling procedures. For instance, a detailed contingency plan for handling hazardous wastes is not required, while such a plan is required of large quantity hazardous waste generators.

Up to and even after the September 22 rule-change date, Axelrad says EPA will be primarily concerned with informing small generators of the rule changes rather than slapping them with violations. "We will provide lots of warnings to people whom we identify as having not complied with the rules," says Axelrad. "We will not take enforcement actions for paper violations, but more for violations that are flagrant or are real risks to human health. We are not going to make examples of these small businesses that may have not heard of the rules yet."

Since there is a good chance that many small businesses are not aware of the pending RCRA regulations, Axelrad says his office has mounted an ambitious education program. Beginning last August, the EPA distributed over 500,000 copies of a brochure designed to help small businesses comply with hazardous waste laws. Included with the brochure were inserts with information specific to small businesses in 18 different industry categories. For a copy of brochure EPA/530-SW-010, write: U.S. EPA, Office of Solid Waste and Emergency Response, Washington, D.C. 20460.

"We are gearing up to mount another major education program that will include about $4 million in grant money that was also available last year. It is now available to states and some non-profit organizations to do implementation activity on a variety of topics, one of which is small quantity generator implementation," says Axelrad. "Last year, a large percentage of the money that went out in



grants did go to small quantity generator work and will again this year. We are going to put together a handbook that is a simple guide to complying with the hazardous waste regulations."

While EPA probably won't be handing out fines for violations come September, the Agency will begin an inspection campaign. Federal EPA obviously does not have the resources to inspect every facility, but Axelrad says they will be able to inspect some small quantity generator facilities for compliance. "That doesn't necessarily mean there will be any enforcement action, it simply means that as part of our inspection strategy for other generators, we will integrate the small quantity generator outfits into that strategy as well. Inspection will be entirely a region and state activity."

State EPA offices have been told by federal EPA to design their own inspection strategies. Since the September rule changes will bring 100,000 new small quantity hazardous waste generators into the fold, state EPA inspectors will more than have their hands full. They currently regulate only 14,000 hazardous waste generators. "You are talking about a seven- or eight-fold increase in the regulating community without any corresponding increase in inspection resources," says Axelrad. "Clearly we are only going to reach a fraction of these newly regulated people. We are going to try to create enough presence and visibility that people comply or make an effort to comply."

Many businesses that will be considered small quantity generators in September, began fulfilling RCRA requirements last August, thinking that EPA would not meet the March 31, 1986 deadline. Axelrad says 28,000 new ID numbers have been issued since last August. He says many businesses transporting hazardous wastes with the required manifest found that transporters and facilities accepting the waste forced them to follow existing regulations for large quantity generators.

"A lot of people who did try to comply last August, and use this hazardous waste manifest, probably found that their solid waste transporters weren't too interested in hauling hazardous waste with a manifest attached. So they were forced to find hazardous waste transporters early, before the requirements were ever issued," says Axelrad. "When you are dealing with a hazardous waste transport facility, they are not going to let you use anything less than what they are going to be expected to produce for the states or the feds when they are inspected. They get inspected a lot more frequently than the generators. The market forces have dictated that a lot of people come into the system now, as opposed to later."

In many cases, market forces have been superceded by state EPA regulations, which have already mandated the regulation changes that federal EPA will adopt in September. "In fact, there are some states that regulate all the way down to zero," notes Axelrad. "There is no exclusion level." In these states, Axelrad says it might be difficult to find transporters and facilities willing to accept hazardous wastes. Other pending statutes may also hinder hazardous waste disposal facilities, such as the Land Disposal Restrictions Program which will prohibit many wastes from land disposal when it becomes law in November, according to Axelrad.

"In the next five years we have to look at every hazardous waste and basically ban it, unless there is a sufficient level of treatment applied to that waste to reduce it to certain levels that would be completely safe to land-dispose," says Axelrad.

One state that has no exclusion level for regulation of hazardous wastes is Ohio. Hazardous wastes in any quantity must go to an approved hazardous waste disposal facility. For that reason, Tony Sasson, Solid Waste Scientist in the Division of Hazardous and Solid Waste Management, Ohio EPA, Columbus, Ohio, recommends that lawn care applicators avoid generating hazardous waste by reusing pesticide residues in subsequent spray solutions. Sasson says any applicators who have a question about whether the materials they are using could be considered a hazardous waste should call the hazardous waste/RCRA hotline at 1/800/424-9346.

Sasson says Ohio EPA does random inspections of waste generators, but most inspections result from complaints brought to EPA's attention. "Complaint investigations are very common," says Sasson. "That is the best way to get inspected. The typical case involves something like where a neighbor or employee saw someone do something." Violations in Ohio have concerned things like barrel dumping or barrel abandonment, discharge from tanks of transport vehicles, and discharge into sewers, according to Sasson.

Applicators in Ohio have had considerable exposure to their hazardous waste disposal duties. "We have had at least 30 seminars around the state," says Sasson. "We had one meeting in Cincinnati with pest control applicators at their Ohio association meeting. Even if they have been informed once, it is probably not enough. I am sure there is plenty of room for more information dissemination."

In addition to avoiding accidents that could create hazardous wastes, such as leaking spray tanks, applicators should also avoid concentrating hazardous wastes on their premises by dumping pesticides on-site. Ray Krueger, ecologist and Pesticide Disposal Specialist in the Office of Pesticide Programs, federal EPA, says applicators should avoid washing down equipment in the same place, which will concentrate even non-regulated materials.

Krueger says dumping lawn care materials of any kind could get applicators caught up in Super Fund violations. "Those things can really come home to haunt you if you have a Super Fund type of uncontrolled waste site. It can cost you a lot of money to clean that up. Even though the material you are using may not be a listed waste today, that could change tomorrow."

For the same reason, Krueger says EPA takes a very dim view of devices like leach pits built on-site for the disposal of pesticide wastes. In the amendments to RCRA, Krueger says Congress demanded that ground disposal of liquids be ended. "The advice I have been giving is to stay away from that sort of thing, particularly in a pit type of arrangement where you are concentrating materials. Again, you could be creating an uncontrolled waste site which could be very expensive to clean up in the future."

He says it might be conceivable, but expensive, to use some type of below-ground system with double liners and leak detection systems. "It is unfortunate because a lot of materials we use would be perfectly safe if put into a thing like that," says Krueger. "Eventually, when we get more sophisticated in our disposal technique, we can say certain materials can go into a system like that." However, he fears that regulators will suspect that leach pit users will take advantage of the pit's convenience and start dumping unapproved materials into it as well.

Krueger's Office of Pesticide Programs operates under the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), rather than RCRA. He says his office has been talking with RCRA officials in an effort to transfer regulation of dilute wastes and empty containers from the RCRA-authorized Office of Solid Wastes to the FIFRA-authorized Office of Pesticide Programs. Krueger says this transfer of authority would provide environmental and human health protection at least equivalent to what RCRA provides.

"They don't want to regulate this stuff. It is peanuts to them," says Krueger. "Pesticides are a very small part of the hazardous waste picture. It makes sense to regulate the handling of solutions and containers under our law (FIFRA). That is the direction we are going, how we are going to get there is not yet established." ■

— *Tim Weidner*

The author is Managing Editor of ALA *magazine.*

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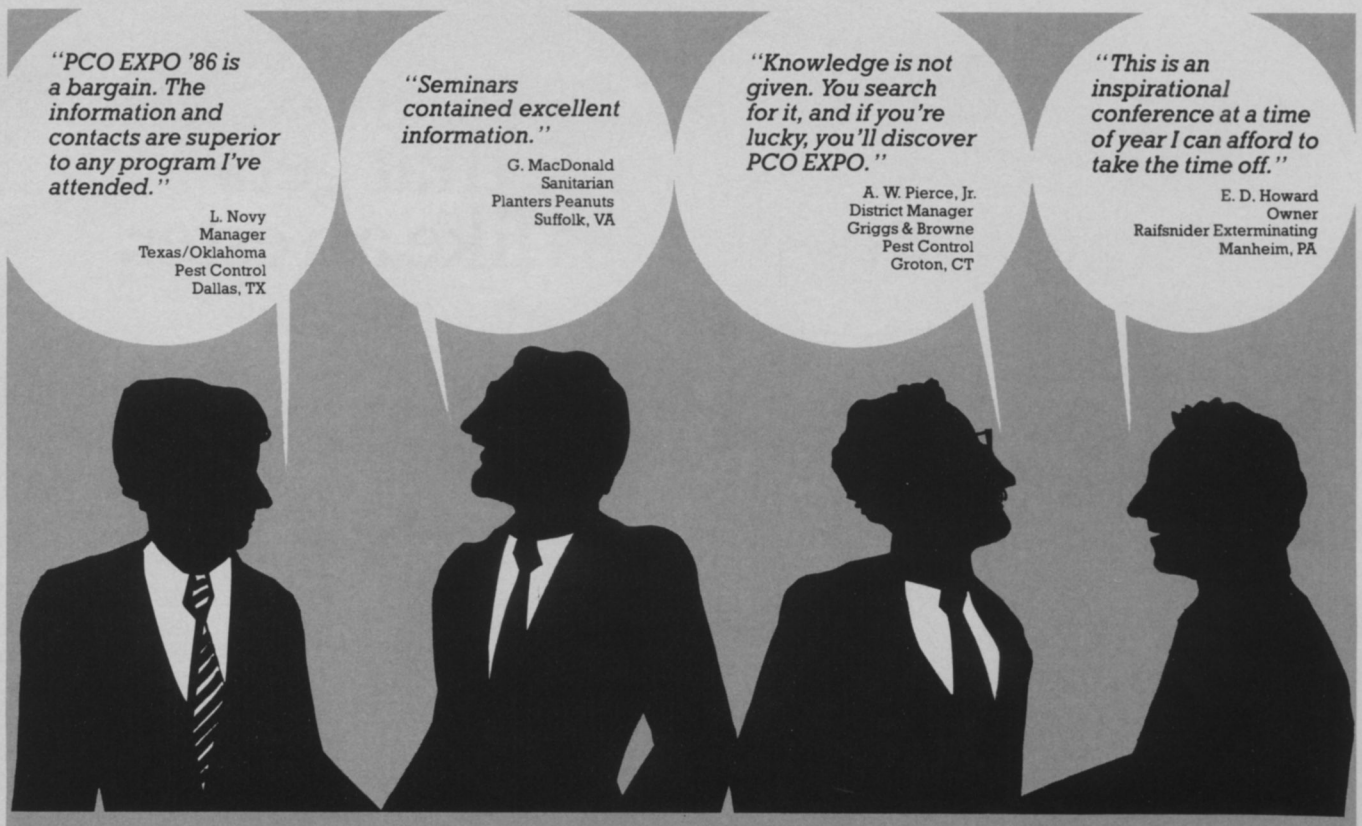

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TURF ROOT GROWTH: HOW IMPORTANT IS IT?

Turfgrass care has traditionally concentrated on the production of attractive surface growth, but new research suggests that we should also be thinking of healthy roots.

The earliest studies of turfgrass root growth in the United States were performed during the 1920s at the Arlington Experimental Turf Garden (today the site of the Pentagon). The effects of soil type, fertilization, and mowing height were examined, and in 1925 a review of the results was published in the Bulletin of the Green Section of the USGA. The author of that article concluded that the turf manager should "by proper care, control the growth of the grass by treatment on the surface and forget all about root growth."

Researchers may have taken those words to heart, for very few studies of turfgrass root growth were performed in the United States for the next 40 years. Interest in this area was renewed during the 1960s when work was done by Beard and Daniel at Purdue University. Powell and associates at VPI, investigated the effects of management practices and environment on bentgrass root growth.

Despite this renewed interest, and recognition that the root is the main nutrient-and-water-absorbing organ of the plant (as well as a producer of important plant hormones), most turfgrass research projects continue to evaluate how environment and/or cultural practices impact on the shoot portion of the plant. The reasons for this are probably two-fold. One is that the turfgrass manager's first priority requires that he produce and maintain an aesthetically pleasing turf surface as quickly and as economically as possible.

While it certainly is advantageous to utilize establishment and maintenance techniques which maximize root system quality, the major emphasis must be placed on the production of a quality shoot system. Consequently, a great deal of today's turfgrass research must be targeted towards making it easier for the turf manager to attain that goal. Secondly, while most turfgrass researchers are interested in the effects of management and environment on root growth, the study of root systems is tedious, expensive, and inexact research. With the advent of rhizotron research, however, researchers are finding that the study of turfgrass root systems can be less difficult and more productive.

Briefly, a rhizotron is an underground laboratory which allows the researcher to observe plant root growth through glass or plastic walls of individual boxes containing soil or some other type of growing medium (Figures 1 and 2). The great advantage afforded by the use of a rhizotron is that observation of individual roots over long periods of time is possible without ever having to remove them from the soil. This article will discuss some general findings of research performed in the Ohio State University rhizotron and what impact they may have on present and future turfgrass management techniques.

ROOT APPEARANCE. One of the first observations made in a study of different cool-season turf species was that each species produced a root system that was quite distinctive with respect to color and morphology. While newly-formed roots of all turf species are white, they become tan, brown, or even black as they become older. Creeping bentgrass roots are generally very fine-textured and turn tan or light brown in color as they age (Figure 3). In contrast, older Kentucky bluegrass roots are slightly coarser, highly-branched, and a dark chocolate brown in color (Figure 4). Perennial ryegrass (Figure 5) and tall fescue roots are quite coarse, less branched, and turn dark brown to almost black as they become mature. While these morphological differences may be of no consequence as far as turf management is concerned, it is still interesting to note that turfgrass species differ as much in appearance below ground as they do above ground.

Turfgrass roots that have become brown or black with age are often assumed to be dead or non-functional. While some turfgrass diseases (necrotic ring spot, brown patch, and *Helminthosporium* diseases) may indeed cause discoloration and death of turf roots, the darkening of otherwise healthy turfgrass roots should be viewed as a normal aspect of the aging process. This process is accelerated during the warmer periods of the growing season, but does not necessarily indicate that the roots have died and/or become non-functional.

Actively growing Kentucky bluegrass roots often turn brown so quickly during the summer months that only an inch-long length of white root tip tissue can be observed at the end of an otherwise brown root. During the summer months, the above-ground portion of the turf was green and actively growing.

Actively growing Kentucky bluegrass roots often turn brown so quickly during the summer months that only an inch-long length of white root tip tissue can be observed at the end of an otherwise brown root. During the summer months, when the root systems of all species studied were predominately brown, the above-ground portion of the turf was green and actively growing. This indicated that the

Figure 1. Surface view of the rhizotron.

dark-colored roots were in some way absorbing water and nutrients to support shoot growth. Although new, white, active roots are probably more efficient at extracting water and nutrients from the soil, the presence of dark-colored, inactive roots does not necessarily indicate that a turfgrass root system is unhealthy or non-functional.

ROOT GROWTH PATTERNS. Work at Ohio State supports those findings of past researchers that cool-season turfgrass species display seasonal variations in root activity (Figure 6). The greatest amount of root growth occurs during the spring when soil temperatures range between 40 and 70 degrees Fahrenheit, although root growth will occur if the soil remains unfrozen. Root elongation rates are quite high as soil temperatures reach 70 degrees or more, but the rate of formation of new roots and the growth rate of already-formed roots will decline quickly under these conditions.

Of special significance is the fact that root activity begins earlier in the spring than shoot growth does, and that roots are still growing in the fall and early winter after shoot production has ceased. These differences in periods of maximum root and shoot activity have important implications with respect to late season (fall) nitrogen application and its effect on root growth. This topic is currently being investigated at Ohio State. It is important that additional research examine what effects that timing of other management practices, such as pesticide application and coring, have on root growth during these critical periods of the year.

Figure 2. Below ground view of the rhizotron showing rows of rooting boxes along each side of the walkway.

ROOTING DEPTH. Significant differences in maximum rooting depth have been observed between species. Tall fescue and perennial ryegrass roots extended to the bottom of the rhizotron rooting boxes (about 36 inches), while creeping bentgrass and Kentucky bluegrass roots grew about 12 to 14 inches deep. These differentials in rooting depth may, in part,

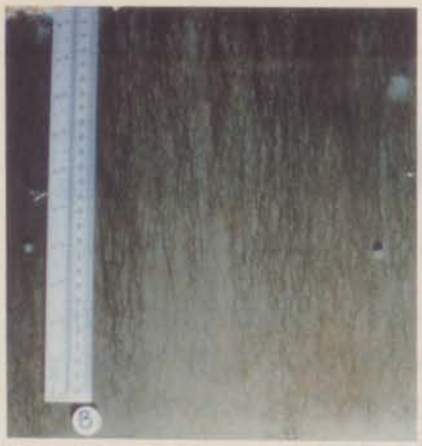

Figure 3. Creeping bentgrass root system.

Figure 4. Kentucky bluegrass root system.

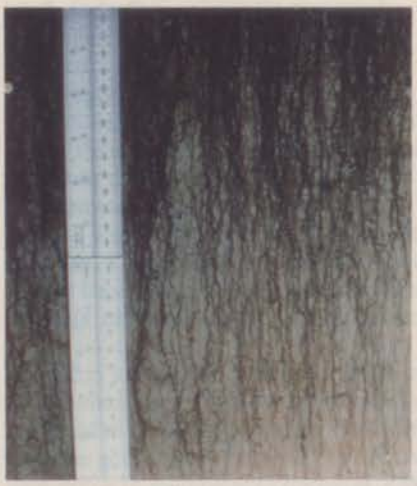

Figure 5. Perennial ryegrass root system.

explain the observed ability of tall fescue to remain green during drought conditions while Kentucky bluegrass becomes brown and dormant.

Where water for irrigation is unavailable or too expensive, the use of deep-rooted turf species (i.e., such as the turf-type tall fescues) should be considered. If shallow-rooted species are used, increased drought tolerance may be realized by using an irrigation regime which employs infrequent, deep watering. As water becomes less available at the shallower soil depths, roots will tend to grow towards water still present deeper in the soil. Conversely, shallow root growth will predominate in a lightly- and/or frequently-watered turf because there is no impetus to encourage deeper root growth.

An interesting aside to discussions of turfgrass rooting depth concerns competition between grass and tree roots. Some arboriculturists claim that root systems of turf growing beneath trees can compete so successfully for water and nutrients that the health and vigor of the tree is compromised. While this competition may be especially serious with newly-planted or young trees, mature trees are occasionally affected. This competition would probably be most severe when turfgrass root systems extend to a depth of 3 feet or more, the zone within which most of a tree's feeder roots are located (Figure 7). More research in this area is required to determine whether or not the suspected root competition should be a real concern.

THATCH ACCUMULATION. A just-completed study at Ohio State revealed that Kentucky bluegrass thatch is comprised of 50 to 70 percent living and dead roots. Results of this study also indicated that thatch accumulation is encouraged by late season nitrogen fertilization, probably because root formation is enhanced by this method of fertilization. Work by Smiley and his associates at Cornell University has likewise indicated that Kentucky bluegrass thatch accumulation may be greater with certain fungicides because they increase the rate of root and rhizome production, and not because they decrease the rate of thatch decomposition. While innumerable other factors may also influence the rate of thatch accumulation in a turf, turf managers should be aware of the fact that cultural practices favorable to root growth may likewise increase the rate of thatch formation.

SUMMARY. Researchers and turf managers alike are becoming more aware of how important the root system and its functions are with respect to the production of healthy turf. Evidence already indicates that root growth can be significantly affected, both positively and negatively, by a number of the management techniques practiced today. Future studies might examine how the timing of cultural practices influence root growth, how rooting of species and cultivars differ in response to these practices, and how the rootzone environment can be modified in an effort to maximize turfgrass root production.

It should be possible to tailor management techniques to the point that they will allow the turf manager to produce not only a high quality shoot system, but also a high quality root system. To achieve this goal, it is essential that we avoid the temptation to agree with that 1925 writer, who concluded that we should "forget all about root growth" and concentrate on surface appearance. — *A.J. Koski and Dr. J.R. Street* ■

The authors are doctoral candidate and professor, respectively, in the Department of Agronomy, Ohio State University.

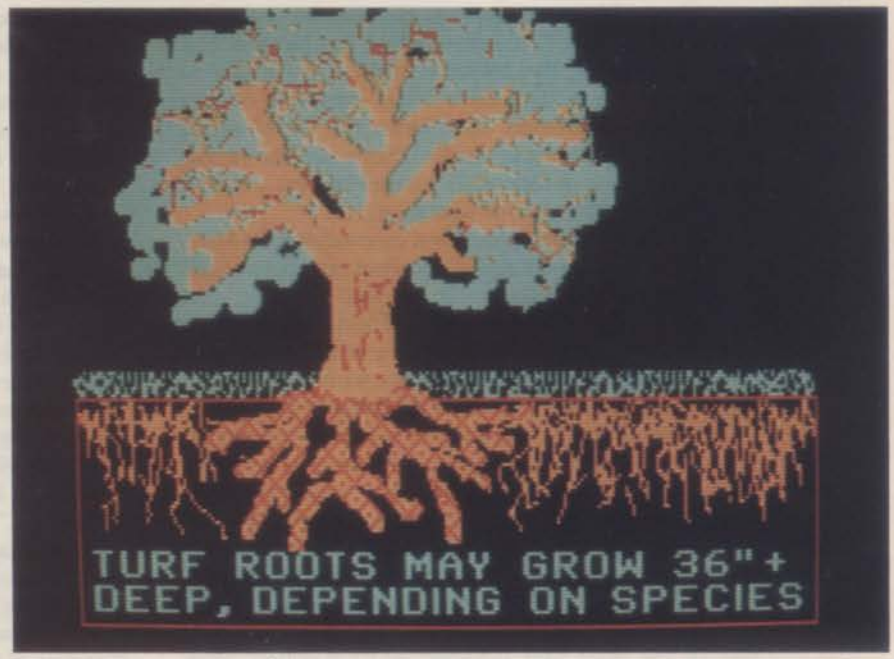

Figure 6. Deep, extensive turfgrass root systems may compete with tree roots for water and nutrients.

LAWN CARE IN MONTREAL

Parlez vous francais? If you don't, you might want to learn how to speak French if you have any designs on the Montreal lawn care market. Montreal is still in the expansion phase many American markets experienced about a decade ago.

When you think of Montreal in Quebec Province, you probably don't think of professional lawn care. But then, most of the 1.2 million people who live in Greater Montreal were also not aware of professional lawn care until several years ago. Today, the concept of lawn care as a hired service is taking off in a big way in this city in the "Great White North."

As in much of North America, the Montreal lawn care market was really established and opened up by ChemLawn Corporation. ChemLawn currently operates over 100 spray rigs in Greater Montreal and the city is reportedly one of ChemLawn's fastest growing markets in North America. Although ChemLawn hasn't had similar success in the rest of Quebec because the province is largely composed of small, rural communities, industry insiders report that ChemLawn has captured about 60 percent of the metropolitan Montreal market.

With its unique types of dining, Montreal is a city of culinary delight that is sure to please anyone's palate.

FERTILITECH, INC. This year will be ChemLawn's sixth year of servicing the Montreal market, according to Robert O. Boyd, Executive Vice President of Les Laboratoires Fertilitech, Inc., located in the Montreal suburb of Saint-Leonard, Quebec. Boyd says the second largest company in Montreal, NaturePlus, Inc., is now beginning its fifth year of operation.

As a major supplier to the lawn care industry in Montreal, Boyd is quite qualified to comment upon his market. Fertilitech manufacturers and supplies fertilizer, and distributes commercial insecticide and herbicide products. "In 1985 we supplied about 80 percent of the business in Quebec," boasts Boyd. "We have more than 115 accounts. Some people didn't think the industry would grow this big. We were the only supplier geared up big enough to handle it. The growth of the industry took a lot of people by surprise." Boyd's facilities utilize large conveyors, about 120,000 gallons of storage space, and a 8,000-gallon tanker is available for deliveries.

Boyd's company is a little different from most companies supplying the lawn care industry in that it was started in March of 1984 with the specific intention of serving the lawn care industry. Most suppliers were originally agricultural suppliers who diversified into lawn care products; Boyd is only now considering diversification into agriculture! "I understand we are the only ChemLawn supplier in North America that is strictly in turf," claims Boyd.

Has his investment in the Montreal lawn care market paid off? The fact that his business has grown 600 percent from the beginning of the 1984 season to the end of the 1985 season tells the story. In addition to Fertilitech's phenomenal growth, Boyd has also managed to lock up ChemLawn's account for the whole of 1985.

Boyd has found that he can sell more lawn care products if he offers customers training in the use of those products. Since there is currently no lawn care association in Quebec, Boyd has assumed the educational role of an association by offering training seminars and facilities. This spring his seminar was attended by over 300 people. He offers a basic course on lawn care, which includes pesticide handling and mixing. He also offers books on lawn pests. He has a computer program which deciphers compatibility and mixing of products. "I saw there was a void because there was no association here," says Boyd. "I read a lot about your association in the states and I decided to provide them education until they are ready to have an association."

The growth of Boyd's company is a direct reflection of the growth of the Montreal lawn care industry in general. The number of companies operating in Montreal more than doubled from 1983 to 1984, according to Boyd. From 1984 to 1985, Boyd says the number of companies almost doubled again. Now, in 1986, he says there are about 50 percent more companies in the field than in 1985. "The largest boom was in the spring of 1985," recalls Boyd. "Right now, more trucks are being built in the spring of 1986, than were built in the spring of 1985. I expect that in 1986 the total market will grow by about 40 percent."

He estimates that 200 lawn care companies operate in the province of Quebec. In metropolitan Montreal there are about 40 companies. The city is a virtual island in the St. Lawrence River and the north and south extremities of the city are referred to as the "north shore" and "south shore." Boyd says there are at least a dozen

Place Jacques-Cartier, the heart of Vieux Montreal, is one of the most historic market places in Montreal. This cobblestone square opened in 1804, and today it is known for its authentic hotels, houses, and sidewalk cafes.

companies in the south shore region and about 20 companies on the north shore.

In terms of company size, after ChemLawn, the next largest company, NaturePlus, operates over 25 trucks. Boyd says the third and fourth largest companies operate four or five trucks. "When you get to the 10th company in terms of size, these are two-truck operations," says Boyd.

Boyd admits that Montreal lawn care operators have some catching up to do to match their United States counterparts. "We are about five years behind the United States in terms of market saturation, pricing, and penetration. The concept is much more recent here. When lawn care companies went to the PLCAA conference in Tampa, they came back to Montreal and said, 'We are not up to that point yet.'"

In metropolitan Montreal, Boyd says lawn care operators tend to be entrepreneurs who started lawn care using the ChemLawn concept. In rural Quebec, in the smaller towns of 20,000 to 30,000 people, lawn care companies have arisen from established garden centers that started a separate division for lawn care.

The standard lawn service in Montreal consists of four applications of fertilizer, two of which also include herbicide and insecticide. Boyd says many companies offer add-on services like dethatching and liming. "More and more are talking about aeration since last year," notes Boyd. He says most applicators in Montreal are on a liquid program. "Some have always been granular," says Boyd, "but in the 1985 lawn care season, about 80 percent were full liquid. Some, like Nutrite, are doing two granular and two liquid applications."

Certain pesticides that applicators take for granted in this country are banned in Quebec, but Boyd says Montreal applicators have no problem controlling local pests with the materials available to them. "The basic insecticide used by almost everybody is chlorpyrifos, or Dursban® ," says Boyd. "That takes care of most of the problems." Despite the more restrictive regulatory atmosphere, Boyd says chlordane was banned from lawn applications only last year.

He says their pest problems are pretty much the same problems we have to deal with in the United States. Applicators treat for chinch bugs, Japanese beetles, and sod webworms. Disease isn't much of a problem on home lawns, but once in awhile fusarium blight and fairy rings do crop up. "We have some crabgrass problems in western Montreal, but much less than in the Midwest (United States)," says Boyd.

Montreal homeowners have been very responsive to the concept of professional lawn care, according to Boyd. "We have the same family lifestyle here with the nice suburbs, the husband and wife both work, they have nice fancy houses, and they don't want to spend their time taking care of the lawn." In the last three years especially, Boyd says homeowners are becoming more and more con-

scious of the status associated with hiring a lawn service. "More people on every street are getting their lawns taken care of by a lawn care company. It is like when color TV came out. Only one guy on the street had it. Soon they all had it."

Apparently not all homeowners are enamored with professional lawn care, since some of the public outcry we are familiar with in this country concerning pesticide applications has begun in Montreal. "There is a case where they have a petition in a small village, but it is not even in the newspaper yet," notes Boyd. "It hasn't gone as far as the Wauconda incident. It might eventually, but it will be treated the same way here."

NATUREPLUS, INC. Boyd is not alone in believing pesticide ordinances may be on the horizon for Montreal lawn care applicators. Guy Van Den Abeele, President of NaturePlus, Inc., Montreal, expects some pesticide regulations to crop up in the suburbs of Montreal. "We expect to be requested to post signs," says Van Den Abeele. He characterizes Montreal citizens as concerned, but not as concerned as U.S. citizens. "What is coming in your country will be coming here one or two years later," predicts Van Den Abeele. "Already we have had some people calling and asking questions." He says legitimate applicators are trying to stave off pesticide concerns by using only registered pesticides.

So far, unscrupulous operators have not been a problem in Montreal, but Van Den Abeele believes the cut-throats will have their day. "The type of service given so far has been very good. Nobody is really undercutting prices yet, but this is what we see coming," says Van Den Abeele. "It is going to be sad for the market because then they will be shaving the fertilizer or the service." He can at least vouch for the quality of service delivered by his company and ChemLawn.

Van Den Abeele says professional lawn care has existed in Montreal for about eight years. While there are currently about 30 companies operating in Montreal, Van Den Abeele says five years ago there were only three. Van Den Abeele echoes Boyd's claim that NaturePlus is the second largest company in Montreal, a distant second to ChemLawn. NaturePlus currently services over 10,000 accounts. While NaturePlus utilizes a strictly liquid spray format, Van Den Abeele says the third largest Montreal company, Nutrite, uses a granular format. A group of nurseries under the name of Botanix, makes two applications with granular fertilizers and two applications with liquid fertilizers, according to Van Den Abeele. He personally feels the results are better with liquid.

Van Den Abeele's minimum lawn treatment is 3,000 square feet at $28.25 per application. The basic treatment package calls for four applications, including preemergent herbicide and insecticide. He also offers a 10 percent discount for prepayment. The spray season starts around April 15 and ends on October 30.

In addition to the basic package of fertilizer and pesticides, Van Den Abeele also offers such add-on services as core aeration, liming, overseeding, and tree and shrub care. NaturePlus is now virtually a full-service company and Van Den Abeele says that is a real advantage since only two other Montreal companies can make that claim. "We find this is the way we can beat those competitors," says Van Den Abeele. "When we spread our services we really tie up our customers."

Tree care has especially influenced customer loyalty, but Van Den Abeele admits it is a difficult sideline to get into. "If you build up a good reputation in lawn care, then you can expect trees. If you combine the two, you have to be well-equipped."

He says homeowners have really jumped on the lawn care bandwagon, especially when they found that professionals could give them better results than they could obtain on their own. The French ancestry of many of Montreal's citizens also explains their acceptance of professional lawn care. "French people are consumers," says Van Den Abeele. "Anything that will make their house look good they will buy. Homeowners couldn't do it properly so they didn't do it. Now they appreciate paying and getting a nice lawn."

Denizens of Montreal tend to have rather small lawn areas, averaging 3,000 square feet. "In the city of Montreal where housing is expensive, people don't have big lawns," says Van Den Abeele.

Van Den Abeele says he and his peers owe a great deal to the assistance lended by American lawn care experts. "We got going because of the American people. ChemLawn wasn't going to tell us anything, but we joined PLCAA and got a lot of information from them." He also cites aid from individuals in getting computer systems and spray rigs set up.

MARION GROUP, INC. Luc Marion, President of Marion Group, Inc., located on Montreal's "South Shore," got into the lawn care business as an extension of his weed control business. He and his three brothers started a weed control business 12 years ago. "People looked after their own fertilizer and we specialized in getting rid of weeds," says Marion. "Now we have changed with the times and demands. We have been doing high volume lawn care for five years."

Marion's company is essentially full-service since he does virtually all landscape maintenance chores with the exception of actual landscape design and installation. His services include weed control, insect control, aeration, trimming, and tree care. Like Van Den Abeele, Marion's operation is strictly liquid. In four visits, he makes four fertilizer applications, two herbicide applications, one in the spring and one in the fall, and an insecticide application during the summer months.

Marion says Montreal is experiencing a lawn care boom and companies are coming out of the woodwork. "By the information I have got, the companies that are the least bit serious are experiencing growth rates of up to 120 percent a year. That is what we have been experiencing," says Marion. "Because of the lack of controlling governmental regulations, anybody here can buy themselves a pickup truck and stick a tank in it." Of all the johnny-come-latelys, Marion says only about 10 are "serious enterprises."

He says many Montreal lawn care companies were started by ex-employees of companies like ChemLawn. "Even ex-employees of *our* company have started up their own companies. That is why the serious companies are all run by people who have gained experience with other lawn care companies and have started out on their own."

Garden center owners have also contributed to the lawn care boom. "Since you have already got a garden center catering to this type of clientele, why not add the lawn care section as well?" reasons Marion. "This is why the growth has been so dramatic. A lot of the garden centers have gone into the lawn care business."

The boom has also extended to lawn care franchises. Franchises have been cropping up in just the last two years, according to Marion. "A big fertilizer company here called Nutrite has started a franchise operation, hoping to increase their sales volume in chemicals, particularly in fertilizer," says Marion. He says Nutrite now has 20 some franchises. Marion has also gotten into the franchising act with the opening of five franchises of his own this year.

Marion believes the Montreal market was opened up to the lawn care concept by intensive advertising campaigns. He says television, newspaper, and direct mail advertising channels have all been heavily exploited by Montreal lawn care companies. "I live in St. Bruno and I receive about 10 pamphlets at my house a year," says Marion. He believes this exposure is sensitizing people to the professional lawn care concept. A few years ago lawn care was harder to sell because only one or two people on any given street subscribed to a lawn care service and

(continued on page 38)

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MONTREAL

(continued from page 36)

everyone else was unaware that the service even existed. "Now we have areas where an entire street takes lawn care, simply because they have seen results," explains Marion. "It has grown so rapidly because the customer is doing the sales work for us."

ChemLawn actually introduced the liquid application format to Montreal, and Marion is grateful because operators like himself had previously tried to sell granular lawn care to homeowners without much success. "Montrealers figured anybody could apply granular fertilizer, so why should they have to pay a professional to do it?" says Marion. "A lot of people back then perhaps even enjoyed puttering around in the garden. Now they are much more into free time. They want to crack open a bottle of beer, relax on the patio, and watch the grass grow."

Marion says even industry and government has become interested in hiring private contractors to do lawn maintenance work. "They want all their parks, boulevards, and government buildings taken care of. Most municipalities around here give that out in contracts."

Marion charges residential customers $31.25 per application. He says up to 22 percent of his customer base takes advantage of the 10 percent prepayment discount he offers. Marion confines his market to the "South Shore" area of Montreal, without going into metropolitan Montreal. In that area alone, Marion grossed $700,000 in 1985. By comparison, in 1980 he grossed about $100,000.

Like the other operators we spoke with, Marion is keenly aware of the increasing concern over pesticides. He says pressure groups are becoming more vocal and he has joined with his competitors to form an association in an effort to disseminate positive pesticide publicity. Because the government does not regulate the use of pesticides, Marion says there are many fly-by-night applicators who abuse their right to apply pesticides. "The first thing you know, it hits the media that there is a lawsuit against a certain firm in this business and it hurts all of us," says Marion.

PEPINIERE NOTRE DAME. Sylvain Laterreur, Manager of Pepiniere Notre Dame, Repentigny, Quebec, also admits that Montreal is plagued with inept operators who hurt the industry. When he and his father first got into the business, the concept of professional lawn care was so new that there was no one in the entire province of Quebec who could supply them with equipment. He says they finally went to a U.S. equipment supplier and are only now getting a feel for the business. The fact that they originally operated a garden center gave them an existing customer base to work from. "We finished the 1984 season with 500 customers," says Laterreur. "The season after, we finished with 1,600. This year we have nearly 3,000 customers."

Like most Montreal lawn care companies, Laterreur has experienced phenomenal growth in a short period of time. "In the three years we have been here, we have doubled every year," says Laterreur. Last year the company grew by 80 percent and he predicts that this year it will grow by 50 percent.

Laterreur describes his garden center in Repentigny, near Montreal, as "very big." He estimates that 80 percent of the lawn care customers he serves are the same people he serves in the garden center. His lawn service includes tree and shrub care, as well as full lawn maintenance chores. His company installs irrigation systems, makes insecticide treatments for trees, takes soil samples, prunes trees, limes, aerates, and dethatches. Laterreur feels strongly about offering aeration to his customers. "Aeration is a complementary service we must offer to all customers because if we apply a good program for fertilization, and we cannot offer the service of aeration, how can they have a good lawn?" reasons Laterreur.

Laterreur says there is a lot of competition in the lawn care market right now and many of his competitors have no knowledge of pesticides and horticulture. But he believes that what goes around, comes around. "It is bad for the market right now, but next year the people will see where good service is and they will be able to find the best company to help them. In that respect we have a big advantage over all the other guys," says Laterreur.

Like Marion, Laterreur has been deluged with direct mail brochures. "Just this week I received seven flyers in the mail. There are some companies we received flyers from who are 40 to 50 miles from here. Everybody is very aggressive and everybody thinks they can make a lot of money." Laterreur thinks the cut-throats will be in for a big surprise within a year after they start marketing their cut-rate service. "Homeowners will be very intriqued by the price, but when they see the service they will receive, and the results, the customers will be angry and will try to find a company with a higher price and better service."

Laterreur's prices are in line with the prices of the legitimate operators we spoke with. His minimum treatment price is $27 for 2,000 square feet. From there, his prices go up to $30 for 3,000 square feet, $33 for 4,000 square feet, $36 for 5,000 square feet, and $51 for 10,000 square feet.

This year Laterreur will take the field with 35 technicians. He has instilled in them the value of good customer relations. "If all these guys know their customers by first name, they can be able to do a good service for these customers," reasons Laterreur. "We operate five 800-gallon trucks. We just started to go with two liquid fertilizations and two granular fertilizations." He believes it is agronomically necessary to use both liquid and granular fertilization in turn to keep customers satisified.

He says the homeowners he has approached are very receptive to the idea of professional lawn care and have not yet been disenchanted by cut-rate lawn care firms. He fears, however, that they may soon become concerned about the safety of chemical applications and conjure up ecological movements to oppose his business. Laterreur is aware of the liability insurance problems his counterparts in the U.S. are having, but he says insurance is no problem in Montreal. His company has liability insurance, but he says many companies operate with no insurance.

"I know that in the United States there are a lot of problems with insurance, but we don't have to buy insurance here," says Laterreur. "If they buy insurance, they can buy a lot of insurance coverage for less cost because there are no regulations here. I am sure that in a very short period all the problems with pesticides will be much stronger than it is right now."

CONCLUSIONS. Other than the fact that about half of the Montreal population speaks French, the Montreal lawn care market is very much like many U.S. lawn care markets of about 10 years ago. This is Montreal's expansion period, just as the early to mid-1970s was the expansion period for U.S. lawn care markets like Columbus, Cincinnati, and Chicago.

Montreal is experiencing all the growing pains associated with rapid expansion. Cut-rate operators are beginning to take advantage of Montreal's wide-eyed and unexperienced lawn care consumers. The legitimate operators are just beginning to realize how valuable an association could be. Plus, they are beginning to feel the added burden of public pesticide concern that their U.S. contemporaries didn't have to deal with in the 1970s.

But like their U.S. peers, Montreal lawn care operators will find that value of their services to homeowners will insure their survival. – *Tim Weidner* ■

The author is Managing Editor of ALA *magazine.*

REGULATORY REVIEW

Anti-pesticide lobbyists and other groups continue to attack the lawn care industry at local, state, and federal levels, but the lawn care industry is fighting back.

The enactment of local pesticide ordinances has been an issue in the lawn care industry for about 15 years, although it wasn't until the late '70s and early '80s that the real brouhaha began. Numerous municipalities talked about drafting their own pesticide legislation — some following up on it, others backing off. But even then, much of the publicity was localized. It wasn't until a few years ago that the lawn care industry's regulatory plight was heightened when national attention focused on the Pesticide Public Policy Foundation's (3PF) lawsuit against the Village of Wauconda, a small town in northern Illinois that adopted a local pesticide ordinance requiring chemical applicators to pay an annual registration fee and post signs on sites of pesticide applications.

Although quick to respond to the Wauconda case, many people believe the green industry was caught off-guard by the media blitz and barrage of proposed pesticide legislation that quickly followed in other cities, counties, and states — legislation that continues to be introduced in houses of legislature all over the country.

But the lawn care industry is in a better position today than it was a few years ago, at least from an organizational standpoint. Time has given turf professionals a chance to band together, both with fellow lawn care businessmen and other pesticide users such as structural pest control operators, arborists, golf course superintendents, and nurserymen. Although not as well-financed or as seasoned at dealing with the political process as anti-pesticide groups like the Sierra Club, the lawn care industry has proven it's a force to be reckoned with, and it will continue to voice its concerns in town halls, county seats, state legislatures, and federal courts when challenged.

A change in the American pysche has certainly contributed to the heated debate over pesticide use. Whereas our forefathers accepted certain risks in the environment for a better quality of life, the modern-day American is demanding a *totally* "safe" world. And to achieve that end, some people believe more restrictive pesticide legislation is needed.

Our society's ever-growing concern for good health has also played a role in triggering today's wave of environmentalism. Vitamin stores and natural food restaurants are popping up all over the country in response to our changing diets. Most of today's frozen foods, canned goods, and even fast-food entrees flaunt a low-fat, low-cholesterol, or low salt label. In addition, we're jogging, aerobicizing, jazzercising, nautilizing, and exercising in any other fashion that gets our cardiovascular system going.

Sensing the public's increased awareness of good health, pesticide opponents have exploited the issue for their own best interests, much as the general media has often dramatized chemical accidents. Intense print and broadcast coverage of disasters such as Bhopal strike emotional chords with the public, paint one-sided pictures of chemical usage, and add fuel to the anti-pesticide fire.

The lawn care industry has also become an easy mark for antagonists' aggression by virtue of its growth. Consequently, increased profits have not been the only byproduct of an expanded industry — lawn care operators have also had to deal with additional regulatory roadblocks.

All of these elements have led to a very important realization by the lawn care industry, as well as the entire pesticide-user industry — challenging anti-pesticide movements and proposed legislation has become a way of life. The key now is for the lawn care industry to remain united with its allies to make sure any pesticide legislation that is passed is fair.

"We recognize that our industry is one that will be regulated," says Jim Betts, Executive Director of Ohio Pesticide Applicators for Responsible Regulation (OPARR), Cleveland, Ohio. "We just want to make sure that the regulation is consistent, reasonable, and properly enforced. We want the legitimate operators to be able to continue to do their work, and of course we don't want illegitimate

operators to create problems for the rest who are trying to perform an honest service."

Since the lawn care industry has strengthened its troops, it's been able to defeat many unfair right-to-know laws, pre-notification regulations, and other anti-pesticide bills. Let's take a look at what's been happening in some of the industry's political "hot spots," while keeping in mind that our "victories" are not indicative of legislative cease-fire. As most lawn care businessmen have witnessed, each year brings new proposed legislation and new environmental issues. However, if the lawn care industry continues to hold together and talk with pesticide opponents, there's hope for fair and reasonable legislation.

WAUCONDA. The biggest legal victory for lawn care operators to date has been the Pesticide Public Policy Foundation's (3PF) win in its case against the Village of Wauconda. 3PF challenged the town's pesticide ordinance which required applicators to register and obtain a $25 per year permit from the village, prohibited pesticide application in winds greater than 10 miles per hour, and required warning signs to be posted for 72 hours after an application. The United States District Court for the Northern District of Illinois ruled in favor of 3PF, declaring that Wauconda's ordinance was preempted by two existing Illinois state laws that control pesticides and pesticide applications, and therefore was invalid.

As expected by 3PF, Wauconda has appealed the decision. Of course, 3PF hopes to receive the same verdict in a higher court so a national precedent, which once and for all answers the question of preemption, is established.

The case has been passed on to the U.S. Circuit Court of Appeals in Illinois, however, a state legislative procedure has gummed up the works for a smooth proceeding. According to 3PF Director Dave Dietz, "The Circuit Court of Appeals has certified back to the Illinois State Supreme Court two questions to consider (which examine state preemption of pesticide laws in Illinois). There's a procedure in Illinois where the State Supreme Court can receive back certain questions from the federal court system if the federal court system so determines." Since this case is a first of its kind, it's not unusual for such legislative procedures to be used.

Hearings on the case by the Illinois State Supreme Court have yet to be scheduled, Dietz says. But he is undaunted by the delay. "The Wauconda ordinance is still enjoined," he says. "The injunction against that ordinance is still in effect, so the ordinance is null and void."

Dietz doubts the hearings by the Illinois State Supreme Court will affect the Foundation's attempt to set a national precedent. "It just puts one more process into this program. It means we've got one more hurdle to go through in this whole effort, but it doesn't alter our fundamental strategies."

However, he admits, "In one sense we're a little bit frustrated, because we had hoped to get a clean decision made at the U.S. Circuit Court of Appeals level. In another sense, nothing is really lost except for some time and probably some additional dollars. We've got to raise more money," he says, "there's no question about that, because every time something like this happens it just makes the whole process more expensive."

3PF recently made a plea to the turf industry for financial support, and response thus far has been positive, according to Dietz. "We're urging everyone to get financially involved because it's such an important question."

In addition to the Wauconda case, 3PF has been monitoring activity in Washington, D.C., to amend the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Hearings for proposed amendments will be held in early May, according to Dietz.

"We've been very much involved in a number of concerns before Congress, including things like applicator training and certification, applicator record keeping, attempting to get clear language in FIFRA that local governments are preempted, attempting to get language in FIFRA that would elevate the value of the label in terms of defense for those that apply pesticides. And right now we feel pretty good about the progress being made."

Dietz believes the regulatory climate is changing, with activity shifting away from the federal level and growing at the state level. "While the heat is not off us in Washington, D.C.," he says, "the heat is turning up on us in the 50 state capitals. We're seeing more efforts on the part of the environmental community and the labor community directed at pesticide use in the urban/suburban setting and what they think needs to be done to control it." Issues covering everything from non-point source pollution and water quality to non-game wildlife protection and transportation of hazardous materials are cropping up, he says.

The biggest concern for lawn care applicators in Massachusetts these days has been over insurance. Prior to approval of an applicator's license, the applicator must show proof of pollution coverage.

OHIO. The question of preemption has also been a hot topic in Ohio, where many local pesticide ordinances have popped up despite the fact that current Ohio law prohibits municipalities from enacting pesticide regulations. To discourage municipalities from drafting their own pesticide legislation, Senator Gary Suhadolnik (Republican) introduced Senate Bill 263 which would re-word the current state law.

"Essentially SB 263 does not create a new law," explains Jim Betts, Executive Director of Ohio Pesticide Applicators for Responsible Regulation (OPARR). "There is in existence in Ohio law today a prohibition against the regulation of any commercial pesticide application at the municipal level. That wording, however, is not necessarily clear and precise. So SB 263 was introduced to clarify that language."

The bill, which the Senate passed by a bare minimum vote of 17 to 14, has moved to committee in the House. However, a recent Attorney General's opinion may determine whether or not further hearings will be held. Subsequent to the bill's introduction to the State House of Representatives, the Ohio Attorney General issued a ruling which supports the current law's prohibition against municipal pesticide regulation. The ruling specifically said that the City of Lakewood and its ordinance, which was passed in May 1985, was acting against the state prohibition and therefore should be invalid.

"Senate Bill 263 would still have to pass through the House for the wording to be clarified, but we're not sure now whether or not we're even going to push for that in view of the Attorney General's opinion," says Betts. "It does not necessarily become legal precedent, but it certainly is a well-researched and well-reasoned opinion. And I think it's one that no court would completely ignore."

OPARR encourages the lawn care industry to write Senator Suhadolnik and thank him for the support he has given the pesticide industry. "It is important for him to know that there are people out there who support his position, because he really got out on a limb at the Senate hearings, where people got pretty vicious," according to Lauren Lanphear, Vice President, Forest City Tree Protection Company, Cleveland, Ohio. Lanphear also suggests industry members write their congressman to indicate sup-

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port of the bill if it reaches the House floor. Lively discussion on the Senate floor turned the bill into a partisan issue, he notes. "It is important for people in the House to know that there are people out there in favor of the bill."

MARYLAND. The 1986 legislative session in Maryland is over, and four pesticide-related bills were defeated. The first bill, which was supported by the lawn care industry, required pesticide applicators to provide each customer with pertinent information on the licensed pesticide business, the applicator, and the pesticides being applied. It also made reference to further training and certification of pesticide applicators.

"We were behind this bill," according to Paul Wolfe, an arborist for Gustin Garden's Tree Service, Gaithersburg, Maryland. "We feel that the more training that we as applicators receive, the better off we as an industry will become. And as far as pertinent safety information, who can be against that?"

Although the legislation did not pass, the lawn care industry was more distressed over the killing of a second bill that would have preempted local governments from regulating pesticide usage. Currently, two counties in Maryland have enacted their own pesticide laws — Montgomery County and Prince George's County. The adjoining counties both require pesticide applicators to post signs on sites to be treated 24 hours prior to application. The sign must display a big Mr. Yuck symbol (which has replaced the traditional skull and crossbones symbol) on its reverse side, so it may be turned around and displayed for three days following any pesticide applications.

Maryland recognizes 23 different counties and about 186 different political subdivisions (municipalities). "If each political subdivision is able to write their own laws concerning pesticides, it will put a tremendous burden on industry and create mass confusion," Wolfe explains. "We feel that preemption is a must. And although we do have a state's Attorney General ruling to that effect, the state's Attorney General will not enforce the ruling."

Though saddened by the outcome of the preemptive measure, the industry was happy with the results of other pesticide legislation. Two posting bills requiring statewide pre-notification were killed. However, the defeats were not necessarily considered victories by the lawn and tree care industries. "Stopping the legislation on the two posting bills was nice," says Wolfe. "We're satisfied with the results this year, but I wouldn't call it a victory. It's going to crop up again. It's going to be a perennial battle. There will be pesticide legislation proposed each year by a very vocal minority of the population," he says. "Our business has not had anyone call up asking for pre-posting or post-posting of signs. It doesn't seem to be an issue with our clientele. It's an issue with lobbying groups and things like that."

"We feel that Maryland is a hotbed for pesticide legislation because of its proximity to Washington, D.C," Wolfe adds. "Groups such as the Audobon Society have regional offices here. They're well-monied and they know the political ins and outs."

Wauconda has appealed the decision. Of course, 3PF hopes to receive the same verdict in a higher court so a national precedent, which once and for all answers the question of preemption, is established.

But Wolfe agrees that the industry has really pulled together recently to fight its cause, just like its opponents. The constant regulatory gun fire has "galvanized us," he says. "Two years ago at this time, or even last year, the lawn companies went their way, the home pest control people went their direction, tree companies went a third way, and golf course superintendents just stayed out of the fray entirely. And now," Wolfe explains, "we have banded together as a political voice and are letting our views be known on both the state and the local levels."

MASSACHUSETTS. The biggest concern for lawn care applicators in Massachusetts these days has been over insurance. Prior to approval of an applicator's license, the applicator must show proof of pollution liability coverage. But the lack of availability has made that regulation impossible to comply with. Consequently, a judicial order has waived the requirement until June 2, 1986. However, pesticide applicators are required to make a "reasonable" effort to obtain pollution insurance, although "reasonable" was not defined. In addition, applicators must have their customers sign letters that say they understand the company does not

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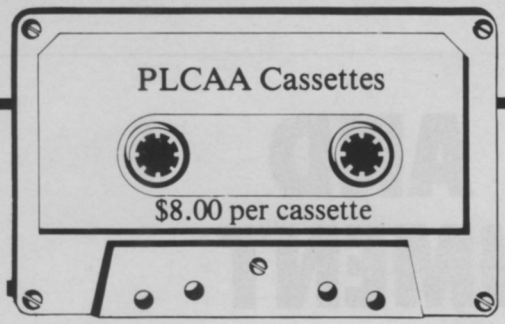

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LAWN CARE AND THE ENVIRONMENT

The public is becoming increasingly anxious about the perceived hazards of chemical lawn care. It is up to enlightened lawn care businessmen to quell their fears.

Is lawn care compatible with the environment? It all depends on who you talk to. Compatibility is defined by Webster as being capable of existing together without discord or disharmony. The philosophy of the lawn care business is just that — to provide a service that is not only in harmony with the environment, but actually enhances it.

Today lawn care is under bitter attack in many parts of the country. The main thrust of the attack is based on contamination of our environment. The key issue in this statement is not *contamination*, but *our* environment. Lawn care professionals live in the same environment as their customers. They work in each customer's environment as well as their own. They, more than anyone, are aware of potential contamination or environmental incompatibility.

Environmental incompatibility looms in the background and is ever ready to leap into controversy involving lawn care applications. It is the responsibility of the lawn care industry to comply with governmental regulations and update industry standards to prevent such controversy. There are numerous tools in place today that, if used and communicated properly to customers, will add to the credibility of the industry and reduce controversy.

One of these existing tools is state regulated pesticide application certification. This is one of the most fundamental requirements of our business. Through certification of personnel, minimum standards, with respect to pesticide knowledge, are met. Training provided through preparatory sessions involved with certification testing should act as a base or building block for further in-depth training. Indicate in your advertisements that you employ state certified personnel.

In-house training is a second tool that must be utilized. Many chemical companies, as well as local safety councils, provide training packages that deal with general safety practices as well as pesticide safety. If development of in-house training programs is difficult, gather information at trade shows and collect labels and material safety data sheets to add to your library of information. Make this information available not only to your employees, but to your customers as well.

Another tool for good communication with the customer is the product label itself. The label makes the job of the lawn care professional less complex; in that, it provides all the guidelines necessary for applying the product. The label is also the law. An understanding of a pesticide label is necessary before it can be a useful tool.

The following elements can be found on a pesticide label:

- Brand name — (diazinon, Tersan 1991®, Trimec®, etc.);
- Type of formulation — (EC, G, WDG);
- Common name — chemical name;
- Ingredient statement;
- Net contents — pounds, gallons;
- Name and address of manufacturer;
- Registration and establishment numbers;
- Signal words — danger, warning, caution;
- Precautionary statement — description of potential hazards;
- Statement of practical treatment — antidote;
- Statement of use classification — general or restricted;
- Directions for use;
- Misuse statement — label violation penalties;
- Re-entry statement;
- Category of applicator — who can use it; and
- Storage and disposal directions.

All of this information outlines in some detail how, where, and when to properly use the particular product. Environmental compatibility can be assessed through understanding and following the direc-

tives on the label. All pesticides must have a label on the container whether being used by a professional or a customer. One further note: Lawn care products available to the lawn care profession (even though there could be a formulation difference) are the same products available to the homeowner.

Lawn care products available for use today are some of the safest, most time-tested materials on the market. All the products used for lawn care have come out of the farming community. These products may have undergone a formulation and name change, however, the general chemistry has remained the same. Thanks to these materials, the corner grocery store is able to provide us with bounteous supplies of fruits, vegetables, and grain products. Not only have these materials been scoured by regulatory agencies, but they have proven themselves to be valuable tools year after year in the farm community — reinforcing the environmental compatibility of these very same materials for use around the home.

There does exist, however, a chance for an environmental compatibility problem with respect to chemicals; that is, misapplication due to improper calibration. This is a problem the lawn care professional is better equipped to handle than the homeowner or even the farmer. Calibration eliminates the compatibility problem before it becomes a problem. Calibration of equipment is of utmost importance to the industry and here are several reasons why:

- Proper calibration will produce desired results. If the weeds do not die, or the turf does not turn green, payment will not be made.
- Proper application will reduce overapplication which results in liabilities. If an excess of material is used, damage will occur and restitution will have to be made to the customer. It will also control insufficient applications which result in service calls and, ultimately, higher material costs due to the use of additional product, plus the potential for customer cancellation.
- The most economical and cost-effective way of providing the desired results is using the correct rate the first time. Lawn care products are expensive, use them wisely.

Proper application will reduce overapplication which results in liabilities. If an excess of material is used, damage will occur and restitution will have to made to the customer.

Proper calibration, therefore, will provide for the best possible results, at a most economical price, while avoiding potential environmental mishaps.

A lawn care service goes beyond providing a green, weed-free lawn. In fact, it provides professional advice. As the industry "professionalizes," less controversy concerning environmental matters will arise. Professionalism results in

providing a lawn service which serves the needs of the consumer and assures economic viability for the company. If the service fails to do either of these functions, the company fails.

The customer knows what he or she wants, whether realistic or not, but is not quite sure how to go about obtaining those results. It is the responsibility of the lawn care service to provide the necessary professional advice to solve the customer's problem. The first step in satisfying this customer is to understand his or her expectations and discuss their feasibility. If the goals are attainable, then the service can commence. Next, explain the progression of events leading up to the end result. Make sure there is a clear understanding of the changes the turf will experience while being transformed. There must also be an agreement concerning the customer's role (namely, watering and mowing responsibilities) in maintaining the lawn.

Additionally, there must be ongoing communication explaining operations, dispelling unnecessary concerns regarding pesticide use and pollution, and answering other questions throughout the season. A customer who receives adequate communication, explanation of procedures, and reassurance about pesticide application, is one who will aid the industry in overcoming the negative controversy enveloping our service business.

Proper attire is important to a positive public image. Steve Juntgen, President of Emerald Green, Ft. Wayne, Indiana presents just such an image.

Finally, the lawn care industry must be as aware of the public as the public is of the lawn care industry. There is no deep, dark mystery of magic potions involved with today's lawn care. It is based on years of agronomic, chemical, and engineering research. This research is complemented by millions of applications performed yearly by lawn care professionals. The success of the industry is a testament to the success of the technical base from which it evolved. Customers should be made aware of the quality and professionalism required in this industry. Professionalism is the key to dispelling the growing feeling that lawn care and the environment are incompatible. — *David G. Jones* ■

The author is Director of Environmental Safety, Tru Green Corporation, Alpharetta, Georgia.

THE POLITICS AND PERCEPTION OF PESTICIDES

Since pesticides are often synthetic or man-made, the public perceives them as being harmful for that reason. The truth is, pesticides are some of the least harmful substances you are likely to encounter.

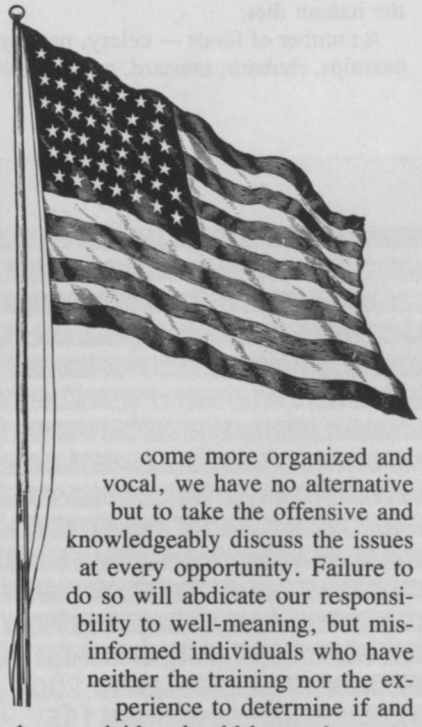
Lawns, trees, and shrubbery are subject to various insect and disease pests which must be managed to protect these valuable assets. Although natural controls such as weather, predatory insects, and parasitic diseases reduce many pest populations, the process is often too slow or ineffective to prevent irreparable damage to lawns and landscape plants. In many instances we have no alternative other than chemicals for safe, dependable protection. These chemicals are called pesticides.

The use of pesticides is not new. In 2000 B.C., the Chinese used sulfurous fumes against rats. The ancient Greeks and Romans burned sulfur to form sulfur dioxide for insect control.

Other pesticides have been employed throughout history. In 200 B.C., the historian Cato described the use of oil to control pests, and later Pliny the Elder described how arsenic was used for pest control in vineyards. In the 1600s, tobacco extracts were used against lice. However, it was not until after World War II that large quantities of pesticides were used to support the dramatic growth in agriculture.

During the late 1950s and early 1960s, reports of pesticide build-up in the soil created an atmosphere of uncertainty over long-term environmental and human safety. Rachel Carson's book, *Silent Spring*, published in 1962, focused more attention on the potential hazards from the use of pesticides and, although much of her book was based on speculation and supposition, it undoubtedly helped increase awareness of the need for more research.

The producers and users of pesticides have traditionally ignored the importance of public discussions of pesticides, complacent in our knowledge that modern pesticides do not pose a health risk when stored, used, and disposed of properly. However, as anti-pesticide groups become more organized and vocal, we have no alternative but to take the offensive and knowledgeably discuss the issues at every opportunity. Failure to do so will abdicate our responsibility to well-meaning, but misinformed individuals who have neither the training nor the experience to determine if and when pesticides should be used.



Informed individuals can participate on a local basis by writing newspaper articles and presenting industry views at civic and garden clubs. Lawn care and tree care organizations, such as the Professional Lawn Care Association of America (PLCAA) and the National Arborist Association (NAA), can represent the industry at government hearings and act as consultants in the development and implementation of laws regulating pesticide use in urban areas.

Much of the current concern about pesticides is based on the myth that "natural is good" and what psychologists call "fear of the unknown."

There is no separation between *natural* and *chemical*. Everything in our world is made of chemicals. The air we breathe, the water we drink, the foods we eat, all consist of chemicals. Even organically grown foods contain combinations of complex chemicals, many of which are highly toxic if taken in sufficient quantity. In fact, all substances possess toxic properties and may be harmful to health at a sufficiently high dose level. The best definition of a poison is "too much" of anything!

The toxicity of a chemical is dependent upon its chemical structure — not whether it is natural or manmade. Natural toxins, such as aflatoxin, a poison produced by a fungus that grows on stored grain and peanut butter, and toxins produced by *Bacillus botulinus* (botulism) and the *Amanita* group of mushrooms are among the most poisonous substances known.

The variety of natural toxic chemicals is so great that organic chemists have been characterizing them for over 100 years, and new plant chemicals are still being discovered.

Plants in nature produce toxic chemicals in large amounts, apparently as a primary defense against the hordes of bacterial, fungal, insect, and animal predators. Dr. James Nathanson, a neurologist at Harvard Medical School, reported evidence that the caffeine and related compounds found in coffee, tea, and cocoa plants are natural insecticides that help plants ward off damaging insects. Citrus oil has demonstrated tremendous killing power against fire ants, flies, fleas, and wasps and is being tested for the control of other insects. Researchers at the University of Georgia's Coastal Plain Experiment Station were able to kill flies simply by scratching the peel of an orange and placing it in a cage with the flies. Even the common potato contains arsenic, a potent pesticide.

Bruce Ames, Chairman of the Department of Biochemistry, University of California, estimated the human dietary intake of "nature's pesticides" is likely to be several grams per day — at least

10,000 times higher than the dietary intake of manmade pesticide residues. Some of the pesticides in use today are extracts or derivatives of these naturally occurring pesticides. Pyrethrum and rotenone are common examples.

Uncertainty over the long-range effects of pesticides is perhaps the major fear of those opposed to pesticide use. Can the most minute trace of certain chemicals cause cancer or other problems long after the exposure takes place?

According to Dr. Elizabeth Whelan, Executive Director of the American Council on Science and Health, the prevailing belief that America's health is jeopardized by trace levels of environmental chemicals is unsubstantiated.

There is no scientific evidence that pesticides registered for lawn care and tree care have the potential to cause cancer or other delayed symptoms in man. Unfortunately, this is not true of many other factors in our daily life.

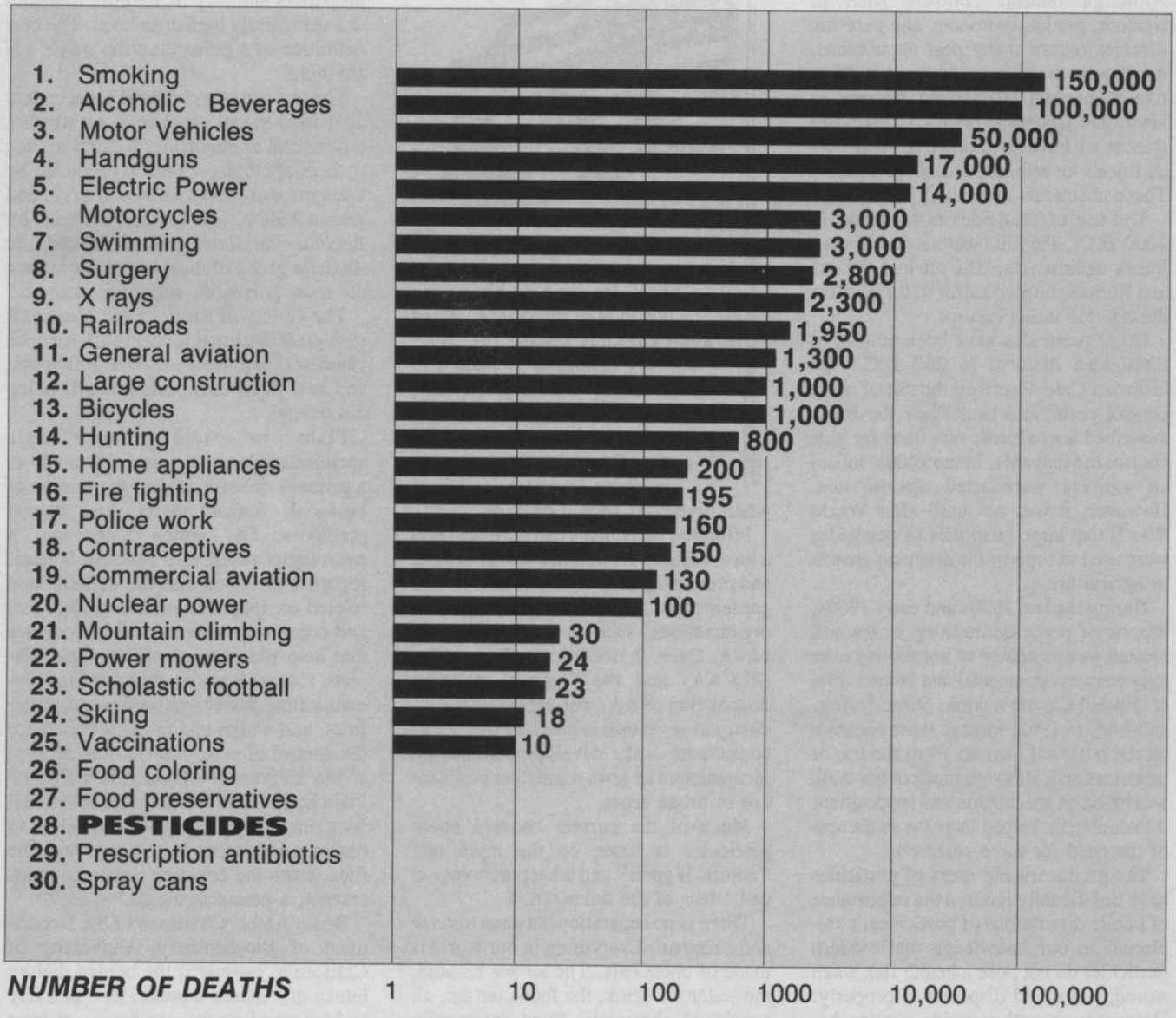
There is no scientific evidence that pesticides which are registered for lawn care and tree care have the potential to cause cancer or other delayed symptoms in man.

Recent widespread use of tests for detecting mutagens and the increased testing of plant substances for carcinogenicity in animals have contributed to the identification of many natural mutagens, teratogens, and carcinogens in the human diet.

A number of foods — celery, parsley, parsnips, rhubarb, mustard, mushrooms, and honey among them — contain minute amounts of cancer-causing agents. Even the seemingly benign herb teas we drink and the peanut butter we eat may have carcinogens in them. Professor Russell Adams, Jr., a soil biochemist, reported that rutabagas contain as much as 200 parts per million of a potent inducer of thyroid cancer.

Another unfounded fear is that pesticides will remain in the environment and build up with annual or repeated applications. Modern pesticides registered for lawn care and tree care are composed of synthesized organic molecules which will decompose naturally. This process usually occurs within a few weeks as sunlight and microorganisms break down the chemical structure. According to *The Herbicide Handbook*, published by the Weed Science Society of America, the average persistence of 2,4-D applied at recommended rates is generally one to four weeks in warm, moist soil.

COLUMN A



A vocal minority has always objected to the use of chemicals as well as other modern conveniences in an unrealistic attempt for a zero-risk approach to life. Electricity, when first used, was held in great suspicion by some and thought to affect the mental and physical well-being of man.

The news media is a particularly effective tool in conditioning people's attitudes and perspectives toward pesticides. Vivid anecdotes and emotional appeals are more memorable and have greater public impact than does dry, statistical fact. Unfortunately, chemicals or pesticides are usually mentioned on television or in newspapers only in association with some hazardous event such as chemical spills, toxic dumps, or hazardous wastes.

Although the safety and benefits of pesticides and other chemicals are well documented, the lack of "balancing" statements have altered people's perception of the risks involved from pesticide use. In addition, the frequency and length of media reports involving pesticide/chemical events are disproportionate in relation to their occurrence. This is not so much an attempt to sway public opinion as it is an effort to publish articles which the media considers newsworthy. For example, even though diseases take about 100 times more lives as homicides do, papers carry about three times more articles about homicides as they do about deaths involving diseases. Disease-induced deaths are not as dramatic and, therefore, not as likely to attract readers as a homicide.

The below chart demonstrates the difference between reality and the perception of risks as viewed by three diverse groups. Column A represents a sample of the ranking of 30 sources of risks according to their *actual* annual contribution to the number of deaths in the United States. Columns B, C, and D represent the *perceived* ranking of those risks as identified in a survey of the respective test groups. Perception of risk varies dramatically among the three groups, reflecting their differing backgrounds and experiences.

Although no one should be subjected to unnecessary hazards, it is impossible to live in a society free of risks. Pesticides, however, and chemicals in general, should not be maligned or feared because certain specific chemicals have been found to pose a genuine health risk.

The public has a right to hear more than just anti-pesticide views. No jury could be expected to bring in a responsible decision unless opposing views are presented and they have the opportunity to review the facts, not emotional feelings. Our public "jury" should expect no less. — *Dr. Roger C. Funk* ■

The author is Vice President, Technical and Human Resources, The Davey Tree Expert Company, Kent, Ohio.

COLUMN B	COLUMN C	COLUMN D
LEAGUE OF WOMEN VOTERS	**COLLEGE STUDENTS**	**BUSINESS AND PROFESSIONAL CLUB MEMBERS**
1. Nuclear power	1. Nuclear power	1. Handguns
2. Motor vehicles	2. Handguns	2. Motorcycles
3. Handguns	3. Smoking	3. Motor vehicles
4. Smoking	4. **PESTICIDES**	4. Smoking
5. Motorcycles	5. Motor vehicles	5. Alcoholic beverages
6. Alcoholic beverages	6. Motorcycles	6. Fire fighting
7. General aviation	7. Alcoholic beverages	7. Police work
8. Police work	8. Police work	8. Nuclear power
9. **PESTICIDES**	9. Contraceptives	9. Surgery
10. Surgery	10. Fire fighting	10. Hunting
11. Fire fighting	11. Surgery	11. General aviation
12. Large construction	12. Food preservatives	12. Mountain climbing
13. Hunting	13. Spray cans	13. Large construction
14. Spray cans	14. Large construction	14. Bicycles
15. Mountain climbing	15. General aviation	15. **PESTICIDES**
16. Bicycles	16. Commercial aviation	16. Skiing
17. Commercial aviation	17. X rays	17. Swimming
18. Electric power	18. Hunting	18. Commercial aviation
19. Swimming	19. Electric power	19. Electric power
20. Contraceptives	20. Food coloring	20. Railroads
21. Skiing	21. Prescription antibiotics	21. Scholastic football
22. X rays	22. Mountain climbing	22. Contraceptives
23. Scholastic football	23. Railroads	23. Spray cans
24. Railroads	24. Bicycles	24. X rays
25. Food preservatives	25. Skiing	25. Power mowers
26. Food coloring	26. Scholastic football	26. Prescription antibiotics
27. Power mowers	27. Home appliances	27. Home appliances
28. Prescription antibiotics	28. Power mowers	28. Food preservatives
29. Home appliances	29. Vaccinations	29. Vaccinations
30. Vaccinations	30. Swimming	30. Food coloring

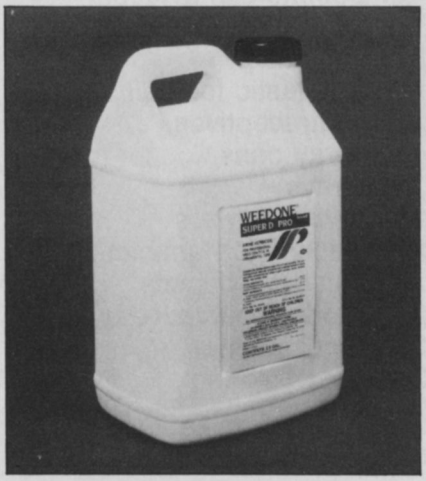
Mortality rate due to pesticides is not the problem most people perceive it to be. (Information contained in the February, 1982 issue of Scientific American *magazine.)*

PRODUCTS

The Specialty Products Group of **Union Carbide Agricultural Products Company, Inc.** announces the addition of three new "professional use" products to their 1986 lineup of turf and ornamental care materials. Weedone® brand Ready-To-Use (RTU) Brush and Vine Killer, Weedone® brand Super D™ PRO Amine Herbicide and Zectran® brand 2E Mexacarbate Pesticide will be sold for professional use under the Union Carbide green and white "SP" logo.

Weedone brand RTU Brush and Vine Killer is designed for convenient, year-round control of unwanted bushes, trees, and vines around residential and commercial buildings, fence lines, rights-of-way, and other non-crop applications. This newly-labeled product can be successfully used on woody species such as multi-flora rose, poison ivy and poison oak, sumac, black locust, ailanthus, osageorange (hedgeapple), persimmon, sassafras, and over 60 other types of woody plants. Plants with stems or trunks up to four inches in diameter (measured at chest height) can be controlled by simply spraying Weedone around the base of the unwanted growth. Larger trees should be cut and the remaining stump treated with the spray.

Weedone brand Super D PRO Amine Herbicide is a new product for professional broadleaf weed control in ornamental turf. Applied at a rate of one fluid ounce per 1,000 square feet, this product effectively controls in excess of 46 broadleaf weed species, such as dandelion, wild garlic, and thistles, according to the company. The product contains a combination of 2,4-D and dicamba, both as diethanolamine salts, per gallon. The product will be available for sale in 1, 2-1/2, and 55 gallon size containers.



Zectran brand 2E Mexacarbate Pesticide can now be used by professional applicators for control of snails and slugs on ornamental plants, flowers, shrubs, vines, trees, and evergreens as well as turf and ground covers. The product may also be used to control pests such as aphids, scales, and mites on the above listed plants. A concentrated product, dilution ratios for Zectran are 1-1/2 to 2 quarts per 100 gallons of water.

Circle 115 on reader card

The Consumer Product Safety Commission estimates that 150,000 injuries associated with all types of power mowers occur each year. This year could be different! A revolutionary new blade replacement is being introduced in markets across the country. It's called the Unblade from Zorcom Enterprise, Inc.

The Unblade is an unconventional cutting tool consisting of a virtually indestructable plastic center and ten monofilament lines extending out. To convert any power mower into a safe lawn mower, simply remove the steel blade and replace it with the Unblade. When in operation, a steel blade revolves at speeds up to 200 miles per hour, often destroying objects the mower runs over or propelling them through the air, frequently causing damage or injury.

Besides preventing personal injury, the Unblade also cuts wet grass. It does not throw or destroy objects in the mower's path. It cuts closer without damage to trees, shrubs, and bushes, and does not scalp the lawn. The design of the Unblade

makes it virtually impossible to bend a mower crank shaft or break an engine's timing key, which often happens when the lawn mower's blade hits a solid, hidden object.

An unbalanced metal blade (bent or sharpened uneven) will eventually ruin the engine's rods and bearings. The Unblade does not do this. In the fall, reverse the unit and it becomes an excellent leaf mulcher.

Circle 119 on reader card

Salsco, Inc. introduces the new Sidewalker asphalt-paver for 1986. This machine increases production of walks, bike paths, guardrail aprons, highway shoulders, and other asphalt areas by 60 percent, while decreasing manual labor by 60 percent. The unit paves at a speed of 50 feet per minute, with a transport speed of 3-1/2 miles per hour. Its paving width is 36 to 72 inches. It is powered by an 11 horsepower Briggs I.C. with electric start and has hydrastatic infinitely variable forward or reverse drive. The machine also features adjustments to control asphalt thickness and compensate for variations in ground contour.

Circle 117 on reader card

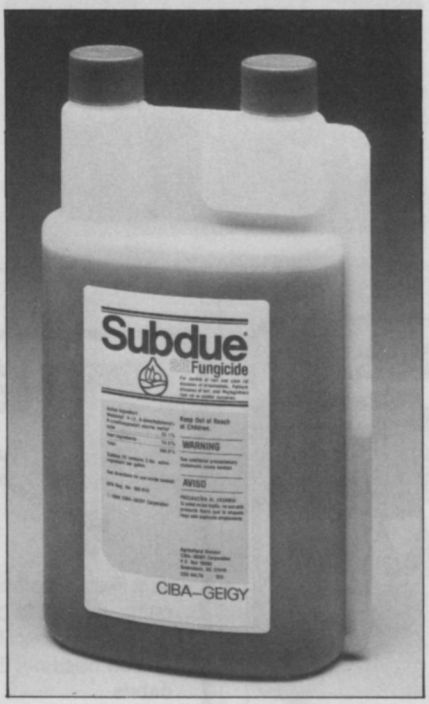
Snowco, Inc. manufactures a wide range of utility trailers with load capacities ranging from 1,000 to 5,100 pounds. Snowco's Model 20-032 heavy-duty, ramp-loading utility trailer has a load capacity of 5,100 pounds. It is ideal for hauling backhoes, large mowers, grounds maintenance equipment, ditchers, and other bulky, hard-to-handle loads. Standard features include tandem axle hydraulic surge brakes, tongue jack, 7-3/4-inch high removable splash shield and wheel stop, extra large tie-down loops and twin ramps that can be adjusted for different tread widths.

Snowco trailers are built with a "low-ride" suspension system which makes them easy to load and lowers the center of gravity for maximum stability at legal highway speeds. In addition, the company manufactures seven tilt deck and ramp loading utility trailers with load capacities ranging from 1,000 to 3,500 pounds. The Town and Country trailer — an all-steel box with tailgate — has 22 cubic feet of space with 11-inch high sides and a load capacity of 1,200 pounds.

All Snowco tilt deck and ramp loading trailers have perforated steel decks, all-steel rectangular tube frame and tongue, baked enamel finish, demountable wheels, tapered bearings, ball hitch with safety chains, and complete lighting to meet current federal safety standards. A comprehensive list of options and accessories are available for each Snowco utility trailer.

Circle 120 on reader card

This first-ever **Ciba-Geigy Corporation** container dispenses accurate ounce and half-ounce rates of Subdue® fungicide right from the jug. There's nothing like



it for agricultural chemicals, says Larry Simmons, company packaging specialist who developed the container. "Subdue is now packaged as a two-in-one jug — a container and a measuring cup," says Simmons. The liquid fungicide is used for ornamentals, turf, and conifer nurseries.

Built into the top of the quart jug is a small measuring chamber that holds up to an ounce of chemical. "A rigid tube feeds liquid into the measuring chamber simply by loosening the chamber cap and squeezing the plastic container," explains Simmons. Then remove the chamber's cap and pour the pre-measured amount directly without using a measuring utensil. "The package is safe and convenient," says Simmons. "It's simply easier to dispense chemicals this way."

Circle 121 on reader card

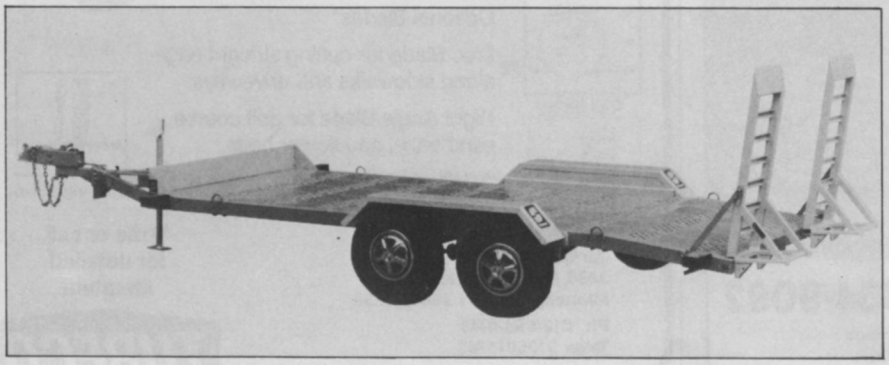
Bunton Company has introduced thatcher attachments for its 32-, 36-, 40-, 48-, 52-, and 61-inch walk-behind commercial mowers. Built with heavy gauge steel and a double row of spring steel tines, Bunton thatchers are attached to the mowers with quick connect/disconnect levers. This allows the thatcher to be removed for mowing in tight quarters and then quickly reattached with minimal lost time. The working height of the tines is set when the thatcher is attached to the mower and need not be reset each time it is used. The thatcher can also be used to prepare new ground or an established lawn for seeding.

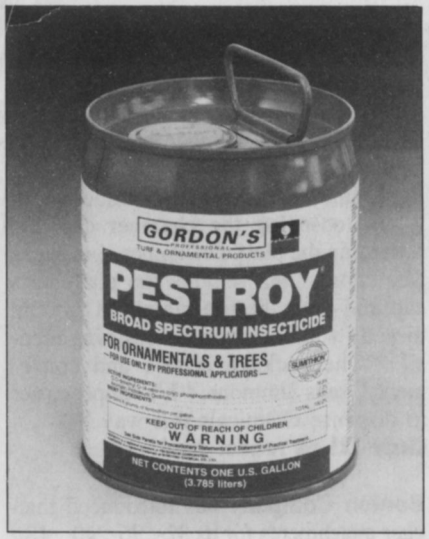
Circle 125 on reader card

The introduction of Pestroy Broad Spectrum Insecticide, a totally new organophosphate insecticide-miticide for the United States market, has been announced by **PBI/Gordon Corporation**. Labeled for control of various insect and mite pests attacking ornamental shrubs and trees, it contains the active ingredient fenitrothion, as an 8-pound per gallon concentrate.

Safe to nearly all trees and shrubs, Pestroy insecticide controls a wide range of pests, including aphids, borers, budworms, caterpillars, cankerworms, leafbeetles, leafminers, mealybugs, palmerworms, lacebugs, sawfly, midges, pinetip moths, mites, scales, spittlebugs, whiteflies, slugs, psyllids, weevils, and southern pine beetles. Pests are affected by both contact and stomach mode of actions, including moderate residual effects resulting from local systemic activity. This is produced by Pestroy's penetrating action into plant tissues.

Relatively safe because of its low toxicity to warm-blooded animals, the active ingredient is marketed under the name Sumithion® in many countries around the world. It has been extensively used for mosquito control in malaria programs of developing nations. Sumithion is also one





of the world's most widely-used locust (grasshopper) control pesticides and is being used for spruce budworm control on thousands of acres of Canadian forestlands.

Pestroy Broad Spectrum insecticide is the first formulation to be introduced as a result of an agreement between Sumitomo Chemical Company of Japan and PBI Gordon Corporation, announced in January 1985, in which the Kansas City firm was named exclusive marketers of Sumithion for the United States ornamental market. Discoverer and developers of fenitrothion, Sumitomo is one of Japan's largest chemical manufacturers of industrial chemicals, fertilizers, plastics and synthetic rubber, fine chemicals, pharmaceuticals, dyestuffs, and pesticides.

Circle 122 on reader card

The Model 45 spreader from **Olathe Manufacturing, Inc.** features a new pendulum action and is now available with an engine and/or trailer for increased versatility. The Model 45 is ideal for top dressing sand or other granular products.

Olathe's Model 28 trencher is a lightweight, yet sturdy trencher which digs 2-inch wide, 7-inch deep trenches for running irrigation lines, power, or other shallow underground requirements. This unit has a 5-horsepower engine and 16 rugged carbide teeth to cut through obstructions such as roots.

The Model 37/38 is a new 30-inch wide PTO-powered slit seeder with "dual level seeders" for bare dirt seeding, established turf overseeding, thatching, and aeration. This unit easily attaches to any 16- to 24-horsepower tractor with a three-point hitch and 540 PTO. The 37/38 seeds on top and into the ground for faster and better coverage.

Circle 123 on reader card

An 88-page handbook on troubleshooting and maintaining landscape irrigation systems is available from **The Idea Bank**. The publication includes step-by-step written guidelines with "how-to" illustrations for in-field employees of landscape, irrigation, and maintenance firms.

Special sections of the book cover: electrical conductors, common problems and repair techniques; how to repair faulty field wiring; how and when to use ammeters, voltmeters, and ohmmeters; techniques for troubleshooting hydraulic irrigation systems; and how to recognize and repair faulty control valves. Irrigation consultant and designer, Ward Der-

ryberry, is the author of the publication.

The cost of the book is $16 postage paid, and may be ordered by credit card by calling toll-free 1-800-621-1136.

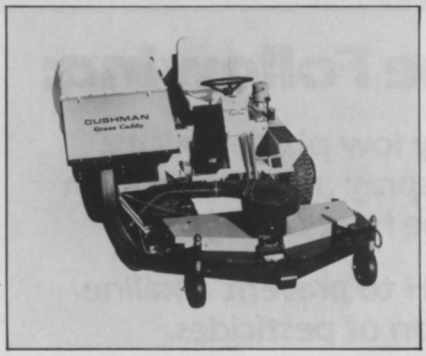
Circle 127 on reader card

OMC Lincoln has introduced a new air injection system for the Grass Caddy™ attachment for Cushman® Front Line mowers. The new air injection system will be standard on all Grass Caddy attachments after April 1, 1986. An accessory kit also will be available for retrofitting the air injection system on Grass Caddy attachments already in the field.

The new air injection system increases air volume in the pickup chute by 30 percent. The system introduces a "cushion" of fast-moving air along the inside surfaces of the chute and helps carry leaves and trash up to the caddy without actually touching the walls of the chute. This helps prevent wet grass clippings and debris from sticking to the sides of the chute, greatly reducing the chance of plugging.

The Grass Caddy air injection system consists of a 10-inch cast aluminum blower wheel that is V-belt driven by the Front Line mower deck gear box. The blower wheel moves only air. Trash and clippings do not pass through the blower itself. The steel blower housing mounts on the mower deck, and a 4-inch flexible hose carries the air to the inlet opening of the chute where it is injected to create the high-speed "cushion" for assisting clippings and debris up the chute into the Grass Caddy hopper.

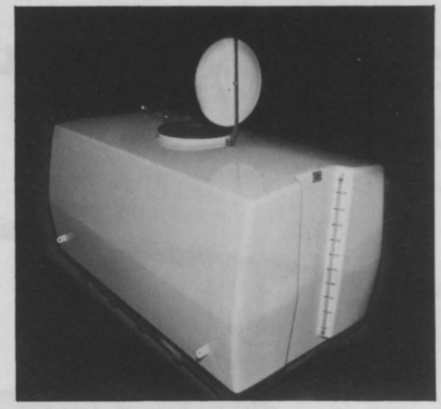
Although the new air injection system takes relatively little engine horsepower



for operation — because the impeller moves only air — Cushman engineers recommend the Grass Caddy attachment with the air injection system be used with 18 horsepower or larger mowers for best results when mowing wet grass. The Grass Caddy attachment is designed specifically for the Cushman Front Line mowers equipped with 60-inch side discharge mower decks.

Circle 116 on reader card

Tuflex Manufacturing Company introduces it's most recent addition to it's superior line of seamless fiberglass tanks. The Model 0600HXBA95L features the extremely high gloss exterior finish, exclusive seamless fiberglass construction, integral molded mounting base allowing for a low profile installation on frame or flat bed installation. Other features include lockable center hatch system, calibrated gallonage indicators front and rear. Tank dimensions are 83-1/2 inches long by 47-3/8 inches wide by 52 inches high. Provide an excellent sign board for your company's logo. Available options



include: stainless steel mechanical agitation, sparger tube or jet agitation, Tuflex's exclusive double steel internal hatch system, up to three compartments and custom colors.

Circle 126 on reader card

Modern Welding Company, Inc.'s new Utility/Tool Box for use in hauling small lawn care and pest control equipment offers more strength and durability than the conventional boxes. Modern Welding has constructed its Utility/Tool Box from fiberglass reinforced plastic (FRP), making it much more capable of withstanding abuse than steel and polyethylene boxes. FRP will not crack or split as polyethlene boxes often do, nor will it rust like the steel boxes. The color is molded into the fiberglass so that when nicked or scratched the color won't be damaged. Furthermore, Modern Welding uses heavy-duty, electroplated steel hinges to resist corrosion.

From tools to heavy bags of fertilizer, the box keeps any item safe and clean. Two rubber closure straps secure the lid, and a gasket-in-lid design seals the lid tight, keeping out dust and moisture. The unit will conveniently fit underneath the truck bed, out of the way. A strong 3-inch wide reinforced rib wrapped around the box allows the unit to be mounted in a variety of ways and places depending on how the door is to be opened.

Circle 128 on reader card ■

All Irons Are Not Created Equal!

Agri-Plex® Fe 8% Offers You The Following:

- The most highly concentrated chelated iron product available in liquid form. Also supplies phosphorus and potash.
- Fully compatible with virtually all (NPK) formulations and pesticide tank mixes.
- Will not stain your customers' sidewalks or your equipment.
- Extremely low phytotoxicity. Ideal for spray application even during the heat of day.
- Buffers pH to prevent alkaline destruction of pesticides.
- Maximizes green-up without excessive nitrogen.

U.S. Patent Nos: 4,214,996 & 4,351,735

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For A Handle On Quality Turf Products Get A Handle On This

One-source ordering is just one call away, and that call to SMCP means prompt delivery of the chemicals and equipment your lawn maintenance business needs. We carry a complete line of professional lawn care products, so ordering is easy and fast. For *all* your chemical and equipment needs, *one* number is all it takes. Take a moment right now to call the SMCP office nearest you to place your order, and request our 1986 catalog.

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Circle 35 on reader service card

Now! A Sprayable Turf Green-up

Let us send you a sample of FeRROMEC™ so you can see with your own eyes how fast it changes weak-looking dull grass into vibrant, deep-green, healthy-looking grass.

Lawn care companies that have been quietly testing Ferromec for several years have proven that it is not only an effective tool for getting new customers, but also in holding their present customers in the face of some pretty tough competition.

Even more exciting are the reports that Ferromec costs them practically nothing because of what they save on reduced fertilizer costs.

In any event, the discovery of Ferromec can help a lawn care operator measurably increase his overall efficiency, and so we urge you to take a minute right now to understand why iron is such an elusive nutrient, and how the Trimec® people have managed to harness it for you.

Ferrous Iron is Very Fragile.

As you know, the basic problem of supplying iron to turfgrass is its fragility in the Ferrous ++ State. Only Ferrous iron can be utilized by a plant and, *ironically,* almost as soon as Ferrous Sulphate is applied it turns to the non-usable Ferric +++ State. Once oxidized, the reversal with organic matter acting as a reducing agent is so slow there is a question if it would ever occur.

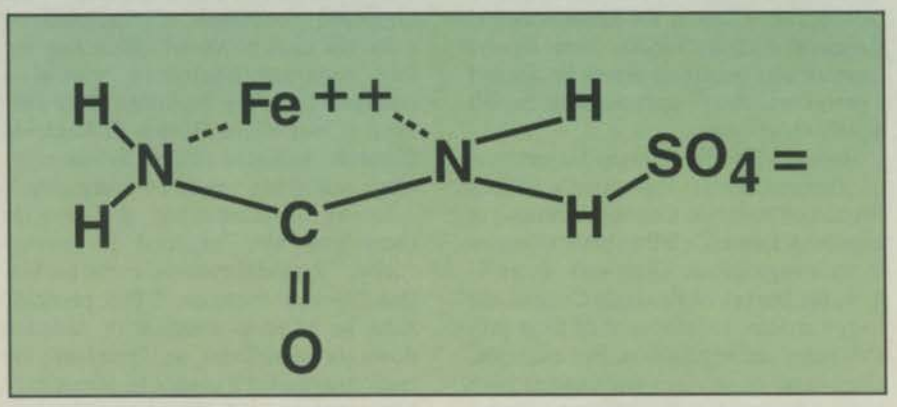
And thus it is that scientists devised chelating, which is intended to fix the iron molecule in the Ferrous state. If chelating is properly done, it is effective. But it is very expensive and so slow to release that it could be many weeks before a treatment of chelated iron could produce a significant color change in the grass.

Ferromec Works Right Now!

At PBI/Gordon we have a patented process of bonding a Ferrous iron molecule to a molecule of urea, which stabilizes the iron in a Ferrous state. Notice the diagram on the opposite page of the Urea/Ferrous sulphate molecule which is called Ferromec.

Half of this green at Hodge Park Golf Course in Kansas City was sprayed with Ferromec and, within 24 hours, the color change was dramatic. Under normal growing conditions, visual response usually occurs between 8 and 48 hours after application. However, if moisture and temperature extremes exist, the response may be slower. Ferromec is also effective on trees, shrubs and herbaceous plantings.

Iron that Produces Within 24 Hours



This is the molecular structure of Ferromec. Note that ferrous sulphate is bonded to a urea molecule and will remain stable. Ferromec utilizes a recombinant urea process to achieve the unique composition. It is classified as an organometallic compound.

Ferromec can be mixed with liquid fertilizer and Super Trimec,® and it will not harm the equipment. The Ferromec is almost immediately assimilated so the color change occurs very rapidly. The Ferromec which reaches the ground is taken up by the root system because the grass has such a voracious appetite for the nitrogen content of Ferromec.

Use Ferromec door-hangers To Get New Customers

You can imagine what a powerful tool Ferromec can be to help you secure new customers . . . After all, every homeowner wants the beautiful, vibrant green color... right now!

Your PBI/Gordon distributor will supply you with door hangers which tell the exciting story of green-up in 24 hours. You can imprint them with your name and telephone number and use them in neighborhoods where you want to secure new customers. *Call or write for your free sample of Ferromec.*

Toll-free 1-800-821-7925
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Ask for Customer Service Department.

Inform us of bids to be let. We furnish detailed specs and names of distributors serving your area.

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

Neal Howell

Do you have any questions about iron?

Iron is definitely established as an essential micronutrient required by all plants. Yet, the amount required can vary dramatically depending on the pH of the soil, the composition of the fertilizer that is being used and the plant that is being fed.

Neal Howell, Director of Sales and Services of Soil Amendments for PBI/Gordon, is an authority on iron; he is as near as your telephone when you have questions.

You'll like Neal. He's a *real Ironman* whose roots go back to the Iron Knights of the "Hell on Wheels" gang of the 2nd Armor Division from Fort Hood (that's General Patton's old bunch).

Ferromec™ is a trademark of PBI/Gordon Corporation.

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Circle 46 on reader service card

REGULATORY REVIEW

(continued from page 42)

have pollution liability coverage. Hearings have been scheduled to seek an answer to the state's pollution insurance problem, however, many people believe the temporary requirements will be turned into permanent regulations.

According to Kevin Eckert, a forester for New England Electric and a 3PF contact for the state of Massachusetts, the state continues to examine statewide pre-notification legislation, but no new results have surfaced. The most recent legislation introduced was a move by the Audobon Society to reconstitute the Massachusetts Pesticide Board and put it under the jurisdiction of the Department of Public Health. Currently, it is under the Department of Environmental Management, along with Agriculture. A move could mean radical changes for pesticide usage in Massachusetts, according to Eckert. He says a joint legislative committee is performing a study to examine the issue.

NEW JERSEY. In last year's 201st session of the New Jersey legislature, the much-talked-about Senate Bill 1342, sponsored by Senator Raymond Lesniak (Democrat), was tabled in the state Senate Energy and Environment Committee. The bill, which originally proposed the posting of warning signs on chemically-treated lawns, pre-notification to anyone in the vicinity of wherever lawn or tree spraying is being done, and virtual duplication of the federal EPA process for registering pesticides at the state level, is unlikely to be reintroduced by Lesniak in this year's 202nd session of legislature, according to Ilona Gray, Executive Director of The Alliance for Environmental Concerns (AEC), Wayne, New Jersey. Lesniak was quoted as saying he doesn't "perceive himself" as sponsoring the bill again, Gray notes.

However, the New Jersey Department of Environmental Protection's (DEP) Bureau of Pesticide Control is looking at aspects of Lesniak's bill to incorporate into their regulations, Gray says. In addition, the Bureau of Pesticide Control has begun stricter enforcement of their present rules and regulations. For example, Gray says, all service vehicles must have some reference clearly displayed in three-inch letters which notes that the vehicles contain pesticides. The simplest way to comply with the regulation is to add the word *pesticide* to the five-digit applicator business license number which must appear on two sides of every service vehicle. Until now, Gray says, few lawn care companies — including the industry leaders — have followed the rule. However, she adds, "They're all getting it on their vehicles now. A lot of them have already been cited for that."

The Bureau of Pesticide Control is also getting out in the field and critically evaluating pesticide storage areas to avoid overexposure in the workplace. "All unopened containers of restricted-use materials must be stored within a secure and separate enclosure within a warehouse," Gray explains. "Ray Ferrarin (Chief of the Bureau of Pesticide Control) indicated that an 8-foot high, chain-link fence would be acceptable."

Lawn care operators and other pesticide users may also be cited for having "loose" granular material in the back of their service vehicles. "The pesticide must be securely attached or fastened down (in the vehicle), so if you leave the truck unattended it cannot be removed," Gray explains. "A physical barrier between the driver and the pesticide containers must also exist. A lot of applicators are building storage chests in the

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back of their pick-up trucks and padlocking the chemical in there."

In addition to cracking down on enforcement of its pesticide regulations, the Bureau of Pesticide Control is meeting with a number of interest groups, including the turfgrass industry, to discuss statewide pre-notification regulation. The Bureau hopes their fact-finding mission will uncover suitable rules for all parties involved.

WISCONSIN. Although Assembly Bill 885, a proposed statewide community right-to-know law, did not go anywhere in this year's legislative session, Russ Weisensel, Executive Director of the Wisconsin Forestry/Rights of Way/Turf Coalition, a division of the Wisconsin Agri-Business Council, believes the issue will be back on next year's legislative docket. The new session, which begins in January of 1987, most likely will examine a statewide pre-notification bill, too.

The City of Madison proposed such an ordinance this year, but held off because of the pending court decision on The Village of Wauconda's ordinance. However, the author of the local legislation, Ald. Eve Galanter (District 10), announced her intentions to pursue the issue at the state level. She is currently working with the Public Intervenor, representatives of environmental groups, lawn care companies, and other interested persons to draft and introduce a statute that is fair and effective.

Lawn care operators and other pesticide users in Wisconsin should contact Ald. Eve Galanter to express their concerns regarding pre-notification. In addition, they should carefully monitor legislative activity that begins the first of next year.

CONCLUSION. Lawn care operators all over the country should continue to track regulatory issues in their market areas and keep strong ties with their pesticide-user allies. As Dave Dietz of 3PF says, "Our members know that what ever happens to the agriculture industry could happen to them. The timber industry recognizes that if something happens to lawn care, it can ultimately come back to haunt them." And so the cycle goes. The industry can make great strides in securing fair and reasonable legislation, but it depends on you. — *Vivian Rose* ■

The author is Assistant Editor of ALA *magazine.*

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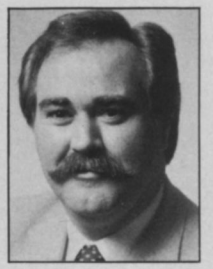
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