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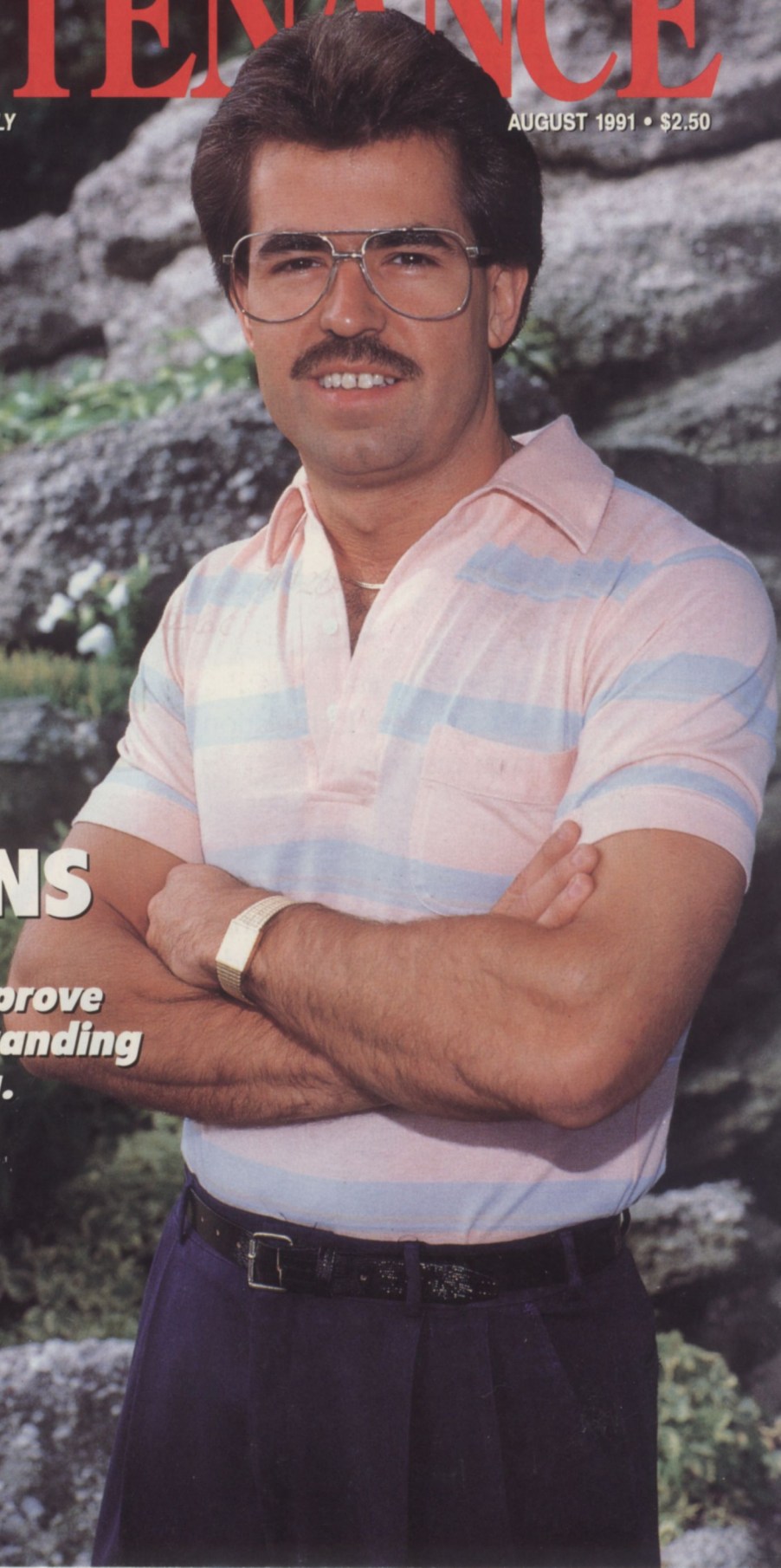
Lawn Specialties' Neal DeAngelo wants to improve the customer's understanding of lawn service pricing.

ALSO IN THIS ISSUE:

Compost Residues

Probing the Groundwater

Efficient Fertilizers



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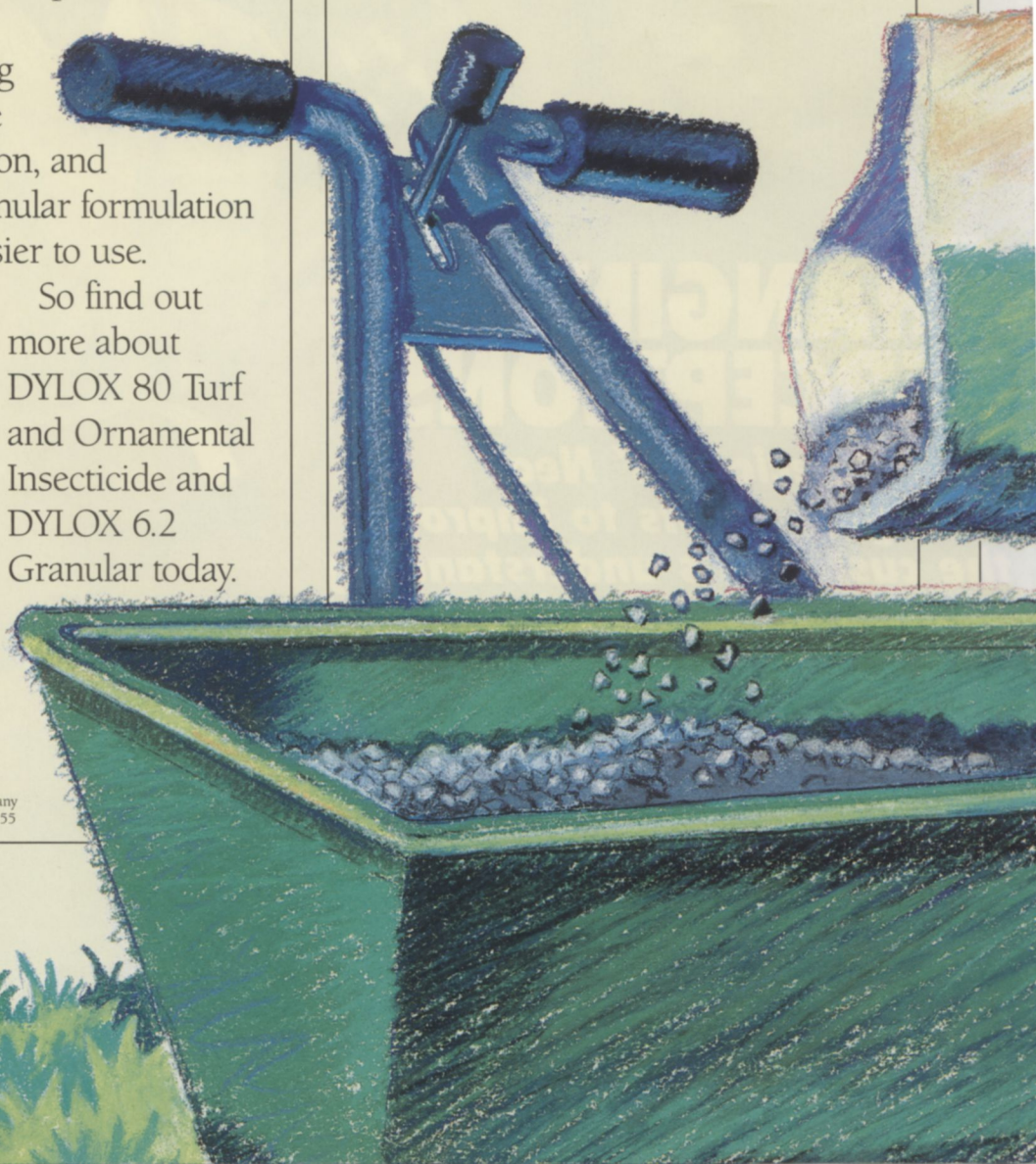
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Lawn & Landscape MAINTENANCE

VOLUME 12, NUMBER 8

AUGUST 1991

FEATURES

18 Pricing Strategies Key To Lawn Maintenance Success

Changing the perceived value of lawn maintenance services is high on the agenda of Neal DeAngelo.

22 Pesticide Outlook: Grace Under Pressure

Self-regulation, proactive postures and increased communications are all methods of improving the cloudy pesticide atmosphere.

26 Testing the Waters For Contaminants

While the EPA aggressively pursues sources of contamination in the groundwater, turf pesticides are receiving a clean bill of health from university research.

30 Are Pesticide Residues Lingering in Compost?

Initial research shows that composting is a non-risk venture to both handlers and end users of pesticide-treated clippings.

38 Fertilizers With More 'Staying Power' Meet Contractor Needs

Whether it's a liquid or a granular, synthetic or organic, varying fertilizer formulations with better control have made life easier for the lawn and landscape maintenance contractor.

42 Accessing Information In One Quick Step

Sophisticated radio and scanning systems can eliminate paperwork and create a more efficient business.

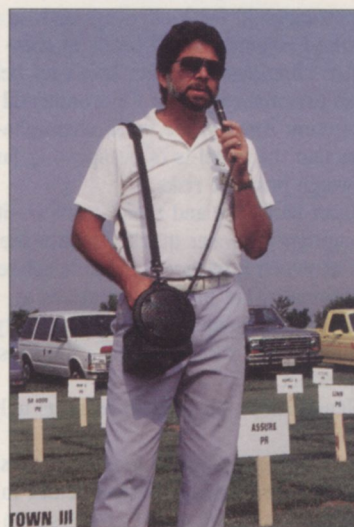
Cover Photo:
Vince Fayock, Hazleton, Pa.



p. 18



p. 42



p. 48

DEPARTMENTS

61 Advertiser's Index

10 Association News

58 Calendar

61 Classifieds

4 Editor's Focus

12 Irrigation News

6 News in Brief
The Green Industry reacts to Supreme Court ruling.

52 People

54 Products

48 Seed News
Seed suppliers open their doors for tours.

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Editor's Focus

YOU KNEW SOONER or later it had to happen. If pesticides are the scourge of the earth (as environmental activists are fond of saying), then chemically treated clippings are bound to cause similar controversy as have pesticides applied to turf, trees, rights-of-way and so on.

Anticipating this concern, we randomly surveyed landscape contractors and municipal workers only to find that the overwhelming majority faced no restrictions in their attempts to compost waste from lawns treated with chemicals.

And through further conversations, we found that city and independent compost facilities have reported no significant exposure problems and/or leaching problems at well-run compost facilities.

Several reputable universities and private companies are in the midst of evaluating turf clippings for signs of residue, but results, for the most part, are varied and premature.

One such study found detectable levels of pesticides in fresh clippings and, in one reported instance, small levels in composted clippings. But with levels far below those established by the Environmental Protection Agency, the research emphasizes that the benefits of composting far outweigh possible risks.

Short half-lives and rapid decomposition by sunlight or water quickly reduce the rate at which a pesticide remains active. Additionally, the high temperatures at which clippings are composted virtually eliminates any pathogens from the finished product.

Nevertheless, skepticism rears its ugly head.

Best exemplifying the thought process of those uneducated about pesticides in general, is a recent phone conversation I had with a resident of an affluent Cleveland suburb. The woman applauded industry efforts to deal with grass clippings, but felt that most municipalities failed to address concerns of pesticide residues.

Namely, she said, if grass has been treated with "toxic" lawn chemicals, those practicing composting should not put the clippings in compost piles, especially if the compost will be used to grow vegetables which will be eaten.

She went on to say that any application of an insecticide or a weed killer raises doubts about the safety of composted grass clippings.

"All cities are encouraging people to compost, but it's not that cut and dry," she said. "I feel that cities should warn



their residents that it is an issue, so they can be aware that it is a concern."

She said most of her concern stems from the fear of the unknown. "As long as I hear of people getting violently ill from being exposed to pesticides sprayed on lawns, trees, flowers and shrubs, I want no part of them."

In her mind, notification of an impending pesticide application isn't enough unless it gives her the right to reject use of the product on neighboring properties.

The long and short of the conversation was that she would rather accept the alternative — sickly trees, weed- and insect-infested yards and mosquito-ridden parks — than deal with "questionable" chemicals.

Here is yet another opportunity for professional lawn maintenance operators to proactively address customer concerns. Whether you have started your own compost facility, are working with a municipality or are just thinking about an alternative source for your clippings, you should be sharing your thoughts with your client base.

Get involved with them through customer newsletters and response cards. Get them involved at city council meetings when issues concerning our industry arise. And, by all means, don't try to hide anything from your customers. Present them with the best information you have to address their questions.

And in those cases, such as residues in clippings, where not much research is available, refer customers with questions to your county extension agent or university representative. — *Cindy Code* ■

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News in Brief

NEWS DIGEST

Program Guarantees Speedy Delivery

Ransomes' new "Priority Parts" program guarantees parts delivery to a Ransomes dealer within two working days — or Ransomes pays the tab for freight and parts costs.

The "Priority Parts" program is in effect in the continental United States, and covers parts for Ransomes turf care equipment sold within three years of April 1991.

Sandoz Introduces Bilingual Labels

Sandoz Crop Protection is providing bilingual labels on three of its major specialty products — Mavrik,[®] Pentac,[®] and Enstar.[®]

The bilingual labels will save time and money in translation and avoid potential mistakes occurring through applicator misinterpretation.

Computer Awarded 'Package of the Year'

Thornton Computer Management Systems received the "Package of the Year" award from *International Spectrum* magazine.

These awards are given in recognition of excellence in application software developed with the databased computer management system. Winners are chosen from the results of an extensive annual survey sent to end users all over the world.

Ingersoll Buys Grazer Division

Ingersoll Equipment Co., Winneconne, Wis., purchased the Grazer Division of M&W Gear, Maple Hill, Kan. The transaction price was not disclosed.

The Grazer Division produces a line of commercial front cut mowers with zero turning radius maneuverability. The sale lets M&W Gear focus on the production of agricultural equipment.

M&W Gear is primarily known for its agricultural attachments sold through farm implement dealers.

Ingersoll is a Northern Wisconsin manufacturer of riding lawn and garden equipment and known for its hydraulic drive garden tractors.

Supreme Court Decision Has Immediate Ramifications

THE SUPREME COURT'S decision to give local governments the right to regulate the manufacture, sale and use of pesticides has already hit home for lawn and landscape maintenance contractors.

Since the June 21 ruling, a number of cities have dusted off regulations setting restrictions in place that had once been shelved pending the Supreme Court ruling, or set the ball rolling on new legislation to severely restrict or even ban the use of pesticides in various cities across the country.

The high court's unanimous ruling interpreted the Federal Insecticide, Fungicide and Rodenticide Act to permit local governments the right to impose more stringent pesticide use regulations of their own. The decision stems from Wisconsin Public Intervenor v. Mortier. A somewhat similar case involved Milford, Mich. Sent to but not heard by the Supreme Court, it was reversed at the state level.

The ruling affects all applications of pesticides by lawn and landscape maintenance operators and structural pest control operators as well as operators caring for rights-of-way, aquatic weed control, golf courses, public mosquito control programs and so on.

"I don't think cities understand the extent of the ruling," said Tom Delaney, director of state government affairs for the Professional Lawn Care Association of America. "What the Supreme Court is saying is wreak havoc until Congress comes up with something better."

Delaney is referring to what many in the pesticide industry feel is the Congressional need to amend FIFRA to clarify the preemption situation.

"The Supreme Court ruling makes it doubly important that Congress closely re-examine the issue of local preemption, and once and for all expressly state in FIFRA that local jurisdictions are preempted from regulating the sale and use of pesticides — products that are already heavily and effectively regulated under federal and state law," said Ralph Engel, president of the Chemical Specialties Manufacturers Association.

The issue of pesticide regulation is far from settled. Controversies will now arise between states and cities. For instance, a city can't pass an ordinance that conflicts with state law. "We may see lawsuits between states and local governments," Delaney said.

West Virginia is the only state which retains complete preemption over its localities. States most likely to pass pesticide restrictions or licensing: Ohio, Michigan, Pennsylvania, Wisconsin, Maryland, New York, Massachusetts, Illinois and to a lesser degree Washington, Colorado and Oregon.

Licensing fees will also be an issue as many state governments are in financial straits. Ohio recently passed a sales tax on lawn care and landscaping services which is expected to generate \$19.2 million.

A sampling of regulations which have made headlines in recent weeks:

An ordinance was recently introduced in Lake Winnebago, Mo., that would regulate and prohibit the use of "certain lawn and tree chemicals within the city...and require the licensing of all lawn and tree sprayers and pest control applicators."

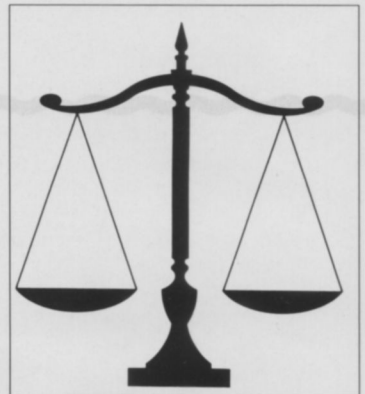
The proposed ordinance approved 17 chemicals for tree and lawn maintenance and pest control; and outlawed the use of 50 chemicals, including Dursban, Roundup and 2,4-D.

According to Section 4 of the ordinance, "No person shall engage in the business of lawn maintenance and tree spraying or pest control application within the City without first obtaining a license therefore."

In addition, licensing would not be approved without proof of insurance and a complete listing of all chemicals intended for use within city limits.

The ordinance was tabled, according to Lake Winnebago Police Chief Steve Untrif. "There was a lot of opposition to it from people in the industry and a lot of residents."

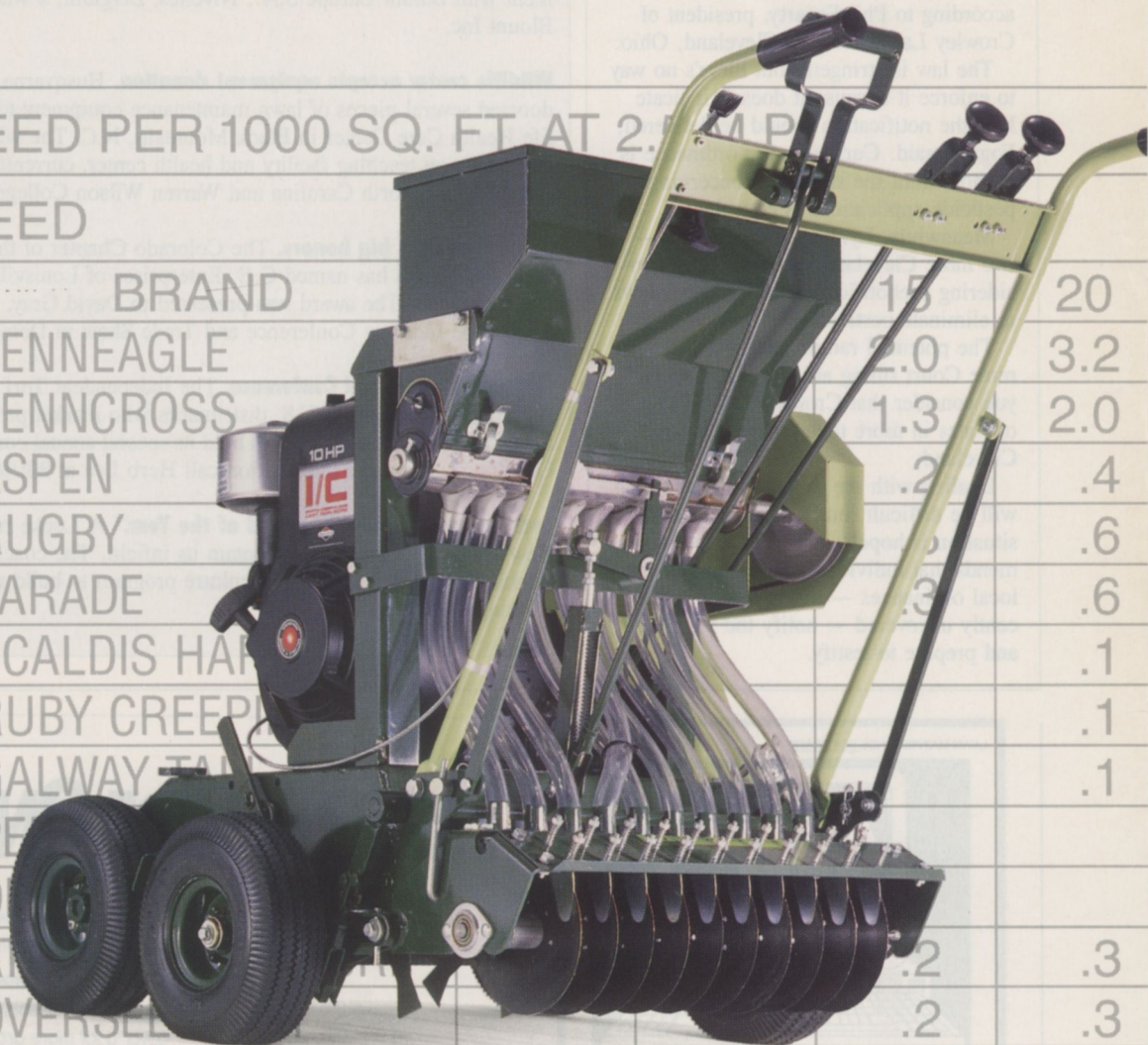
Mayfield Village, a suburb of Cleveland, Ohio, put a 1987 ordinance into effect that had been on hold pending the Supreme Court ruling. The ordinance calls for 24 hour



(continued on page 8)

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News in Brief

(continued from page 6)

written prenotification to abutting properties of the intended application. The prenotification includes homeowners as well, according to Phil Fogarty, president of Crowley Lawn Service, Cleveland, Ohio.

The law is stringent, but there's no way to enforce it because it doesn't indicate how the notification should be delivered, Fogarty said. Currently, the ordinance is on hold until the state law concerning pesticide applications is consulted.

Meanwhile, Lyndhurst and Euclid — two more Cleveland suburbs — are considering prenotification and possible laws to eliminate pesticides.

The potential ramifications of the Supreme Court ruling are staggering when you consider that Crowley Lawn Care operates in more than 20 cities around Cleveland.

Dealing with the Supreme Court ruling will be difficult, but it doesn't mean the situation is hopeless. The PLCAA recommends that individuals begin monitoring local ordinances — newly created or recently uncovered — notify the PLCAA and prepare to testify.

GREEN NOTES

Technic Tool Corp. markets product overseas. Technic Tool is marketing its power pruner in Europe, Africa and the Middle East through an exclusive marketing agreement with Blount Europe S.A., Nivelles, Belgium, a wholly owned subsidiary of Blount Inc.

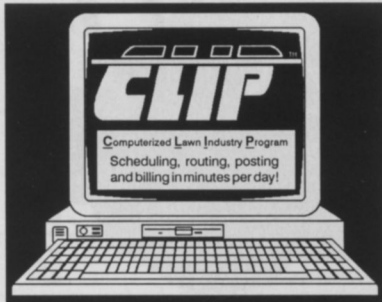
Wildlife center accepts equipment donation. Husqvarna Forest & Garden Co. has donated several pieces of lawn maintenance equipment to The North American Wildlife Health Care Center in Black Mountain, N.C. The wildlife center is an educational and hands-on teaching facility and health center, currently serving students at the University of North Carolina and Warren Wilson College.

Small firm wins big honors. The Colorado Chapter of the American Society of Landscape Architects has named G.E. Enterprises of Louisville, Colo., landscape contractor of the year. The award was presented to David Gray, president and founder, at the Landscape Industry Conference and Trade Show in Denver.

Turf and Ornamental Conference. The Independent Turf & Ornamental Distributors Association, a group of U.S. distributors who market products and services to the lawn maintenance industry, will hold its second annual conference in Hilton Head, S.C., Oct. 23-27. For more information call Herb Lea at 301/899-3535.

Locke mower graces "Diamond of the Year." A Locke reel mower was donated to a New Jersey high school to maintain its infield. The coach and his team have been working with the school's horticulture program to build and maintain the award-winning diamond.

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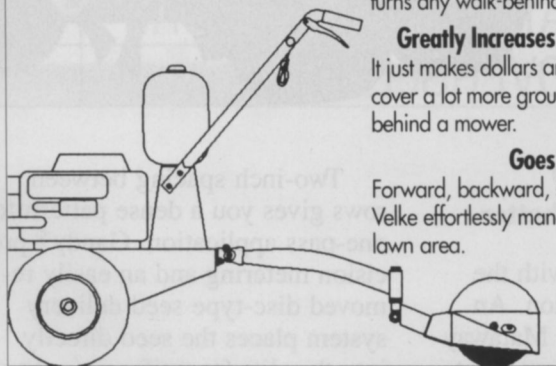
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A significant tactic to reduce the chances of unreasonable regulation is to get your customer base involved, according to Delaney. As members of the community, they can and should have impact on what happens in their city.

The PLCAA is working with the National Pest Control Association on a how-to book to stay informed of legislative issues.

Joint Venture Targets International Market

Ecolab Inc. and Henkel KGaA, Dusseldorf, Germany, have formed Henkel-Ecolab, a joint venture of their respective European institutional cleaning and sanitizing businesses.

Ecolab and Henkel each have a 50 percent economic interest in the joint venture, which operates throughout Europe. Henkel will serve as managing partner. The joint venture employs approximately 3,500 people and is expected to initially have about \$750 million in annual revenues.

Ecolab is the parent company of Chem-Lawn Corp., Columbus, Ohio.

In addition, Ecolab has acquired Hen-

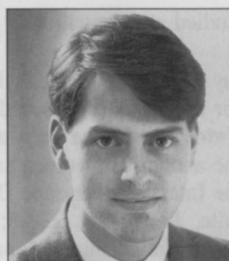
kel's institutional cleaning and sanitizing businesses in 19 countries in the Latin American and Asia Pacific regions. This adds approximately \$50 million in annual revenues to Ecolab's international operations.

Administrative and technical headquarters for Henkel-Ecolab are located in Dusseldorf, Germany. While the joint venture has its own manufacturing, training and R & D facilities, it also has access to the basic technology of both Ecolab and Henkel.

Foster Named Group Manager

Christopher Foster recently was promoted to group manager of *Lawn & Landscape Maintenance* magazine and *Pest Control Technology* magazine.

As group manager, Foster is responsible for overseeing



Foster

production, circulation, sales, editorial and future growth of the publications.

Foster started with GIE Publishing in August 1989. He has a BBA in business administration and international marketing from Schiller University, Heidelberg, West Germany, and is pursuing an MBA in financial information systems.

Herbicide Gets Federal Permit

BAS 514, an experimental product for the control of annual grasses and broadleaf weeds, has received a 1991 federal experimental use permit for more than 4,000 acres. A limited amount of product will be sold to cooperating researchers and commercial turf specialists for trials in selected states.

The experimental herbicide is based on a new active ingredient, proposed common name quinclorac. An application for full registration has been submitted to the Environmental Protection Agency.

BAS 514 is said to have shown good to excellent postemergence control of crabgrass, dandelions, clover and other broad-

(continued on page 60)

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Association News



The **Florida Turfgrass Research Foundation** received \$350,000 in matching funds from the state for its new Envirotron research facility.

Approved by the State of Florida's capital facilities trust, the money will be used to construct a laboratory dedicated to the development of methods to improve the environment.

The University of Florida campus in Gainesville will house the new facility. Construction is slated to begin later this year.

The Envirotron is the state's first environmental research unit. Scientists at the facility will investigate and study the effects of pollutants in groundwater; the effects of herbicides, fungicides and insecticides on the environment; the breeding of new grasses requiring less water; and biological control methods for turfgrass pests.

Water conservation strategies and the use of recycled water for irrigation will be

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studied at the facility.

Jay Conrad Levinson is the keynote speaker for two events sponsored by the **Associated Landscape Contractors of America**: the annual Conference and Trade Show of the Interior Plantscape Division, Nashville, Tenn., Oct. 22-25; and the Landscape and Grounds Management Con-

ference in Tampa, Fla., Nov. 17-21.

Levinson, an award-winning former vice president and creative director at J. Walter Thompson Advertising and at Leo Burnett Advertising, encourages small businesses to do inventive marketing based on small, but powerful ideas.

The Landscape and Grounds Manage-

(continued on page 11)

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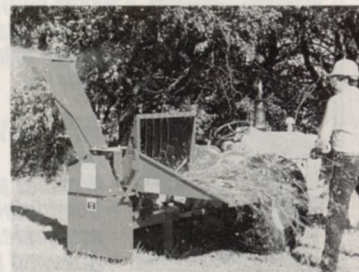
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Model 84



Model 12



Model 88

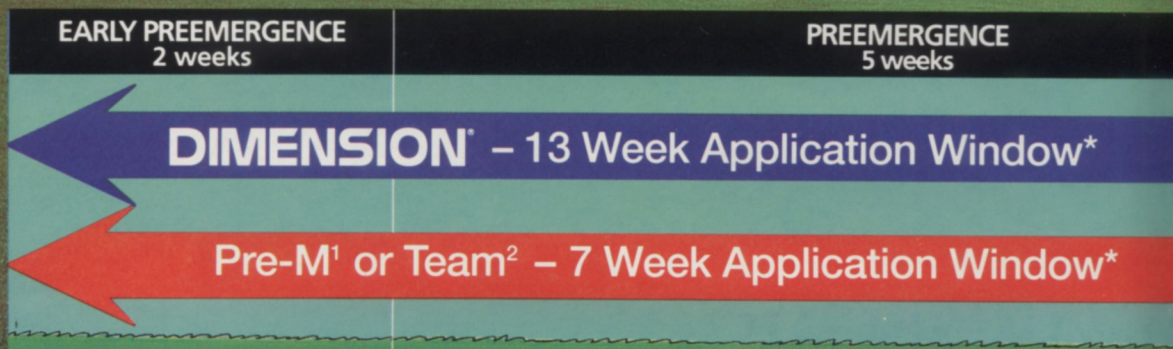
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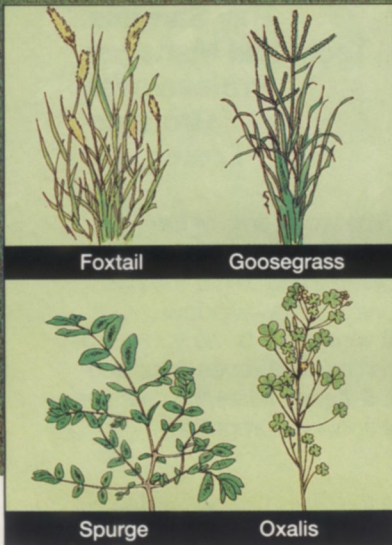
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DMP-1-257

Association News

(continued from page 10)

ment Conference will be held in November in conjunction with the Green Industry Expo, co-sponsored by ALCA, the Professional Grounds Management Society and the Professional Lawn Care Association of America.

The **American Association of Nurserymen** recently teamed up with Rotary International and Mothers Against Drunk Driving in support of President Bush's America the Beautiful Tree Planting initiative.

In April, AAN, Rotary and the U.S. Forest Service launched "Trees Around the World," with help from President Bush, who planted a tree with AAN President Rick Henkel at the White House. The program is part of Rotary's "Preserve Planet Earth" environmental platform. AAN provided technical information and AAN members provided trees and advice for local plantings across the United States.

A second program, "We're In It For Lives," links AAN members with MADD chapters nationwide for ceremonial tree plantings.

AAN is currently documenting member participation in the Rotary and MADD programs and in similar programs by members at the local level. Participants are encouraged to report their experiences to AAN so they may be shared with the industry.

Contestants are awaiting results of the Trophy Awards Program, sponsored by the **California Landscape Contractors Association**. Themed "Fiesta of Color," the program will award prizes to contestants in 28 categories — 20 in landscape installation and eight in maintenance.

Eight special awards will be given for best overall projects. Presented for the second year will be the Landscape Enhancement Award, honoring up to three companies that most successfully enhance the environment through landscaping.

An awards ceremony will be held Nov. 15 during CLCA's annual convention at the San Diego Hilton Beach & Tennis Resort. The association invites all those interested to attend.

The **Ohio Nurserymen's Association** recently adopted a \$500,000 goal for the Ohio Research Endowment Fund to bene-

fit the Horticultural Research Institute.

According to Jim Reese, ONA president, "HRI represents our industry's national commitment to research. Ohio has certainly benefitted from HRI-sponsored research, and we wanted to demonstrate our continued commitment by adopting this goal."

The Ohio fund is currently at \$145,000, the largest state association fund within HRI.

Since 1975, HRI has awarded more than \$52,000 to support research projects in Ohio. Funds given to HRI can influence federal dollars invested in research as well as attract additional state funds.

Sports turf managers from the Southeastern United States met in Clemson, S.C., for the second annual Carolina Sports Turf Institute. The event was sponsored by the **Sports Turf Managers Association** and its South Carolina chapter in cooperation with Clemson University.

The two-day institute emphasized athletic field weed and insect control, drainage and maintenance. It also offered a practical problem-solving seminar and provided solutions for low budget athletic field maintenance. ■

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Irrigation News

DROUGHT CONDITIONS FORCE NEW LANDSCAPING TECHNIQUES

WESTERN LANDSCAPERS and gardeners have three things on their minds — water, water and water. Or, rather, the lack of it. The pale shadow of a dusty drought continues to extend over most of California.

I'm no stranger to drought. My first after moving here was the Big Drought of 1975-77. Our current version, which already has lingered for five long, parched years, has exceeded that earlier period in its impact on wildlands, suburbs and cities.

The 1970s forced me to learn how to
(continued on page 14)

As drought and water availability concerns linger, drip irrigation has filled a niche.



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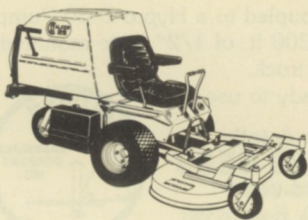
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Drought

(continued from page 12)

live with a drought. This time around, I'm honing my skills — focusing on gray-water systems, drip irrigation and xeriscape (dry) landscaping techniques.

Looking back on my first experiments with gray-water systems 15 years ago, I realize they were a Rube Goldberg collection of tubes, hoses and other contraptions tapped into my house's plumbing system. Few people then were willing to consider the use of gray water — "waste" water from sinks, showers and laundries — to irrigate their ornamental landscaping and fruit trees. Many thought it was unsanitary, and the California Department of Health is still a major source of resistance.

But now reasonable government officials have allowed common sense to triumph over no-risk health policy. In 1989, Santa Barbara county became the first in the nation to permit permanent gray-water use by contractors and homeowners, and last July the city of San Luis Obispo in southern California followed suit.

You'll have no problems with installing and operating gray-water systems if you remember the following:

- Always distribute gray water to the

landscape as soon as it is generated. Storing it can breed bacteria.

- Don't allow gray water to puddle on the surface. Pipe it through minileaching fields of gravel, or a drip-irrigation system that is covered with four inches of mulch to prevent exposure to the surface.

- Use simple soaps and detergents (no products containing boron or borax) and greatly reduce or eliminate bleach in the laundry.

In my experience, and in that of many people I know, gray water is not a crisis intervention scheme, but one of the tools that help our gardens flourish: Plants actually grow better than they do with water from other sources.

The Big Drought also taught me how to get the most out of fresh water with drip irrigation, a new idea then that's now commonplace. To my mind, the technological advances with this method have practically exceeded the revolution in computer technology. The greatest of these is the redesign of the emitters themselves, the gadgets that control the release of water — as little as half a gallon per hour. (By contrast, a conventional garden hose releases 300 to 600 gallons an hour.)

In-line emitters, my favorites, come prefabricated inside the drip-irrigation

hosing. Because they're protected, they aren't damaged by rough handling when you plant, weed and mulch.

But the most important lesson I've learned from the Big Drought is to choose plants that practically eliminate the need for irrigation. Many ornamental Mediterranean plants are more drought resistant than a lot of native California varieties.

These truly dry plantings feature santolinas, lavenders, a ground cover of summer lilac, various kinds of rosemary and a chartreuse perennial spurge, to name only a few of the attractive possibilities.

Has all this experimentation been worthwhile? Judge for yourself: My current water use, including all indoor needs and some 800 square feet of landscaping, averages less than 30 gallons a day year-round. That compares to a national average of 70 gallons and a typical California average of 150 to 280 gallons.

My goal is to drop this water use to less than 20 gallons by the year 2000. — Robert Kourik

The author is a former landscape contractor who now makes his living as a freelance writer. Based in Occidental, Calif., the author's work has also appeared in New Choices magazine.

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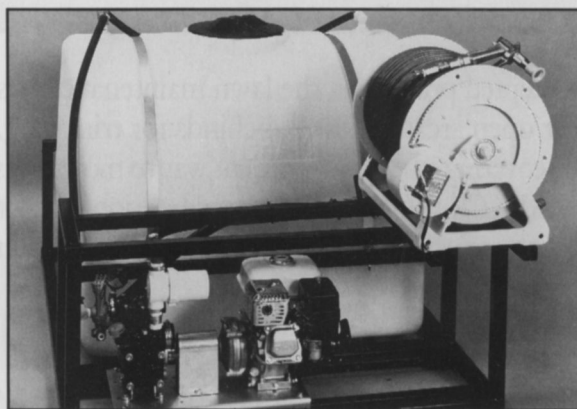
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publications, and affiliated companies.

4. Enter by completing and mailing the official entry form available in the monthly issues of *LLM* magazine, your local distributors or at various locations at the Green Industry Expo '91, Tampa, Fla., November 18-20, 1991, or by printing your name, address, city, state, zip code, phone number and driver's license number on a plain 3-in. by 5-in. piece of paper and mailing it to *LLM's* "Service Vehicle Sweepstakes," 4012 Bridge Ave., Cleveland, Ohio 44113, Attn: Fran Franzak, or depositing it in one of the official entry boxes located at the GIE exhibition hall before noon, November 20, 1991. Not responsible or liable for lost, late, stolen, mutilated, illegible, incomplete, postage due or misdirected entries. No mechanical reproductions permitted.

5. PRIZE — one 1992 Chevrolet truck of your choice valued at \$18,000.00. The winner will be determined by a random drawing of all entries received, to be conducted 1:00 PM on Wednesday, November 20, 1991 at the GIE exhibition hall. The winner will be announced and notified by U.S. mail and/or telephone. Prize notification returned as undeliverable as addressed will result in an alternate winner being drawn and notified until a qualified entrant is awarded the grand prize. Only one grand prize will be awarded.

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PRICING STRATEGIES

ARE KEY TO SUCCESS IN LAWN MAINTENANCE

Changing the perceived value of lawn maintenance services is high on the agenda of Neal DeAngelo.

By Kevin Tanzillo

NEAL DEANGELO WAS SURE of two things when he graduated from high school. He wanted to be his own boss and he wanted to work outside.

He started Lawn Specialties in his hometown of Hazleton, Pa., with a lawn mower and a dream. That was 13 years ago, and now the company he nurtured may be heading for its first million-dollar year.

As a senior in high school, DeAngelo began cutting lawns. That was the extent of his business for the first three years. It wasn't until 1981 that he began complete lawn care.

"At 18 years old, analyzing my possibilities, two factors contributed to my decision. One was that I enjoyed working outside. The other was that I didn't have any money, so I needed something that required a limited amount of capital."

His assets were a lawn mower and a pickup truck, and his first year's sales were, in his own words, "peanuts."

"I don't even remember a figure. How many lawns could a guy mow in the summer? What could we have done, maybe a couple thousand dollars?"

He continued to live with his parents, enabling him to channel all his profits back into the business. The quality of his work built his customer base up to 250 within a couple of years. It was then that he decided to get into chemical lawn care. In the winter, he pumped home heating fuels for a local oil company. In return he was able to use the oil company's tank trucks for lawn spraying in the summer.

About the time that Lawn Specialties went heavily into chemical lawn care, it quickly cut back its mowing business, quitting that entirely within two years.

"We wanted to invest as much of our time and efforts into chemical lawn care as possible. We were working with limited money, and we had to direct it to one area. Chemical lawn care was the more profitable, and a bigger growth area."

DeAngelo's younger brother Paul, 26, joined him in the business in 1981. DeAngelo is president and his brother is secretary-treasurer in the partnership company that posted sales of \$900,000 in 1990.

The goal for 1991 is an even million dollars.

Lawn Specialties has eight year-round employees, 30 seasonal employees, and a fleet of 18 vehicles, ranging from a minivan to 600-gallon tank trucks for residential lawn care and a 1,500-gallon tank truck for industrial weed control.

The firm serves a residential market within a 50-mile radius of Hazleton and within a 10- to 15-mile radius in Allentown, Pa.

In its commercial and industrial work, Lawn Specialties serves customers up to 150 miles away, from the Maryland state line to northern New Jersey.

LEVELS OF SERVICE. Lawn Specialties offers residential customers three levels of care.

Standard care is a basic five-application program that consists of fertilizer, weed control, surface insect control and preemergent crabgrass control. Premium care is the next step. That includes guaranteed grub control and a lime application.

The Gold Club program includes all the standard and premium services



Lawn Specialties targeted the lawn maintenance market as its focus because of its growth potential in the '80s. Phil Voystock oversees the lawn care division.



The industrial weed control division serves customers up to 150 miles away, from the Maryland state line to northern New Jersey.

LAWN SPECIALTIES

HEADQUARTERS:
Hazleton, Pa.

BRANCH OFFICE:
Allentown, Pa.

FOUNDED:
1978 by
Neal DeAngelo.

OWNERS:
Neal and
Paul DeAngelo.

PRIMARY SERVICES:
Residential and
commercial lawn care,
primarily chemical
applications, industrial
weed control and tree
and shrub care.

EMPLOYEES:
8 year-round;
30 seasonal.

1990 SALES:
\$900,000



plus aeration, slit-seeding of the lawn as many times as is needed, crack and crevice spraying and disease control.

"Since we have had this three-tiered program, the number of premium and gold customers has increased," he said. "Right now we have about 5 percent in the gold club, 20 percent in premium and 75 percent on standard."

Standard or premium customers can buy individual gold club services without moving to the next level, DeAngelo added.

The company also offers tree and shrub care, evolving from a single late fall application into a full five-application program, as well as shrub bed weed control.

The same range of services are offered on the commercial side of the business, along with non-selective weed control in parking lots or other areas.

Lawn Specialties has about a 50/50 commercial-residential split, and plans to keep the ratio that way, DeAngelo said.

The first few years were tough ones for Lawn Specialties.

"My age worked against me in the early '80s," DeAngelo recalled. "It was more difficult for me, in my early 20s, without having the people skills to find and keep good people. But experience is the key. The first few years as I hired people to help me out on the side, I saw what I did wrong and just

developed the skills.

"I attended a lot of seminars and listened to a lot of tapes — personal improvement is very big with me — but most of it just came through pure experience."

Lawn Specialties grew fastest from 1983 to 1986. "Our biggest problem then was being able to get the money to buy enough trucks and hire and train enough guys fast enough. There was more work out there than we could do," DeAngelo said. "They were boom years in the lawn care industry and in this part of the country. Chemical lawn care was new, too."

ALWAYS A MARKET. Could another ambitious high school sen-

ior out there today duplicate DeAngelo's success? His answer is a qualified yes.

"There are always customers out there for someone who is willing to work hard and who provides good service for what they charge," he said. "But it would be different today because when I went into it, the market had just opened for chemical lawn care.

"Someone starting out now would have to become a more diversified company and stay that way. It could be done again, but the growth won't be there like it was in the '80s.

There isn't much that DeAngelo would change if he had it to do over. He said he always managed

to keep on top of the industry and the local economy and made the right decisions at the right times.

Lawn Specialties has reached a point, DeAngelo conceded, where "The only way we can grow is through acquisitions or expanding into new markets. In our current market we feel we have done everything we can to maximize it."

Right now, the strategy is to acquire companies in the existing market. DeAngelo said he's looking at a couple of possibilities and may make a move in the next six months.

In residential lawn care, Lawn Specialties controls about 20 percent of the market in their service region, DeAngelo estimated, and about 70 percent in Hazleton itself.

"Our major advantage is that we are one of the oldest companies in our area. We still have that local flavor, and we employ all local people. Our manager, for instance, has been with us eight years," he said. "Also, I think that we run a very customer service oriented program. We tend to go out of our way for customer satisfaction rather than looking at it from a profit-making standpoint. Our competitors also don't offer the range of services we offer."

PRICE WARS. DeAngelo said his competitors often use price as a weapon against Lawn Specialties, but that doesn't bother him.

"We have always been the highest priced or nearly highest priced company in the area. Small companies and national companies have come in and tried to really undercut prices, but I never changed our company philosophy and went to that low-ball pricing.

"I priced my services for the market. People who didn't want to pay our prices went to the competition. I wasn't trying to be all things to all people."

Bringing up the subject of pricing to DeAngelo is like waving a red flag in front of a bull. Some contractors' pricing strategies rattle him.

"Because of our pricing strategies, we as an industry have changed the customer's perception about the value of our service," DeAngelo said.

"We charge the same for a corrective treatment as we do for maintenance. That is one of the biggest mistakes the lawn care industry has made over the years. If we charge \$50 for the first treatment to correct the lawn, we go ahead and keep charging the same price per application. What we should do is come in at \$75 or \$80 for that first remedial treatment and then charge \$50 per application. We create a perceived value of staying with lawn care."

It's important that everyone in this business pull together ...and pay their fair share of the tab.

Discounting the first treatment is an incentive to leave rather than stay with the program, he added. "What we are doing is shrinking our own market.

"I don't know that I'm ever going to change this perception. I haven't seen one company change yet. But if I accomplish nothing more than stopping people from discounting the first application,

maybe I will have accomplished something," he said.

LEARNING TO DELEGATE. Like most people who start and nurture a business, it took DeAngelo a while to learn the art of delegating responsibility.

"I was the type of person who was always a perfectionist and wouldn't delegate," he recalled. "But as I got involved with professional associations, it took time away from the business. That forced me to delegate responsibility to employees who were capable; I just hadn't given them the chance.

"Once they accepted that responsibility, they all did a better job in each of those areas than I could have done because I just couldn't do it all."

Joining DeAngelo and his brother, Paul, on the management team are: Phil Voystock, lawn care manager, who oversees training programs and is in charge of customer sales and service; Danny Pozniak, who handles the technical end of the business, doing all tank mixing at the end of the day and arranging all routing; and Wayne Hug, who oversees Lawn Specialties' industrial weed control business.

Applying himself as energetically to the Professional Lawn Care Association of America as he did to his business, DeAngelo won a spot on the association's board in 1988, after five years of membership.

"I wanted to be on the board for two reasons. This was the industry that was treating me so well, and it was time to take my turn and do something in return. Also, what I could learn from it would be worthwhile," said DeAngelo, now PLCAA president.

"Once I got on the board, as with most things I do, I dug in

and dedicated my time and made a commitment to the association. My fellow board members elected me secretary-treasurer, then rewarded me again by putting me in as president."

DeAngelo is also president of the Lawn Care Association of Pennsylvania, which he helped found a year and a half ago.

Interviewed just after the U.S. Supreme Court's decision permitting local governments to impose more stringent regulations concerning the use of pesticides than set forth in the Federal Insecticide, Fungicide and Rodenticide Act, DeAngelo talked about what the decision means to the industry:

Q. How should lawn maintenance contractors deal with this decision?

A. What is important is that everyone in this business pull together. Everyone has to realize that it will take some battles to get through this. They have to be willing to pay their fair share of the tab and the time commitment it will take.

Q. What will that involve?

A. Well, just because there might be a battle in the western part of the state that doesn't affect me, that doesn't mean I shouldn't get involved. I have to be willing to put money into a state or national fund and take my own time to fight these battles.

We are going to have many instances where municipalities are going to legislate. It is nice to know that someone is out there, an association or group of individuals you can call on who have an organized effort in place.

Q. What if it happened to you?

A. If I was the lucky guy and Hazleton wanted to pass anti-lawn care regulations, it would cost thousands of dollars to fight it and lots of time spent at council meetings. I am willing to pay my share of the dues, and I will look to other people for help.

People on the other side of the state may not be so willing to help, but they have to realize that the whole industry, across the entire country, must be willing to commit. Independently we will all struggle. Collectively, it will be easier on all of us.

Q. Do you expect many cities to start enacting anti-lawn care regulations? What kinds of regula-

Brothers and partners, Neal and Paul DeAngelo.



tions can we expect?

A. A lot of cities have been waiting for the outcome of the Supreme Court decision. The ones that have attempted regulations in the past will be the first to try again, followed not far behind by others.

I think the regulations will mainly deal with prior notification and posting, but there will be some attempts to completely ban pesticide applications.

Q. What kind of a burden would prior notification put on contractors?

A. It depends. When you talk about prior notification, are you talking about the customers, the neighbors or anyone within 1,000 feet? Is prior notification OK in writing, or does it have to be a verbal notification?

Is it enough to say we will be there next week, or do we say we'll be there in 24 hours or 72 hours? From a practical standpoint, with the weather and truck break downs, will it be possible to call everyone for tomorrow's applications?

Q. What can contractors do to prevent efforts to enact local laws?

A. The first thing to do is try to eliminate having dissatisfied people. Take the time that is required to satisfy the concerns of customers or non-customers.

If it's a matter of someone with a cat they say is sensitive to chemicals, refer them to veterinarians. Refer customers to technical people at the county level or at a state university.

But once those people have gone to the city council, the only thing you can do is try to get to the council as much information as you can about the industry, its success and our track record. Also, call on the associations to assist you in what kind of approach to take.

But do something. The earlier you act, the more effective you can be at defusing it.

Q. What will be the worst thing to come out of the Supreme Court's decision?

A. In addition to all the local regulations that will have to be fought, we will have negative media coverage to go along with it.

That is what is difficult to respond to. You can educate your customers, but how do you reach the people who will never become customers because they read all these negative reports?

What do you do about that? I ask that question not because I have an answer, but because that is the big question. It is difficult to answer. All you can do is be ready to respond to questions from your customers, non-customers and the media. Also, keep educating your customers so when they read something negative they have at least had the chance to hear the facts.

Q. As far as pesticide application goes, what do you see as a workable method of certification?

A. The way I see it working best is the way Pennsylvania does it. A business itself gets a license by category, such as lawn, tree and shrub, right of way, industrial weed, etc. For a business to be certified, it must employ at least one certified applicator and have ade-

quate insurance.

The next level is the commercial applicator, the individual who can apply basically any product in one of those categories. The next level is a technician, who has to be trained for at least 30 days by a commercial applicator. He is also licensed in just one category and can only apply general use pesticides, nothing restricted, and he can only apply them while working for the company that has certified him.

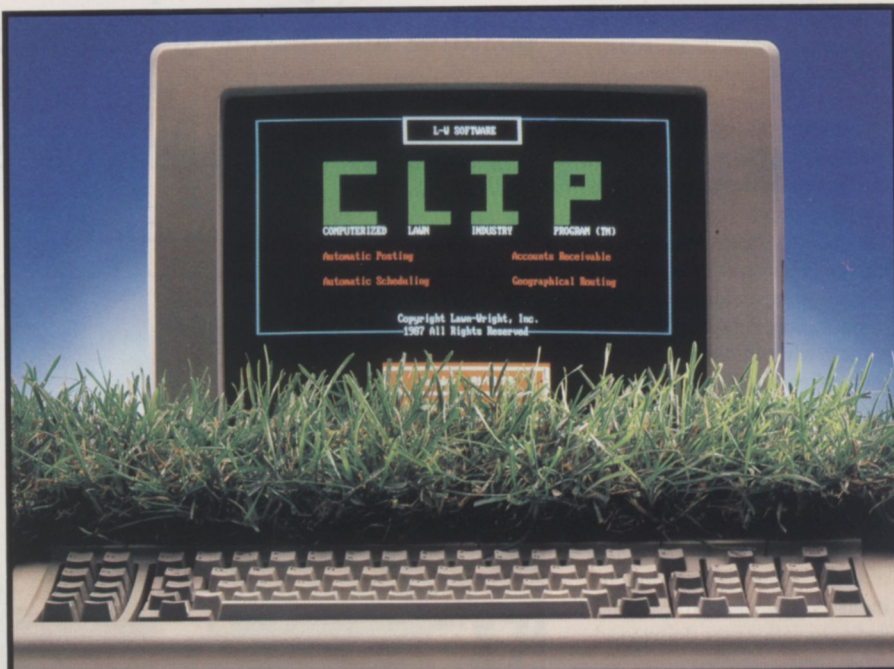
This three-tiered system seems like a nice approach. A technician does not require state testing, but to get the commercial applicator's license you need to pass a state test.

Q. How should the PLCAA fit into this?

A. We have been looking at a national certification and training program for two years now. Whether it will ever come into being or not, I don't know. It is a difficult thing to try to accomplish — training and certification that's acceptable to all states.

Once you do get certification in place, who is the overseeing body? Certainly PLCAA would have an active role, whether in the actual training itself or in distribution of training materials. To what level depends on what comes out of the program itself. ■

The author is a free-lance writer based in Norwalk, Ohio.



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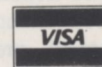
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GRACE UNDER PRESSURE

Self-regulation, proactive postures and increased communications are all methods of improving the cloudy pesticide atmosphere.

By Julie A. Evans

POSTING. ADVERTISING. Local regulations. Certification. The list of pesticide-related issues is long and growing. Increasingly, landscape maintenance professionals are finding that change is the only constant in an industry besieged with regulatory and legislative affairs.

The easy thing to do, of course, would be to dodge the issues and run for cover. But many in the industry, especially the Professional Lawn Care Association of America, have chosen a more proactive stance on pesticide issues.

Education, not avoidance, is the tonic to what ails the industry. By facing the issues head on, the prudent professional can anticipate and field questions with confidence. A thoughtful response goes a long way in building client relations.

Presented here are a sampling of some of the issues facing the industry, and what professionals and associations are doing to address them.

UNDER SIEGE. Pesticide use is integral to success for many in the industry. In fact, more than half of *Lawn & Landscape Maintenance* readers offer pesticide application (turf) services and plan to spend nearly \$350 million on pesticides in 1991.

If pesticides are so popular, then why are they under attack? Some blame the media, with news stories often biased against pesticide use. Others point to Earth Day awareness and the movement away from chemical-laden products. Both points are valid.

But many look within the landscape industry itself and see a basic communications flaw.

"Communications is one of the areas in the industry where we're not doing a good job. We're very good technically, but we're not good communicators," said Tim Doppel, president of Atwood Lawn Care, Sterling Heights, Mich.



Increasingly in the spotlight, the push is on to better train professional applicators.

To promote professionalism, Doppel said, he constantly reminds employees that they are in the public eye. He also advises them to watch out for unprofessional acts committed by others.

"The people who are doing a good job have to turn in the ones who are not," he said. "Unless we police ourselves, we are going to be in all sorts of hot water."

Don Burton, manager for Lawn Medic, Bergen, N.Y., agreed that a proactive communications stance is important in building client trust.

"There is a more heightened awareness due to media that pesticides could cause problems. We address pesticide safety head on and provide customers with the most recent information to show

them that their fears are unfounded," he said.

Disseminating positive information to the media is another successful strategy to combat pesticide illiteracy. Rick Steinau, president, Greenlon Lawn Care Services, Cincinnati, Ohio, positions himself as a willing media source. When pesticide-related questions arise, he makes himself available for interviews.

But Steinau doesn't just sit around and wait for the press to contact him. He aggressively seeks media attention through a public relations campaign.

"We do a lot of public relations and talk about positive events," Steinau explained. "I send press releases to major newspapers, television stations, business magazines, selected radio stations. Topics vary, but they focus on the positive things that pesticide applicators are already doing and that are not being reported."

Steinau cautioned that careful preparation is needed before approaching the media. "You just have to be very careful and remember that they are working on sound bites. If you're really smart, you can sit them down before the interview and talk about what is going to be covered before the interview. Give them certain guidelines."

ADVERTISING. The lawn and landscape maintenance industry is trying to implement a few guidelines of its own, as lawn care advertising is under scrutiny these days. Currently, five cases are pending at the Federal Trade Commission. Four of those cases involve companies providing organic lawn care.

As state attorneys general consider a resolution about false and misleading lawn care advertising, PLCAA is working with the FTC and the Environmental Protection Agency to come up with guidelines of its own. The guidelines

(continued on page 24)



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Pesticides

(continued from page 22)

apply to all communications with the general public, written and spoken.

Environmental/health and safety issues. The PLCAA recommends that their member lawn care companies use the following language in communications with their customers: "These products have been reviewed by EPA and have met criteria for the registered use(s)." The EPA does not officially "approve" a product, rather EPA registers products for use according to label instructions.

When using the statement "EPA-registered," always include the definition "Registration indicates that the pesticide, when used according to label directions, will perform its intended function without unreasonable adverse effects on the environment. EPA defines unreasonable adverse effects as any unreasonable risk to man or the environment, taking into account the economic, social and environmental costs and benefits of the use of any pesticide."

Avoid any statement that characterizes any pesticide as "safe," "nonpoisonous," "low in toxicity," "biodegradable," "non-toxic" or "harmless," and do not use any terminology that is false or mis-

leading or in violation of federal or state law, with or without a qualifying phrase such as "when used as directed."

In legal circles, the word 'safe' indicates the absolute absence of risk. Since nothing meets that definition, it should never be stated that "a material is safe." Avoid safety comparisons between liquid and dry applications, or organic, natural and synthetic products. Such comparisons include, but are not necessarily limited to, references to toxicity, drift, odor and exposure.

When referring to organic or natural fertilizers and/or pesticides, a breakdown of the fertilizer and/or pesticide analysis should be given. This breakdown should include percentage of natural (derived from animals or plants) vs. synthetic (man-made) components contained in the fertilizer and/or pesticide.

The term "integrated pest management" should only be used to describe programs designed to integrate to the extent possible the basic management areas of fertilization, irrigation, mowing and cultural, cultivar selection and pest control, to achieve customers' expectations.

Consumers should be guided away from the concept of a perfect, pest-free landscape. Rather, they should be guided to unders-

tand and accept integrated pest management practices, which control/manage unwanted weeds, insects and diseases.

Consumer issues. Before reaching an agreement with customers, state what services are included. Disclaimers, if any, should be in a type size no more than one point smaller than the body of the text in print advertising. When no body text is incorporated, disclaimers should be no smaller than 9-point type.

Disclaimers for broadcast media should be made at the same decibel level and speed as the majority of the commercial.

When discussed, price of the service should be fully disclosed. The existence of taxes, surcharges or other applicable service charges, if any, will be revealed.

All advertising should comply with the appropriate regulations and restrictions of federal and state laws.

SENATE HEARINGS. The PLCAA has tossed its hat into more than one regulatory arena. Perhaps nowhere was its proactive stance better exemplified than during the Senate hearings on posting and prenotification earlier this year.

Appearing before a Senate subcommittee, Ann McClure, executive vice president of PLCAA,

testified that "...our members are prepared to work with Congress and other interested parties to assure that any legislation ultimately adopted protects both human health and the environment, while at the same time recognizes the practicalities of providing lawn care services."

The jury is still out as to if and when regulations will be set in motion; but the industry appears to have emerged from the experience as a consolidated voice in Washington and on the home front. And that voice will need to be heard again, as the industry now faces a devastating blow from the nation's highest court.

'WE LOST.' On June 21, the Supreme Court handed down a decision that will have long term ramifications for the landscape maintenance industry. In *Wisconsin Public Intervenor v. Mortier*, the Court ruled that the Federal Insecticide, Fungicide and Rodenticide Act *does* permit local governments to impose more stringent regulations of their own.

Allen James, executive director of Responsible Industry for a Sound Environment, said that a coalition is being developed to represent agricultural and non-agricultural interests impacted by the decision. The broadbased coalition will evaluate how in-

DOES ODOR CREATE NEGATIVE PERCEPTION?

CONSUMERS OFTEN associate pesticide use with strong odor. But does that odor create a negative perception of the product?

Well...yes and no, according to industry sources.

"Some people demand odor, some people hate it," said Rick Steinau, president, Greenlon Lawn Care Services, Cincinnati, Ohio.

"Some people expect odor. If they don't smell it, they don't think you're putting anything down."

Mark Laube, vice president for development, Lawnmark, Hudson, Ohio, offered a similar explanation: "The smell of products can be a negative, or it can definitely be a positive. It's a signal that something has been applied and to stay off the lawn."

"It used to mean that if the product smells, it works," said George Raymond, sales manager of the professional products group, Lebanon Chemical Corp., Lebanon, Pa. "Now it means that a chemical

has been sprayed and could be dangerous. That's the consumer perception. Professionals realize that's not the case."

Jim Budzynski, Dimension product manager for Monsanto, St. Louis, Mo., agreed that odor is a perception issue. "If I can smell it, I must be injured — that's the perception, and anything a manufacturer can do to minimize that would be a plus. That's one of the reasons for the trend toward more granular applications."

Solvent-based formulations tend to have higher odor, Raymond explained. Granular formulations don't contain solvents, so they tend to have lower odor. Budzynski said that this may be one of the reasons for the trend toward granular applications.

So do odorless pesticides have the marketing edge? "It's not going to be an advantage to be odorless; it's a disadvantage to have an odor," Budzynski said.

"We generally try not to decide on a product on odor alone," Steinau said. "Cost effectiveness and best overall results are more important. If low odor happens

to be a bonus, we'll take it. But it's very difficult to base product choice on low odor."

Laube said he would "definitely choose a product that had low odor as opposed to one that had a foul odor" — provided that both products were effective.

Certain basic landscape maintenance practices will reduce odor problems, Raymond said. These include selecting appropriate times for spraying; reviewing the compounds you're using for objectionable odor; and testing to see if a masking or control agent would help.

Bart Sheeler, president of ProLawn ProScape, Cincinnati, Ohio, said the integrated pest management approach goes a long way in minimizing odor, thereby allaying customers' fears of pesticides.

"If the grass is green and weed-free, the customer knows the grass is healthy," Sheeler said. "Most of our customers are results-oriented. Just knowing they're not getting as much pesticide on the lawn gives them a good feeling."

dustry can best respond at the federal and state levels.

"FIFRA needs to be amended to accomplish uniformity of pesticide regulations at state and federal levels," James said. "It's unfortunate that the nonagricultural industry, particularly those most involved in municipalities like lawn care, are going to be the groups negatively affected by the rulings."

Mark Laube, vice president for development, Lawnmark, Hudson, Ohio, put the ruling into personal perspective: "In Northeast Ohio alone, there are over 100 different communities that could potentially write different regulations, which we have the burden to follow. That becomes a nightmare."

"Hopefully, local organizations can have a voice in the communities to explain our concerns and put information in front of the decision makers."

George Raymond, marketing manager for Nor-Am Chemical Co., Wilmington, Del., expressed deep concern that local municipalities are ill-equipped to determine pesticide regulations. He also noted that the ruling presents complications for the manufacturer.

"It's difficult enough to label requirements that meet all federal and state requirements," Raymond said. "If we have to go down to county and city requirements, that may be impossible."

"The thing that is bothersome is that there is no real benefit to the consumer. There are a lot of fears about things that are not a concern. The consumer thinks this ruling will protect him from all sorts of environmental consequences, when in fact they aren't occurring at all."

Already, some municipalities have taken the initiative to enact restrictive regulations against pesticide use. An ordinance was recently introduced in Lake Winnebago, Mo., for example, that would regulate and prohibit the use of "certain lawn and tree chemicals within the city...and require the licensing of all lawn and tree sprayers and pest control applicators."

The ordinance was tabled, according to Lake Winnebago Police Chief Steve Untrif. "There was a lot of opposition to it from people in the industry and a lot of residents."

The Lake Winnebago incident

STATES REQUIRING COMMERCIAL FIRMS TO PROVIDE NOTIFICATION WHEN APPLYING PESTICIDES TO RESIDENTIAL LAWNS

State	Direct Notification				Posting	Registry
	Advance		When applied			
	Customer	Neighbor	Customer	Neighbor		
AZ			X			
CO			X		X	X
CT	X	X ^a			X	X ^b
DE	X ^a	X ^a	X ^a	X ^a		
FL	X ^a		X ^a		X	X
IL		X ^a	X	X ^a	X	
IN			X		X	
IA	X ^a	X ^a	X ^a	X ^a	X	
KS			X			
KY	X	X ^a	X	X ^a	X	
ME		X ^a			X	
MD	X ^a		X		X	X
MA	X ^a		X		X	
MN			X		X ^c	
NH	X					
NJ	X	X ^a			X	
NM			X ^a			
NY	X				X	
OH		X ^a	X	X ^a	X	
PA		X ^a				X ^d
RI	X	X ^a	X	X ^a	X	
VT	X ^a	X ^a	X	X ^a	X	
WI	X ^a		X		X ^e	

Note: Montana and South Carolina require notification for restricted-use pesticides. Hawaii may require posting when highly toxic pesticides are used. North Dakota requires posting if required by label or if re-entry period is 48 hours or more.

^aNotification provided upon request.

^bAll individuals on the registry including, but not limited to, chemically sensitive.

^cState statute allows home rule cities to pass posting ordinances.

^dParticipation by commercial firms is voluntary.

^eWhen pesticide label prescribes time interval for safe re-entry into treated area.

highlights the need for public education to combat consumer misconceptions about pesticides.

It also shows how industry cooperation can bring positive results — in this case, a tabled ordinance.

CERTIFICATION. Certification presents yet another aspect of pes-

ticide use that may soon see some changes. The EPA is now in the process of upgrading its certification requirements for applicators of restricted use pesticides. (Under FIFRA, EPA does not currently have the authority to require certification for general use pesticides.)

According to Tom Delaney, di-

rector of state government affairs for PLCAA, the landscape maintenance industry doesn't use many restricted use pesticides — but that could change. He said that the EPA may eventually classify more pesticides as restricted, rather than general use, especially in light of increased environmen-

(continued on page 62)

TESTING THE WATERS FOR CONTAMINATION

While the EPA aggressively pursues sources of contamination to the groundwater, turf pesticides are receiving a clean bill of health from university research.

By Julie A. Evans

AS SURE AS OLD Faithful erupts on the hour, another news story about pesticides and groundwater will spring from the pages of the consumer press. But not all news is bad news these days. University researchers are conducting studies that show that well-maintained turf *improves* water quality, contrary to public perception.

Researchers Thomas Watschke of The Pennsylvania State University, Martin Petrovic of Cornell University and Harry Niemczyk of The Ohio State University have set out to prove that healthy, well-maintained turf actually serves as a deterrent — rather than conduit — to pesticide runoff.

Their research may help stem the growing tide of negative publicity that ultimately tarnishes the image of those who apply the pesticides — including the lawn and landscape maintenance professional.

GROUNDWATER. Why the widespread fuss about pesticides and groundwater? Because groundwater comprises 96 percent of the world's total water resources. In fact, 90 percent of rural residents and 50 percent of people in the United States rely on groundwater as their drinking water source.

Groundwater forms when water moves below the earth's surface and fills in empty spaces around rocks and in porous materials. It moves slowly, as little as inches per year. Rainfall replenishes groundwater supplies as it seeps through the ground or joins surface waters.

Pesticides enter water several ways. They may reach water accidentally when area land has been sprayed, or they may be applied directly to the water for aquatic plant control. Also, pesticides attached to soil may wash into streams, and some chemicals may enter the water after being

washed out of the air by rain.

Groundwater contaminants are difficult to remove and remain in the water for several years. Thus, concern for groundwater is heightened by knowledge that contaminants applied today will persist for a long time.

EPA STEPS IN. Last November, the Environmental Protection Agency published its five-year National Survey of Pesticides in Drinking Water Wells. The results were encouraging: Although 10 percent of the nation's community drinking water wells and about 4 percent of rural domestic drinking water wells have detectable residues of at least one pesticide, less than 1 percent of the wells have pesticide residues above levels considered protective of human health.

The survey also studied nitrate levels. EPA estimated that more than half of the nation's wells con-

tain nitrates, with about 1.2 percent of the community wells and 2.4 percent of the rural wells showing detections above the 10 parts per million maximum contaminant level established to protect human health.

Phase II of the National Survey of Pesticides in Drinking Water Wells is expected to be released later this year.

In response to EPA findings, The Professional Lawn Care Association of America countered that the community drinking water wells in the survey are typically located in agricultural, not suburban communities where lawn care services are much more typically used. Also, PLCAA cited research at Penn State University, which demonstrated that high quality turfgrass inhibits percolation and may even provide water treatment.

PLCAA concluded that the residues found in the survey are not





Groundwater comprises 96 percent of the world's total water resources. Therefore, it's a highly visible — and often controversial — subject. Photo: Dave Miethke.

RESEARCH. While the EPA studies groundwater prevention strategies, university researchers are examining a much more elementary, but no less important question: Do pesticides contribute to groundwater contamination.

"If there are data to support the conclusion that pesticides applied to turfgrasses pose a real potential for contributing to groundwater contamination, I'd like to see it," said Harry Niemczyk, professor of turfgrass entomology at OARDC/Ohio State University. "There are too many assumptions this is the case without any data to back it up."

For more than six years, Niemczyk has been studying the vertical mobility of pesticides used in turfgrasses with and without thatch. The bottom line of his research, Niemczyk said, is that those insecticides applied to turf with thatch pose little or no potential for downward mobility.

"Thatch is one of the best pesticide filtration systems that we have. It's a natural pesticide filtration system."

Niemczyk's study included nine insecticides and evaluated their vertical mobility to the first, second, fourth and in some cases, tenth inch below the thatch.

For turf without thatch, Niemczyk found that if the turf has been established for any length of time, the organic level for at least the first two inches of soil often exceeds 10 percent. He said that pesticides moving through that zone have a great probability of being tied up by that organic matter.

"Even though the leaching potential in turf without thatch is increased to some degree, the probability for groundwater contamination is still minimal, if at all," he said.

Last year, Niemczyk completed a study of the vertical mobility of six preemergent herbicides, including Dacthal and its two metabolites. DCPA, whose parent compound is marketed as Dacthal, and atrazine were the two

pesticides detected most frequently in the EPA National Survey of Pesticides in Drinking Water Wells.

According to Niemczyk, pre-emergent herbicides applied to turf with or without thatch are not mobile. "The tenth inch commonly showed zero residue of the parent compound," Niemczyk said. "The diacid metabolite of Dacthal was found at low levels in the tenth inch zone. It's only the metabolite that moves, not the parent compound."

Niemczyk concluded that "the parent compounds of the six pre-emergent herbicides studied show no potential for contributing to groundwater contamination."

At Penn State University, Thomas Watschke also has been examining pesticides and groundwater. His findings have been published in "The Effect of Nutrients and Pesticides Applied to Turf on the Quality of Runoff and Percolating Water."

Watschke's research looks at the movement of pesticides and nutrients that have been applied to runoff areas and turfed areas that are sloped. His strategy has been to irrigate heavily, capture the runoff and analyze samples for substances that may or may not have moved.

To date, Watschke said, they haven't detected any pesticides in as low as a part per billion; in those instances where they did detect some amount of pesticide, "in almost all cases they're below the public drinking water standards."

Watschke concluded that the impact of well-managed turfgrass on water quality actually appears to be positive. He based his conclusion on experiments that showed that "dense, quality turfgrass stands...affect the overland flow process to such a degree that runoff is insignificant" even under the most extreme weather conditions.

In addition, Watschke found that not only does high quality turfgrass inhibit the percolation of fertilizers and pesticides into

the result of products used by lawn maintenance companies. Rather, PLCAA said, they may be caused by product dumping, unsound wells or some other yet-to-be discovered source."

Nevertheless, Henry Habicht, EPA deputy administrator, said the EPA was "more determined than ever to push ahead aggressively to prevent further contamination of drinking water."

EPA is expected to publish a groundwater strategy later this year. A preliminary outline reveals that the agency's overall goal is "to prevent adverse effects to human health and the environment and protect (the) integrity of (the) nation's groundwater resources."

To achieve its goal, EPA has set forth several principles, including giving states the lead role in setting priorities and managing risks. EPA said it "wants to keep the door open for flexibility and case-

by-case decisions at the state level, because we think that is the best approach to managing groundwater risks."

The groundwater strategy emphasizes prevention over remediation, and recognizes that both regulatory and nonregulatory measures need to be taken.

As part of its proposed prevention policy, the EPA said, it will use its existing authority to call in testing data to identify leachers. The agency also plans "to minimize risks to the extent possible through labeling, or restricted use classification or, in an extreme case, we can suspend or cancel."

Finally, EPA calls for individual State Management Plans to provide a less extreme alternative to national cancellation. The SMP is an assessment of the state's actual risk situation, and what that state proposes to do about it.

The groundwater strategy awaits approval.

groundwater, but "the ability of this type of vegetative community to allow water to infiltrate and promote the metabolism of solutes suggests that it might even possess the ability to be used as a water quality medium."

What this suggests is that good management practices, which include pesticides and fertilizers, contribute to the development of thatch. The organic layer of thatch is so effective at breaking down chemicals, Watschke said, that a common practice in agriculture is to use grass filter strips to prevent pesticide runoff.

Two leaching studies, (fall 1989 and summer 1990) conducted by Martin Petrovic at Cornell University, also examined pesticide movement from turfgrasses. Study treatments included the application of four turf pesticides (dicamba, 2,4-D amine salt, carbaryl and chlorothalonil) to three different soils (sand, Arkport sandy loam, Hudson silt loam).

Two irrigation regimes were followed: a three times per week irrigation program, which began two days after pesticide treatment; and an once a week irrigation program which began seven days following pesticide application. All plots were irrigated to saturation to force drainage.

According to Petrovic, pesticide recoveries from leachate samples in the fall study were low (0 to 1.8 percent of the amount applied). The highest leaching occurred with dicamba in a sand plot that received the high irrigation treatment (1.8 percent).

Again in the summer study, the sand plots had the greatest amount of pesticide leaching (0.004 to 4.31 of applied pesticide).

Petrovic concluded that the sand plots had the greatest degree of pesticide leaching due to high hydraulic conductivity, low sorption onto organic matter and limited biodegradation by soil microbes.

"Bottom line is that if you're managing turf on sand, you have to be careful with what you're putting down and how you're irrigating," Petrovic said. "If you get away from sandy soils, you don't have to be as careful, because the turf system is good at tying up these pesticides.

"Make sure you properly identify the pest you're working with. Part of sound pest management is integrating practices that reduce the potential of environmental impact of pesticides. I think people are going to have to start looking at products which are most likely to leach, and make that a decision when choosing a pesticide," Petrovic said.

Products with high water solubility are more likely to leach into the soil than those with low solubility, Petrovic said. Also, select products that decompose quickly and that bind themselves more readily to organic matter.

HOME FRONT. When customers ask questions about pesticides and groundwater, the key is to be forthcoming with facts. A good example of a company that tackled the groundwater and pesticide debate

is Lawn Medic of Bergen, N.Y.

The company publishes Grass Roots, a newsletter that addresses customer concerns head on. A recent issue of the newsletter featured groundwater and pesticides, and included information about the studies conducted by Petrovic, Watschke, Niemczyk and others.

"Our literature is the most important thing going out the door," said Don Burton, manager. "Our literature has to be presented in a way that's literate and shows competence and knowledge.

"The key is anticipating the potential problem or question in advance and having the ammunition to react," he said.

Tim Doppel, president of Atwood Lawncare, Sterling Heights, Mich., also noted the importance of customer education.

"The main thing I think customers are concerned about is that products are appropriate for use where they're being used," Doppel said. "If you are articulate and can answer questions at a level customers can appreciate, then nine times out of 10, the customer will be relieved of any anxiety."

Mark Laube, vice president of development for Lawnmark, Hudson, Ohio, said that his number one concern is to educate the consumer that not every application has chemicals in it.

The typical customer, Laube said, often equates all lawn care treatments with pesticide applications. To combat this misconception, Lawnmark promotes its need-based program, based on the judicious use of pesticides.

GRASS ROOTS. Practice what you preach is an old cliché, but it has meaning when applied to groundwater and pesticide use. Educating customers will invariably make them feel better, but it's never enough. Sound turf management practices really do make a difference in protecting the nation's drinking water supply.

Some of the ways pesticide users can help reduce the potential for contamination include:

- Select products that decompose quickly and that offer low water solubility.

- Follow label directions exactly.

- Dispose of waste properly.

- Control surface water to avoid runoff.

- Consider soil characteristics. As Petrovic pointed out, pesticides are more likely to leach into groundwater through sandy soils.

- Incorporate integrated pest management practices (IPM) to ensure that pesticides are used only when and where needed.

For a better understanding of the importance of healthy turf on groundwater quality, PLCAA offers a videotape, "The Value of Turf — For Today and the Future." The tape includes interviews with Watschke, Petrovic and Niemczyk and lists other resources for further education. The tape is available from PLCAA, 1000 Johnson Ferry Rd. NE, Marietta Ga. 30068-2112; 404/977-5222.

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

DO EARTHWORMS AFFECT GROUNDWATER?

EARTHWORMS CAN ENHANCE plant growth by making soil porous so it drains and aerates well.

But researchers are questioning whether the underground channels they create speed the downward movement of pesticides.

The North Appalachian Experimental Watershed at Coshocton, Ohio, has been the site of a 27-year no-till experiment.

No-till — planting crops without first plowing to clear the residue of the previous crop — was designed to reduce surface runoff of soil and agricultural chemicals in water that flows into lakes and streams — not specifically to preserve groundwater quality, said William Edwards, leader of conservation tillage research at Coshocton.

In the last couple of years, Edwards has turned most of his attention to pesticide movement. For his studies, he brings cubic-foot blocks of no-till cornfield topsoil into the lab and exposes them to artificial rainstorms of various intensities. During and after each rainstorm, water drains through the soil and is collected in funnels below each block.

Edwards found that the amount of atrazine and alachlor herbicides collected in funnels below nighcrawler burrows depended

on the sequence of rainstorms. If the initial rainstorm was minor, it carried the herbicides just far enough down to mix with and bind to organic matter. Very little moved downward if a major rain then followed. But if a major storm came first, more of the herbicides moved downward.

In an Agricultural Research Service study at St. Paul, Minn., scientists also studied the relationship between earthworms and groundwater. They grew crops in several ways: in soil with no crop residue; with incorporated residue or surface residue; and with or without a common earthworm near the soil surface.

The scientists then applied potassium bromide to the soil surface and slowly applied simulated rainfall.

They found that the surface residue provided a major food source for worms, helping them to form stable burrows that were open to the surface. The burrows allowed rapid water infiltration, but 95 percent of the bromide was retained in the top six inches of soil.

In soil with incorporated residue, that same amount of bromide went down 5.3 inches as more of the water was soaked up near the soil surface. — *Agricultural Research Service, U.S. Dept. of Agriculture.*

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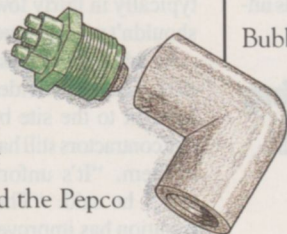
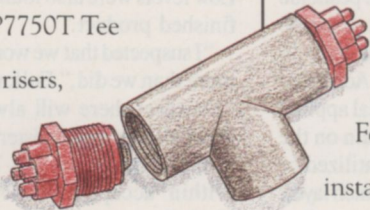
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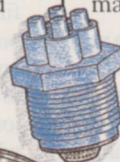


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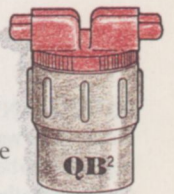
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ARE PESTICIDE RESIDUES LINGERING IN COMPOST?

Initial research shows that composting is a non-risk venture to both handlers and end users of pesticide-treated clippings.

By Cindy Code

AS WITH ANY NEW kid on the block, yard waste composting is beginning to be scrutinized for its quick rise to the head of the class.

While sewage sludge composting has seen significant growth since the early 1970s, organic waste composting — yard waste — can still be considered in its infancy.

The popularity of yard waste composting has brought new technology, alternatives to landfilling and business to entrepreneurs, but it has also brought some concerns about its possible effects on human health and the environment.

Obviously, odor poses the most conspicuous obstacle. But that can be easily avoided by proper composting procedures. So too can the possibility of leaching if a site is kept clean and orderly.

Nevertheless, there are those who enter the business simply to

and those dispersing and using the end product. Questions remain, however, regarding the safety of pesticide-treated clippings.

Most herbicides and insecticides applied to turf and ornamentals break down quickly because of their short half lives — the period during which the pesticide is active. In most cases, pesticide residues can't be found 10 to 14 days after application. Additionally, much of the material applied to the turf doesn't remain on the grass blades but is volatilized or makes its way into the thatch layer.

While preliminary sampling finds traces of pesticide residues on clippings being dropped off at compost facilities, there appears to be no cause for alarm. The majority of residue breaks down when compost temperatures reach between 140 and 170 degrees Fahrenheit.

More definitive research is un-

der and nutrient leaching from clippings at a compost site.

Pesticide residues were present in the clippings as they were brought into the site, but in fairly low quantities, according to Fulford, who is director of organic waste management at the institute. Low levels were also found in the finished product.

"I suspected that we would find more than we did," Fulford said. "I suspect there will always be residues, but they register in parts per billion which is very low and within acceptable EPA standards."

2,4-D, pendimethalin and some dinitroaniline were among residues identified in the clippings.

Fulford wouldn't go so far as to say that clippings previously treated with pesticides are safe under all circumstances, but said when residues are present, they're typically in fairly low levels and shouldn't present much concern.

In addition to pesticide residues, some pesticide containers brought to the site by commercial contractors still had pesticides in them. "It's unfortunate, but true," he said. "The container situation has improved with better enforcement."

The tested clippings were said to be fresh, probably no more than three to five days after a pesticide had been applied, Fulford estimated.

Fulford worked with Chem-Lawn and The Lawn Co., two firms in the area where the clippings were generated, to determine what chemicals were applied to

the clippings and in what quantities.

Despite appearances of low residuals, Fulford said, he has received no information of compost handlers suffering from skin rashes or other out-of-the ordinary events.

"It may be a legitimate concern, but exposure to pesticides is much more prevalent at the time of application than at the time clippings reach a compost site," Fulford said. "In my opinion, nutrient leaching from a compost site is a more significant problem than pesticide residue in a windrow compost system. In an enclosed compost system, pesticide residue could conceivably pose a threat to workers, but there's not enough evidence to establish this."

Fulford's state-funded report was expected to be completed early this month. It was commissioned by the Massachusetts Department of Environmental Protection to assess the environmental impact of yard waste compost sites, and completed independent of the Tellus Institute.

The study was conducted at one site and is not necessarily representative of the whole industry.

"It's safe to assume that a percentage of clippings coming in are going to be treated with pesticides. If people have concerns about using the end product...it's more than likely there aren't even measurable levels when finished," he said.

If there's real reason for concern, Fulford recommended that the compost be tested periodical-

Windrow, static and in-vessel composting methods have been identified by the EPA as pathogen-reducing.

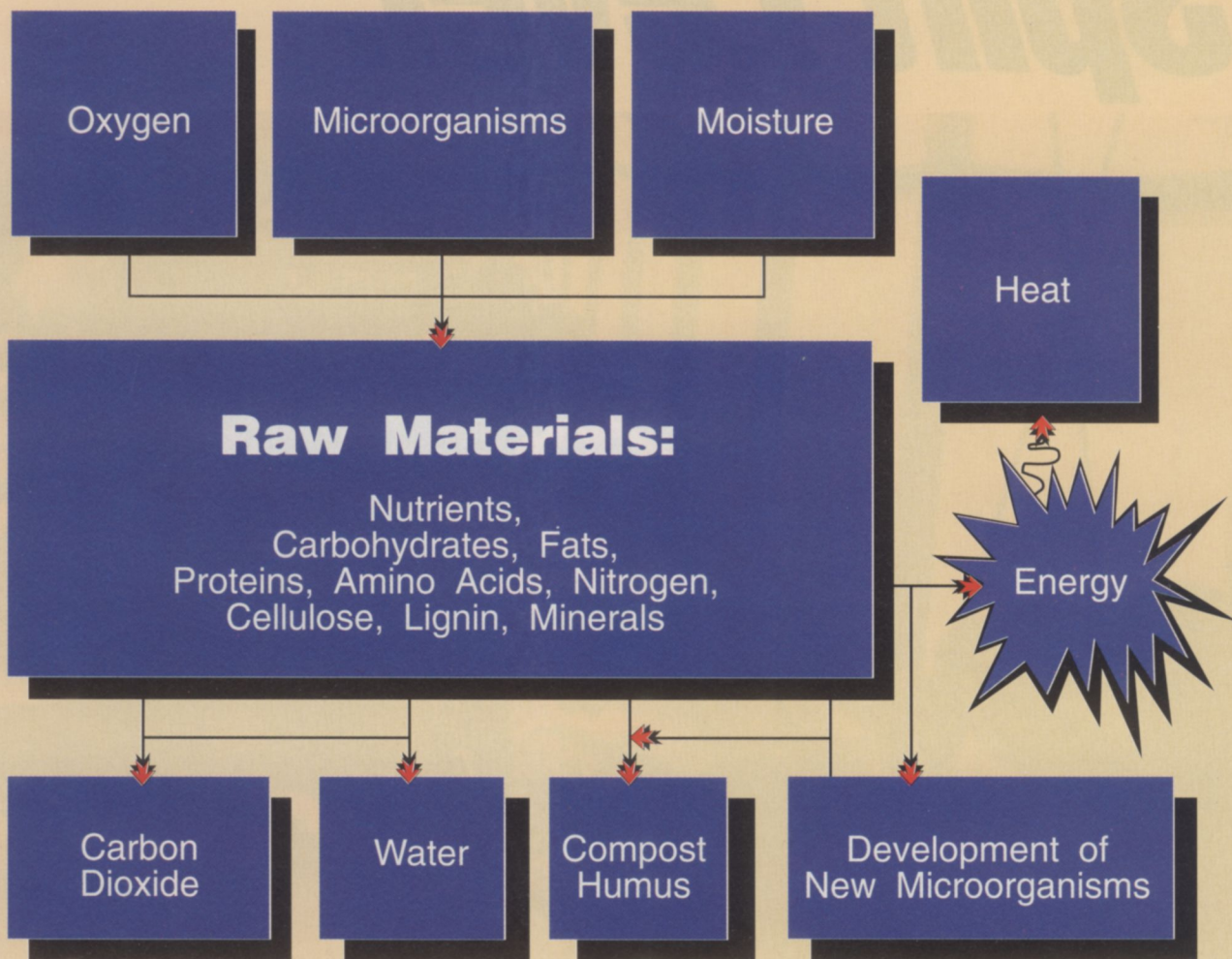
make a buck, disregarding the long-term effects they may have on those who are in the business to stay.

With little research to go on, the general consensus in the lawn and landscape maintenance industry is that yard waste composting is a non-risk venture to both handlers of grass clippings

der way at several Midwest universities, but is not yet ready for publication.

RESEARCH. Bruce Fulford of the Tellus Institute, Boston, Mass., recently completed a three-year study in conjunction with Woods End Laboratory, Mt. Vernon, Maine, evaluating pesticide resi-

THE COMPOSTING PROCESS



ly. Whether a municipality or private operator thinks the testing is justified, they should be prepared to spend a lot of money. And if testing is to be done, a broad enough sample should be taken to get accurate results.

According to Eliot Epstein of E & A Environmental Services, Stoughton, Mass., end-users are most concerned about compost stability or the degree of organic matter decomposition. It's been reported that poorly stabilized compost can inhibit plant growth.

Yard waste may contain certain pesticide residues such as aldrin, municipal solid waste compost may contain household hazardous wastes and sludge compost may contain industrial organic compounds. In these cases, the level of potential toxic organics is low, Epstein said.

DowElanco, Indianapolis, Ind., is in the first year of its study

of pesticide-treated clippings. Coordinated by Bruce Branham at Michigan State University, the research is focusing on two areas: grass clippings used as mulch in vegetable gardens and the fate of pesticide-treated clippings through the compost process, according to Mike Shaw, a member of the research and development team at DowElanco.

One part of the study will look for any effects of pesticide-treated clippings on vegetables, while the second part will follow the fate of pesticide residue through time including the disappearance rate.

"I expect it to be relatively fast; most of the breakdown comes from microbial decomposition or by hydrolysis," Shaw said. "In composting, we're basically putting it in a biological oven."

Shaw added that DowElanco has quite a bit of data on dislodgeable residues and environ-

mental fate studies on most of its actives since it's generally required for registration.

"We're quite surprised by how fast chlorpyrifos disappears from the leaf surface," Shaw said. "The majority of the residue is gone within a day; most of it (chlorpyrifos) is tied up in the thatch zone."

The U.S. Environmental Protection Agency has established guidelines regulating the use of all products of solid waste which specifically limit pathogens, heavy metals and PCBs contained in those products. As far as composting is concerned, the EPA requires owners or operators of commercial compost facilities to maintain temperatures greater than 131 degrees Fahrenheit in the compost process for several days in order to effectively eliminate viral, bacterial and parasitic pathogens.

Windrow, static and in-vessel

composting methods have been identified as pathogen-reducing methods by the EPA.

The EPA is expected to release regulations addressing the land application, distribution and marketing of any products derived from sewage sludge, including composts, in January. They are expected to cover a variety of areas including odor, pathogen and vector reduction, application rates and labeling requirements.

The federal regulations are not likely to address yard waste, according to Epstein.

Kurtz Brothers, which runs a state-of-the-art composting facility in Cuyahoga Falls, Ohio, has received no complaints from its workers handling grass clippings, said Ed Janesz, organic recycling department manager.

"Most residue in grass cuttings is small and, once taken through

(continued on page 34)

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Pesticide Residues

(continued from page 31)

high temperatures, should be insignificant," he said. "If a yard is mowed right after a pesticide has been applied, it's possible to get a reaction; it depends on the individual."

It's an area that still needs to be researched, he added.

Phil Fogarty, president of Crowley Lawn Service, Cleveland, Ohio, said it's almost impossible to rub pesticide residue off clippings or branches because it is absorbed into the plant fairly quickly.

"With granulars, as long as they are watered-in and left alone for 24 hours, there should be no run-off or exposure," he said. "If the fears are that homeowners aren't following label directions; that's a tough one."

CHEMICAL REACTIONS? Something fishy is going on at Brown-Ing-Ferris Industries.

Pamela Harris, director of loss

control services at BFI, a waste management firm, said several employees handling grass clippings have come down with rashes. The outbreak wasn't severe — a fairly simple raised, reddened area — and work conducted by the firm's industrial hygienist hasn't shown anything, yet.

"We had some employees with rashes, but it's difficult to know if it's a heat rash from handling plastic bags or if it could be chemical exposure," Harris said. "We've done skin wipe tests and air analysis tests and haven't found anything. It appears to be associated with warm weather, but so are clippings. It's hard to tell."

"If it stemmed from pesticide residue in the grass, you would expect to see compost people with a problem. But the rashes have appeared only with those handling curbside, not at the compost facility. So this would support the heat rash theory," she said.

Composting on this level is fairly new for BFI and Harris admitted that it may be a problem that's

always been there, but just now realized because of the attention BFI has been directing toward composting.

Treatment and long sleeves seemed to solve the rash mystery which only appeared on two workers. The firm employs 50 people in its compost facility.

The firm will do additional tests until it can determine if the problem stemmed from heat rash or otherwise. "If it's chemical in nature we need to address it," Harris said. "We'll keep at it until we know what it is or its statistical significance."

BFI's enigma is not all that uncommon. Until more research is dispersed, unanswered questions are perceived as the equivalence of danger.

The San Francisco League of Urban Gardeners is a 10-year-old, nonprofit organization which offers a compost education program for residents of the city.

Carl Grimm, director of horticultural education, said although conventional wisdom says that the

compost process renders most chemicals harmless, persistent pesticides like chlorinated hydrocarbons won't break down under any circumstances.

A lot of people tell others not to worry. We tell them not to use chemicals in the first place," Grimm said. "We tell them to send it to the landfill if you're dealing with a large area treated with pesticides, but if a broadleaf herbicide was used in small amounts and it's a small portion of the compost then...The main thing is to avoid pesticides in the first place. There are alternatives."

In Lakewood, Ohio, a city publication encouraged residents to be aware of grass clippings treated with pesticides and to use caution when putting them in gardens.

Some municipalities, on the other hand, see no danger in chemically treated grass clippings. Grass and leaf composting has been going on for three years in Tenafly, N.J. John VanVorst of the city's parks department said

(continued on page 36)

COMPOST DIGEST

Lockport Opens Automated Composting Facility

The \$4.8 million combination yard waste and sewage sludge composting facility in Lockport, N.Y., processes 100 tons per day of material, according to International Process Systems Inc., Glastonbury, Conn. IPS, a subsidiary of Wheelabrator Technologies, itself a subsidiary of Waste Management Inc., Oakbrook, Ill., operates five other in-vessel composting facilities in New England.

Lockport Mayor Tom Rotondo expects the city to save some \$300,000 in the first year of operation. "Not only do we save money over the current method of disposal at the landfill, but we are doing something that's environmentally desirable and we are producing a safe, valuable end product that is beneficial to the city," he said.

The 42,000-square-foot facility contains 12, 252-foot-long composting bays and a biofilter to control odors. The computer system monitors and controls the composting process designed to handle up to 19,000 wet tons of sludge and 13,000 tons of shredded yard waste annually.

Mayors Propose Research For Composting Projects

The U.S. Conference of Mayors, Washington, D.C., formed a program in conjunction with Procter & Gamble, Cincinnati, and the Solid-Waste Composting Council, Washington, D.C., to provide information about compost and promote its acceptance as a viable component of solid-waste management. In addition, the

three-year project intends to assist local governments in planning and constructing composting facilities.

According to the SWCC, "The initiative provides assistance to cities developing model composting facilities. These demonstration projects will educate the public about the value of composting and assist other municipalities to design and implement similar programs."

Illinois Releases Five Yard-Waste Brochures

The Illinois Department of Energy and Natural Resources, Springfield, released five publications prepared by the University of Illinois Department of Horticulture and the Cooperative Extension Service. Available through the ENR Information Clearing House, the publications detail methods to reduce and recycle landscape wastes.

"A Homeowner's Guide To Recycling Yard Waste" describes composting and mulching techniques for the homeowner.

"Controlling Thatch In Turfgrasses" targets anyone responsible for lawn maintenance and explains the factors contributing to thatch.

"Turfgrass Management Strategies For Reducing Landscape Waste" recommends and explains mowing, fertilizing and pest management techniques to maintain healthy yards with minimum yard waste.

"Integrated Pest Management For Home Lawns" is a discussion of pest management techniques and provides tools a homeowner can use to produce a healthy lawn.

"Organic Mulches" provides guidance on the value and use of organic material such as mulch and describes how to apply and what to expect from organic mulches.

For information call: 800/252-8955 in Illinois or 217/785-0310.

(continued on page 61)

OTF

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The Ohio Turfgrass Foundation is proud to sponsor the 25th Annual OTF Conference And Show in Cincinnati, Ohio, December 2-5. This year marks the silver anniversary of the OTF show and is sure to be the most exciting ever.

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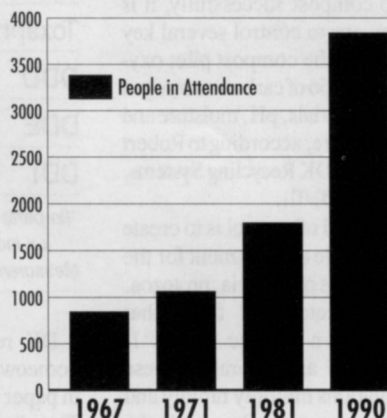
- Golf Turf
- Lawn Care
- Grounds Maintenance
- Sports Turf

Many of these sessions qualify for pesticide recertification credits.

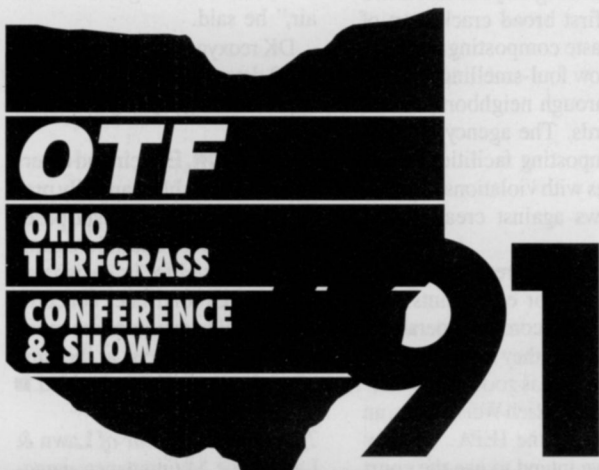
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Pesticide Residues

(continued from page 34)

they haven't experienced any such problems or concerns.

Workers pick up the clippings in 20-gallon garbage cans — preferably galvanized — dump them in a truck and transport the loads to be weighed and dumped into windrows with a front-end loader. No handling by the employees is involved, VanVorst said. Leaves are raked to the curb and vacuumed up.

CONTROLLING COMPOST? Since composting is the biological decomposition of organic matter under controlled conditions, the need for control is important.

To compost successfully, it is necessary to control several key factors in the compost pile: oxygen, the ratio of carbon to nitrogen in the materials, pH, moisture and temperature, according to Robert Gillespie, DK Recycling Systems, Lake Bluff, Ill.

The goal of control is to create a hospitable environment for the populations of bacteria, protozoa, actinomycetes and fungi that break down organic matter. If conditions are favorable, these populations multiply rapidly and there are more workers to do the job of decomposition.

A well-run compost operation doesn't generate any leachate, Gillespie said. It will handle all the water naturally.

"We handle several thousand yards of material with no retention basins and we don't see any runoff after heavy rains," he said. "If a facility is improperly run, then leachate can occur. For instance if someone tries to run a compost site in a wetland area or similar surroundings, it will create a swamp-like atmosphere."

Compost piles seldom need water added to them because there's almost always sufficient internal moisture to complete the process. Grass itself is about 80 percent water.

But, like others, Gillespie realizes there's been little research on the subject of runoff and residues.

"In analyses that I've seen done, there's no residue that approaches EPA tolerance levels," he said. "We have 150 people working in our landscape company and we've never heard of any problems of skin sensitivity, etc."

ORGANIC COMPOUNDS IN COMPOSTS*

Parameter	Type of Compost		
	Yard Waste	Solid Waste	Sludge
Aldrin	< 7.8	< 0.13	< 50
Benzene	< 300	< 0.5	< 300
Benzo (A)pyrene	450	< 0.8	125
Chlordane	87	< 240	< 50
Dieldrin	130	< 2.7	< 50
Heptachlor	7.8	< .23	< 50
Hexachlorobenzene	< 4100	< 0.6	95
Lindane	< 7.8	< 1.0	< 50
Total PCB	< 70	< 330	< 250
Toxaphene	< 160	< 170	< 50
DDD	< 16	< 7.0	< 50
DDE	< 16	< 4.3	< 50
DDT	< 15	< 8.2	< 50

**(in parts per billion)*

x.x indicates that compound was not detected at or above x.x level.

Measurements are site specific and do not necessarily represent a typical compost.

Source: E & A Environmental Services.

DK receives materials from homeowners and municipalities in paper bags or loose clippings. There's no distinction as to where the clippings originated and whether they have been treated with pesticides.

The clippings are immediately mixed with a carbon source and brush (or similar product) and put into large windrow piles 9 feet long by 18 feet wide. They remain undisturbed for four to six weeks and reach a high temperature of 170 degrees Fahrenheit. One of the effects of that cycle is to sterilize everything in the pile. No pathogens survive those temperatures.

DK handles 75,000 yards of grass, brush and leaves by volume annually; 50 percent of which are leaves, 30 percent grass and 20 percent brush. The firm works with 110 customers.

In North Carolina, concerns focus on environmental fate.

Tom Glendinning, president of Wastek, Pittsboro, N.C., a composting consulting and marketing firm to local governments, said leachate concerns from consumers are frequent, but not enough to require regulation from the government to date.

"If you're stacking clippings in

a huge pile in the back of a lot, you're not doing anything more than a landfill would do," he said.

"Leachate from that has the potential to enter the water table or soil, but the concentrations are so small.

ODOR. Because it's hard to avoid, odor, more than any other symptom, may be responsible for the fear of chemicals on grass clippings. As a result, state governmental agencies are starting to crack down on compost facilities spewing bad odors.

The Illinois Environmental Protection Agency has embarked on its first broad crackdown on yard waste composting facilities that allow foul-smelling gases to float through neighbors' homes and yards. The agency charged six composting facilities in five counties with violations of pollution laws against creating bad odors.

The charges resulted mostly from neighbor complaints.

"It puts the compost operations on notice that they have to operate their facilities as good neighbors," according to Rich Warrington, an attorney for the IEPA. "If they can't, we intend to use the court system to compel compliance."

But the crackdown has had incriminating effects on properly run facilities.

"We have extraordinarily high credibility with the EPA," Gillespie said. "We're devoting time and capital into this technology, but our problem is the number of amateurs who are jumping into the business."

Gillespie said there should be no unpleasant odors to a well-run compost facility.

"We let nature work its own will. People unnecessarily act as intervenors in windrow turning. When turning a pile at 140 degrees it releases volatile gases into the air," he said.

DK reoxygenates piles every 30 to 40 days, then lets them sit for approximately 40 days.

CONCLUSION. Epstein and others believe that stable, carefully processed compost of any type poses virtually no public health concerns when it is used for its designated purpose. Groundwater concerns and pesticide exposure are much more likely to occur at the time of application, Fulford added. ■

The author is Editor of Lawn & Landscape Maintenance magazine.

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reader service **23**

FERTILIZERS WITH MORE 'STAYING POWER'

MEET CONTRACTORS' NEEDS

Whether it's a liquid or granular, synthetic or organic, varying fertilizer formulations with better control have made life easier for the lawn and landscape maintenance contractor.

By Bob Gitlin

JIM WINGO, PRESIDENT of Jim's Lawnscape, Orlando, Fla., said his application philosophy parallels University of Florida recommendations: four times a year.

Today's fertilizers, using slow-release nitrogen, do a better job than their counterparts of 10 years ago, he said.

"The chemicals' staying power is better. Today's products are more efficient, reducing burn and excessive growth," he said, particularly important as contractors try to reduce yard waste — and landfilling.

In Wingo's estimation, less burn results from the use of liquid than from granular fertilizers, and liquid applications appear more even, he said. "With liquid we're able to do other things easier, like weed control. We can put out a fungicide or herbicide at the same time," he said.

"In southern Ohio," said Steve Leising, vice president of operations for Greenlon Lawn Care Services, Cincinnati, "we have two major grass varieties: bluegrass and turf-type. We go anywhere from three and a half to four pounds of nitrogen per thousand square feet."

Greenlon's program consists of five applications. Most nitrogen, 60 percent, is applied in September, October and November.

Leising said the main improvement in fertilizers over the 15 years he's been in the industry has been the proliferation of slow-release liquid formulations.

"Ten years ago, it was difficult to find liquid fertilizer in controlled release. All the product would be used up in four to six weeks," he said. "Today's urea formaldehydes last upward of 14 weeks. They're agronomically better, easier and safer for applicators to

put down without risk of injury to turf. Liquid fertilizers 10 years ago were more temperature- and moisture-sensitive."

Citing The Ohio State University and other studies, he said the ultimate difference in performance between liquid and granular products is negligible. It all comes down to carriers.

"Let's take a 20:10:10 fertilizer as the raw material. Manufacturers of granular fertilizer impregnate, or coat, that product with an inorganic material, such as limestone, to make a dry fertilizer. Put the same product in liquid form, and the only difference is we put it into water to apply it. From a turf-quality standpoint, there is no difference," Leising said.

Nor does he see any functional difference between organic and inorganic fertilizers. Greenlon has begun using a 10:2:6 product

as part of a new "organic program" offered to customers. "We are evaluating the turf quality of organic vs. man-made fertilization. The jury's still out."

Rich Grigalus, branch manager for Ruppert Landscape Co., headquartered in Ashton, Md., said homogenized blends distinguish the panoply of offerings from those of a decade ago.

"The biggest differences are formulations available in different types of nitrogen, especially different blends that give you better control over release of nitrogen," he said. "We use liquid for ground covers and flowers. It's simple to use; you throw it in the backpack sprayer. But it's easier to apply a granular to get it consistent. If you miss with liquid, your applicator's not real good — it shows."

Environmental activists complain about haphazard application

NPK RATIOS DEPEND ON SEASONAL PLANT NEEDS

OVER THE YEARS, Rich Grigalus of Ruppert Landscaping, Ashton, Md., has developed some hard knowledge about NPK ratios. Flexibility and a watchful eye are the keys in treating both turf and ornamentals.

"You can't just say 'I'm going to go with an 18:5:9 on all my rounds.' Each time of year requires something different," he said. "In the spring, you don't want to fertilize because that promotes shoot growth, not root growth. You just want to put some color in."

In late May or early June, Grigalus likes to treat irrigated sites with a 37:0:0 sulfur-coated urea, which keeps color on the turf and keeps vital nutrients in the turf.

If you are overseeding, high phosphorus is called for.

In the fall, Ruppert goes to a separate fertilizer, usually around a 10:20:10. Raising the phosphorus, while maintaining "a decent

amount" of nitrogen, creates the requisite balance.

In Maryland, cool-season tall-fescue turfs dominate, although there is still plenty of bluegrass.

"A tall fescue wants anywhere from 2 to 4 pounds of nitrogen a year per thousand square feet," Grigalus said. "When you have irrigated sites, you have to go to the high side of that in order to keep it green throughout the season."

When treating ornamentals or annual flowers with liquid fertilizers, he said, landscapers must remember that it is the phosphorus that helps rooting and blooming.

Sometimes a NPK makeup depends, simply, on what the client has to spend. "Some people say, 'Hey, I can't afford that, give me three rounds: a half pound in the spring, and two and a half pounds in the fall.' And that's basically the way we'll do it."



A green lawn is still the American dream and newer, more versatile fertilizers and spray equipment are aiding professionals.

of liquid fertilizers in conjunction with pre and postemergent pesticides; however, a professional applicator doing it at the right time, making sure to stop if wind conditions aren't right, solves this problem, Grigalus said.

"With liquid on a turf, you need someone experienced to calibrate the machine to put out the proper amount of water and chemical," he said. "Granulars give more flexibility; you can send out a regular maintenance supervisor with a calibrated spreader."

The logic applied to turf application is not too different from that used in treating ornamentals. Each time of the year requires something different.

Nitrogen is the most important macronutrient needed to retain color. Phosphorus may be the number to watch, Grigalus said.

"When you use a liquid on ornamentals, phosphorus helps rooting — it's what you used when you seeded. Same with flowers. If you're planting annuals and want them to root and bloom better, phosphorus is the important number," he said. "Nitrogen is fine for greenup, but if you take an impatiens and put down a granular 37:0:0 — people actually do this — you get a green plant with no bloom."

Timing is everything. "If you are overseeding, you want high phosphorus. In fall, we go down with, say, a 10:20:10 to get the stuff going," he said.

Generally speaking, spring ap-

plications should be slow-release and low-nitrogen, to somewhat impede growth. In fall, when root growth is desired, phosphorus should go up, he said.

"For most home lawn situations, we look at anywhere from four to six applications per year," said Doug Masters, sales manager, Lawn Products Division, The Andersons, Maumee, Ohio. Today's fertilizers are typically higher in nitrogen, he said — now in the 25 percent to 32 percent range, unlike yesterday's 18:5:9s, 10:10:10s and triple 12s. And formulations are being offered that are more balanced overall. "Analyses of 25:5:15, 18:3:10 and 32:3:10 are common," he said.

LIQUID VS. GRANULAR? "They both have good and bad points,"

Masters said. "Liquid lets you put down a number of different things at once. You can spray liquid fertilizers, iron, herbicides, insecticides — all in one application. But they have a little more potential to burn turf. We provide both; if you use any of the products correctly, you'll do fine. Granular is typically higher in nitrogen content. We and others apply herbicides and insecticides to those as well. With granular, you can apply preemergent crabgrass control insecticide and fertilizer with one of our products. Liquid still provides the best weed control."

Harry Mathis, national sales manager, landscape and lawn care products, Lebanon Turf Products, Lebanon, Pa., recommends four applications of fertilizer a year for typical needs. "We say to look at

preemergent applications, before crabgrass germinates, early in April. A second feeding comes sometime after or before Memorial Day, a third in early fall, then a dormant feed around Thanksgiving."

Customer formulations are more advanced now, he said. "The biggest advance is in diverse combination products: fertilizers with crabgrass control, insect control and so on. The number of those products has increased, as has their quality and versatility."

The argument for liquid? Fast application due to tank mixing and lower relative cost of the fertilizer itself, he said.

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operators are going to dry applications to avoid spray drift — a media-fed scare, he said, way out of proportion to actual danger.

There's a growing movement toward organic fertilizers, which like synthetics, are also said to be slow-releasing. So what's the difference?

David White, director of marketing of CoRoN Corp. the Soudertown, Pa., manufacturer of a liquid controlled-release nitrogen source said that, in a sense, there is none. "The plant doesn't know the difference between a molecule and a synthetic molecule."

Like many such products, CoRoN is sold as an ingredient to fertilizer formulators, who mix in the phosphorus, potassium and whatever else customers may need.

"We take CoRoN," said Tom Fister, sales manager for Tyler Enterprises, Elwood, Ill., "and blend a liquid fertilizer. We create a wide range in terms of analysis. Some common ones would be 15:3:3 and 15:3:6; we call those stock items." Tyler handles granular formulations as well, using other sources.

A mainstay of Midwest horticulture since 1926 has been Milorganite, a fertilizer recycled from Milwaukee sewage sludge. Terry Ward, marketing director, Milorganite Division, Milwaukee Metropolitan Sewage District, said more and more cities are consulting with Milorganite for its knowledge in the area of sewage sludge.

Fertilizers are far more sophisticated now than they were 10 years ago, he said. "We are seeing a new wave of exotic organics, some produced in a wide range of composting venues. We're getting away from manures and going to composts. We're going to synthetic-organic byproducts of the petrochemical industry; some are very good combinations which, if properly handled, produce stunning results."

Ward said liquids are easier than granulars. "For the professional, liquids are the most reasonable way to go. Granular forms are also simple, but you're talking a whole lot more handling, more product to be put out; it's more time-consuming and labor-intensive."

"We have a trace of K but unless it's a percent or more we can't claim it. It also has 4 percent iron for greening. When professionals are taking a look at the NPK index, they ought to test their soil on a regular basis to get a good feeling of what the pH is, what's needed for the designated crop, whether turfgrass or fruit tree or whatever — and use the fertilizer in a sensitive manner to avoid any potential for runoff or leaching."

Milorganite, at 90 percent water-insoluble, releases very slowly. The movement to slower-releasing fertilizer nutrients is understandable, Ward said.

"You get more nutrient value for the money; it hangs around. Some of the more soluble nitrogen sources, such as urea, do a great job growing grass, but you're growing it on top rather than on the roots," he said. "You get a heavy crop of clippings. EPA said 20 percent of what's going into landfills is yard waste.

(continued on page 62)

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ACCESSING INFORMATION

Sophisticated IN ONE QUICK STEP

radio and scanning systems can eliminate paperwork and create a more efficient business.

By Susan Bleznick

A SUMMER thunderstorm dumps a lot of water on the ground, breaks power lines and causes dozens of trees to topple over. Your crews are out trying to clean up the mess, but it's tough to know who is where and who needs help.

In such a scenario, you want to respond quickly. Reliable communications systems are crucial. Sophisticated communications technology currently on the market can expedite handling emergencies.

And in non-emergency situations, communications systems can relieve lawn and landscape maintenance professionals of some of the tediousness of their daily routine. The amount of time spent on mundane tasks — record keeping, billing and communicating with crews out in the field — can be dramatically reduced with some newer devices on the market.

Eldon Dyk, president of the Associated Landscape Contractors of America, said he believes effective communications systems are the key to success in the maintenance industry.

"I think the trend is you have to go to more sophisticated communications systems," he said. "The quicker your response, the better your service helps you hold on to customers. Since landscape maintenance contractors operate with 'mobile offices' in the field, they need to be able to connect with the company's main office and with other technicians out in the field."

How does a business decide what is best for them in the way

of communications systems? After all, technological advancements during the last few years have snowballed. Cellular telephones, faxes, satellites, radio frequency — all of these could be helpful to contractors, but are they cost effective?

For Ron Kujawa, a quick response to customer needs is imperative. He is president of Kujawa Enterprises, Cudahy, Wis., a landscape management service, and has been in the industry for 20 years. The company employs about 40 full-time people year-round and as many as 100 people seasonally.

Kujawa relies on a combination of pagers, two-way radios, cellular telephones and a 24-hour answering service to help his business run smoothly.

"We can reach operators in the field just about anytime. Response is very important," he said. The sales staff and managers use cellular telephones and two-way radios. Five vehicles are equipped with cellular telephones, and 24 employees — crew leaders, sales people and managers — carry pagers. Most of the pagers are mounted in trucks, but a few are hand held. With pagers, crews in trucks can talk to the base and to each other.

Although it all sounds good, Kujawa offers one obstacle: Communications devices can breed dependency. "There is a tendency when people get radios, telephones or pagers that they use them as an excuse not to make a decision. You have to use the equipment as a way to *facilitate* decisions."



What about the cost involved in buying and renting those devices? The company pays about \$9 per month to rent pagers, which, he said, he has used "as long as they've been around."

Kujawa purchased two-way radios nearly 10 years ago for about \$1,000 each. He had cellular telephone units installed about four years ago, each unit costing about \$500. He also bought one portable cellular unit about the size of a briefcase that cost close to \$1,200. It is handy for communicating from a site, such as from a trailer.

Kujawa finds communications systems vital to the company's



snow removal operations. If a truck veers off the side of the road during the night, the driver can call a wrecker to come tow him out. "The systems are especially helpful, without a doubt, in the snow season. There's a great sense of urgency with snow removal. And there's a greater propensity for a breakdown in snow because it's hard, heavy work."

Although some companies can operate effectively without communications systems, Kujawa said, he considers them integral to his business. He said few hassles arise from using so many communications devices. Once in a while a pager is stolen, but in-

surance covers the losses.

"The advantages of having these devices far outweigh the disadvantages. It's still worth the expense. If we want to contact someone, or they want to contact us, it's easy. We pride ourselves on being quick responding to our customers," Kujawa said.

While Kujawa doesn't use hand held or portable computers, other people in the lawn and landscape maintenance industry do. Rick Steinau, president of Greenlon Lawn Care Services, Cincinnati, Ohio, began using portable scanners four or five years ago.

"To the best of my knowledge," he said, "we may be the only

lawn care company that uses hand held scanners."

The scanner reads bar codes and collects information about customer accounts, such as pricing, inventory numbers and account names. The device is programmed, but alternate pricing can be entered manually in the scanner. For example, Steinau said, "If a customer says only do half of the yard, it doesn't throw us for a loop."

And the advantages of having the scanners are numerous for Greenlon. Paperwork is minimal because technicians enter all of that information into their scanners, including reports of "every

The Laser-Wand is a non-contact scanner from Hand Held Products. Such scanners can reduce paperwork and mistakes to a minimum.

ounce (of chemicals) that you put down," Steinau said. "This is an integrated system. You don't have to keep a handwritten account. All the information is attached in the customer file."

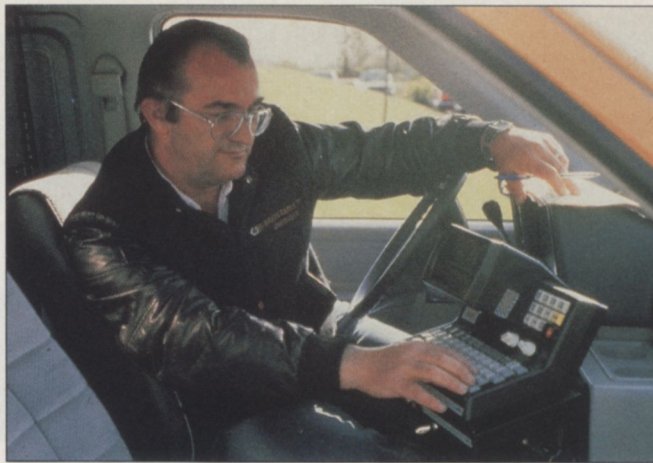
Greenlon uses about 35 scanners for field operations. They are about the size of a small walkie-talkie and cost about \$800 per unit. Technicians only carry one piece of paper to each job, a pre-printed invoice that has a bar code on it. He scans the bar code and then enters information about the

job he performed, such as materials used and time spent. He leaves a copy of the invoice with the customer and walks away without any paperwork. He has entered all pertinent information about the account into the scanner.

At the end of a workday, the technician brings his scanner into the office and plugs it into a small personal computer in the office. "The technician hits a couple of buttons and seconds later it downloads to the mainframe computer and updates the customer file," Steinau explained. The scanner can also store information for a couple of days.

Steinau's system is programmed to perform analytical functions. For instance, Greenlon technicians use scanners to keep track of daily activities, such as their daily schedules, starting and finishing times on an account and travel time. Even the odometer reading of the technician's truck is recorded in the sophisticated computer.

Why, you might wonder, would such information be helpful?



"The technician has to enter the reading; otherwise the system won't let him go on to the next stop," Steinau said. With records of mileage and the amount of time spent driving, the computer can calculate miles per hour. If a technician drives beyond the speed limit, the computer flags the number. That information is highlighted in reports that managers review.

Other criteria are programmed into the computer, such as how

long it takes to apply chemicals to a 6,000-square-foot lawn. If too much time is being spent, according to the established criteria, then the computer flags it. In that way, management keeps track of employees and can talk with technicians about job efficiency.

"Using scanners makes our technicians more efficient and saves time and money," Steinau said. "It's saving us hundreds of hours a year and we are able to keep our administrative services

Service companies are realizing high gains with mobile data communications. Photo: RAM Broadcasting.

very thin."

Technicians don't generate volumes of written invoices to be re-typed — all of that information is entered on the job into the scanner. As a result, at least two hours of paperwork is slashed from the daily schedule.

Steinau is quick to point out a potential drawback for a company that wants to use a system similar to his. When problems with the scanners arise, an in-house data processor solves them. The data processor was instrumental in setting up the system and continues to make refinements to it. Many maintenance businesses would have to look outside their company to find technical assistance for their communications systems. And that could be costly.

Steinau said most smaller landscape maintenance companies would not need such a sophisticated system. And some of the larger companies might find the

(continued on page 46)

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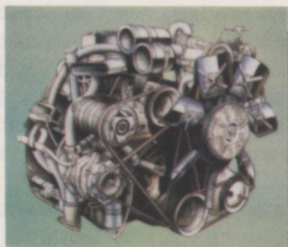
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Accessing Information

(continued from page 44)

system beneficial, but they would be unable to afford the cost incurred in setting up and maintaining them for a large number of employees.

Businesses must be cautious about purchasing such sophisticated equipment, Steinau warned. "You better really know what your return on investment is. If you put in \$30,000 and it only saves you \$10,000, then you've made a major mistake," he said. In Steinau's case, his system paid for itself in a little less than two years.

Some communications systems are even more advanced than the one Steinau uses. Radio frequency, for example, allows field technicians to send and receive information from computers in their trucks.

RAM Mobile Data, New York, N.Y., provides a network that enables people to send and receive messages through computers that operate on radio communications. Technicians can send each message to the office and to other people in the field without actually talking to them. Technicians can even access information in the office computer system, when they are stuck in traffic or from a customer's office.

Consider one example of how the system might work. Ted the technician completes a job, climbs into his truck and as he pulls out of the driveway hears a tone that signals an emergency. The message says that a sprinkler line broke and is causing a flood at the university. "All he has to do is hit one key on his keyboard that says 'I'm on my way,'" said George Dennis, RAM's manager of corporate communications.

A dispatcher at the office knows Ted is driving to the emergency site. But if Ted gets stuck in traffic, he can punch another key that sends a message that says he will be delayed. Meanwhile, the office can contact the customer to apprise him of Ted's unavoidable delay.

Once at the site, if Ted needs to research the past history of that sprinkler system, he can tap into the computer terminal at the office. His unit links up with standard computer equipment at the office, which is connected to the network by a leased data line. Often a business employs a dispatcher to constantly keep track of the vehicles out in the field. That person can "see where everyone is, what they're doing and where they need to be sent next," Dennis said.

Ted's truck has a computer terminal mounted in the dashboard and a full keyboard. He can enter and read information on a display; a radio and modem are stashed in the trunk or under his seat. Some companies prefer to mount a status keyboard in the dashboard. It is comparable in size to a calculator and has about 12 buttons instead of a full keyboard. When the buttons are punched, specific messages are automatically sent, such as "I'm on my way to a job" or "I'm at the job and working."

By sending radio messages, paperwork is eliminated. "A clerk does not have to look at a piece of paper the technician wrote and re-write everything," Dennis said. Customer information is sent directly to billing. And credit card transactions can be handled by the technician too.

RAM provides the technology and works with a systems integrator who develops the software and hardware for a particular company's needs. "It's a team deal," Dennis said. The systems integrator designs and sets up the system, usually trains people on it and handles problems customers encounter after the initial setup.

Such a technologically advanced system can be expensive. "It's not a lightweight sale," Dennis admitted. Users pay "not less than \$3,000 to \$4,000 per vehicle," he said. They also are billed three cents for each character that is delivered per message. However, he said, "The system usually pays off in less than two years, if you really needed it in the first place."

Dennis said the system saves his customers time and money. A cable company increased its number of sales calls from eight to 12 visits per day, Dennis said. Productivity increases of 30 percent to 50 percent per day can be accomplished, he maintained.

While RAM's network is used by many different types of industries, others market com-

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reader service 21

munications systems specifically designed for the green industry.

Thornton Computer Management Systems, Maineville, Ohio, recently introduced a new computer device made by Psion that runs a program for taking inventory counts in the field. The unit looks like a calculator and can be held in one hand. In a garden store, for example, an employee simply glides the scanner over the bar code.

"It's a handy little gizmo. It's a tool that allows you to record the inventory in a much more simple and accurate method," said John Haubrich, Thornton sales manager. Each unit costs \$595 and a program pack costs \$2.95.

The unit only works for lawn maintenance professionals who already use Thornton's SLICE computer system. Haubrich hopes in the future the unit will be designed to handle customer service transactions as well.

Hand Held Products, Charlotte, N.C., designs and manufactures portable bar code scanners. In fact, the company markets its scanners to a major shipping company that is "the biggest user in the world of portable scanners," said Jeff Osborne, director of marketing at Hand Held. Museums, blood banks, textile manufacturers and telephone companies also use the company's scanners.

Studies show that "a remarkable decrease in errors" results from using scanners, Osborne said. With manual data entry, one error is made every three hundred characters. But with the bar code scanner entry, the error rate is one per three million characters entered, he said.

"I've seen companies that have literally paid for their systems the first day they used it," Osborne said. For example, a chemical plant in South Carolina closes down for three days to do its quarterly inventory. The cost to shut down the plant and hire an inventory team is \$68,700. But when the company purchased a bar code system, they spent \$50,000 and paid for their system the first time they used it.

Hand Held's bar code scanners can be programmed and are compatible with standard computer equipment, such as a PC or mainframe system. The company sells more than 25 different scanner models, which feature different technical capabilities and vary in size and price. All of the scanners are designed to be held in one hand.

One type of Hand Held scanner, an eight-ounce microcomputer, reads bar codes by touching them. It costs from \$1,095 to \$1,595, depending on the model. Another model scans bar codes without contact and weighs 22 ounces. The laser wand series is designed for use in warehouses to perform a variety of functions such as item tracking, receiving and shipping. One laser wand model can scan from as far as six feet away. Prices for the Laser-Wands range from \$2,495 to \$4,295.

Hand Held also makes a 32-ounce scanner that combines a microcomputer, laser scanning system and real-time radio frequency data communications. It eliminates the time lag between field data entry and downloading to a computer. Those scanners range in price from

\$3,695 to \$5,095.

Hand Held recommends to customers a systems integrator who takes the company's hardware and designs software to fit the needs of a particular company. The systems integrator provides customer support even after the bar code system is established, Osborne said.

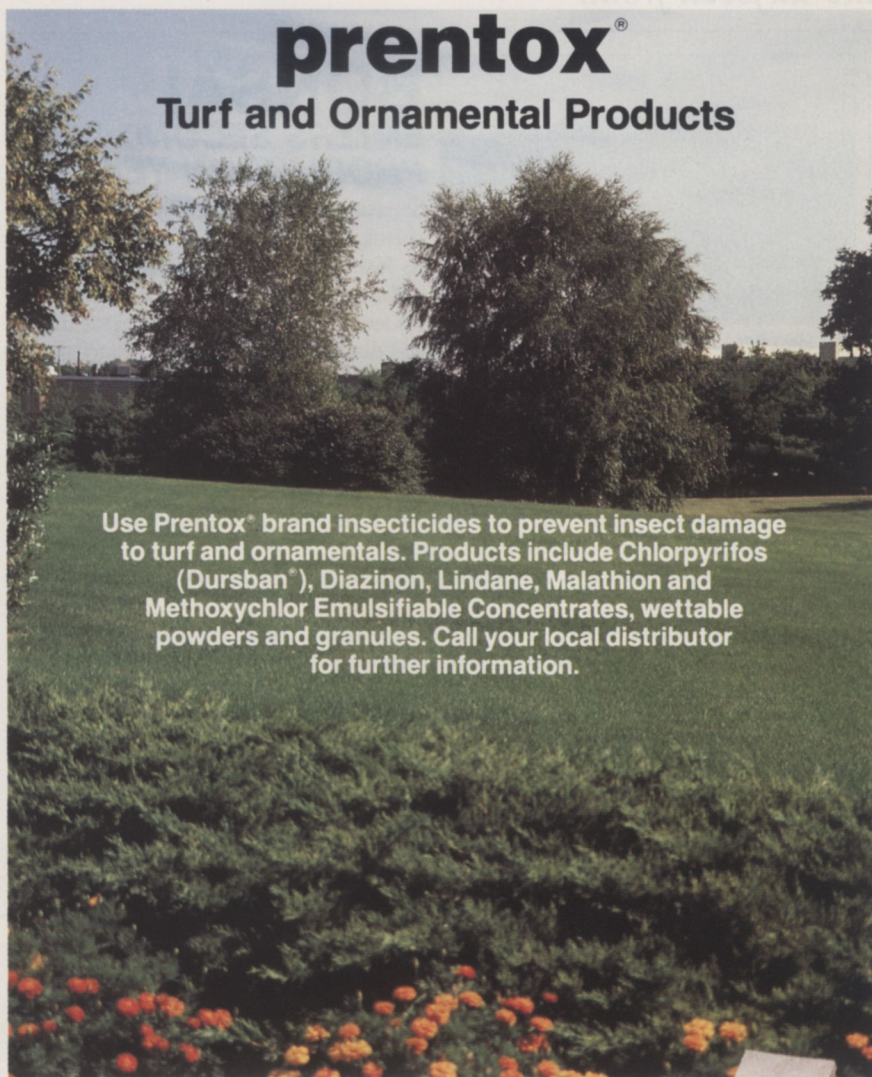
Selecting a communications system is a highly individual decision for a lawn and landscape maintenance contractor. Each business has many variables to consider. How technologically sophisticated do you want to become and how much money are you able to spend and still maintain a cost-effective business?

Dyk sums up the dilemma with advice on

how to select communications systems that are best for your business. "You always have to analyze whether or not a communications system is going to be useful for you. There are a lot of gadgets on the market. You have to make sure it's something that will pay for itself."

Dyk and other lawn maintenance professionals have at least one thing in common — it's difficult for them to imagine what it would be like conducting business without their communications systems. And they wouldn't want to find out. ■

The author is a free-lance writer based in Toledo, Ohio.



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reader service **14**

SUMMER FIELD DAYS

Lawn and landscape maintenance contractors, distributors, university researchers and others made the annual trek out West to view the latest on the turfseed front.



Turf Merchant's Fred Ledeboer walked attendees through turfgrass trials at the company's Oregon research site.

BONSAI ENTERS SECOND PRODUCTION YEAR

Showcase '91, sponsored by Turf Merchants, gave attendees a first-hand look at its Research Station in Aurora, Ore.

Research Director Fred Ledeboer led attendees through a tour of the grass trials and discussed such topics as dwarfism, enhanced endophyte levels and lower maintenance grasses.

Much of the attention zeroed in on Bonsai, a dwarf, turf-type tall fescue in its second year of production. Bonsai offers a high endophyte count for increased insect tolerance. Endophyte is a fungus that lives within the plant. It is transmitted by seed through the maternal parent. The fungi gets nutrients from the plant, then secretes a toxic compound to insects and other herbivores.

Bonsai is characterized by a dark color, high density and improved performance under humid conditions.

Advantages of Bonsai extend to maintenance, Ledeboer said. The dwarf turf-type tall fescue conserves energy through reduced mowing. Clippings are significantly reduced in the spring and fall.

Other featured grass varieties included Twilight and Julia bluegrasses. According to Ledeboer, Julia features good texture and dollar spot resistance. Twilight offers a good yield and dark green color.

Aquatic II and Alar II perennial ryegrasses were also presented. The ryegrasses are a "natural" for coastal climates, and perform in colder climates as well, Ledeboer said. The ryegrasses also show good response to fertilizers and good resistance to annual bluegrasses.

POLYMER COATED MATERIAL OFFERS PROGRAMMED CONTROL

Recent technology from O.M. Scott & Sons Co. combines polymer and sulfur into a new coating for controlled-release turf fertilizers.

The Poly-S™ technology was discussed at O.M. Scott's recent media day at its Marysville, Ohio, headquarters.

For future use in a variety of fertilizer products, Poly-S allows controlled, programmed release of nutrients. Residual can be programmed from two to six months according to the application. The composition of the polymer, through which the nutrient is diffused, determines the rate of release.

The low-cost product is expected to be available late next year.

Scott's three new varieties — Sonesta seeded bermudagrass, Aztec tall fescue and Brigade hard fescue — will be available this fall or next year. Sonesta will see limited availability this fall, while Aztec and Brigade will be available next year.

NATIONAL TURF TRIALS TOURED AT JACKLIN SEED

MORE THAN 120 participants attended Jacklin Seed's fifth annual Discovery Tour in Post Falls, Idaho.

Their tour began at the 75-acre Idaho Ranch where Jacklin maintains its field research facilities.

The ranch is now the site of cool- and warm-season nurseries; trials that evaluate the effects of burning, herbicide and insecticide applications; Kentucky bluegrass seed yield trial studies; and breeder seed fields.

Other studies conducted at the Idaho Ranch include cheatgrass control, sod webworm control, ergot control, pre-emergence herbicide trials, growth and yield enhancing studies and crossing blocks for new variety development.

Research Director Doug Brede walked

ENDOPHYTE PROVIDES GOOD INSURANCE POLICY

More than 400 landscape contractors, golf course superintendents, sod growers and landscape architects attended Lofts' 15th annual field day in Bound Brook, N.J. The annual event was followed by the firm's first field day at its Wilmington, Ohio, branch facility.

Wilmington is the newest of Lofts branches and serves Ohio, Indiana, Kentucky, West Virginia, lower Michigan and western Pennsylvania.

This year's theme for the field days, "Concern for the Environment," addressed the growing fear by the general public about the potential health hazards of using chemical lawn care products.

Jon Loft, president of Lofts, said the so-



Lofts' Wilmington field day.



Seed breeding begins at Jacklin's greenhouse; a new seed takes five weeks to move from seedling to growth stage.

tour participants through the U.S. National test trials for Kentucky bluegrass, perennial ryegrass, turf-type tall fescue, creeping bentgrass and bermudagrass. Also presented were the shade and low maintenance trials, as well as the zoysiagrass seed development tests.

The company hopes to double its nursery acreage and have its own irrigation system within the next two to three years.

At the Jacklin company headquarters, participants toured the greenhouse and re-

search laboratory. Visitors learned about the Green Seal label, a program initiated by the company to set stringent standards for grass seed varieties. To qualify for a Green Seal of Quality rating, seed varieties must meet higher environmental quality requirements with better disease resistance, requiring fewer chemicals and less maintenance.

Research Laboratory Manager Virginia Kanikeberg explained a special test for endophyte screening for tall fescue and perennial ryegrass.

lution revolves around the use of new turfgrass varieties bred for improved resistance to insects and disease.

Many of Lofts' new varieties contain endophytes, giving turfgrass a natural insect resistance to pests.

New varieties include Jamestown II, Palmer II, Prelude II, Repel II and Yorktown III. Ten new varieties will be available in 1992.

Dr. Richard Hurley, Lofts' director of research and development, discussed the evolution of endophytes in turfgrass. It's the first biological control turfseed companies have capitalized on with seed breeding. It provides "a nice insurance policy" in perennial ryegrasses, tall fescues and fine fescues.

Jon Loft reviewed the blue tag certification program which the firm's varieties participate in, guaranteeing the integrity of each variety. All varieties except for Kentucky 31 are eligible for certification.

Lofts headquarters is one of only 37 official sites used by the USDA for its annual National Tall Fescue Tests, the results of which are reported by the National Turfgrass Beltsville Agricultural Research Center. Other ongoing trials at the Lofts Farm include those for Kentucky bluegrass, perennial ryegrass, bentgrass, fine fescue, ornamental grasses and wildflowers.

OREGON CONSIDERS FIELD-BURNING BILL

Oregon House and Senate negotiators have devised a compromise plan to gradually curtail field burning.

The proposal also includes plans to generate about \$1 million a year to develop alternatives to field burning, which grass seed growers rely on to clear fields of unwanted straw.

The compromise must pass the House and Senate before moving to the governor for final approval. According to *The Statesman Journal*, provisions of the compromise include:

- Propane-flamed acreage would be limited to 75,000 acres. From 1998 on, propane flaming would be allowed only if it met pollution standards.
- Open field burning, propane flaming and burning of straw stacks would be banned once "economically feasible, environmentally acceptable alternatives" are developed.
- Registration fees would increase from \$1 to \$2 per acre to be open

(continued on page 62)

PURE SEED OPENS NEW BREEDING CENTER



Featured speaker Hank Wilkinson.

Pure Seed Testing/Turf-Seed Inc. recently sponsored its 10th annual Turf Field Day. The event was held at the Pure Seed Testing research farm near Hubbard, Ore., and featured turfgrass, seed yield, forage grass and wildflower trials; as well as shade performance and turf breeding.

Pure Seed Testing has been conducting breeding and evaluation work at the Hubbard site for 16 years. At Field Day '91, attendees viewed many new products, including Quickstart, Navajo and GH 89 perennial ryegrasses; Tomahawk, Virtue and Safari tall fescues; Livingston, Unique and 4 Aces Kentucky bluegrasses; 4DF and 4DR strong creeping fescues; 4CD and 4LD chewings fescue; and Elsie and Shawnee orchardgrasses.

Pure Seed also announced the opening of a new breeding and evaluation center in Rolesville, N.C., 10 miles north of Raleigh. Dr. Melodee Kemp, a recent graduate from Rutgers University, was hired to head up research at the new facilities.

According to Bill Meyer, president of Pure Seed Testing, the company chose the North Carolina site due to the tremendous heat and disease pressures presented by the geographic location. Tall fescue, bermudagrass and zoysiagrass improvement will be evaluated there.

Dr. Hank Wilkinson was the featured speaker at Field Day '91. Wilkinson, a turfgrass pathologist at the University of Illinois, discussed turfgrass conditions in the Midwest. According to Wilkinson, bluegrass is still the grass of choice in midwestern states, and root problems demand much of bluegrass research efforts.

People

JOHN KRUSE JOINED O.M. Scott & Sons as a ProTurf schools/sports field technical representative. Kruse provides technical service, products and programs to school and athletic turf professionals in Georgia.

Previously, Kruse was with the company's Hyponex division. Prior to joining the firm, he was a county extension agent for the University of Georgia Extension department.

Pennington Enterprises appointed **Brett Ellis** as Midwest regional sales manager. Ellis brings to the company more than 10 years of experience in marketing, handling and application of lawn and garden products.

In his new position, Ellis is responsible for marketing all Pennington products, including seed, fertilizers and lawn chemicals.

Michael Dietrich was named manager, lawn care sales division for LESCO. Dietrich joined the company in 1988 as a lawn care customer account manager.

Prior to joining LESCO, Dietrich was a senior buyer, research agronomist and

lawn specialist for ChemLawn.

Nine people were recently promoted at Rain Bird: **Frank Busam** to vice president of quality, **Kris Freudenthaler** to director of human resources, **Pamela Kratzer** to advertising assistant, **Pat Loper** to corporate parts service manager, **Sally Prusia** to MAXICOM sales specialist, **Phil Vangen** to area specifications manager in Northern California and Northern Nevada, **Javier Cuellar** to area specifications manager for three Southern California counties, **Sheila O'Brien** to Southern California district manager and **Dean Wagoner** to Florida contractor sales specialist.

William Sherman is the new national sales manager for Ringer Corp. Sherman joined the company in 1990 as eastern regional sales manager. His new responsibilities include all field sales, personnel and national accounts.

Prior to joining Ringer, Sherman was Eastern regional sales manager for Lipha, Milwaukee, Wis.

Vanessa Jensen joined Turf-Seed as Mid-Atlantic marketing manager and tech-



Cuellar



Prusia

nical service representative. In her new position, Jensen will assist distributors and dealers with technical questions and help introduce new products.

Jensen has been involved with the turf-grass industry for 19 years. She is immediate past president of the Maryland Turf-grass Council.

Briggs & Stratton named **Joe Lamer**, outside sales representative from Diamond Engine Sales, its 1991 Golden Piston Award recipient. The award is presented annually to the Industrial Engine division's most outstanding central service distributor sales representative. ■

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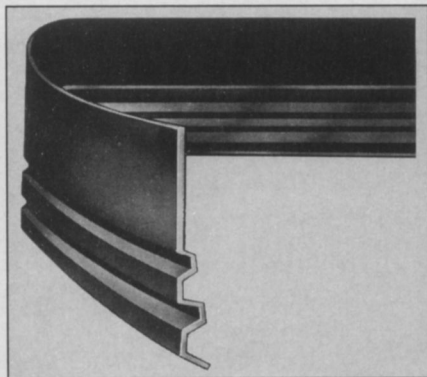
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reader service 73

Products

Oly-Ola Sales introduces Slim-Edg landscape edging. The flexible, UV-treated black polyethylene edging provides a durable, low-maintenance option for high-traffic areas.

Four horizontal grooves at the bottom and non-bending steel anchoring stakes



Product Spotlight

Dimension® turf herbicide from **Monsanto Co.** is designed to control crabgrass and other problem weeds.

Its active ingredient, dithiopyr, comes from a new class of chemistry developed by Monsanto. Dimension offers both preemergence and early postemergent control of crabgrass. Dimension also controls a broad spectrum of annual grasses and broadleaf weeds, including goosegrass, foxtail, spurge and oxalis.

Low use rates, safety to turf and nonstaining to desirable plant foliage, sidewalks or buildings are some of the product's features.

The product is available in one-gallon containers.

Circle 125 on reader service card

help to eliminate frost heave problems. The edging has a 5-inch depth, 1/4-inch top width and 2-inch deep slim top.

Super-Edg black rigid vinyl edging is also available.

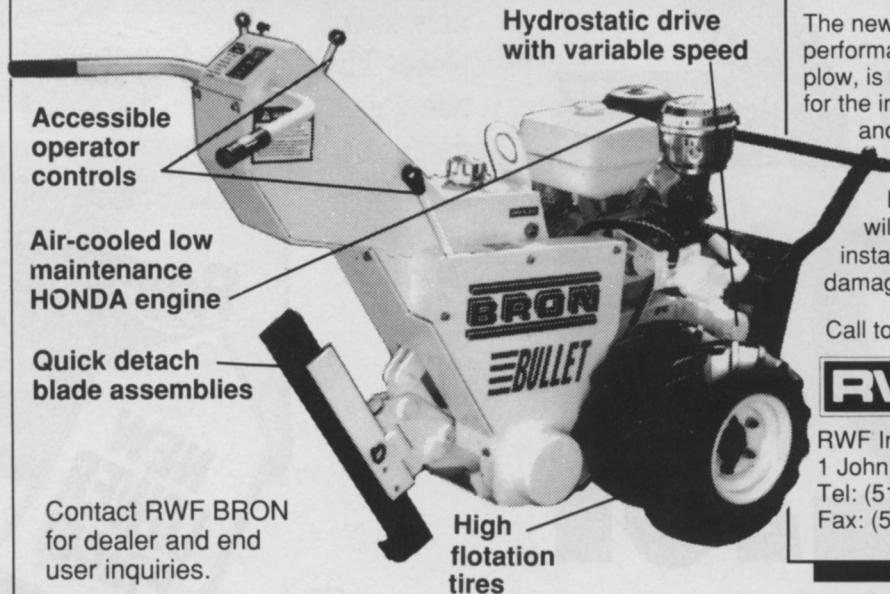
Circle 126 on reader service card

The **Olson Irrigation** 6200 series shrub adapter converts standard sprinklers to micro-spray. The adapter is available in two outlet sizes: 6201 accepts all 10-32 thread nozzles including the Olson O-Jet

(continued on page 56)

BRON BULLET

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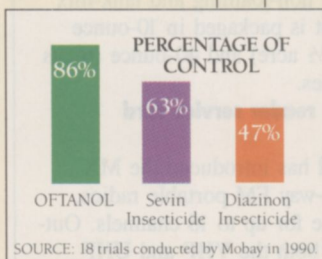
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The right time to apply it? That will vary from region to region. But a good rule of thumb is



to treat with OFTANOL when grubs are at the surface. An easy way to check is by just pulling back a bit of sod and looking for infestation. Or call your local Extension office to determine peak periods of grub feeding in your area.

These are, of course, just the basics of effective grub control. If you'd like to learn more about OFTANOL and its proper usage, contact your local Mobay representative. Or just give us a call at (800) 842-8020. One of our trained pro-

professionals will be standing by to answer your questions. Mobay Corporation, Specialty Products Group, Box 4913, Kansas City, MO 64120.

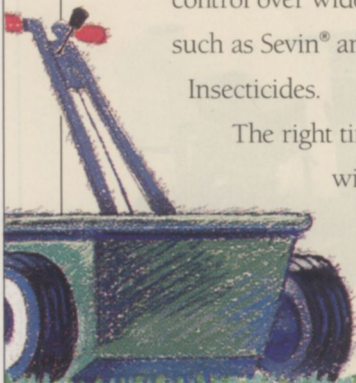
So why let grubs continue to test your patience when the easy answer is OFTANOL.



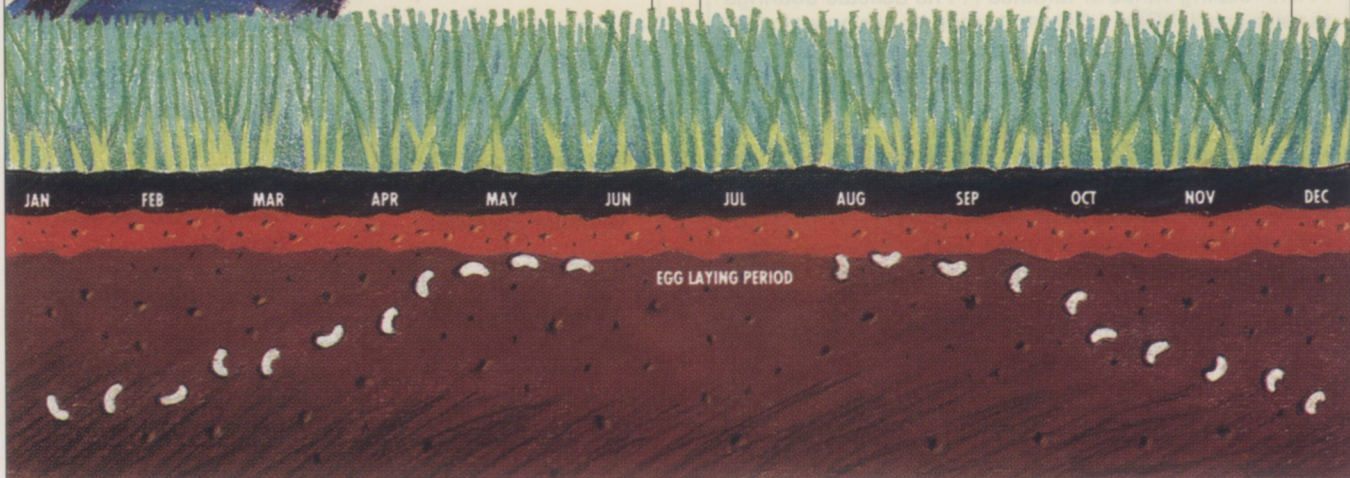
reader service **33**

OFTANOL is a Reg. TM of Bayer AG, Germany
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Products

(continued from page 54)

and Mini-Sprinkler; 6202 accepts 1/4-28 thread nozzles such as the Olson Hydro-Jet.



Both models are compatible with the Olson flow control modulator, which provides a uniform flow rate regardless of pressure. The adapter has applications on above ground risers in ground cover, shrub areas, planters and flower beds.

Circle 127 on reader service card

The M-C Big Tooth double roller pulverizer from **Mathews Co.** features two staggered rows of reversible heavy-duty teeth. Each tooth is 1/2-inch thick and 11 1/2-inches long, and is held by a single bolt for quick reversal.

The unit is designed to scarify, pulverize, grade, level and ground and break clods. Three models, 5-, 6- and 7-feet, are available.

Circle 128 on reader service card

Dissolve, a water soluble phenoxy herbicide combination, is now available from **Riverdale Chemical.** The product is a soluble, highly concentrated, dry formulation of 2,4-D, mecoprop and dichlorprop. It offers economical weed control at low use rates with minimal risk of exposure during handling and mixing.

Dissolve is non-foaming and tank-mix compatible. It is packaged in 10-ounce (treats 1/4 to 1/2 acre) and 40-ounce (treats 1-2 acres) sizes.

Circle 129 on reader service card

Midland LMR has introduced the MX Series of two-way FM portable radios, programmable for up to 16 channels. Output power of both the VHF and UHF



models is 5 watts, switchable to 2 watts to conserve battery life.

VHF models (70-145MX) cover 138-174 MHz in three frequency ranges. UHF models (70-245MX) cover 406-512 MHz in four frequency ranges. The radios have programmable tone-coded squelch.

Options include front keypad, voice scrambling, external weatherproof speaker



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Circle 130 on reader service card

As part of an expansion that includes 12 new products in the ProLine lineup, **The Toro Co.** introduced a hydrostatic-drive option for 14- and 18-h.p. midsize walk-behind mowers.

The hydrostatic drive features two Sundstrand pumps and two Ross wheel motors with ball bearings and tapered output



shafts. The unit also has a hydraulic oil cooling system for longer life.

Circle 131 on reader service card

Isuzu introduced its line of 1992 low cab forward commercial trucks. Features include increased horsepower and torque, intercooled turbo technology, a timing and injection rate control system (six-cylinder engines only) and redesigned piston heads.

The intercooler cools the hot, compressed air from the turbocharger before it enters the engine, providing increased horsepower, improved fuel economy and minimized exhaust emissions. Model NPR features a 4-cylinder engine; the NRR, F and E series trucks have 6-cylinder engines.

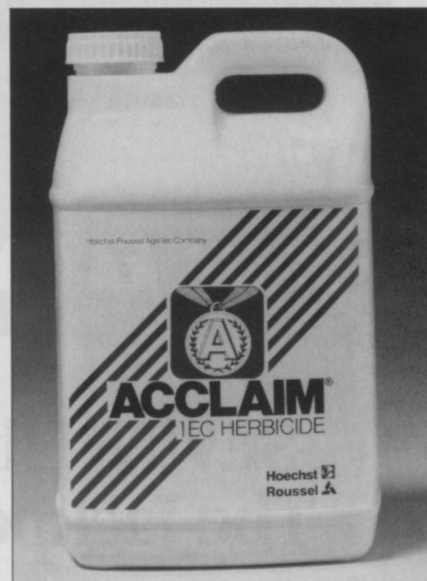
Circle 132 on reader service card

The Spotlyte ApliCart I sprayer/applicator from **Falkenberg** offers an alternative to pump cans and backpack sprayers. The interchangeable 10-gallon tank allows the operator to switch chemicals or continue after emptying the first tank.

The product is designed to eliminate spillage, contamination and on-site mixing problems. Swivel casters and 15-inch tires make it highly maneuverable even with a full load. The extra long 30-foot, 3/8-inch nylon reinforced, chemical and petroleum resistant hose is designed for hard-to-reach areas.

Circle 133 on reader service card

Acclaim IEC herbicide is now available in 2 1/2-gallon containers. The postemergent grass herbicide from **Hoechst-Roussel**



helps control grassy weeds such as crabgrass and goosegrass.

One-gallon and quart sizes are also available.

Circle 134 on reader service card

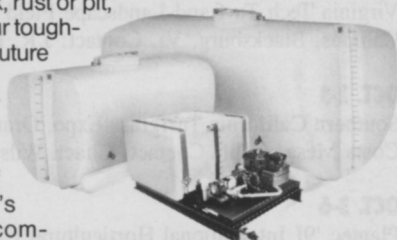
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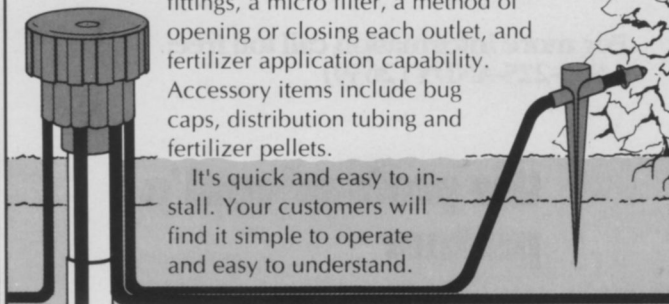
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Calendar



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AUG. 22

Turfgrass Field Day, Trade Show and Equipment Auction, Hancock Turfgrass Research Center, Michigan State University. Contact: Bruce Branham, Michigan State University, Dept. of Crop and Soil Sciences, E. Lansing, Mich. 48824; 517/353-2033.

AUG. 23-25

Farwest Show, Oregon Convention Center, Portland, Ore. Contact: OAN, 2780 S.E. Harrison, Suite 102, Milwaukie, Ore. 97222; 503/653-8733.

SEPT. 7-10

RISE Fall Conference, Hyatt Regency Reston Hotel, Reston, Va. Contact: RISE, 1155 15th St. NW, Suite 900, Washington, D.C. 20005; 202/296-6085.

SEPT. 12

The Ohio Turfgrass and Landscape Horticultural Field Day, The Ohio State University Turfgrass Research Facility, Columbus, Ohio. Contact: Dr. Karl Danneberger, OSU, 614/292-2001; or OTF, 614/292-2601.

SEPT. 13

Hazard Tree Evaluation Seminar, Graham Visitors Center, Washington Park Arboretum, Seattle, Wash. Contact: Center for Urban Horticulture, 206/685-8033.

SEPT. 13-14

National Horticulture Short Course, sponsored by the Florida Nurserymen & Growers Association in cooperation with University of Florida Cooperative Extension Service, Orange County Civic Center, Orlando, Fla. Contact: Uday Yadav, 407/323-2500, ext. 5559.

SEPT. 15-17

30th Annual Alabama Turf Conference, Auburn University Conference Center, Auburn, Ala. Contact: Dr. Coleman Ward, 205/844-5475.

SEPT. 16-19

Northwest Turfgrass Conference & Exhibition, Couer d'Alene, Idaho. Contact: NTA, P.O. Box 1367, Olympia, Wash. 98507; 206/754-0825.

SEPT. 17-19

Virginia Tech Turf and Landscape Field Days, Virginia Tech Campus, Blacksburg, Va. Contact: J.R. Hall III, 703/231-5797.

OCT. 2-3

Southern California Turfgrass Expo, Orange County Fairgrounds, Costa Mesa, Calif. Contact: Chuck Wilson, 714/951-8547.

OCT. 3-6

Plantec '91 International Horticultural Exhibition, Frankfurt Fair and Exhibition Center, Frankfurt, Germany. Contact: Messe Frankfurt GmbH, Ludwig-Erhard-Anlage 1, 6000 Frankfurt 1; (069) 75 75-0.

NOV. 5-8

New York State Turfgrass Association, Turf and Grounds Exposition, Rochester, N.Y. Contact: NYSTA, 800/873-TURF. ■

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News in Brief

(continued from page 9)

leaf weed species. Tank-mix studies indicate BAS 514, combined with a grass herbicide, will provide a complete weed control program.

Cool-season grasses as well as bermudagrass and zoysiagrass have been determined to be tolerant to BAS 514 application. The herbicide is currently formulated as a wettable powder, packaged in water-soluble bags.

BASF also reported that the California Department of Food and Agriculture has reinstated Basagran® herbicide for use on authorized crops in California, including turf.

Basagran provides control of yellow nutsedge and other broadleaf weeds in turf. The reinstatement carries several restrictions, including a permit to use the restricted use material.

Placement Service Fills Labor Demands

Companies who have experienced labor problems in the past now have an alternative when searching for dependable laborers and managers.

Amigos Empleo Legal Inc., a placement

service in Dallas, Texas, helps find employment for workers documented under the Immigration Reform and Control Act of 1986. Amigos also finds positions for managers in a wide range of industries.

Workers are screened to determine their compatibility, background experience and level of knowledge of U.S. industries in need of laborers. Amigos has placed workers in a variety of jobs, including landscaping, construction, dairy, agriculture, farms, horse ranches, restaurants, hotels and country clubs.

"Most of our workers are willing to relocate if they can earn a reasonable salary," said Amigos president Bob Wingfield.

As a part of its service, Amigos will confirm that the worker has all documents required under the new law and include a completed I-9 form and W-4 for each placement.

Wingfield started his placement service in 1987 after running his own irrigation company for 15 years. Losing workers to immigration was a constant worry, particularly after the Immigration Reform and Control Act of 1986.

To date, Amigos has placed workers in 41 states.

After receiving an order, the staff spends

one to two weeks screening applicants for the best possible match.

Displaced Execs Consider Franchises

A nationwide survey of franchise companies reveals that the downsizing of U.S. corporations has sent significant numbers of displaced executives shopping for franchised businesses.

Asked in a recent survey what percentage of their franchise buyers are "corporate dropouts," the franchise companies reported that the segment accounts for an average of 35.2 percent of their buyers.

Further, 82.5 percent of the respondents who had been selling franchises for more than five years said that the number of former corporation executives who make inquiries has increased over the past five years. Nearly 80 percent say that the use of "golden parachute" money has increased as a means of capitalizing franchised businesses over the same five-year period.

The findings are from a new study of 265 U.S. and Canadian franchise companies conducted by DePaul University and Francorp Inc., an Olympia Fields, Ill.-based franchise consulting firm. ■

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At Last A Solution for Watering Trees!

The **TREGATOR**® is a portable, reusable, above ground irrigation system. It provides a careful controlled drip rate for consistent watering of trees for up to 32 hours. *Designed to be used on the root ball of a planted tree, or a balled & burlapped tree for maintenance until planting.* Works well for softening hard soils overnight making summer tree digging easy. Effortlessly zips around the tree trunk and can be filled with water and liquid fertilizers in less than 10 minutes.

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18-h.p. Kohler, edgers, with bag, low hours. Good condition \$4,750. Call 609/627-2802; 36 Sugarbush Drive, Sicklerville, N.J. 08081.

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LANDSCAPE MANAGEMENT FOREMAN/ASST.

Manager needed for progressive, second generation, quality oriented Cleveland area company specializing in fussy residential work. Must be good with people and have a strong horticultural background. Irrigation knowledge helpful. Good compensation and full benefits. Great opportunity with growing, team oriented company. Send resume to: Schrauf Landscaping Inc., 35482 Chestnut Ridge, N. Ridgeville, Ohio 44039.

ADMINISTRATIVE/PROFESSIONAL

COMMERCIAL LANDSCAPE MAINTENANCE FIELD SUPERVISOR for \$6 million Arizona contractor. Duties: hire, train, schedule personnel, develop and direct site maintenance programs, interface with clients, etc. Qualifications: B.S. in horticulture or related, six years landscape management experience. Salary mid-20's DOE, benefits. EOE. Mail resume and handwritten letter to: Landscape Manager, P.O. Box 44224, Tucson, Ariz. 85733. ■

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GMC	45
Great Salt Lake	37
Green Industry Expo	59
Irrigation Association	5
Jacklin Seed	63
Kees	46
Lawn-Wright	8,21
Lofts	23
Mobay	2,55
Monsanto	10a,b,c,d,* 53
OTF*	35
Olathe	10
Oldham	14
Olson	57
Pepco	29
Prentiss	47
RWF Industries	54
RND Signs	12
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Strong	52
Technology Management	56
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Tuflex	57
Turf-Seed	41
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Yazoo	40

*Denotes regional advertising.

Compost Digest

(continued from page 34)

N.C. Counties Join In For Composting Project

The Coastal Regional Solid-Waste Authority, consisting of Carteret, Craven and Pamlico counties, N.C., issued a request for proposals for a 500-ton-per-day composting facility. The counties plan the facility as part of a comprehensive, regional solid waste management system.

Plans call for the facility to take in mixed waste and remove all the recyclables from the waste stream before composting the remainder into a mulch-like product, according to a representative. The counties expect to create a compost high in organic material and suitable for use as a soil amendment.

The RFP is available from Malcolm Pirnie, Newport News, Va., the consulting engineers on the project. ■

Pesticides

(continued from page 25)

tal concerns.

Arty Williams, of the certification and training branch in EPA's Office of Pesticide Programs, explained that the requirements would upgrade the standards of applicator competency; and were proposed to protect workers, animals, groundwater and other health-related concerns.

Currently, FIFRA mandates that a restricted use pesticide may be applied only by a certified applicator or a noncertified applicator under direct supervision. The proposed regulations would create three tiers of restricted use pesticides. Each tier would require verifiable training of the non-certified applicator.

The first level would consist of those products which EPA says require the closest scrutiny. Application of these products would be allowed only by a certified applicator.

For the second level of restricted use pesticides, a non-certified applicator could perform the service, but a certified applicator must remain onsite and within five minutes of the job site.

The third level would mirror the regulations currently in place: Off-site supervision would be permissible.

EPA is further considering a proposal that every state require recertification at least once every five years. States would have the option to recertify more frequently.

Williams said that most states already require recertification and that the majority set a three-year program.

PLCAA supports some of the proposed regulations, but doesn't think they go far enough in regulating pesticide use. PLCAA would like to see certification requirements for the use of all pesticides, not just those classified as restricted use. Therefore, PLCAA recommends adoption, perhaps through amendment to FIFRA, of a comprehensive certification and training program.

"We think that certification should be required for any pesticide use, not just restricted," Delaney said. "And it should be extended to all commercial applications of that product."

Delaney said that workers who maintain grounds as employees of private companies are not required to be licensed. And the do-it-yourselfers, who comprise the majority of pesticide users, are not even required to receive training.

To strengthen FIFRA certification requirements, PLCAA recommends that:

- Congress mandate state or EPA-certified verifiable training for all commercial pesticide applicators, regardless of whether the pesticides applied are classified for general or restricted use.
- State enforcement personnel be required to undergo the same training and meet the same standards as certified applicators.
- Congress adopt a voluntary training or information program aimed at the "do-

it-yourselfers" who comprise the majority of pesticide users.

Very few states require technician training, but that also may change as more states upgrade their standards for pesticide application. Michigan, for example, recently enacted a law that requires everyone applying pesticides to have state-approved training as well as company training. Applicators must now take the core (general standards) portion of the certified applicator's exam, plus receive specific on-the-job training. The law applies to institutional personnel as well as applicators.

In 1990, Iowa began to require certification for every applicator. Previously, Iowa had an 'under direct supervision' provision.

According to Donald Lewis, extension entomologist, the changes to certification were the direct result of the 1987 Iowa Groundwater Protection Act. The act set standards for dealing with environmental pollution concerns related to pesticide use.

Lewis said that he sees a trend toward more states beefing up their training requirements.

According to Delaney, this trend is simply the industry's response to more sophisticated demands on the applicator. "Any program, as it goes on, needs improvement and upgrading.

"In this age, an applicator has to be a more sophisticated applicator than 10 years ago. More is expected of him." ■

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

Field Burning

(continued from page 51)

burned, and a new fee of \$1 per acre would be levied on growers who plan to propane burn. Fees also would be levied when fields are actually burned. These fees would increase from \$2.50 to \$8 for every acre that is open burned in the Willamette Valley, and \$4 outside that area.

New fees for burning straw in stacks would be \$2 per acre from 1992-97, increasing to \$4 in 1998, \$6 in 1999, \$8 in 2000 and \$10 from 2001 on. A new \$2 fee also would be levied for propane flaming.

Money from these fees, estimated at \$500,000 a year, would pay for regulation of field burning and research into alternatives.

• The state would pay \$500,000 a year to subsidize the grower-financed research efforts from 1992-97.

The Oregon seed industry is estimated at \$280 million and supplies about 90 percent of the lawn, field turf and pasture grass in cool-climate countries throughout the world. ■

Staying Power

(continued from page 40)

If we grow grass on the roots and keep it healthy with a slow-release combination — and keep it green thanks to the iron, without pushing it on top, which keeps it healthier — we're doing the environment a good turn."

A growing market in organics is upon us.

After World War II, America's chemical technology started showing up in the care of turf and ornamentals. Today, Mark Nuzum, president of Harmony Products, Chesapeake, Va., which makes and sells synthetic and organic fertilizers, said he thinks alternatives should be considered. He said he doesn't want to throw away decades of excellent technology; he just wants more contractors to investigate the possibilities of sensible mixtures of synthetics and organics.

Howard Terrel, president of the new Humus Research Institute, Grove, Okla., said he's looking into humates — the end product of decayed matter — as a source of fertilizer.

His non-profit tax-exempt research cen-

ter will publish information on humate classifications.

"If you had to put down 46 percent nitrogen on a lawn, with humates you can reduce that to 6 percent — without contamination. We reduced water up to 50 percent and maintained the same moisture content in a test in Arizona and Utah," he said.

Ringer Corp., Minneapolis, Minn., is another fertilizer producer involved in organics. Its fertilizers consist mostly of castoff products from food-processing industries. These recycled products include feather meal, blood meal, bone meal, wheat germ (used as a binder) and sunflower-seed hull ash (a potassium source).

Scott Boutilier, director of commercial marketing, said Ringer products are released slowly. Also, he said, studies by Cornell, Michigan State University, and University of Rhode Island have shown that natural organic fertilizers can help reduce conditions that can lead to common patch diseases such as dollar spots and brown patch. ■

The author is a free-lance writer based in Cleveland, Ohio.

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Mean Turfgrass Quality Ratings of Tall Fescue Cultivars At Four Shade Locations in the United States

Quality Ratings 1-9	9=Ideal Turf
Name	Mean
Arid	6.0
Finelawn I	5.6
Trident	5.4
Pacer	5.3
Mustang	5.3
Apache	5.2
Tempo	5.1
KY-31	5.0
Falcon	5.0
Hounddog	5.0
Adventure	4.9
Jaguar	4.9
Bonanza	4.8
Olympic	4.8
Maverick	4.7
Willamette	4.6
Rebel	4.5
Clemfine	4.4
Brookston	4.4
Johnstone	4.0
Kenhy	3.4

Data from USDA National Turfgrass Evaluation Program

Drought Tolerance (Dormancy) Ratings of Tall Fescue Cultivars

Dormancy Ratings 1-9		9=No Dormancy	
Name	Mean	Name	Mean
Arid	7.7	Chesapeake	5.7
Olympic	7.7	Tempo	5.3
Apache	7.3	Hounddog	5.0
Jaguar	7.3	Pacer	5.0
Finelawn I	6.3	Johnstone	5.0
Mustang	6.3	Kenhy	5.0
Rebel	6.3	Maverick	5.0
Bonanza	6.0	Brookston	4.3
KY-31	6.0	Clemfine	4.3
Adventure	5.7	Trident	3.7
Falcon	5.7	Willamette	3.3
Finelawn 5GL	5.7		

Data from USDA National Turfgrass Evaluation Program

Brown Patch Ratings of Tall Fescue Cultivars

Brown Patch Ratings 1-9		9=No Disease	
Name	Mean	Name	Mean
Arid	6.3	Chesapeake	5.5
Adventure	6.2	Finelawn 5GL	5.5
Jaguar	6.1	KY-31	5.5
Rebel	6.0	Mustang	5.5
Pacer	5.9	Bonanza	5.5
Maverick	5.8	Trident	5.5
Falcon	5.8	Johnstone	5.5
Clemfine	5.7	Finelawn I	5.3
Apache	5.6	Kenhy	5.0
Tempo	5.6	Willamette	4.9
Olympic	5.6	Brookston	4.3
Hounddog	5.6		

Data from USDA National Turfgrass Evaluation Program

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