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**Controlling Weeds in  
Ornamental Beds**

**Tree Maintenance**

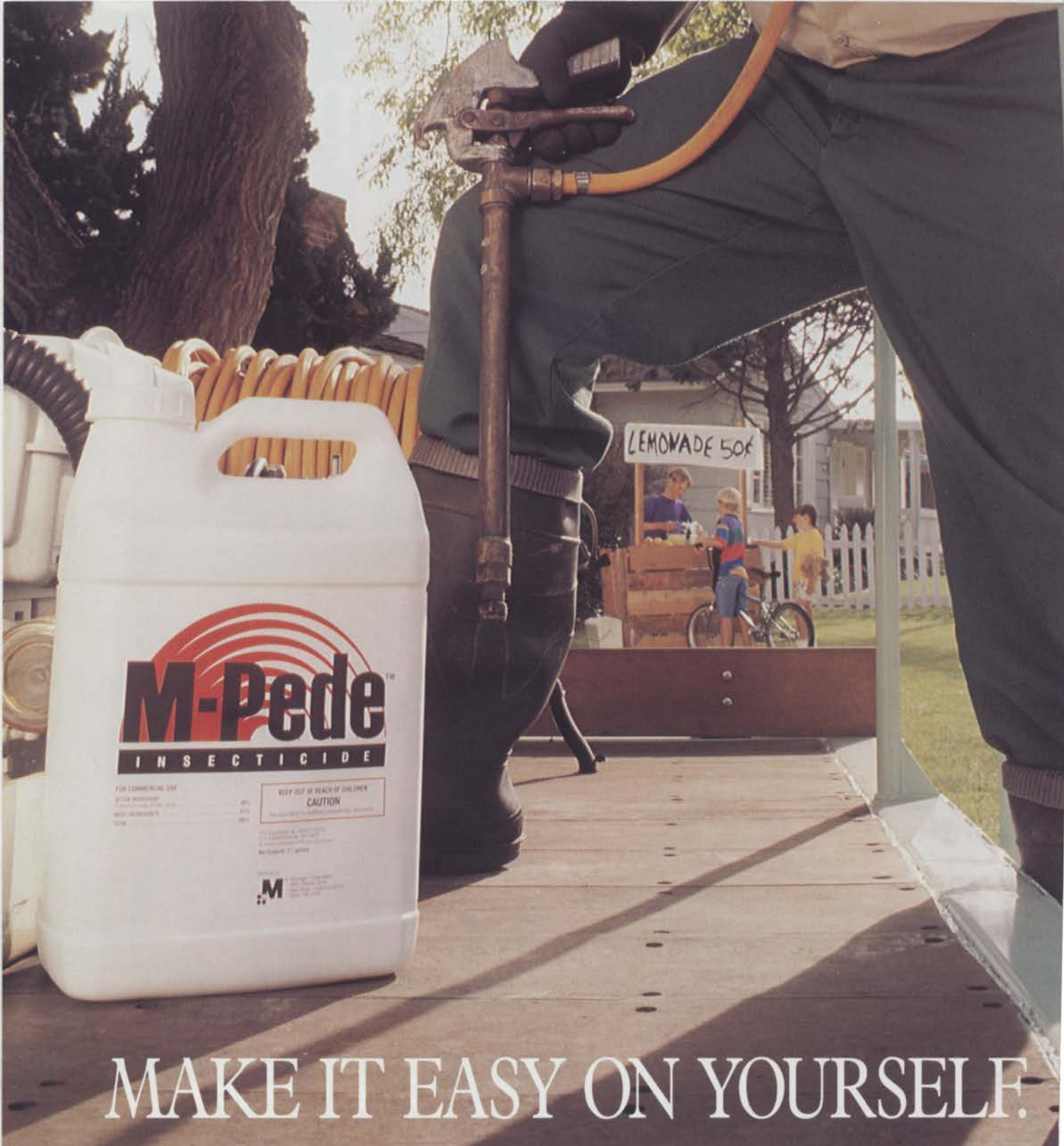
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**USE READER SERVICE #12**

# Lawn & Landscape MAINTENANCE

VOLUME 14, NUMBER 5

MAY 1993

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Larry Kaplan,  
Royal Oak, Mich.

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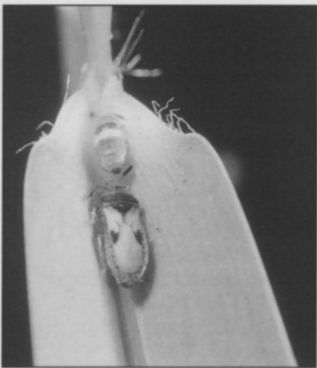
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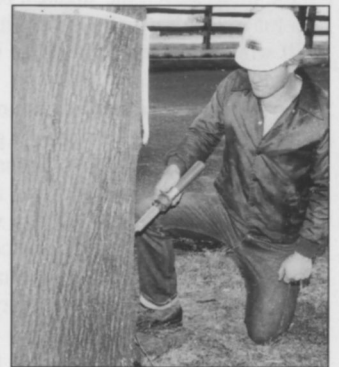
*In appropriate settings, drip can now be used with a high degree of confidence when designed, installed and properly operated.*



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# Editor's Focus

**INDUSTRY CERTIFICATION.** There's been lots written and said about this subject in the consumer and business press over the last decade. Some of it controversial, some of it patronizing, some of it overkill. But, always with the best interests of the professional lawn and landscape industry in mind — at least in this column.

The green industry has come a long way since its growth heyday in the 1970s and early 80s. Most of those who have been around that long have gone from order takers to renderers of valuable services. Even those who are relatively new to the lawn and landscape service world (many of whom have emulated those who have come before them) have made successes of themselves and their firms.

And it's these people who have cut a niche for themselves in the green industry who want to add overall legitimacy to the lawn and landscape profession. They want to do away with the "cutter" images, the "fly by night" scenarios and negative laborer connotations often associated with landscaping. And replace those reputations with quality service, valuable contributors and hard-working professionals.

And who can blame them. If national testing and certification will alleviate some of these images even the slightest bit, why not go for it. Don't we all want to improve our self worth as contributors to the industry and society in general?

To date, several state associations have incorporated testing for various green industry personnel, but never before has a national designation been given to a lawn and landscape professional. But with the emergence of a new landscape certification test comes the promise of increased universal professionalism; continuity across state lines.

The first group of participants (or guinea pigs some might say) recently endured the six-hour Certified Landscape Professional exam sponsored by the Associated Landscape Contractors of America. Nine of the 23 exterior and interior professionals sitting for the exam passed, and in turn became certified landscape professionals.

Upon hearing this, I'll admit to being slightly disappointed by the less than 50 percent passage rate — as I'm sure many of you are. But I'm told the results are more encouraging than they appear.

"At first it sounded low to me, but in retrospect, it's perfect," said Gary Thornton, ALCA president and an individual integral to the instrumentation of the national landscape exam. "If we had scored the tests by the overall average (of those taking the exam), everybody would



have passed. It was that close."

All 23 landscapers passed at least three out of five content areas. Almost everybody passed four of the five subject areas. Among all test takers, there was a range of 19 points from high to low. Once the other 14 pass the final portion(s) of the test, they too will be considered charter certified landscape professionals.

Not bad for the industry's first attempt at a national certification exam. (ALCA will offer the test two more times this year.)

ALCA and its Board of Governors have been working on the national certification concept for a good three years. They have worked hard to design a test which clearly reflects what a professional landscape contractor should strive to achieve, and in doing so, represent a minimum competency level in the field.

Certifying landscape professionals is a long-term project for ALCA. Forces behind the project hope to institute some level of continuing education needed to maintain the professional designation.

Likewise, a nationally certified turf professional program is not far off. By fall, the Professional Lawn Care Association of America in cooperation with the University of Georgia hopes to be able to offer its correspondence course for lawn maintenance professionals. The training course will cover the control of insects, diseases and weeds as well as an understanding of soils and turf varieties.

Kudos to both of these associations for making it possible for industry professionals to attain nationally certified status. And congratulations to those who strive to achieve such well-deserved recognition.

— Cindy Code ■

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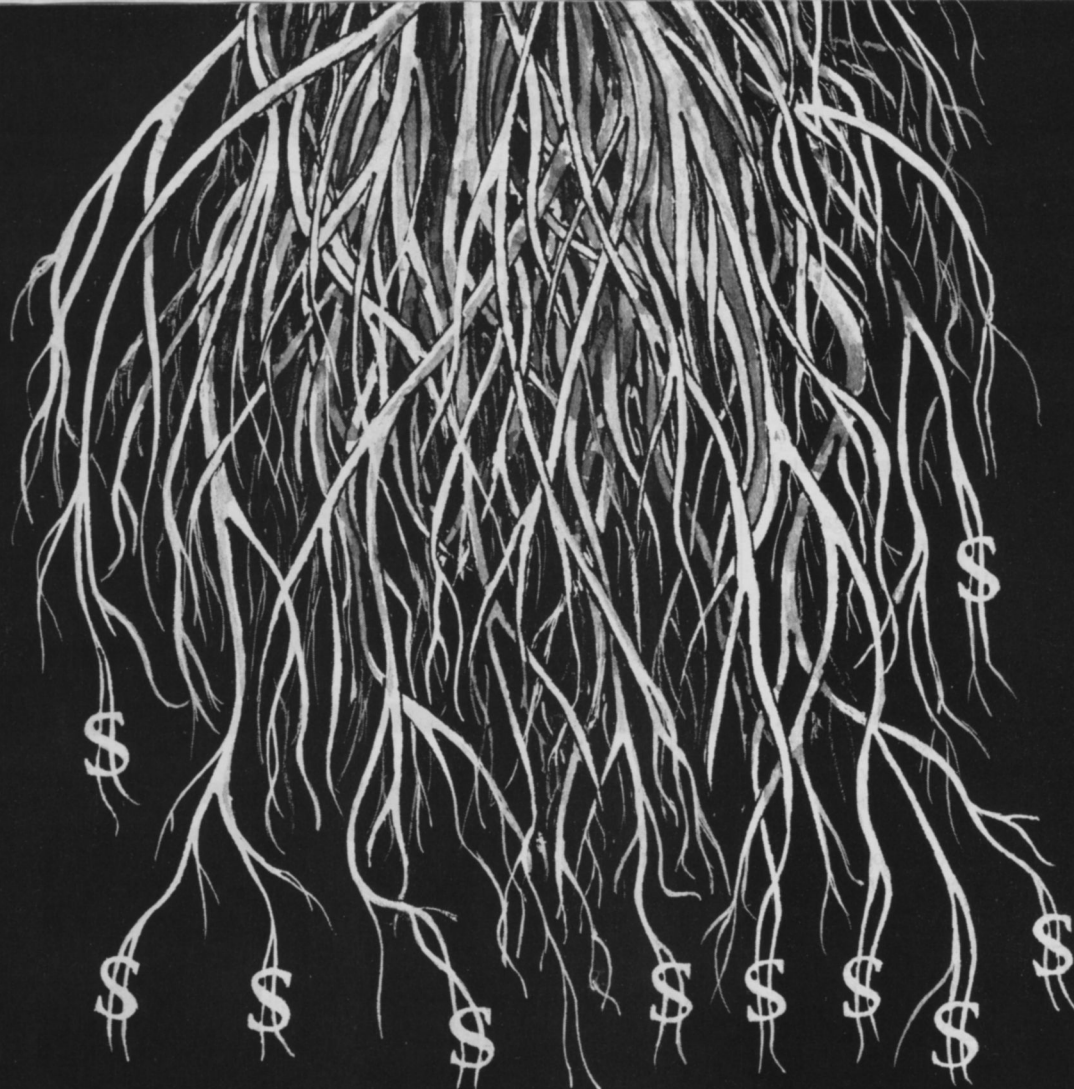
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USE READER SERVICE #17

# Business Watch

HOUSING STARTS and new home sales both rose modestly in February after the big fall both took in January, according to the U.S. Census Bureau.

New home sales rose 4.6 percent, from 569,000 to 595,000 homes (seasonally adjusted), after having dropped 12.7 percent in January. Housing starts were up 1.5 percent, from 1,171,000 to 1,189,000 (seasonally adjusted), after having plummeted 8.9 percent the previous month.

Regionally, the Northeast saw a big gain in new home sales, rebounding from 41,000 to 66,000 homes, or an increase of 61 percent, after having plunged 43 percent the previous month. The West saw a more modest gain of 14 percent (136,000 to 155,000), after a large drop of 27 percent in January. The Midwest continued its slow decline in new home sales, dropping another 7 percent to 101,000. And the South remained relatively steady, dropping 3 percent after having gained 1 percent in January.

Finally, the U.S. Bureau of Labor Statistics reported that unemployment held steady at 7.0 percent for March.

## CONSUMER PRICE INDEX\*

DEC.	JAN.	FEB.	MAR.
+0.1	+0.5	+0.3	+0.1

\*Percent change from preceding month (seasonally adjusted).

## PRODUCER PRICE INDEX\*

DEC.	JAN.	FEB.	MAR.
+0.2	+0.2	+0.4	+0.4

\*Percent change from preceding month (seasonally adjusted).

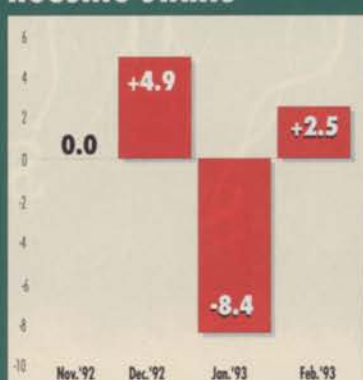
## IS IT TIME TO BUY A NEW HOUSE?

New home sales have rebounded since January's double-digit plunge, signaling a renewed interest from new home buyers.



Source: Bureau of the Census

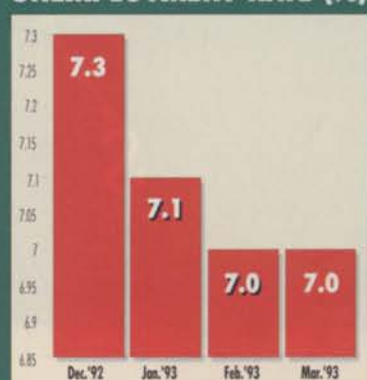
## HOUSING STARTS\*



\*Thousands of homes, seasonally adjusted

Source: Bureau of the Census

## UNEMPLOYMENT RATE (%)



Source: Bureau of Labor Statistics

## ECONOMIC REPORT: WEATHER CONDITIONS

LANDSCAPE CONTRACTORS expect the extended winter and excessive spring precipitation to result in long work hours and increased labor costs later this season.

Harsh weather and heavy flooding put Stano Landscaping in Milwaukee, Wis., 16 days behind schedule in maintenance and construction. "We have no revenue coming in. We have people on staff ready to go with nothing to do. We'll have to make it up in overtime, which means labor costs will go up," said Dan Ferrise, Stano's manager of landscape management.

Southern Seeding Service in Greensboro, N.C., quotes similar woes. Heavy rainfall robbed the company's crews of all but 25 work days in five months, said Carol Johnston, office manager. "By the time we get the equipment out, it's raining again," she said. The company hasn't laid off workers, but "if we hadn't been in business for 40 years, we might have had to."

Mid-March's deadly storm ripped out some plant material and felled trees in areas of Florida — which actually increased business for area landscape professionals.

"Storms like that have a kind of bittersweet effect for landscape contractors," said Dale Elkins, vice president of ISS Landscape Management Services, Tampa. "We don't want to see landscapes get

all beat up, but at the same time whatever damage is done increases our business."

ISS crews spent overtime prior to the storm storing plant materials in parking garages, restrooms, "anywhere we could get them out of the weather."

Pat Enstrom, landscape maintenance supervisor for Teufel Nursery-Landscape, Portland, Ore., reported that wet weather delayed plantings but also created a backlog of plant material the company normally ships. "We had plants we couldn't ship because our customers were in areas being dumped on with snow or rain," he said. "We may have trouble getting rid of them."

Increased precipitation served as a blessing for L&L Landscape Services, Santa Clara, Calif. "The water restrictions in place for six years have been lifted. So people precluded from landscaping will now be able to landscape. And we're able to irrigate areas that were totally or severely restricted before," said L&L's president Steve Glover.

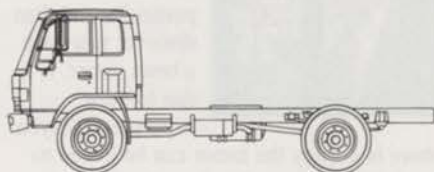
Lou Wierichs, president of Pro-X Systems, Appleton, Wis., said this spring hasn't been as good as past springs. Sales aren't where they should be, but cancellations are down. "We're behind, but we're small enough that we can get caught up fast." ■

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\*Payload includes weight of cargo, body, equipment and passengers.

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USE READER SERVICE #79

# Letters

## Risk Perception

In your March article, "Pesticides: Ruled by Fact or Fear?" I found the table on page 33, "Ranking Risks," somewhat misleading.

Many of the risks listed before pesticides are obvious to most people. When you drive your car, smoke cigarettes or fight fires, most people are aware of the risks. When you're involved in a car wreck, for example, the cause and effect are right there.



If you've worked in the landscape industry almost your whole life, have been exposed to various pesticides and then discover you have a brain tumor, is it due to those exposures? Maybe

there is no way the tumor can be linked to pesticide exposure, but there is also no sure way to prove that it isn't.

As a landscape professional it distresses

(continued on page 10)

## The Miracle of Trees

*Ed. Note: Because this month's issue focus is trees and ornamentals, we thought we would run the following poem from one of our readers.*

Trees are not mere objects — please don't take them for granted. So intelligent! Capable of making their own food. Imagine how a seed can be formed and how it can possibly grow. Such subtle, powerful reproductive instincts and mechanisms. How amazing! Green leaves receive and convert sunlight into sugar to feed themselves, their own cells. How can water go straight up a tree trunk — 100 percent against gravity — right to the cell where it's needed — with no pump? How does the bark know what texture to be? How do the leaves know what shape to be? How incredibly perfect! Plants provide us with absolutely essential oxygen — the only source. What a creation! It's not enough just to provide oxygen, it's done in such a gorgeous, natural, aesthetically perfect way.

Trees adorn and beautify our precious Earth. Imagine the world without trees. Go for a long walk in the woods — a really long walk — until you feel life. Stop and look at a tree: Strong, gentle; such a part of the silent mystery. Let me learn from the trees, about beauty and about change. Learn about stillness and about growth, about strength and humility.

Plant a tree; have gratitude for life. Yes, the inventions of man are unbelievable: the light bulb, the automobile, the computer chip, the skyscraper. But how incredible is the force that creates and powers trees?

Bob Paulding

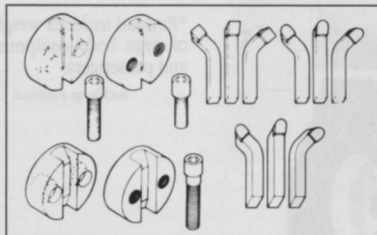
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USE READER SERVICE #71





## Letters

(continued from page 8)

me to see the amount of pesticides used to promote monoculture in turf at the expense of diversity and the health of the environment. What's safer for the environment: dandelions, wild violets or regular applications of pre- and postemergence herbicides?

We've forgotten that the definition of a "weed" is simply a plant that someone thinks is growing in the wrong location. If we decide that those "weeds" in our lawns are no longer "weeds," then the motivation for using chemical solutions disappear. The definition of a lawn is simply this: green plants all cut to the same size.

*Robert Mulder, owner  
Amsterdam Landscaping  
Raleigh, N.C.*

## Continuing Education

Thank you for running the irrigation training series. Each article has been well written and educational.

We share the commonality of trying to help our peers understand the more practical aspects of irrigation design. One

area that many landscape architects are having a difficult time understanding is precipitation rates.

In California, AB325 requires landscape architects to provide a schedule of irrigation run-times for three different seasons of the year, and to show the precipitation rate of each zone or valve. Additional information in this area

would be beneficial.

Once again, thanks for your support.  
*Derick Wright, district manager  
Hunter Industries  
San Marcos, Calif.*

Just a note to let you know how helpful your irrigation articles have been. I am interested in hearing your views on drip irrigation and the mechanics of pumps. Keep up the good work.

*Julia Barnosky, landscape architect  
N.E.S. Inc.  
Colorado Springs, Colo.*

Great irrigation training articles. Very good information presented in a way that the average person will get good use out of the information. We appreciate your continued dedication to our industry.

*Rick Randall, president  
Randall & Blake/Environmental  
Contractors  
Lighton, Colo.*

## Feature Enjoyment

Your article about the Messers (January 1993) was great. They sound like wonderful people. It was a perfect blend of facts and human interest.

*Natasha Hopkinson  
Hopkinson Associates  
Boston, Mass.*

Letters to the Editor are encouraged. Send them to: **Cindy Code, Editor, Lawn & Landscape Maintenance magazine, 4012 Bridge Ave., Cleveland, OH 44113.** Letters may be edited for length and/or clarity. ■

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USE READER SERVICE #64

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any other way. Sure, you appreciate a pretty yard. But it's a good bet you appreciate a healthy



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USE READER SERVICE #77

## NEWS DIGEST

### Bill Davids Named President of Illinois Firm

Bill Davids was promoted to president of Clarence Davids & Co., Blue Island, Ill. Former president, Clarence Davids Sr., will remain active in the company as chairman of the board.

Bill Davids, formerly executive vice president, has worked full-time for the firm for the past 20 years. He is also a past president of the Illinois Landscape Contractors Association and a past chairman of the Landscape Management division of the Associated Landscape Contractors of America.

### Biosys Expands To UK Market

Biosys signed a marketing agreement with pan britannica industries ltd. of the United Kingdom to sell biosys' BioSafe nematode-based insecticide in the U.K. Pbi, a subsidiary of Sumitomo Corp. of Japan, holds a major share of the U.K.'s retail lawn and garden pesticide market.

### RISE Forms Packaging Task Force

The Responsible Industry for a Sound Environment created an industry task force to address product packaging and container management issues.

Chaired by Dr. Molly Cline, manager of public affairs and new products for Monsanto Residential Products, the task force plans to assemble innovative packaging and recycling ideas for the specialty pesticide industry.

The group continues to solicit contributions from companies and individuals with appropriate technical background.

### Davey Graduates Ready for Work

Forty-eight students graduated from the Davey Institute of Tree Sciences, a four-week course on plant care, customer service and safety, sponsored by The Davey Tree Expert Co.

Davey employees nationwide attended the course at the company's Kent, Ohio, headquarters. Subjects covered insect and disease management, personnel management, tree identification and physiology, plant health care, soils, equipment, fertilization and pruning. In addition to classroom instruction, the course included actual experience in techniques such as tree climbing and aerial rescue training.

## Strong Sales Expected in the Northeast

LAWN AND LANDSCAPE professionals expect 1993 to be considerably better than 1992, according to the National Landscape Association's 18th annual economic survey of member firms.

An 11 percent increase in sales was forecasted for this year compared to 8 percent in 1992. Sales for 1992 fell 1 percent short of projections coming in at 7 percent instead of 8 percent.

Strongest increases in landscape sales for 1993 are expected in new residential landscapes, 11.5 percent; residential renovation landscaping, 8.9 percent; commercial maintenance, 8.8 percent; and residential maintenance, 6.7 percent. Prospects continue for poor increases in new commercial work, 2.9 percent and renovation commercial landscaping, 1.4 percent. (The West was not included in survey statistics due to low returns.)

Regionally, the strongest recovery is expected in the Northeast, 14.6 percent; followed by the Great Plains, 10.3 percent; Southeast, 9.4 percent; and Great Lakes, 9.3 percent.

Landscape sales predicted and earned in 1992 were fairly close to expectations. For instance, the Northeast expected a 5 percent sales increase in 1992 and experienced a 5.6 percent increase.

The Southeast expected a 4.9 percent increase and experienced 4.4 percent. The Great Lakes region, on the other hand, was overly optimistic predicting 14.3 percent and reporting a 6 percent increase.

### EXPECTED IN 1993 FROM 1992

Region	Overall Landscape Sales			Avg. % Change
	Up	Same	Down	
Northeast	82	18	0	+14.6
Southeast	86	0	14	+9.4
Great Lakes	71	21	8	+9.3
Great Plains	83	17	0	+10.3
Survey Avg.	79	17	4	+11.6

#### NEW RESIDENTIAL

	% Reporting			Avg. % Change
	Up	Same	Down	
Northeast	93	7	0	+13.7
Southeast	80	20	0	+8.8
Great Lakes	84	11	5	+10.9
Great Plains	89	11	0	+10.1
Survey Avg.	86	12	2	+11.5

#### NEW COMMERCIAL

	% Reporting			Avg. % Change
	Up	Same	Down	
Northeast	80	10	10	+4.9
Southeast	72	14	14	+6.8
Great Lakes	50	33	17	+0.6
Great Plains	50	38	12	+5.6
Survey Avg.	59	26	15	+2.9

## Minor Use Pesticide Bill Moves Into Spotlight

The U.S. Senate introduced a companion bill to the U.S. House of Representative's Minor Crop Protection Assistance Act presented earlier this year. Industry observers are "hopeful" the bill will pass, but aren't placing any bets.

"There's been a lot of Congressional good will to fix the problem," said Ben Bolusky, director of government affairs for the American Association of Nurserymen. "We're hopeful Congress will come to a resolution."

The act, introduced by House Agricultural Committee chairman Kika de la Garza, D-Texas, is intended to promote the federal registration and re-registration of minor use pesticides and curb the loss of effective pesticides from the landscape market. Manufacturers have been opting to pull limited-use pesticides from the lawn and landscape market rather than pay for

expensive Environmental Protection Agency toxicity tests.

"Manufacturers are pulling the products based on economic decisions rather than questions of safety," Bolusky said. "As we bump up against 1997, we see the number of available chemicals declining."

Congress amended the federal pesticide law in 1988, requiring all pesticides on the market since before 1984 to undergo re-registration by 1997. The program is far behind schedule. EPA officials pushed the deadline back 14 years until 2002, but recent budget cuts could cause further delays.

## Pennington Unveils Heat-Resistant Fescue

Pennington Seed introduced Georgia 5, a tall fescue seed that can adapt to the southern coastal plain region, said company spokesman Roy Deason.

The grass, which underwent 25 years of research by the University of Georgia and

U.S. Department of Agriculture Soil Conservation Service, performed well in several turfgrass evaluations in Georgia and Florida. Similar in appearance and turf quality to other tall fescues, Georgia 5 appears better able to withstand high temperatures, extreme sun and water stress, making it ideal for North Carolina, South Carolina, Georgia, Mississippi, Louisiana and parts of Texas.

The dark-green, fine-leaved fescue should be available in limited amounts by fall, Deason said.

## EPA Reduces Pesticide Poison Hotline Hours

The U.S. Environmental Protection Agency Office of Pesticide Programs reduced hours for its pesticide poison hotline, blaming the cutback on budget cuts.

Previously a 24-hour-a-day service, the National Pesticide Telecommunications Network hotline now only operates Monday through Friday, 8 a.m. to 6 p.m., excluding holidays. The number of operators dropped from six to three, but medical professionals continue to be available for emergency situations.

"The number of calls handled has dropped about 26 percent," said Richard Daum, an EPA spokesman. "We're still tracking the calls that were not answered. We don't have those figures yet."

## Proposed Bill Prohibits Dual Shops

Rep. William Clay, D-Mo., introduced a bill that would ban construction firms from "double-breasting" both union and non-union operations. Under the proposed bill, non-union construction firms would be forced to operate under union contracts even without employees' consent.

It remains unclear whether the bill would regard landscape contractors as part of the construction industry.

Under the bill, even right-to-work states would require employees to go through union hiring halls to keep their jobs.

## Miles' 1992 Profit Reaches \$305 Million

Miles Inc.'s 1992 sales grew 5 percent over 1991, and profit before taxes increased 50 percent to \$305 million, according to company figures.

Sales rose from \$6.2 billion to \$6.5 billion, while profit from continuing operations jumped to \$305 million from \$203 million.

Profit before taxes from continuing operations reflects the exclusion of costs associated with restructuring certain medical imaging and animal health businesses last year. More than 40 percent of sales came from health care products, 41 percent from chemicals and 16 percent from imaging technologies.

Expenditures for research and development grew more than 19 percent to some \$438 million, representing about 7 percent of sales.

"One of the reasons for our optimism about the future of Miles is the productivity of our company's R&D programs," said Helge Wehmeier, Miles' president and chief executive officer.

## Scotts Opens Two Service Centers

The Scotts Co. opened two service centers in April. The one-stop shops are located in Rockville, Md., and Tysons Corner, Va.

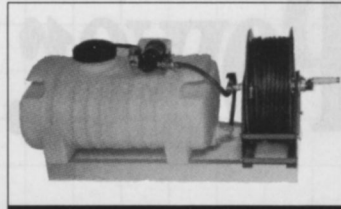
In addition to professional turf products, the centers offer tools, safety supplies and irrigation and nursery supplies. Products are available in bag or bulk; orders may be cash and carry or call and delivery. Technical advisers are also available.

The new centers will also be the site of future seminars sponsored by

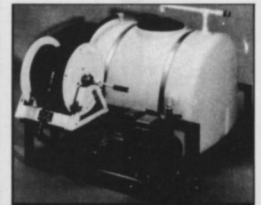


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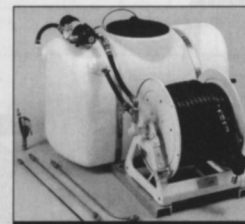
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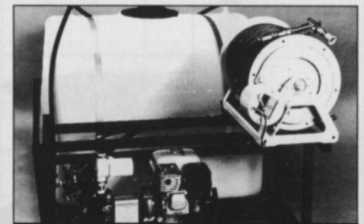
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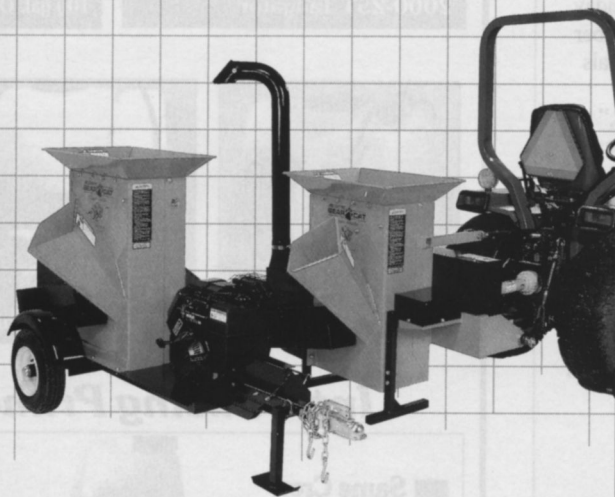
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Scotts' Professional Business Group.

The service centers are open Monday through Friday, 6:30 a.m. until 5:30 p.m.

## **Netlan Tackles U.S. Turf Market**

The United Kingdom-based Netlon Ltd. recently appointed seven distributors in North America to supply Netlon Advanced Turf, a rootzone system which protects turf from soil compaction in heavy-use areas such as walkways, parking lots and service roads.

Advanced Turf has been tested on several athletic fields in the United States, including the Anita Race Track in Los Angeles. The rootzone system increases turf's water infiltration rate and reduces waterlogging.

## **Landscape Firm Forms in California**

Takehara Landscape and Sansei Garden recently joined forces to form Image Landscape Inc., a broad-based landscape construction firm providing water management and chemical applications throughout northern California.

Headquartered in Sacramento, the new firm specializes in maintaining "high profile" landscapes while reducing water and chemical use.

Brian Takehara serves as Image's president. Other key executives include Walt Takehara, vice president of production, and Brian Masunaga, vice president of sales/marketing.

The company formed to provide environmentally sound services.

## **Monsanto Receives Experimental Permit**

The Environmental Protection Agency granted an experimental use permit for Monsanto's Manage turf herbicide used to control nutsedge.

The permit allows use on 500 acres in 1993. The herbicide is safe on all major warm- and cool-season North American turfgrasses.

Manage, a sulfonlurea herbicide, is applied at very low rates. Field trials have demonstrated it has negligible potential to reach groundwater supplies, said Dennis Plummer, Monsanto's business director.

## **Corrections**

American Cyanamid is the sole manufacturer of pendimethalin. The information was incorrectly reported in the March issue of LLM.

Ruppert Landscape, Ashton, Md., was misidentified as Rapiere Landscape in April's article, "Reaping Atlanta's Riches."

# Association News

NINE OF 23 landscape professionals passed the pilot certification program sponsored by the **Associated Landscape Contractors of America** in February. The six-hour exam covered business planning, accounting and management; health, safety and human resources; production/operations and horticulture; risks, laws and contracts; and sales, marketing communications and public relations.

The first group of Certified Landscape Professionals are Bill Cox, Lawn Management Co., Houston, Texas; Kurt Kluznik, Yardmaster, Painesville, Ohio; David Livingston, Green Earth Services, Columbia, S.C.; Bruce Moore, Eastern Land Management, Shelton, Conn.; Thomas Pruett, Land Arc, Raleigh, N.C.; Mitch Rolsky, Pro Care Horticultural Service, Indianapolis; Lance Schendorf, Gachina Landscape Management, Menlo Park, Calif.; Rick Spalenka, Rainbow Gardens, Virginia Beach, Va.; and William Thornton Jr., Thornton Gardens, Maineville, Ohio.

Additional exams will be held Sept. 20, 7:30 a.m. to 2:30 p.m. at the Stouffer Orlando Resort during the ALCA Interior

## For more information...



ALCA  
12200 Sunrise Valley Drive  
Suite 150  
Reston, VA 22091  
703/620-6363

CAN  
4620 Northgate Blvd.  
Suite 155  
Sacramento, CA 95834  
916/567-0200

AAN  
1250 I St. NW  
Suite 500  
Washington, DC 20005  
202/789-2900

GTA  
5198 Ross Road  
Acworth, GA 30102  
404/975-4123

IA  
1911 N. Fort Myer Drive  
Suite 1009  
Arlington, VA 22209  
703/524-1200

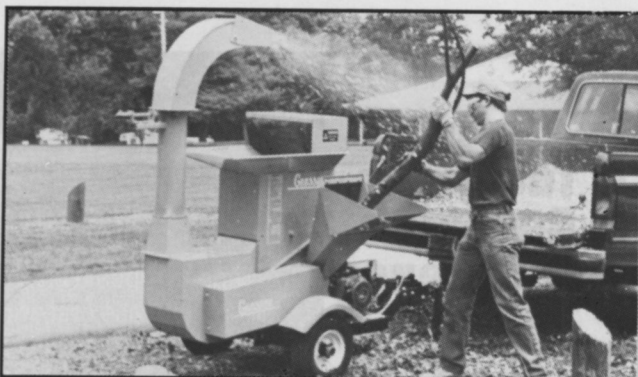
Plantscape Division Conference, as well as Nov. 14, 1 to 6 p.m. at the Baltimore Sheraton during the ALCA Landscape and Grounds Maintenance Conference. A third exam is also scheduled to coincide with ALCA's Annual Executive Forum Jan. 23-26., in Waikoloa, Hawaii.

The **Georgia Turfgrass Foundation Trust** forges ahead with plans for its Dead Air Syndrome bentgrass cultivar study. The five-year project, to be conducted at

the Atlanta Athletic Club in Duluth, Ga., will evaluate current and new bentgrass cultivars under the stress of poor air circulation.

Workers broke ground on the evaluation green earlier this month. Plantings of warm-season turfgrass varieties are scheduled for August.

Research scientists at the Griffin Experimental Station, University of Georgia, and golf course superintendents will conduct evaluations regularly throughout the study.



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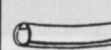
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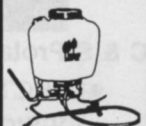


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The project, primarily funded through private donations from the golf and turfgrass industries, is expected to cost about \$21,000. That total does not include supply and maintenance donations.

The **California Association of Nurserymen** presents "The Place To Be in '93" as its theme for the 1993 Pacific Hort Expo. The show runs Aug. 25-26 at the San Diego Convention Center.

This year's Expo features a variety of seminars, a separate display area for new products and a job placement Career Fair.

Seminar topics include handling injured employees, marketing environmentally friendly products, planning strategically for business and planning for succession in a family business.

Special events planned around the show include an excursion to the San Diego Zoo and a boat tour of the harbor.

More than 6,500 people attended last year's show, in which 450 exhibitors participated. About 720 booths are expected this year.

The **Irrigation Association** elected William Koonz, Koonz Sprinkler Supply, Springfield, N.J., as its 1993 president.

Others elected to office include Joe Goecke, Valmont Industries, Valley, Neb., as president elect; Jack Buzzard, Rain Bird Sales, Glendora, Calif., as vice president; and Sam Duke, Russell Daniel Irrigation, Athens, Ga., as treasurer.

Three members were elected to three-year terms on IA's board of directors: Michael Donahue, Aquamaster Irrigation Products, Thornhill, Canada; Mike Muffett, Muffett and Sons, Zillah, Wash.; and David Ransburg, L.R. Nelson Corp., Peoria, Ill.

The **American Association of Nurserymen** claims success with its Partner in Politics forums in three states, and looks to expand the program to other regions.

In the program, AAN officials helped state nursery associations in California, Oregon and Ohio conduct local one- or two-day government issue forums. Ben Bolusky, AAN's director of government affairs, Craig Regelbrugge, AAN director of regulatory affairs and grower services, and state legislators discussed industry issues including pesticide preemption, minor use pesticides, water quality, nursery inspections, quarantines, OSHA reform, health care reform and taxes.

California attendees also met with legislators one-on-one to voice individual concerns.

"We had pretty good participation at all three forums," Bolusky said. "Each one was a little different."

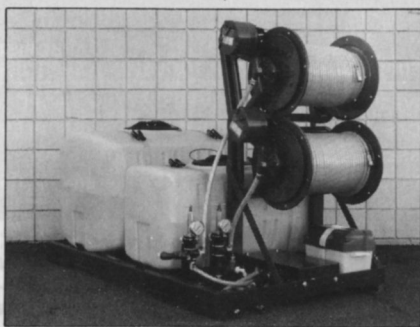
The program's main goal is to heighten awareness that "federal and state legislation and regulations are intertwined," he said.

Several state associations are considering hosting similar forums, he said.

**IN BRIEF...The United States Golf Association** and the **New York Audubon Society** published the "Landscape Restoration Handbook," a comprehensive guide demonstrating the use of naturalization vs. more intensive landscape management. The book is available through USGA, 800/336-4446...The **Idaho Nursery Association** elected Meredith Carnahan of Jayker Tree Farm, Eagle, as its 1993 president. Other officers elected include Terry Huntsman, Sunnyside Gardens, Idaho Falls, as president elect, and John Driedger, Apple Creek Propagators, Bonners Ferry, as first vice president...Tom Bland of Bland Landscaping, Raleigh, was elected president of the **North Carolina Turfgrass Council**. The gavel passed during official ceremonies May 12. ■

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According to Andrew Baldy, vice president of Oakwood A.P.C.I., half his company's 20 trucks are Isuzus. "As we keep growing, we'll keep on buying Isuzu trucks. Reason being, we get longer life out of them. We also get better fuel mileage, easier maintenance, lower

upkeep and much better overall durability."

Ken Thomas, owner of Landscape Techniques says, "I didn't know what cargo room was until I got an Isuzu."

Adds Greg, "My mechanic loves it. He likes the tilt cab. And if you take an Isuzu in a cul-de-sac, you can almost do a figure eight"

Terry Walton of Greenscape just bought two new Isuzu trucks. "People I talked to had nothing but good things to say about the trucks."

Andrew sums it all up, "I will never go to another truck. And that's truth."

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# Maintaining a Tropical Mirage

*Jim Gibbons  
and his Mirage maintenance  
team strive to maintain the  
highest landscaping standards  
in a fiercely competitive tourist  
setting where appearance  
is everything.*

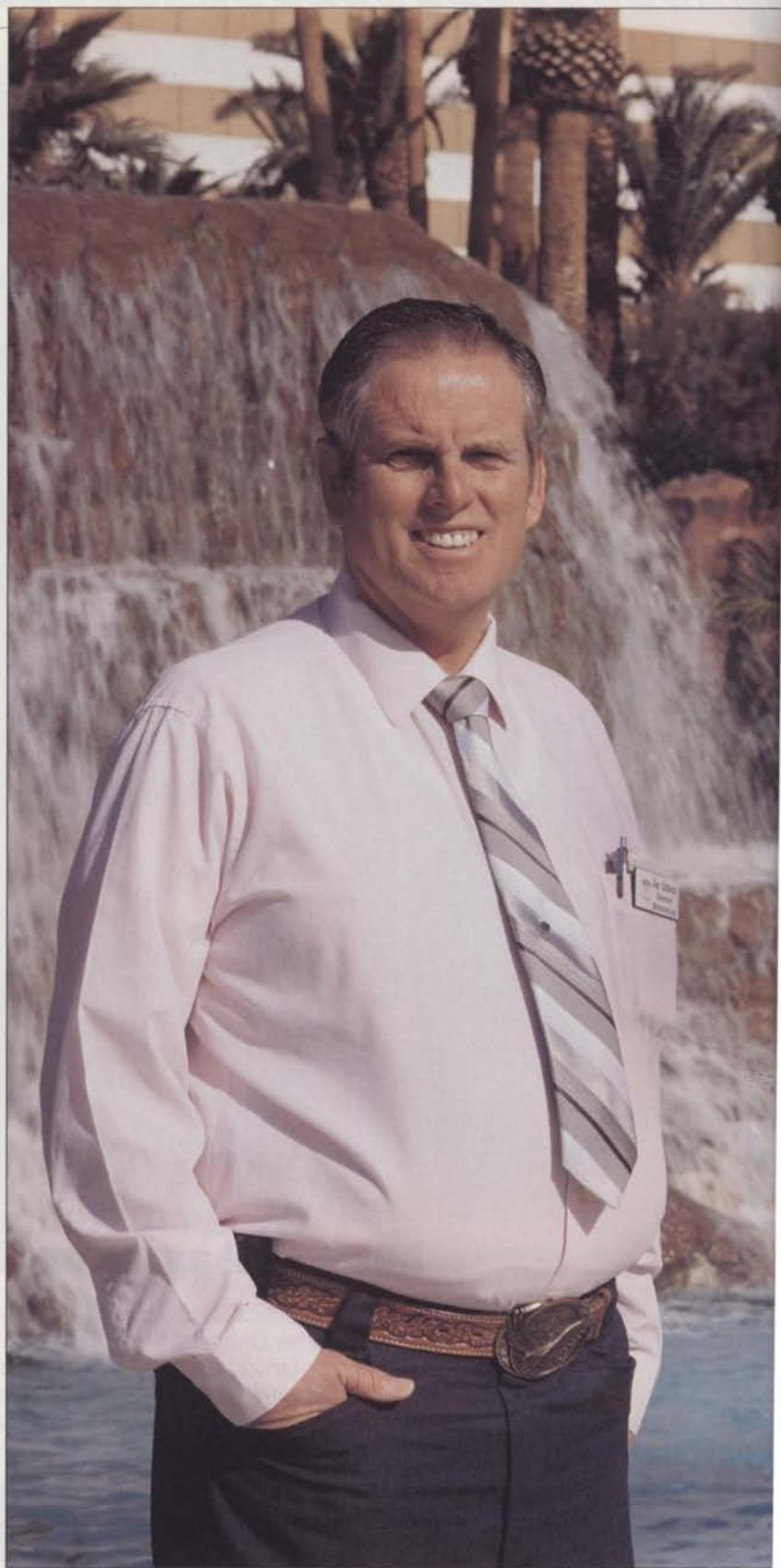
*By Julie A. Evans*

LIKE THE INFAMOUS WIZARD behind the curtain, Jim Gibbons maintains a masterful tropical illusion in the midst of a dry Las Vegas desert.

As director of horticulture at The Mirage, a \$630 million hotel and casino on Las Vegas Boulevard, Gibbons' task is to make legions of money-toting tourists believe they've left the hot and arid Nevada climate for some lush, exotic locale.

He has his work cut out for him. Landscaping at The Mirage is a seven-day-a-week affair. Maintenance crews strive to maintain the highest landscape standards set by their employer while grappling with an impossibly hot climate and challenges inherent to a theme-park setting: crowd damage, vandalism, constant remodeling and a fiercely competitive industry where appearance is everything.

In his role as director, Gibbons must be more



concerned with the big picture — long-range planning, communications, staffing requirements and paperwork fill a good portion of his day. He oversees four divisions and a full-time staff of 65 maintenance employees.

Although Gibbons remains low key about his accomplishments, landscape professionals who work

**"This company doesn't know the word can't," said Jim Gibbons, Mirage horticulture director. Photo: Larry Kaplan.**

## THE MIRAGE

**LOCATION:** Las Vegas, Nev.

**OPENED:** November 1989

**CHAIRMAN:** Steve Wynn, Golden Nugget Inc.

**THE CONCEPT:** \$630 million hotel/casino with three 30-story towers and 3,049 guest rooms, as well as six lanai bungalows with private pools.

**SCOPE:** 100-acre site; 2,200 feet of frontage on Las Vegas Boulevard.

## LANDSCAPE SUMMARY

**LANDSCAPE FEATURES:** Exterior landscape features a five-story waterfall and volcano that erupts every few minutes. The interior landscape includes a tropical garden under a 90-foot-high, glass-enclosed atrium featuring royal palms and tropical foliage.

**MAINTENANCE STAFF:** 65 full-time

**TOTAL INSTALLATION AND DESIGN COSTS:**  
\$30 million

**ANNUAL MAINTENANCE BUDGET:**  
In excess of \$1 million

## DIRECTOR OF HORTICULTURE

### JIM GIBBONS

**AGE:** 52

**FAMILY:** Married, 7 children

**EDUCATION:** Associate degree in horticulture, San Diego Mesa College

**LAST JOB HELD:** Horticultural manager for the San Diego Wild Animal Park, 18 years

with him are effusive in their praise.

"Jim is a very rare individual. He's extremely competent," said Don Brinkerhoff, chief executive officer of Lifescapes of Newport Beach, Calif. Lifescapes is the landscape architectural firm responsible for the award-winning design.

"You can design until you're blue in the face, but without the backup and support of the grounds and horticultural staff, it just won't work. I feel very fortunate that we were able to find such a skilled professional as Jim," Brinkerhoff said.

Greg Klund, project manager for Carlacio Landscape, which installed the majority of the exterior landscaping, added, "Gibbons does a tremendous job of keeping the project up to the original installation quality. He really works to keep any changes and hassles as minimal as possible."

Gibbons throws back the praise to his colleagues. "We have a management team that supports and wants quality," he said. "We work closely with the architects and if there is something that they want to do we find compromise. They are good about consulting us."

**BEGINNINGS.** From its inception, The Mirage signaled a dramatic departure from the typical neon and glitter of the Las Vegas casino strip. Steve Wynn, chairman of Golden Nugget Enterprises Inc. of Las Vegas, challenged Brinkerhoff and his team at Lifescapes to create a theatrical atmosphere within a tropical resort-like setting.

"Our job was to try to create a scheme that would facilitate the image of what he (Wynn) wanted to achieve," Brinkerhoff said. "He was an intense part of the design effort."

Visitors to the hotel/casino immediately take note of Brinkerhoff's theatrical accomplishments. A five-story waterfall greets passers-by as it erupts into a fiery volcano, throwing flames 100 feet into the air.

Palm trees and lush vegetation line a path to the front doors, where white tigers greet curious tourists from behind an elaborately designed jungle-like habitat. Waterscapes surround four acres of swimming pools behind the hotel, where elaborately landscaped villas and lanais cater to the hotel's elite guests.

Indoors, sharks swim menacingly in a 20,000-gallon aquarium behind the registration desk. But the highlight of the interior is a rich and verdant atrium overflowing with live and artificial vegetation, including more than 2,000 orchids and 100 artificial Coco palms and Washingtonias. The palm trees stretch upward to meet a 90-foot-high glass ceiling.

The challenging Mirage landscape is the result of cooperation among several firms, including Lifescapes (design), Carlacio Landscape (exterior installation), Atlandia Design (The Mirage's in-house design firm) and Valley Crest Landscape (atrium installation).

Tony-award winning lighting designer David Hersey — known for his work on "CATS" and "Les Miserables," among others — created dramatic lighting for the exterior, tiger habitat and the atrium.

Gibbons joined The Mirage in August 1989, three months before the hotel's grand opening.

In all, the complex landscape at The Mirage was three years in the making, about half of that time spent on installation. According to Carlacio's Klund, installation crews clocked about 60,000 hours of labor to meet ever-shrinking deadlines, and about 250 to 280 employees were on site at the height of construction.

**PLANT EDUCATION.** The hot desert climate made plant selection critical for Lifescapes, which traveled to 15 nurseries in California and Hawaii to preselect

## KEEPING TABS

STAYING ON TOP of the plant and tree varieties located both in the Atrium and outside at The Mirage is no easy task. Below is a list of the varieties and quantities of each plant or tree you can expect to

### ATRIUM PLANT LIST

Kentia palm	100
Reclanatta palm	1
Washingtonia palm	15
Queen palm	25
Travellers palm	2
Caryota palm	20
Raphis palm	150
MacArthur palm	25
Ravenia palm	4
Dracena marginata, Dracena massangeana, Dracena compacta, Dracena Janet	
Craig	50
Phoenix robellini	10
Green banana	10
Zanadu philodendron	200
Spathaphylum	300
Cissus ivy (grape ivy)	100
Golden pothos	300
Cordatum philodendron	200
Green pothos	250
Window leaf philodendron	150
Aglonema silver queen	300
Aglonema emerald beauty	150
Neathabella palm	50
Chamaedorea metallica	100
Chamaedorea radicalis	100
Chamaedorea seifrizii	200
Chamaedorea erumpens	100

Dracena warnakai	50
Syngonium white butterfly (nephytis)	100
Aspidestra	100
Sansavera	50
Monestera philo	100
Hamaloma emerald	5
Antherium birdnest	25
Spider plants green/variegated	100
Boston fern	50
Kimberly queen fern	50
Caladium	100
Sword fern	150
Staghorn fern	10
Philodendron lundii	25
Alocasia	5
Dicksonia tree fern	25
White bird of paradise	50
Lactospadix palm	10

### MIRAGE EXTERIOR PLANT LIST

Canary palm	550
Pindo palm	300
Windmill palm	200
Mediterranean fan palm	350
Mexican blue palm	100
Mexican fan palm	600
Carob tree	5

find when you visit The Mirage. The plants are rotated frequently (particularly the annuals) so the quantities and varieties may not be exact.

Magnolia	40
African sumac	160
Bottle tree	150
Carolina laurel cherry	200
Japanese ligustrum	300
Photinia tree	1
Aleppo pine	400
Rhapis palm	25
Cycad	500
Robinia	5
Tangerine trees	40
India hawthorn varieties	5,000
Mock orange dwarf, Mock orange, Variegated mock orange	5,000 each
Gold spot euonymus	5,000
Silver queen euonymus	1,000
Green euonymus	5,000
Box leaf euonymus	2,000
New Zealand flax	200
Xylosma	150
Yaupon holly	500
Star jasmine	5,000
Halls japanese honeysuckle	300
Pandorea jasmine	50
Daylily	5,000
Heavenly bamboo	2,000
Yucca glauca	200
Cast iron plant	150
Hibiscus	150 annually
English ivy	500
Cat's claw	1,000
Trumpet vine	50
Cranberry cotoneaster	100
Rock cotoneaster	300
Photinia	150
Italian cypress	50
Liriope	1,000
Gray santolina	1,000
Lantana	500 annually
Rosemary	400
Gardenias	100
Coppertone eriobotrya	150
Bougainvillea	100 annually
Podocarpus	40
Dietes-fortnight lily	100
Roses	200
Buffalo juniper	500
Philodendron	5 specimens
Japanese aralia	50
Vinca (annuals), Petunia (annuals), Pansy (annuals), Geraniums (annuals), Dianthus (annuals), Dusty miller (annuals), Alyssum (annuals), Snap dragons (annuals), Poppy (annuals), Primrose (annuals), Aptinia (annuals), Zinnia (annuals), Salvia (annuals)	50
Mexican weeping bamboo, Gazania (annuals)	50

and specify mature trees and thousands of shrubs and flowers.

Now it's up to Gibbons and his crew to maintain the plantings, which number about 3,000 specimen trees (including 1,500 palms), approximately 30,000 shrubs, nearly 118,000 square feet of ground cover and tens of thousands of flowers.

Gibbons, who is responsible for the majority of plant purchasing, remains faithful to the original design.

"If we're remodeling an area, we put the landscaping back like it was," he said.

Maintenance crews are grouped into four areas of plant specialization: exterior, atrium live, silk and wooden plants and floral arranging with live cut flowers.

Continuing education helps to assure that the highest care is afforded within each division. Weekly education sessions at the company are mandatory, and more than one-third of landscape em-

ployees are enrolled in night school at a local junior college. The program leads to an associate degree in horticulture, and The Mirage picks up the tab.

"Everyone needs to have as much background in horticulture as possible," Gibbons said. "If

### Color changeouts are frequent at the Mirage, where weather, crowds and vandalism conspire against the landscape.

they're not trained, then they're really just weed pullers. And if they're not skilled, they can't see problems in the landscape."

Education is key to plant survival, Gibbons said, because few

maintenance staffers are native to the area. "They all come with a different idea of how they used to do maintenance. But the desert is very different. We try to get them all thinking the same way about the landscape."

The intensive training program also enables the company to recruit from within for most job positions.

**COLORFUL OPTIONS.** Color changeouts are frequent at the Mirage, where weather, crowds and vandalism conspire against the landscape.

"People always want a souvenir," Gibbons explained. "Holidays, weekends or any special time the town is full, there's a lot of crowd damage."

Color changeouts for the exterior occur three to seven times a year, depending on weather conditions. "We change an average of five times a year, 1,200 flats at a time," Gibbons said. "We try to go with

the seasons but whenever it starts to look bad is our criteria. It depends where the plants are and how much sun and wind they get."

In the atrium, maintenance crews replace about 400 orchids and 200 to 300 bromeliads every week so that flowers are always in full bloom. Cut flowers arrive daily for guest rooms and hotel displays.

**HURDLES.** Color is not the only change that's constant at The Mirage. Ongoing remodeling projects and new construction create maintenance obstacles for Gibbons and his crew. Landscapes frequently have to be removed, if only temporarily, as cranes and other heavy equipment rip their way through the landscaped turf.

Maintenance employees are currently hard at work removing landscaping from the site of a future hotel, in a space previously used for a parking lot. A monorail

(continued on page 24)

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**USE READER SERVICE #27**

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## Cover Story

(continued from page 22)

will link the two hotels, and a valet parking garage is being built to replace the parking lot.

The task ahead for Gibbons' crew is to ensure that landscaping on both properties "mesh." To do so, they must first remove the plantings, then replace them upon completion of the construction.

"They took out a lot of the landscaping to fit the monorail and parking garage in," Gibbons said. "The landscape has to 'go away' and then come back. We'll be putting it back together when the construction is done," he explained.

The new hotel will have a separate landscape staff, but The Mirage team remains involved throughout the construction process.

"We're watching to make sure the landscaping goes in properly and gets maintained properly. They've taken some of our land, so we've had to move a lot of our plantings for the construction and



repair along the dividing line," he said.

Weather conditions provide a different set of hurdles for Gib-

bons and his staff, who have learned to expect just about anything from the fickle Nevada climate. Winter temperatures drop

A plethora of tropical plants and ever-changing varieties of annuals occupy the hotel's atrium. Photo: Larry Kaplan.

as low as 0 degrees Fahrenheit and soar as high as 120 degrees in the summer.

High winds of up to 40 mph every spring and fall cause plant desiccation, and watering levels are adjusted accordingly. "The winds take a lot of water out of the palms, so you have to make sure you put a lot back in," Gibbons said.

The worst weather fiasco occurred in the winter of 1989 when an unexpected winter freeze destroyed thousands of trees and caused \$1 million in plant damages.

On a daily basis, the dramatic design elements of The Mirage create special maintenance needs. For example, plants surrounding the volcano are frequently checked for fire damage caused by the intense volcanic heat. To keep plant damage at a minimum, a computer-controlled curtain of

(continued on page 26)

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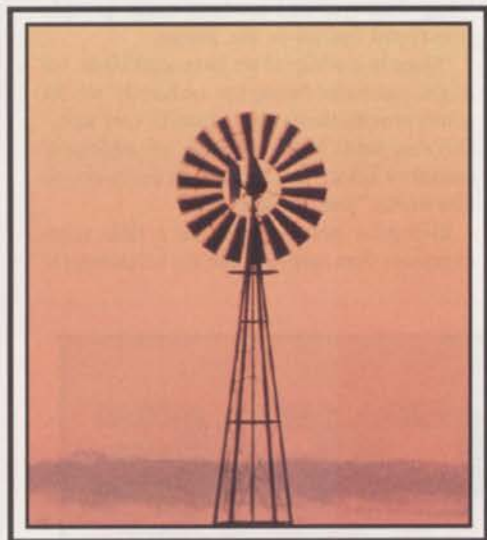
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## Cover Story

(continued from page 24)

water sprays the surrounding foliage each time the volcano erupts.

Poolside plantings on heavily landscaped mountains require special care in the winter. Chlorine gets deposited onto the plants as the heated pool water evaporates into the cold air. Maintenance workers are careful to wash off the plants to keep them from burning.

**NATURAL PEST CONTROL.** Biological pest controls are a mainstay at The Mirage. Preda-

tory insects such as ladybugs, lacewings and preying mantises control pests outdoors during cooler months — the intense heat discourages most pests in the summer — while the Mealybug destroyer and predator mites provide year-round control in the atrium.

"Once in a while, if we have a problem, we might use Safer Soap, but ordinarily we let nature provide the balance. It works very well," Gibbons said. Reinforcements of additional predatory insects are brought in every one to two weeks "just to make sure."

Biological pest controls are a little more expensive than spraying, but the investment is



Waterscapes surround four acres of swimming pools behind the Mirage. Photo: Larry Kaplan.

worth it, Gibbons said. "We get an acceptable level of control. As long as you build up a good supply and as long as there is something for them to eat, they'll stay."

The environmentally conscious staff at The Mirage is currently in the process of setting up a gray water recycling system. Although the Las Vegas water supply is not in immediate danger, Gibbons foresees a future shortage, and he wants to be prepared.

"We're doing this to be ahead of the game. All of our water either comes out of the Colorado River or from wells at the base of the mountains. At the rate the valley is growing, there is not going to be enough water to go around some day."

The recycling system will reclaim sink and shower water. The water will then be run through a mini sewer plant where chlorine will be added.

**'CAN DO' MANAGEMENT.** Working as horticultural manager for the San Diego Wild Animal Park provided Gibbons with 18 years of invaluable horticultural experience. Gibbons was involved in the start-up of that institution and grew professionally along with the park.

But The Mirage allows him one luxury he never before had as a professional: The financial wherewithal to implement new projects.

"Here, when they want something, they have the means to get it. At San Diego, which was a non-profit venture, there was never enough money to go around for what they wanted to do," Gibbons said. "This company doesn't know the word 'can't.'"

*The author is a Contributing Editor to Lawn & Landscape Maintenance magazine and is based in Lakewood, Ohio.*

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**USE READER SERVICE #58**



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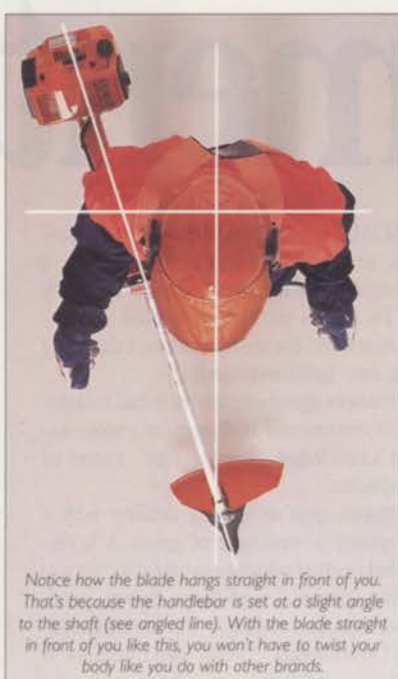
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USE READER SERVICE #14

# Controlling Weeds in Ornamental Beds



*A relatively new service for some, weed control in ornamental beds can prove lucrative but requires knowledge and experience far beyond turf maintenance.*

*By Cathy Hoehn*

FOR SOME LAWN and landscape professionals, ornamental weed control is just a small segment of the everyday services they offer. To others providing limited maintenance, however, the service can be a daunting venture into unknown territory.

Contractors agree successful weed maintenance in ornamental beds requires more extensive knowledge about a vast range of plant species.

"In lawns, you're usually dealing with a monoculture — one type of grass. A herbicide label is clear whether or not you can use it on that species," said Dave Byron, product development manager for Indianapolis-based DowElanco. "With ornamentals it depends on what plants you have under the trees you spray. You may have 20 to 30 different plants in ornamental beds which can be very sensitive. You have to check labels carefully and learn what materials you can apply to each of those plants."

To the uninitiated, the extra expertise required may not seem worth the hassle. But once a crew is thoroughly trained, a company can provide the service as part of its repertoire, potentially reducing competition at a client's site.

"You have to train your people — make sure the sales people ask the right questions, ensure that your technicians understand the conditions and factors involved in proper application for ornamentals," said Fred Haskett, divisional operations manager, lawn and tree, for J.C. Ehrlich Co., Reading, Penn. "It's not an easy service to provide, but it's lucrative."

Manufacturers say their product labels help reduce the landscape professional's need to do homework by specifying which ornamentals can be treated.

"We have hundreds of ornamentals on our labels, subsequently taking this job away from the landscape professional. It helps eliminate the chance of injury to particular plants," said Keith Kohlmann, DowElanco's product communications manager, turf and ornamental and technical products.

## WHO'S QUALIFIED?

Lawn and landscape companies considering delving into ornamental bed care should first evaluate their own strengths and weaknesses. "It's not the size of the company that is the determinant, it's the knowledge," said Steve Derrick, technical manager/lawn care for Atlanta-based Orkin Lawn Care.

"If the company is very one-dimensional, say it just offers tree care, it might want to stay away from offering this service," Haskett said. "Our company already presented itself as a lawn and tree service, so it was a natural add-on for us."

Full-service maintenance firms that design beds hold the advantage of planning with maintenance in mind. "We offer design/build, as well as maintenance. We try to initiate weed control at the beginning by properly installing the beds, using weed barriers, preemergents, that sort of thing," said Bob Broughton, owner of Empire Landscaping, Hamilton, Mont.

Traditional turf care companies such as Orkin and TruGreen/ChemLawn remain tentative about leaping into ornamental bed maintenance.

"The demand is there, but we don't see it as a significant element of our business," said Kirk Hurto, director of technical services for TruGreen/ChemLawn's Research Center in Delaware, Ohio. "I know it can be very profitable if you know the ornamental's tolerance, and can identify what the problems are in the landscape. Every time we try to





Ornamentals provide an attractive and diverse addition to the landscape, but their sensitivity to herbicides make weed control a difficult task. Photos: DowElanco.

simplify this in ornamentals we run into problems."

Certain regions appear more receptive to ornamental bed maintenance, Hurto said.

"It depends on a community in a given market area. You'll find more well-detailed beds in California than in Columbus, Ohio. Grass is a smaller component of the landscape in California, and perhaps Atlanta and Philadelphia."

Orkin began testing the market about five years ago, offering limited services in California and Northwest states. The company is considering expanding its ornamental services, but not with great relish.

"You have to be careful in some

areas like Seattle and Portland, Ore., and even the Carolinas, Georgia, California and Florida, where you have winter annual weeds and summer annual broadleaf weeds. They grow at different times there,

## WEED CONTROL TIPS

FOLLOWING ARE some reminders to help ensure an effective weed control program.

- Choose herbicides that fit your plants, weed species, soil type and equipment.
- Read and follow all label directions.
- Contact your manufacturers' representative with questions on weed species, plant tolerances and applications.
- Make sure applicators know how to properly apply the correct amount of herbicide.

and they don't die off," Derrick said.

More professional ornamental bed maintenance is called for on residential property than in commercial, noted Doug Houseworth, manager of technical support for Ciba-Geigy Corp., Greensboro, N.C. "Of most major plantings, the sheer number is greater in residential. But commercial sites are also very important."

Drew Madzin, owner of Royal Lawns of Monmouth Inc., Freehold, N.J., is delaying plans to offer ornamental weed control until his company is staffed with a tree and shrub expert.

"It's a great idea, but we're not in the position right now. We just don't have someone technical enough who can represent us to the client. Until we have that, we won't offer that service."

Madzin's greatest concern is facing unreasonable liability claims. For example, he cited caring for an ornamental bed in which a 30-foot tree becomes ant-infested and dies. "It's not your fault. There's nothing you can do about it. But no matter what you prove to the client, you're still guilty," he said.

Haskett disputed the notion that liability creates a deterrent. "We have run into claims. None that I would be worried about," he said. "As long as you're using the right materials properly labeled for your specific use, you

shouldn't have a liability problem."

Empire Landscaping avoids liability "by being very, very cautious," Broughton said. "We have one person who does all the spraying for all of our jobs. If we have three crews out there, one person does the spraying for all three crews. If that person notes a problem, he has a real good feel for how the spray is working, the temperature limits, etc."

Liability claims concern herbicide manufacturers as well, according to Houseworth. "Few herbicides are safe across all ornamentals. If a landscaper doesn't know what he's doing, there's the risk of getting the weed and also killing the ornamentals."

**GETTING STARTED.** The key to establishing an effective weed control program is having a staff well-versed in tree and shrub care, concurred contractors.

"Two things you need to do is understand the timing and target of the materials — when to do the work and what plant materials you can apply herbicides to — and then select jobs or use your own property to conduct time studies. For example, how long it takes to do a 1,000-square-foot shrubbery bed; what are the costs of production; if you have failures, what do you do then? You have to develop a plan, evaluate it for a year and see if you're on target or not," Haskett said. "It's the same process we do with everything."

J.C. Ehrlich began offering weed control in ornamental beds as an add-on service last year. "We played around in 1991, offered the service in '92 and are getting a little more aggressive in '93. We've learned what works and what doesn't. In '93 and '94, I feel we will get very aggressive in marketing the service and educating customers."

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## CRITICAL FACTORS IN SELECTING HERBICIDES

ALL HERBICIDES control weeds. The choice then becomes which ones best meet your needs. Consider the following factors:

- Weed species — The first step is identifying the weeds. Consult identification charts and then check herbicide labels.
- Timing — Young, actively growing weeds are more susceptible to treatment than larger, more mature weeds.
- Growth points — Weeds have different growing points. They can be sheathed, below soil surface or above ground.
- Plant tolerance — Many flowers and shrubs are highly sensitive to herbicides. To protect the ornamentals, make sure they are listed on the label of the herbicide you apply.
- Soil moisture — Moist soil is generally better. To ensure effective weed control, follow a preemergence herbicide application with at least one-half inch of irrigation (or rain).
- Soil temperature — Weeds germinate and emerge from the soil when the soil reaches a specific temperature for a certain length of time. Monitoring the soil temperature allows you to determine the best time to apply a herbicide.
- Soil type and organic composition — In general, the higher the level of organic matter in the soil, the higher the herbicide rate you need for effective control.

Source: DowElanco

tage. "We've found the schedule for lawn and bed applications are about the same, so we can visit a site and do both on the same day," Haskett said.

He concedes the company's learning process developed largely through trial and error. "We had some problems the first year, identifying when the beds were ready for a preemergence program and properly timing the application." The company maintains an 80 percent to 85 percent success rate, and "that's how we price each job," Haskett said.

### PREVENTIVE MAINTENANCE.

There are three types of weed control — preemergents, postemergents and mechanical means such as weed barriers and hand picking weeds. Ideally, a successful weed control program evolves largely through preventive maintenance, namely, applying preemergents.

"There's no doubt preemergence herbicides are the most effective and easiest form of weed control in ornamental beds," said John Buechner, director of technical services for Lawn Doctor, Marlboro, N.J.

Trying to catch weeds before they emerge is "essentially imperative," Houseworth said. "The idea is, the compounds control the germination of weeds but don't affect established plants. You have to begin weed control, particu-

larly for ornamentals, as pre-emergents. Once the weeds germinate, the preemergents are no longer effective on them."

Preemergents for most regions are put down between February and late April, Haskett said. They are applied before weeds appear

**The key to  
establishing an  
effective  
weed control  
program is having  
a staff well versed  
in tree and  
shrub care.**

and reduce potential damage to the plants. They also diminish the need for repeat applications.

No preemergence herbicide on the market controls all weeds, however. Therefore, even in the most successful program, a few weeds pop up that must be spot treated with a postemergent or pulled by hand.

Landscape professionals differ in opinion as to whether spot treating or hand weeding is preferable.

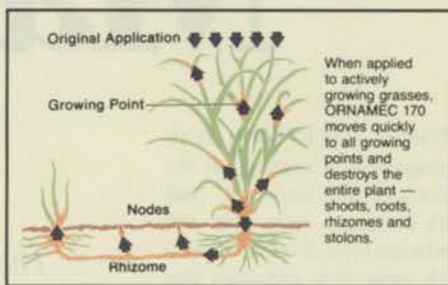
Postemergent application pre-

(continued on page 82)



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# Strategies for Maintaining Trees

*Though one of the least understood facets of landscape management, tree and shrub care is integral to many clients' maintenance needs.*

PROPER TREE AND shrub management is essential to the success of any landscape. And with more and more lawn and landscape firms diversifying into such areas, it is important that maintenance strategies are correctly learned at the onset.

This article focuses on three commonly offered tree and shrub services: pruning, pesticide applications and fertilizer use.

Pruning is one of the least understood practices of landscape maintenance. Before attempting to prune your landscape shrubs and trees, consider the basic principles.

Reasons for pruning:

- To maintain or limit the size and shape of a plant to prevent it from overpowering the landscape.
- To remove undesirable growth that distracts from the balance or symmetry of the plant.
- To remove diseased, dead or abnormal plant tissue.
- To stimulate flowering and/or fruit production of old plants.
- To develop a specific plant form, i.e., a hedge or espalier.
- To direct or train trees to grow in a particular form to eliminate problems.
- To remove plant parts that may interfere with structures, utility lines or obstruct visibility.

**HOW TO PRUNE.** How to prune depends on the plant type. Most landscape plants are divided into three categories: broadleaf evergreens, narrowleaf evergreens and deciduous plants. Each type responds differently to pruning.

*Broadleaf evergreen* plants have broad, wide or flat leaves. The shedding of old leaves and



Newly planted trees need fertilizer to mature, but don't fertilize until the root system has adapted. Photo: Ruppert Landscape.

the growth of new ones are synchronized so that the plant is rarely, if ever, without leaves; thus, the term evergreen.

Broadleaf evergreen plants are the most popular landscape plants used in the South. Examples include hollies, Ligustrum (privet),

Photinia (red tip), Elaeagnus, Euonymus, Cleyera, azaleas, Pyracantha, Nandina, Gardenia, Pittosporum, sweet olive, boxwood, Camellia and Southern Magnolia.

Along the limbs, branches and trunks of broadleaf evergreen plants are specialized cells (latent buds) that have the potential to become growing buds. A latent bud remains dormant until stimulated into growth. The presence of these specialized cells (latent buds) permits drastic pruning.

Some broadleaf evergreens may be dwarf plants. Dwarf plants normally have a compact, dense growth habit and do not need much pruning to control size or shape.

Tip pruning encourages a thick, well-shaped plant; however, after many years, some dwarf shrubs may need rejuvenating. They can be pruned severely (6 to 12 inches from the ground), but it must be done in early spring, before new growth begins.

*Narrowleaf evergreens* have tiny, scalelike or needlelike leaves and do not tolerate severe pruning. Many produce a fruit-like cone; thus the nickname "conifers." Examples of narrowleaf evergreens include: junipers, Arborvitae, pine, cedar and spruce.

Narrowleaf evergreen shrubs need occasional foliage shearing in early spring to control size. They often have a "dead zone" on older portions of their branches. To avoid exposing these, never remove more than one-third of the tree's foliage. If all scales or needles are pruned off, no new growth will occur on that limb. Drastic pruning can kill the plants.

*(continued on page 34)*

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## Maintaining Trees

(continued from page 32)

Conifers are pruned by removing a portion of the "candle," or the new growth that appears on the shrub's tips in early spring. Once the candle has matured, buds normally stop developing. Removing the candle tip before it matures can stimulate growth, however.

Deciduous landscape plants have leaves similar to broadleaf evergreens, but shed theirs in the fall. Like the broadleaf evergreens, deciduous plants can be severely pruned.

**PRUNING METHODS.** Tip pruning encourages a thick, well-shaped plant. Light tip pruning, usually done in early spring after new growth, removes only a few inches of stem tips.

Thinning is used on broadleaf, deciduous landscape plants to encourage flowering and strong growth. Use this method (in early spring before new growth begins) by removing older or weaker



branches back to a lateral branch or to the ground.

Shearing controls the shape and size of all types of shrubs. Shearing calls for slipping the newest foliage, usually 1 to 2 inches of new growth. Always use sharp shears.

Rejuvenation, or severe pruning, is used only on broadleaf evergreens and deciduous plants to control overgrown, leggy and straggly plants. This method is best in early spring before new growth appears.

Espalier pruning is used to train

Before pruning landscape shrubs, make sure you know what you're trying to accomplish.

a plant to grow against a tall wall. Pruning may be needed several times in one season to achieve the desired shape and form.

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*Topiary* is the art of shaping plants into fantastic or ornamental forms by careful pruning or trimming. Topiary pruning may be necessary several times during the growing season. Broadleaf and narrowleaf trees and shrubs normally respond well as topiaries.

*Removing tree limbs* requires a special pruning technique. Tree limbs that need pruning should be cut so no stubs remain. Do not remove the branch collar. Make three cuts to allow the limb to fall without ripping the bark down the tree trunk.

**TIMING.** The time of year plants are pruned is essential to proper care. Most pruning takes place in late winter or spring. Pruning at the wrong time could stimulate new growth that ends up damaged by early frosts or freezes. It also could remove flower buds, reducing next year's flowers.

Prune after the landscape feature of the plant has passed. For spring flowering plants, prune in late spring after flowering season to allow adequate growth during summer for next year's buds. Fall-flowering plants, such as some camellias, should be tip pruned or thinned after flowering season.

**SPRAYING SHRUBS & TREES.** Manual sprayers commonly used to spray ornamental plants are relatively inexpensive, simple to operate, maneuverable and easy to clean and store. Shrubs and small trees are often sprayed with compressed-air sprayers that hold 1 1/2 to 5 gallons of spray and can be carried by hand, on a shoulder strap or mounted on a small cart.

Most backpack sprayers have similar capacities and are used for similar applications. Wick applicators and rotary nozzles (controlled droplet applicators) may also be used to apply pesticides to weeds or ornamental plants.

Small power sprayers with gasoline engines and 15- to 30-gallon spray tanks are well suited for use in residential and commercial landscapes, parks and similar areas. Different pumps may supply low pressures (up to 60 psi) or high pressures (about 300 psi).

Powered mist blowers have lightweight engines and fans that deliver a fine mist usually three to 10 times more concentrated with pesticide than sprays used in other types of sprayers. This arrangement enables the operator to use much less water and cover a larger area without refilling.

The air blast carries the spray solution through the plants, coating the undersides of leaves, stems and branches, as well as the outer leaf surfaces. Powered backpack units are useful for covering large areas quickly and thoroughly, especially in dense plantings. Drift is a major concern when applying pesticides with mist blowers.

When applied to shade trees, pesticide spray must be projected over greater distances and cover larger surface areas. Trees are most commonly sprayed with high-pressure, high-volume, hydraulic sprayers that use pressure to propel the spray solution. Mist blowers using

air-stream to transport and distribute spray solution can be used.

High-pressure, hydraulic sprayers are common in ornamental and shade tree spraying, especially for trees taller than 50 feet. Sprayers are available on trailers or skid-mounted for pickup trucks and other vehicles.

The pressure developed from the pump is used to atomize the spray mix at the nozzle and deliver it to the target. Shade tree spraying requires pumps capable of delivering 35 to 60 gallons per minute at pressures of 400 psi to 800 psi. The taller the tree, the higher the required pressure. Higher pressures tend to produce smaller droplets, however.

Droplets must be relatively large to have sufficient momentum to reach tree tops and adhere to tree surfaces. When vertical reach becomes a problem, it is better to select a larger-capacity nozzle than increase pressure.

For short trees and shrubs, a multiple outlet gun may be used, but the single-outlet gun with a pistol-grip valve is most common. Many operators use a variable discharge-angle gun, on which spray angle is controlled by twisting the handle.

A relief valve is necessary on all high-pressure hydraulic sprayers to protect the system from excessive pressure and to control the pressure being applied to the spray gun. Relief valves must be sized to handle the desired flow rates and pressures.

A pressure gauge can be installed in the supply line to help adjust and monitor the sprayer's operation. A damper is needed to protect the gauge from pump pulsations.

Mist blowers are air-blast sprayers that dispense the pesticide into a high-velocity air stream. The pesticide is diluted in water, but unlike a hydraulic sprayer, both air and water are the carriers.

#### **SPRAYING TO THE POINT OF RUNOFF.**

Recommendations for applying insecticides and fungicides to ornamental shrubs and trees are generally given as the amount of active ingredient or product to add to each gallon or 100 gallons of water. The operator is usually directed to spray to the point of runoff.

To calibrate, you simply add the recommended concentration to each gallon or 100 gallons and spray until the solution is about to run off the tree.

Spraying to the point of runoff, often called dilute spraying, is required when using compressed-air, backpack and power hydraulic sprayers to obtain thorough and uniform coverage. The spray is directed to the plant until it drips from the targeted areas. Additional spray beyond the point of runoff washes pesticide from the plant and is wasteful.

To determine how much spray mix is needed, you must first figure out how long it takes to spray to the point of runoff. Learning this generally comes through experience. A tree in full leaf, for example, will take longer to spray than the same tree in early spring.

Once you have determined the time re-

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quired to spray to runoff, you can then determine how much spray to apply by multiplying the time it takes to spray by the flow rate from the nozzle.

Measure the flow rate by collecting the output for a time period. For example, if a nozzle fills a pail with a 1-gallon capacity in 30 seconds, the flow rate is 2 gallons per minute.

**CONCENTRATE SPRAYING.** Air-blast sprayers use both air and water to dilute the pesticide. They give equal coverage of an area with pesticide using less water than hydraulic sprayers. The use of a lower water-to-pesticide ratio is termed concentrate spraying or low-volume spraying.

With this technique, three, four or even 10 times the amount of pesticide is used per 100 gallons of spray, but only 1/3, 1/5 or 1/10 as many gallons of spray is applied to the plants. In concentrate spraying, this rate is referred to as 3x, 5x or 10x application although the resulting deposit of pesticide on leaves should be the same as the dilute method's.

To determine the gallonage of spray required per tree for concentrate spraying, first determine as precisely as possible the amount of spray required for dilute spraying. Then divide the dilute gallonage by the concentration to be applied. For example, if 20 gallons of dilute spray are required per tree, then a 5x concentrate spray would require 4 gallons of spray per tree (20 ÷ 5).

Mist blowers must be calibrated before use because the spray is almost invisible and you cannot apply the pesticide to the point of runoff as you do with hydraulic sprayers. Once you have calculated how much spray is needed, determine how long to spray.

You also must know how much pesticide the blower is delivering to the target in order to time the application and ensure the right amount of spray concentrate is applied. To determine how long to spray, divide the gallons of spray required per tree by the flow rate from the nozzle.

For example, if an application requires 4 gallons per tree and the sprayer output is 2 gallons per minute, you will have to spray the tree for 2 minutes (4 gallons/tree ÷ 2 gallons/minute).

To determine the flow rate or delivery rate of a sprayer, completely fill the blower tank with water. Bring the blower up to operating speed and pressure, open the valve and run it for 5 full minutes. Then close the valve, shut it down and measure the amount of water needed to refill the tank. Divide this figure by 5 to find the amount the sprayer pumps in one minute.

**OTHER APPLICATION METHODS.** Pesticides used to control ornamental plant pests can be applied with various other methods, including injection and implantation.

Injection is the process of using gravity or pressure to feed solutions into holes that have been drilled or punched into the trunks or root buttresses of trees. Injections are usually made

a few inches around the trunk of a tree to ensure distribution of the chemical into the target bark, leaves or wood.

The best uptake of solutions occurs on warm, sunny days when trees are in leaf. Most movement of injected chemicals is upward, so injections are not used for diseases and insects on roots.

The most effective transport of a pesticide within a tree occurs in the outermost sapwood. This is where the injector should deliver the chemical. Injection into deeper lying wood results in failure of much of the injected chemical to reach the target.

An injection site can be used only once. Within several days after a hole is drilled into healthy sapwood, the tree reacts by isolating the wood from healthy tissues. Liquids can neither move into or out of a tree through such a wound.

During implantation solid chemicals, usually in water soluble capsules (or plastic capsules with soluble membranes over perforations), are inserted in holes drilled into the outer sapwood. Sap from the living wood dissolves the capsule or membrane and the chemical, allowing the chemical to be carried upward in the sap stream.

**FERTILIZATION.** Proper fertilization should take place when shrubs and trees are actively growing. Because young plants are small and growing actively they require more fertilizer than mature, established plantings.

Well-established shrubs and trees approaching maturity benefit from an annual application of fertilizer in early spring (March 15 through May 30). Mature plants in extremely sandy soils may need an additional application in late summer (August 15 through September 15).

Don't fertilize newly transplanted trees and shrubs for at least four weeks after planting. By this time the root system will have regenerated and can absorb nutrients to stimulate new growth and encourage rapid development. Fertilize young plants at several regular intervals during the first, second and third growing seasons. After the third growing season, reduce the fertility program to one annual application.

**CHOOSING A FERTILIZER.** A complete fertilizer containing nitrogen, phosphorus and potassium (potash) is ideal. Don't use fertilizers stronger than 10-10-10. The two most popular fertilizers are 6-8-8 and 8-8-8.

The easiest method of applying fertilizer is by broadcasting (spreading evenly) the material on the soil surface of the planted areas. The active root zone of ornamental trees and shrubs includes all the soil area from the trunk out past the foliage canopy and often beyond. ■

*The material in this article was provided by the Cooperative Extension Service, University of Delaware, Delaware State College and the U.S. Department of Agriculture; and the Cooperative Extension Service, Mississippi State University.*

# Controlling Ornamental Pests

*Resistance to a pesticide is often misidentified as product failure. For insects and mites attacking ornamental plants, this is a rare occurrence.*

*By David  
Shetlar, Ph.D.*



**A hover fly larva which preys on aphids and is easily killed by general cover sprays of insecticides. Photo: David Shetlar.**

MANY KINDS OF insects and mites feed on trees and shrubs. Generally, the greater the variety of plants in the landscape, the more insect and mite species will be encountered.

The mere presence of an insect or mite on a tree or shrub does not mean there is a problem that has to be controlled with an insecticide, miticide or acaricide. Some plants require constant attention, while others are relatively free of insects and mites.

Proper management of pests begins with knowing which insects and mites are most damaging in your area, which are likely to attack a particular kind of plant and when they usually begin to cause damage. Once a suspected pest is identified, more can be learned about its life cycle, damage potential, importance and con-

trol options. (See sidebar on page 38.)

As more lawn and landscape maintenance firms adopt integrated pest management techniques and tactics, the old question of "which products work?" continues to be asked.

Complete reliance on plant health care and biological control generally fails and a pesticide must be used. The question then becomes, "which pesticides have the least adverse impact and which ones work best?"

As certain pesticides become "old products" or are dropped from the market in favor of newer versions, it's assumed that the newer ones must be as good or better than the old. Not necessarily. Most basic pesticide manufacturers are now developing pesticides exclusively for the "green industry"

including the development of new products as well as the reformulation and renaming of older products.

In order to keep up with changing products, periodic performance evaluations are necessary.

## **MEASURING PERFORMANCE.**

Most manufacturers have at least two tiers of measuring product performance: in-house and externally. In-house tests are usually limited to a few special target insects and mites, and the data is not generally available to the public. External testing is often done by independent contractors or in cooperation with land grant colleges. These tests are often published and are available, if you have the tenacity to dig the information out of scientific publications.

For reports on insecticide and termiticide performance, the *Insecticide & Acaricide Tests* published by the *Entomological Society of America* (Sales Office, ESA, 9301 Annapolis Road, Lanham, MD 20706) is the best resource. This book is published each year and contains the results of scientific evaluations from the previous season.

Valid tests should have a number of replicates and untreated checks. Be cautious of accepting sales information which relies heavily on testimonials.

Lawn and landscape managers often blame a product for working well one year and poorly the next. This type of product evaluation is loaded with potential mistakes for

a variety of reasons including:

• *Pest Pressure.* Pest population pressures are vastly different from year to year. In a hot, dry summer, lace bugs and spider mites may seem to be uncontrollable. During rainy years, almost everything seems to work well, except for the fungicides. This is merely a factor of pest pressure which is often related to climate and weather conditions.

Other pests seem to go through cycles of outbreaks and downfalls. Fall webworms, tent caterpillars and gypsy moths go through regular cycles. It appears that many of these cycles are based on host/

predator interactions.

Something like the story of the arctic fox and arctic hare. When the hare population explodes the foxes build up, almost eliminating the hares. The disappearance of the hares then causes the fox populations to vanish. The cycle continues.

• *Control Timing.* Pesticide application timing can vary from year to year. Pest activity in a cool year may be two weeks later than a normal year. The opposite is true of a warm year. Therefore, if the same pesticide is being applied according to a calendar, it is probably being applied too early or

too late. A poorly timed application will reduce efficacy.

• *Application Technique.* Most insecticides and miticides require the pest to contact or eat the pesticide. For large caterpillars or sawflies, contact or ingestion is difficult to avoid. However, small mites and scales may never come into contact with widely distributed droplets of spray. Many mites and whiteflies live on the undersurface of leaves. If the pesticide is on top, poor control will result. Thorough coverage exposing the pest to the pesticide is essential.

• *Alkaline Hydrolysis.* Most

pesticides will remain active in the tank long enough for them to be applied. However, this assumes that the tank mix is not too far from a normal pH (acidity or alkalinity). Pesticides susceptible to break down in highly alkaline water often have buffers in the formulation or instructions on the label detailing how to correct an alkaline mix.

It is recommended that you check the tank pH after everything is mixed and after the mix has been agitated for some time. If the mix is over pH 8, an acidifier may be necessary.

(continued on page 40)

## MANAGING ORNAMENTAL PESTS

PROPER MANAGEMENT of pests begins with knowing which insects and mites are most damaging in your area, which are likely to attack a particular kind of plant and when they usually begin to cause damage. Once a suspected pest is identified, more can be learned about its life cycle, damage potential, importance and control options.

Insect and mite pests of ornamentals can be divided into groups based on feeding site and type of damage. For discussion purposes, pests are divided as follows: leaf-chewing insects, plant-sucking pests, gall-forming pests, root-feeding insects and wood-boring insects. Grouping pests in this way can be useful in diagnosis and in the development of management programs.

Leaf-chewing insects have mouthparts that are adapted for chewing plant tissue. The long-term effects on plant health from foliage loss depend on plant age and vigor, the extent and duration of the feeding and the time of year. Many deciduous trees, for example, can tolerate up to 50 percent defoliation without serious effects.

Some healthy trees can be completely defoliated in one season and not die. Repeated defoliation for several years in a row, however, is usually fatal. Late-season defoliation of deciduous trees and shrubs is usually of less concern than early-season defoliation.

Many different species of insects and mites have mouthparts adapted for sucking the sap from plants. These pests do not chew leaves, flowers or stems, but instead injure plant tissues by sucking out the contents. This usually results in the chlorosis or bronzing of leaves and a reduction in plant health and vigor. Sucking pests can also transmit disease-causing organisms. Examples of sucking pests are aphids, scales, spider mites, lace bugs, thrips, spittlebugs and leaf- and planthoppers.

Galls are not insects. A gall is abnormal growth of leaf, stem or twig tissue caused by the presence of a gall-making organism such as an insect, mite or fungus. Most galls are produced during late spring on new growth, and do not cause serious damage to the host plant. The eastern spruce gall adelgid (an aphid relative), however, produces unusual purplish, pineapple-shaped galls that can retard plant growth, cause disfigurement and in some cases, kill host trees. Oaks commonly have galls, many maples have pimple-like leaf galls; and ash, dogwood, hemlock, hickory, juniper and pine frequently have galls.

Under most circumstances, control of galls is not recommended. Most galls are produced by insects that move to the trees as new growth develops and that can be controlled only by insecticides which cover the leaves when the eggs are being deposited.

A common root-feeding insect is the black vine weevil. It attacks many plants, including rhododendron, yew and hemlock. One of the

earliest indications of the black vine weevil is the leaf damage by the adult — characteristic crescent-shaped notches on the leaf margins. As the infestation progresses, yellowing foliage may be noticed.

Root-feeding by the weevil larvae is potentially more damaging than foliar feeding. Plants infested with black vine weevil larvae will appear off-color and in poor health. Newly transplanted stock may die before it can become established.

When large numbers of larvae are feeding on the root system, even plants that are well-established can die. Control of the black vine weevil is usually targeted at the adults because it is difficult to get an insecticide to the larvae. Some insecticides are effective against the larvae if they are drenched into the soil surrounding the roots.

Beetle grubs, other weevils and borers may also attack the root system of ornamentals, causing root damage and deterioration of plant health.

Serious plant damage can be done by insects that spend at least part of their life cycle as internal feeders within woody plants. Any insect that feeds inside the trunk, branches or roots of a plant is referred to as a borer. Borers are usually the immature stage of an insect, although some adult beetles bore into trees.

The general life cycle of many borers starts in the spring when eggs are laid on the bark. The eggs hatch and the larvae penetrate the bark or tunnel underneath the bark and into the wood. Larvae usually molt several times as they develop, and then pupate inside the plant. When the adults are ready to emerge, they eat through the bark to the outside of the tree. Exit holes made by the adults are often diagnostic clues of a borer infestation.

Depending on the specific site of attack, internal feeding in woody tissues can stunt a plant's health, killing the plant by interfering with water and nutrient transport; kill the plant by disrupting the reproduction of new growth; or allow entrance of rot causing organisms. Borers can also weaken the structure of a tree and increase its susceptibility to storm damage and diseases.

The common borers are beetle larvae (flat-headed and round-headed borers) and the bark beetles. A great many borers attack trees and shrubs. Some are specific to only one host, such as the bronze birch borer, while others attack a variety of host species. Ash, birch, elm, lilac, locust, maple, poplar, dogwood and fruit trees are often attacked by various boring insects.

Preventing borers requires the maintenance of healthy trees. Controlling borers in infested trees is difficult and it may involve pruning and/or the use of insecticides to kill adults before they lay eggs or newly hatched larvae before they become established. — *University of Arizona, Cooperative Extension Office, Pesticide Coordinator's Office.*

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USE READER SERVICE #20

## Ornamental Pests

(continued from page 38)

• **Pest Adsorption and Washoff.** Many pesticides are sticky, that is, they may become tightly bound onto the leaf or bark surface. If a pest does not eat this tissue but merely walks over the pesticide, a toxic dose of the pesticide may not be achieved.

Many of the emulsifiable concentrates may become too tightly bound onto surfaces to be effective against sucking insects and mites. Flowable and wettable powder formulations are often better in these cases.

On the other hand, any pesticide may be washed off a plant if a sudden rainstorm arrives before an application has had time to dry. Even after drying, flowables and wettable powders may be prone to washoff.

• **Pest Resistance.** Resistance to a pesticide is often misidentified as product failure. For insects and mites attacking ornamental plants, this is a rare occurrence. Usually,



some other factor is involved such as a poor application or poor timing. However, pests which are common in other crops (i.e., whiteflies and two-spotted spider mites) may develop resistance to pesticides applied to those crops and they will carry that resistance

factor when they attack trees and shrubs.

• **Pest Rebound.** Most insecticides and miticides, when applied as general cover sprays, will kill off non-target insects and mites. These non-targets are often beneficial predators and parasites

A bronze birch borer laying eggs which can be controlled by several insecticides. Photo: David Shetlar.

which keep pest populations at moderate levels. When these beneficials are absent, pest populations have free reign to buildup without any controls. This is pest resurgence or rebound.

The obvious way to reduce the chances of pest rebound is to target pesticides only to the plants or area of turf which has damaging levels of pests. In other words, don't apply general cover sprays.

**INSECTICIDES FOR ORNAMENTALS.** There are a number of soaps and oils available for the control of pests in ornamentals.

• **Insecticidal soaps** (i.e., Safer Insecticidal Soap,<sup>TM</sup> Secta Soap,<sup>TM</sup> M-Pede<sup>TM</sup>) and horticultural oils (i.e., Sunspray,<sup>TM</sup> Safer Ultra Fine Spray Oil,<sup>TM</sup> Rockland Horticultural Oil,<sup>TM</sup> Summer Oil<sup>TM</sup>) continue to be useful alternatives to standard pesticides for control of soft-bod-



# Some tools require a lot of time and manpower ...

ied pests (aphids, scale crawlers, caterpillars and spider mites). Contact with the target pest is essential for these products to work.

• **Pyrethroids.** The synthetic pyrethroids (i.e., Tempo™/Decathlon™, Talstar™, Scimitar™) are some of the most exciting, broad-spectrum insecticides now available. Talstar and Scimitar also have excellent spider mite activity. These pyrethroids are used at very low rates, usually less than 1/2 lb. active ingredient/100 gal. or acre, do not have objectionable odors and they have moderate to short residual activity.

• **Azadirachtin (Neem).** This botanical, systemic, insect growth regulator has had a tough time gaining use in the landscape. Availability, expense and poor formulations have been some of the problems. However, Margosan-O™, NEEMisis™ and Turplex™ are consistent products which control a wide variety of insects. Turplex is registered for turf infesting caterpillars such as sod webworms and cutworms.

These products may require re-application at three to seven day intervals until the pests are under control.

• **Chlorinated Hydrocarbons.** Lindane is about the only insecticide left in this category, but it is still an excellent borer protectant material.

• **Carbamates.** Turcam™/Dycarb™ and Sevin™/Carbaryl™ are still the standards of this category and are excellent broad-spectrum insecticides. In many areas of the country, Turcam/Dycarb is the product of choice for black vine weevil adult control, and Sevin remains at the top of the list of Japanese beetle adult and caterpillar/sawfly control products.

• **Organophosphates.** Cygon™, Cythion™, malathion, diazinon, Dursban™, Pageant™, Dylox™, Proxol™ and Orthene™ continue to be excellent broad-spectrum insecticides. Though some of these products also claim mite suppression, regular miticides are recommended. While many of these products have lost favor because

of their odors and higher usage rates, their efficacy is still unquestionable.

• **Bacillus thuringiensis, Bt.** Bt products contain a naturally occurring microbial toxin. The most common types, the kurstaki strains, (i.e., Dipel™, Biobit™, Thuricide™, Victory™, Bactospeine™, Condor™ and Caterpillar Attack™) are active against young caterpillars. These are products of choice for area wide applications against gypsy moths and spruce budworms.

Another Bt group, the *tenebrio* or *San Diego* strains, (i.e., M-One™ and Trident™) are active against some leaf-feeding beetles such as the elm leaf beetle. Bts are moderately effective, but excellent choices for environmentally sensitive areas.

**MITICIDES FOR ORNAMENTS.** Mite control on woody ornamentals continues to be a headache. Many of the problems can be traced back to eliminating the mite predators by using general cover sprays of insecticides.

Use soaps and oils (1.5 to 2 percent horticultural oil) for moderate infestations or where beneficials need to be conserved. Kelthane™ and Morestan™ are the traditional citicides, but the new pyrethroids, Talstar™ and Scimitar™ should be considered as alternatives. If mite control is not obtained by using any of these products, switch. Mites are one of the few pests noted for developing resistance. Usually poor application technique and not reapplying at 7 to 10 day intervals are the more common causes of unsatisfactory control.

In summary, the most common causes of poor insecticide and miticide performance are poor timing and application technique. If you are not getting satisfactory results, check to see if the pests are actually present when you apply the product and be sure to get thorough coverage. ■

*The author is a landscape entomologist at The Ohio State University, Columbus.*

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# Trends in Riding Mowers

*Manufacturers strive to heed the call for versatile riding mowers that are more maneuverable and pack a lot of power and efficiency into a compact machine.*

*By Cathy Hoehn*

THERE IS NO such thing as a perfect commercial riding mower, since contractors' needs vary so vastly. Manufacturers therefore strive to meet customers' demands as they arise.

"The manufacturer has to constantly keep in touch with dealers and customers to find out what their needs are and then fill those niches," said Bob Tracinski, public relations manager for Deere & Co.'s lawn and grounds care division, Raleigh, N.C. "Their needs depend on what type of customers they have — whether it's a factory, office building or residence. It also depends on how big the lawns are and the equipment they use to transport the mowers."

Many manufacturers' mowing divisions likely evolved to meet market demands, he said. "We got into this market in a major way in about 1985. Our primary emphasis was wide area mowing because in a lot of cases, such as on college campuses and golf courses, the task was mowing big areas of turf. Then we started to fill the specialty niches."

Scag Power Equipment, Mayville, Wis., entered the market to fill a need for three-wheel front-end mowers, however, and then began producing walk-behinds and zero-turn-radius riders, said John Crowson, Scag's national sales manager.

Regardless the reason for delving into the market, manufacturers keep busy answering contractors' continual demands for higher performance mowers.

"There's a great drive for increased productivity. It allows contractors to get their jobs done more quickly, which allows them to take on more jobs and make more money," Crowson said.

Using riders rather than walk-

behinds for certain areas helps increase that productivity, Tracinski said. "Customers asked for riders with decks that could go through gates and had a deck low enough to cut around the gates and

other low areas. Manufacturers today are providing that."

"There are limitations to every rider mower, but they increase productivity over walk-behinds in many types of mowing jobs," said

Steve Mazarella, landscape manager for Custom Care Building Services, Boca Raton, Fla.

**MARKET NEEDS.** According to manufacturers, contractors in recent years have called for riding mowers with, among other things, more horsepower, wider mowing decks, increased maneuverability, better traction for cutting wet grass and on slopes, improved fuel efficiency, lower maintenance and rear-discharge for areas where pedestrians are within range of flying debris.

Manufacturers have responded with a multitude of features to appease those needs. Foremost, many new riders include electric fuel injection, diesel engines, four-wheel drive and liquid-cooled engines, the latter of which "reduces noise and maintains optimum performance in hot, dry, dusty conditions," Tracinski said.

Overhead valve engines — small, square engines that pack a lot of power — were introduced on riding mowers within the last decade. The engine's cylinder walls contain fewer cool spots than past models so fuel is used more efficiently and economically. The engines also emit fewer hydrocarbons, which helps manufacturers meet California's tough emission standards expected to take effect by 1995.

Manufacturers also introduced front-end mowers designed so that a single lever redistributes weight from the front mowing deck to two front tractor wheels. The redesign increases traction, Tracinski said.

Another innovation recently hitting the market is all-wheel steering, based on the same concept as zero-turn-radius mowers, Tracinski said. "You turn the front wheel and the back wheels turn tightly."

And of course, zero-turn-radius mowers remain a hot seller.



Many contractors prefer riders because of perceived productivity improvements. Photo: Ruppert Landscape.



"The increased popularity of zero-turn-radius machines has been the most notable trend in the last five years," Crowson said. "They're doing very well."

Compared to the front-end deck mowers popular for several years, zero-turn-radius mowers equal their performance but are more competitively priced, Crowson said.

"Front-end mowers make sense for open turf areas. The zero-turn-radius mower is ideal for highly landscaped areas. They can cut on open acreages, but not as productively. By the same token, it's tough to get the out-front (deck mower) into tight spaces. So if the operator is limited in what he can buy, the zero-turn radius is more versatile and makes more sense."

Hydraulic transmission mowers are "by far the most popular front-end deck mowers," Crowson added. "Few still use the chain drive. The hydraulic is more productive, creates less down time. It's a matter of convenience."

One contractor remains unimpressed with the choice of zero-turn-radius mowers on the market. "To be honest we're not real impressed with the line we currently have or a lot of the others we've looked at," said Pat Enstrom, landscape maintenance supervisor for Teufel Nursery-Landscape, Portland, Ore. "We're looking seriously at the Dixie Chopper. It's a very impressive mower. In Oregon, you

have to have the ability to mow in the rain and a mower that can easily convert to mulching."

Mulching mowers have made their mark in the riding mower market, said Peter Whurr, product manager for Minneapolis-based Ransomes America Corp. Whurr conceded the concept behind the mowers still lacks sufficient momentum. "The goal is to get people to buy into the idea of grass recycling. I think that is starting to happen," he said.

Manufacturers are also providing more safety features, Tracinski

said. "We've added a seat switch to mowers so that if the operator's weight is off the seat the mower turns off automatically. We've also introduced triple-safe starting mechanisms."

**THE RIGHT CHOICE.** What contractors look for in a mower ranges as broadly as the types of clients to which they cater. The scope sways heavily between dependability, durability, maneuverability and cost efficiency.

"Reliability is probably the most important thing," said Paul

Many new riders are designed to easily maneuver around trees and ornamental beds. Photo: Excel Industries.

Barton, owner of Landshapes Inc., Bloomington, Minn. "If you're using a mower 50 to 60 hours a week, you can't afford to have it break down. If the mower runs seven to eight months without problems, it's worth paying a couple thousand dollars more. I don't have the time or energy for constant repairs."

Barton, like many contractors, mostly sticks with one brand of mowers because of familiarity and ease of replacing parts.

Also, the mowers he used previously "didn't have the same longevity or attention to detail, like the welding spots — the angle iron was not as well engineered," he said.

Durability takes high priority in the mower search for Dan Ferrise,

manager of landscape management for Stano Landscaping, Milwaukee, Wis. "I look at how much abuse the machines can take. They have to be able to withstand the punishment my crews give them," he said. Ease of maintenance also plays a significant role. "It's important to be able to get to parts easily to do repairs. There aren't that many mowers that are easy to work on."

Tracinski claims manufacturers are working toward making mowers more serviceable. "I would say easy access to service points is another trend that is de-



veloping. Manufacturers are making it easier to do daily and weekly checks of hydraulic fluid levels, that sort of thing."

"Quality of product and quality of service" determine which mowers Enstrom chooses, yet he also tends to remain loyal to one brand because "they're built strictly for commercial application and the sales and service through our distributor exceeds anyone else's in town," he said.

Some contractors may not adhere stringently to one mower line, but do maintain a limited scope of options. Ed Hoffman, maintenance project manager for Clarence Davids

& Co., Blue Island, Ill., only looks at three or four major brands.

"Number one, I look at productivity, then quality. If two machines are equal in quality, I'll go with the one that's more productive," he said. "There would have to be a big difference to get me to switch. It would mean re-training our mechanics to service the new machine, and storing parts just for that one mower."

Adaptability to a site and trailerability round out a mower's top selling points, he added.

**COST CONSIDERATIONS.** Contractors pointed to a number of cost factors vital to making a

purchasing decision. Weighing the expense of equipment vs. labor is number one, according to Bart Sheeler, president of ProLawn ProScape, Blue Ash, Ohio.

"Sometimes higher equipment costs can reduce overall operating costs and make you more competitive," he said. "Remember to calculate labor costs and savings when reviewing the addition of new equipment."

Surprisingly, a number of contractors said actual mower cost wields little force in their purchase plotting. Ferrise said cost comes fourth behind reliability, durability and ease of maintenance. Hoffman considers it even less of a factor. "I'll pay top dollar for a quality mower," he said. "I'm not worried about the initial costs. We'll make that up in a short time if the mower is that much more productive."

Ferrise looks at ways to reduce mowing costs to pinpoint all the factors that help give his company a competitive edge. "You have to figure what pieces of equipment you'll need, know what you'll use them for, what grades you'll be working on, what the ma-

### What contractors look for in a mower ranges as broadly as the clients to which they cater.

chine can do in an hour. If you can cut costs on mowing, you're more likely to get the job. Then you can pay more attention to on-site detail work."

Ferrise plans to target other areas of maintenance, such as applying growth regulators, to cut mowing costs. "It doesn't all come down to just getting the most efficient mower anymore. There's more to it than that," he said.

And of course maintaining a realistic view of the company's needs plays a vital role in deciding what to buy. "I cut turf on up to 20-acre sites. I have to take into account, if I buy a tractor, will I be able to use it all week long? I don't want a \$30,000 mower sitting in a garage," said Rich Grigalus, branch manager of Ruppert Landscape Co., Clinton, Md.

**ROOM TO GROW.** Contractors concede riding mowers continue to improve. One type — the 61-inch hydro rider — has especially found a niche in Eastern states. Offered by most manufacturers, the hydro rider "adds twice the labor time but cut costs in half," Grigalus said.

Though considered a rider, the mower "has a walk-behind front with a sulky — a seat with one wheel beneath it — attached to it. It also has a slightly different steering wheel," Grigalus said. He attributed the mower's popularity to its low price, but said the machine reduces cutting width 10 to 12 inches compared to small riders. "You have to factor in

(continued on page 46)

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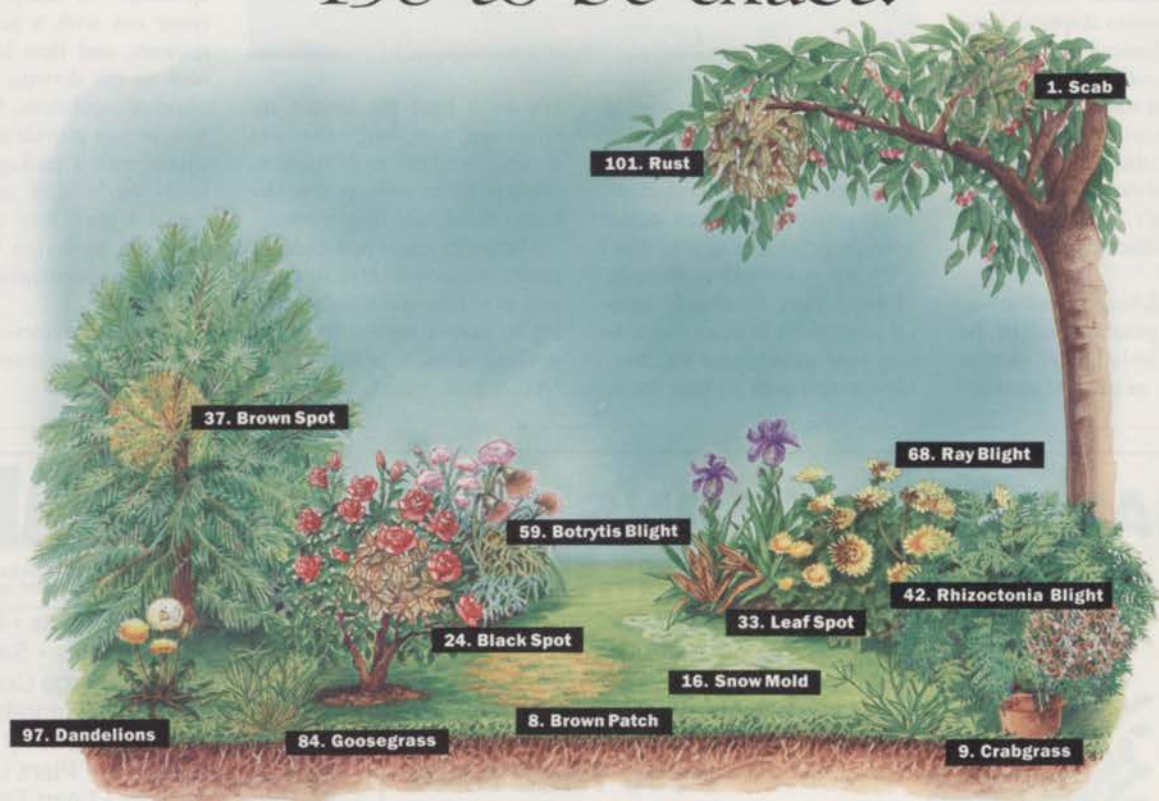
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## Riding Mowers

(continued from page 44)

labor and determine if it's the right thing to do," he said.

Other contractors clashed in their views of the hydro riders. Sheeler considers the mowers a viable investment. "We're finding increased use of 61-inch hydro riders. They're good for sites with tight areas and limited open turf. They can get into areas other riders can't reach. They have good ground speed, excellent maneuverability and increased efficiency over walk-behinds," he said.

Ferrise remains skeptical, however. "It's basically a walk-behind with a sulky. Some have a little place to stand, some have a seat. They're nothing new. I think they're more dangerous than anything, at least ones that you stand on. It doesn't look like there's much there attaching the stand to the mower."

In the mulching mower arena, contractors generally agreed the options available fall far short of commercial needs. "Manufac-



turers are trying to be inventive in what they offer but, realistically, when grass is 8 inches in the spring, there's no way one of those mowers is going to cut it, no matter what they claim," Grigalus said.

"When you're talking about the Midwest, there are already landfill restrictions in place there, so they have already seen mulching mowers that work for their needs.

We don't have the landfill restrictions and, with the wet weather, we have more stringent needs as far as what we consider a successful mulching mower."

Mazarella expressed concern about environmental devices such as mulching equipment driving up mower costs without improving mower performance. "As long as manufacturers con-

Mowing contractors are looking for equipment built specifically for the commercial mowing market. Photo: Jacobsen.

tinue to improve performance, we can make up the increased costs in reduced labor, etc. But if the mowers only cost more because of pollution devices, noise suppressors, etc., they will strictly cost more to run. How are we going to continue to afford that?"

Manufacturers are listening very closely to concerns of customers about price, Tracinski responded. "In many cases, we come out with a new line of mowers, and then have to go back to the drawing board because of regulations. We look at how we can provide commercial clients with a package that upholds the level of productivity but at a price they can afford. Then we re-design the whole package to accomplish that." ■

The author is Associate Editor of *Lawn and Landscape Maintenance* magazine.

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# Keeping In Touch

*Whether the goal is to retain current clients or attract new ones, newsletters provide a relatively inexpensive way for companies to keep their name in front of their customers.*

*By Julie A. Evans*

THE NEWSLETTER MAY well be the marketing tool of the '90s. Thanks to the affordability of desktop publishing, many business owners have discovered newsletters are a cost-effective way to build company awareness and generate business.

Although not a replacement for sales efforts, a newsletter with useful information tends to be read more carefully and held onto longer than a straight sales piece.

But not all newsletters are created equally. Poorly produced or sales-oriented newsletters seldom rate more than a glance, while carefully planned and designed ones get read cover to cover.

**GETTING STARTED.** One of the first steps in newsletter publishing is defining the audience. Who is going to receive the newsletter? What kind of information will they find useful?

If the main objective is to build awareness among potential and existing clients, select information that positions your firm as the local expert. Readers will find news about the benefits of seeding and irrigation far more useful than news about your company picnic or awards banquet.

Next, select a newsletter name that reflects the professional image you want to project to your audience. Avoid overly "cute"

names that fail to convey the newsletter's purpose. Also, decide how often the newsletter will be published. Keep in mind time constraints: If you're producing the newsletter in-house, a monthly publication may be unrealistic and deadlines hard to meet.

Additionally, more issues mean higher printing and postage costs. Of course, there is a tradeoff. Fewer mailings result in reduced visibility in the marketplace.

**BUSINESS BUILDERS.** Whether the goal is to retain current cli-

ents or attract new ones, newsletters provide a relatively inexpensive way for companies to keep their names in the marketplace.

"The majority of green industry companies are relatively invisible to customers," said Matthew Shoener, president of Focal Point Communications, Cincinnati, Ohio, a company that specializes in newsletters for the green industry.

"Customers are at work, the lawn service does its job and leaves and there's little face-to-face contact, but an invoice is left. The newsletter personal-



## NEWSLETTERS ON A SHOESTRING BUDGET

SIMPLE AND informative newsletters can be produced for as little as \$300 a year (postage will cost more) if you follow a few cost-saving measures:

- Limit the newsletter to one page, either one or both sides. This reduces postage costs.
- Use stationary that bears your company logo.
- Type the newsletter if you don't have word processing or desktop publishing technology.
- Photocopy the newsletter to save typesetting and printing costs. One laser-quality master copy can be reproduced clearly and inexpensively at a quick-print shop.
- Don't rent a mailing list; use your own. Borrow directories from the public library. Include a request for address correction on each piece.
- Consider bulk rate mailings. Bulk permits can be purchased with a minimum of 200 pieces. You can also use your postal meter or purchase stamps for a reduced rate. Mailing locally and presorting by zip code also saves money. — *Inc.* magazine.



Company newsletters are an affordable method of staying in touch with new and repeat customers, as well as potential clients. Decide what message you want to relay and get started.

izes the company to the customer."

A few companies that have discovered the impact of well-done newsletters offer some insight.

Ed Laflamme, owner of Laflamme Services Inc., Bridgeport, Conn., mails his one-page newsletter, *Shades of Green*, to 1,000 "past, present and future clients." Laflamme keeps his data base up-to-date with mailing lists from associations such as the Building Owners & Managers Association and International Facility Management Association; and mails

the newsletter to "bankers, accountants, anyone I touch with any potential at all.

"It's not easy, but it's definitely worthwhile," he said. "The newsletter keeps my name in front of people. It definitely attracts customers. We have a couple of maintenance jobs I can attribute directly to this newsletter.

"Last fall, a banker called from another city. He said he had been receiving the newsletter and that we looked like a credible company, if the newsletter was any reflection of our work."

Laflamme landed the account. In another instance, a newsletter sent to a Fortune 500 company resulted in a \$100,000 project

for Laflamme, he said.

Jim Lucas, vice president of administration for Hermes Landscaping and Nursery in Kansas City, said the company's newsletter "does generate some new business."

"We're trying to be a company that works with higher-end customers so we want to get a high-quality newsletter in front of them," he said. "We decided from the very beginning that we were not going to do the newsletter unless it was first class, because that's the kind of company we perceive ourselves to be."

In Ashton, Md., Ruppert Landscape Co. distributes 3,500 full-color newsletters, twice a year,

to clients, prospects, employees, vendors and "anyone we deal with or would like to be working with," said Cheri Baker, Ruppert's director of public relations. Baker said the newsletter helps build sales. An added advantage is media awareness. "A lot of media call us to reprint articles."

**EDUCATING THE MARKET.** To get read, a newsletter must hold value for the reader. "People don't want to read all about your company," said Rob Zolezzi, owner of L&L Landscape Services Inc., Santa Clara, Calif. "They want information that's valuable to them. A newsletter is a marketing tool in a subtle way, rather than always patting yourself on the back."

A typical issue of L&L's quarterly newsletter might include gardening tips, industry innovations



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and legislative and economic issues affecting the green industry, he said.

At Ruppert, an editorial board comprised of 10 staff members from different segments of the company come together before each issue to brainstorm ideas and set the newsletter's theme, such as the environment or customer education. All articles are written to reinforce that theme.

Baker said the newsletter goes easy on the sales approach and focuses on education by example.

"Every article should point to a strength Ruppert has," she said. "We always highlight one of our jobs. It's more of an information vehicle, because we want our readers to get to know Ruppert and find out what makes us different from everyone else."

Laflamme keeps a folder of story ideas in his briefcase, but most material he culls directly from on-the-job experience. "We're in landscaping 24 hours a day, seven days a week. Usually there's too much informa-

tion each month I could write about."

According to Focal Point's Shooner, an educational newsletter has another advantage: It helps reduce callbacks.

"If customers understand more about the care they have to give the landscape, they are less likely to be phoning in service calls," he said, adding that educational newsletters also open the door to suggested selling of additional services.

"In our newsletter, we talk about

the advantages of aeration or the importance of thatch control. We're not pitching that a service should be ordered, but we're educating about the importance of (that service)," he said.

**DESIGN BASICS.** Newsletters don't have to be full-color, high-tech productions to grab reader attention, but they should maintain a professional, clean appearance. Layout consistency should be maintained from one issue to

the next, said Ruppert's Baker.

"We try to make it consistent so when people pick it up next time, they know they'll see the same department but with a new article."

Photo selection is key because people typically look at photos before reading the copy. Mug shots and unnaturally posed photos should be avoided if possible. As for paper stock, keep in mind the image you want to convey.

Laflamme prints his newsletters on recycled paper, which is more expensive but carries the message that Laflamme is kind to the environment. Many companies use uncoated or offset paper, but photos do not reproduce very well. Coated book paper is the paper of choice for newsletters with halftone photos.

Finally, certain design basics can enhance a newsletter's readability. Padgett-Thomas, a company that offers seminars on newsletter publishing, provides the following tips:

- Keep the line length at 65

## HOW TO FIND STORY IDEAS

THE BEST STORY ideas usually come from within the company. Brainstorming sessions with staff members not only produce newsletter ideas, but prompt business-building suggestions, as well.

Consumer and trade magazines and daily newspapers provide an outside source of information. Start a clippings file and encourage employees to contribute. (Be sure to receive permission from the publisher of the publication before reprinting any stories.)

Reader feedback is another valuable resource. Reader surveys serve a dual purpose: They provide new story ideas and they let readers know their input is valued.

Finally, association mailings often include tips and trends of interest to your readers.





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- Use large initial capital letters to begin the story.
- Set body copy flush left, ragged right; set headlines flush left.
- Set heads in upper and lower case — upper case for the first word of heads and any proper noun.
- Use bold horizontal rules at the top of the page or above heads.
- Add thin vertical rules between columns.
- Use sans serif type only for headlines; serif type for body copy.
- Limit typefaces to two styles.

**COST CONSIDERATIONS.** Effective newsletters are not necessarily expensive to produce. Final costs will be determined by a host of factors, including the number of issues mailed, the amount of color used and whether an outside firm is hired for creative input.

Newsletters produced by companies surveyed for this article range in scope from one-page, two-color to four-page, full-color

with inserts. Not surprisingly, costs varied. Ruppert spends about \$1.50 per piece, or \$10,000 a year, to produce its biannual, full-color four-page newsletter. That amount

### **An informative newsletter tends to be read more carefully and kept longer than a straight sales piece.**

includes design, printing and mailing costs to 3,500 readers, but does not include staff time spent researching, writing and preparing the newsletter for publication.

Zolezzi of L&L Landscape Services also estimates his total costs at about \$10,000 a year, but that's for a quarterly, two-color, one-page newsletter with editorial on the front and back.

Laflamme's newsletter proves

that less can be more. For \$1,000 per issue, he produces a highly attractive newsletter for 1,000 readers. His one-page, photocopied newsletter costs less to produce because mailing and production costs are kept to a minimum.

Newsletters can also be produced for less than \$1,000 a month, if the company uses some ingenuity (see sidebar, "Newsletters on a Shoestring Budget," p. 48); or employs a newsletter service.

**IN-HOUSE OR OUT?** Larger companies with an in-house public relations staff usually produce newsletters themselves, farming out production and printing work only. But what about the smaller companies with little time or interest in newsletter publishing?

Public relations firms are one option. Also, some companies specialize in newsletter publishing, typically offering a complete package including writing and editing, creative design, layout and printing.

Focal Point offers three levels

of newsletters. Customers can select from stock newsletters (no personalization); semi-personalized (masthead only); or full custom. A full-custom newsletter allows the landscape company to insert its own articles in place of stock copy.

Still, Laflamme is proof that a small staff can produce a professional newsletter in-house — if the owner is willing to commit the necessary time and resources to the job.

"We keep our newsletter really simple, because we're not making a flowery statement. The key is repetition, but the repetition has to be with quality and originality," Laflamme said.

"I still have people calling me and telling me how I could do it cheaper. I appreciate the suggestions, but that's not the intention of the newsletter."

*The author is a Contributing Editor to Lawn & Landscape Maintenance and is based in Lakewood, Ohio.*

# Organic Fertilizers

## Gaining Ground

*Except for bridge products, synthetic fertilizers still rule, but makers and users of "natural" products are steadily growing their businesses.*

*By Bob Gitlin*



Lawn maintenance attitudes vary about the success of organic products on turf. Photo: Clean Cut.

ORGANIC AND synthetic fertilizers are co-existing in today's ever changing lawn maintenance market. But try and survey professionals on the attributes of each and the answers are as varied as the people who use the products.

Terminology, too, is practically wide open. Try defining natural or organic and see if your employees and your customers are comprehending the same message you're setting forth. (See sidebar on page 56.)

Phil Catron, president of Naturalawn, based in Frederick, Md., is reaping the benefits of an ever more ecology-conscious population. Although he said it's common to hear cynical grumbles about "natural lawn care" from some contractors, he doesn't hear complaints from customers.

On the other hand, Bob Macko, owner of Custom Greenery Lawn Care, Farmington Hills, Mich., is skeptical of the organic lawn care companies that have cropped up around the country. He once tried a biological pesticide for a customer who later begged for the old chemicals again, citing better performance.

"There's no organic substitute for the pesticides," Macko said adding that the "natural" contractors wind up using chemical herbicides anyway. "The only thing different is the fertilizer. And fertilizer is not the issue here," he said, referring to ecological concerns.

Catron's business has bloomed. In the last three years he's added 24 locations in 13 states. That is way beyond the industry average, he said. What is his fertilizer strategy?

"The fertilizers we use are made exclusively to our specs," he said. Homeowners can buy the same analyses some Naturalawn products have, but not the exact same products. "There are little exclusive things we add. Our fertilizers contain between 25 and 100 percent natural organics. Their use

*(continued on page 54)*

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USE READER SERVICE #10

## Organic Fertilizers

(continued from page 52)

varies with what part of the country, what time of the year and what kind of turf you're dealing with."

Macko frequently tells customers that his fertilizers, which are man-made, not only supply the high nitrogen content that greens up turf, but chemicals such as potash and iron, which are "natural products" needed by the grass's root system. The respective analyses of chemical and organic fertilizers tell the story, he said.

"They (the organics) are like 8:2:0. I just talked to a manufacturer who said people are having problems with them so they're knocking the nitrogen up and putting in half urea and half powder blue."

When asked about Naturalawn's standard fertilizer strategy, Catron replies that, unlike some chemical fertilizer schedules, Naturalawn has no overriding "program."

"People like to say, 'Here we're going to do five treatments. In the

first treatment you get this, next treatment you get this and so forth.' We train our people in agronomics. We teach them grass interrelationships with the soil, physiology of how grass grows—depending on what type it is, how it interacts with weather, with time of year."

The idea is not to try to force a plant to do something just because it's a certain month of year.

"When our people get to the property they understand that each property has its inherent differences. It is a true custom approach. You need to have people trained and knowledgeable enough to be able to make those decisions, to be granted responsibility and authority to do that in the field. Otherwise you're nothing more than fast-food lawn care."

**DO ORGANICS WORK?** Oh yes, said Scott Boutilier, spokesman for Ringer Corp., Minneapolis, which formulates both fertilizers and pesticides. "Cornell University has done work on disease suppression of brown patch and dollar spot in which natural or-

ganic fertilizers exceeded the standard fungicides in turf trials."

The loud skeptics are either uneducated, or they're using the product under very cool conditions where a natural organic fertilizer won't release, he said.

Many lawn maintenance professionals complain that organics cost too much. But pricing is a misinterpreted issue, Boutilier said.

"If someone is out there buying the least expensive fertility product, it's costing him about 22 cents per pound of N. We're going to have difficulty competing, there's no question about it. The materials we use for nitrogen sources, however, have very high percentages of water-insoluble nitrogen (WIN).

And that is expensive nitrogen. If you're looking just at WIN, we're competitive with at least some of the major producers. If you're looking at coated ureas, no, there's no way we can be competitive."

Trugreen/Chemlawn used a truckload of his product last year,

he said, with great results. According to Mike Blast, branch manager for the office based in Sterling Heights, Mich., the product was mixed with standard synthetic fertilizer on an as-requested basis, and proved successful in treatment of such problems as summer patch.

**ORGANIC ATTITUDES.** But perceived cost pressures continue to drive many contractor decisions to stick with traditional synthetic approaches.

"We don't use them," said Bob Andrews, owner of The Greenskeeper, Carmel, Ind., a 90 percent upper-echelon residential business. "They are not price-competitive if properly used. We don't have that many requests. And I don't see them playing a long-term role or a significant role in the next four to five years."

There was more interest in organics two years ago, he said, when the scares about chemical lawn sprayings were newer and shriller. Andrews said his col-

(continued on page 56)



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## Organic Fertilizers

(continued from page 54)

leagues offering organic programs have dropped them due to a lack of interest.

"Organic fertilizer programs of good materials are expensive. If you use them properly and according to label rate, they can drive the price of lawn care out the window for the customer. If he has a fleeting interest in organic lawn care, he'll suddenly lose interest when he gets a quotation saying his service has quadrupled in price."

The applicator scrambles to save face by either not using the products anymore or using less of them, which means the program now will not work.

Not to mention that such programs offer no weed control, which is a significant part of lawn care, Andrews said. "The emphasis placed on organics as being safe and non-toxic as opposed to synthetic products is, to a great extent today, perceived by the customer and by

the industry at large as being a lot of smoke."

Besides, the industrywide implementation of integrated pest management has precluded the need for the "organic" products, he said. He and his colleagues are doing less blanket pesticide applications and more proper mowing, watering, core aeration, mulching and other back-to-basics things with proven horticultural benefits, not to mention environmental benignness.

It must be mentioned that organic fertilizers are expected to last longer and are applied only half as many times a year. The cost/benefit analysis will depend, obviously, on the presence (or lack thereof) of a market that will respond to the concept of a pure environmentalist approach.

Evincing perhaps a more charitable attitude toward organics is J. Landon Reeve, owner of Chapel Valley Landscape, Woodbine, Md. "We have a couple jobs," he said, "where the client is asking us to use no chemicals or

(continued on page 58)

## NATURAL LAWN CARE: VOCABULARY

NATURAL LAWN CARE involves understanding basic terms that tend to get muddled around in common parlance.

What do the terms "natural" and "organic" mean with regard to lawn care products? While there are no universally accepted definitions, the Professional Lawn Care Association of America published these possible definitions in its consumer information brochure, "What You Should Know About Lawn Care Products and Services."

**NATURAL:** A product derived from animal/biological, mineral or plant sources in a form substantially as it occurs in nature. The materials may be altered or manipulated to put them in a physical form that allows them to be efficiently used in the application process by the homeowner or lawn care professional.

**ORGANIC:** Any substance containing the element carbon is, by technical definition, organic. Both naturally occurring and man-made products may be organic. The common misconception that organic and natural have the same meaning may cause the non-technical consumer to believe that a man-made organic material is natural when it is not.

**NATURAL-BASED:** Generally used to describe a mixture of materials that includes some materials that may be properly described as natural. The portion that is natural is frequently undefined. The other portion may be man-made pesticides or fertilizers.

**ORGANIC-BASED:** Generally used to describe a mixture of materials that includes some organic materials. The portion of the product that is both organic and natural is frequently undefined. The other portion may be man-made pesticides or fertilizers.

Additionally, a "biological" is a non-synthetic pesticide derived from a living organism that works by controlling another living organism. Examples are the bacteria *bacillus thuringiensis* (Bt) and *bacillus papilliae*, parasitic nematode, and praying mantises.

A "biorational" is a non-synthetic pesticide that is not a living organism per se, but a derivation or extract from organic life. These include azadirachtin, neem (oil extract from a tree), citric soaps, potassium salts and fatty acids.

The Lawn Institute supports a three-part definition for organic lawn care:

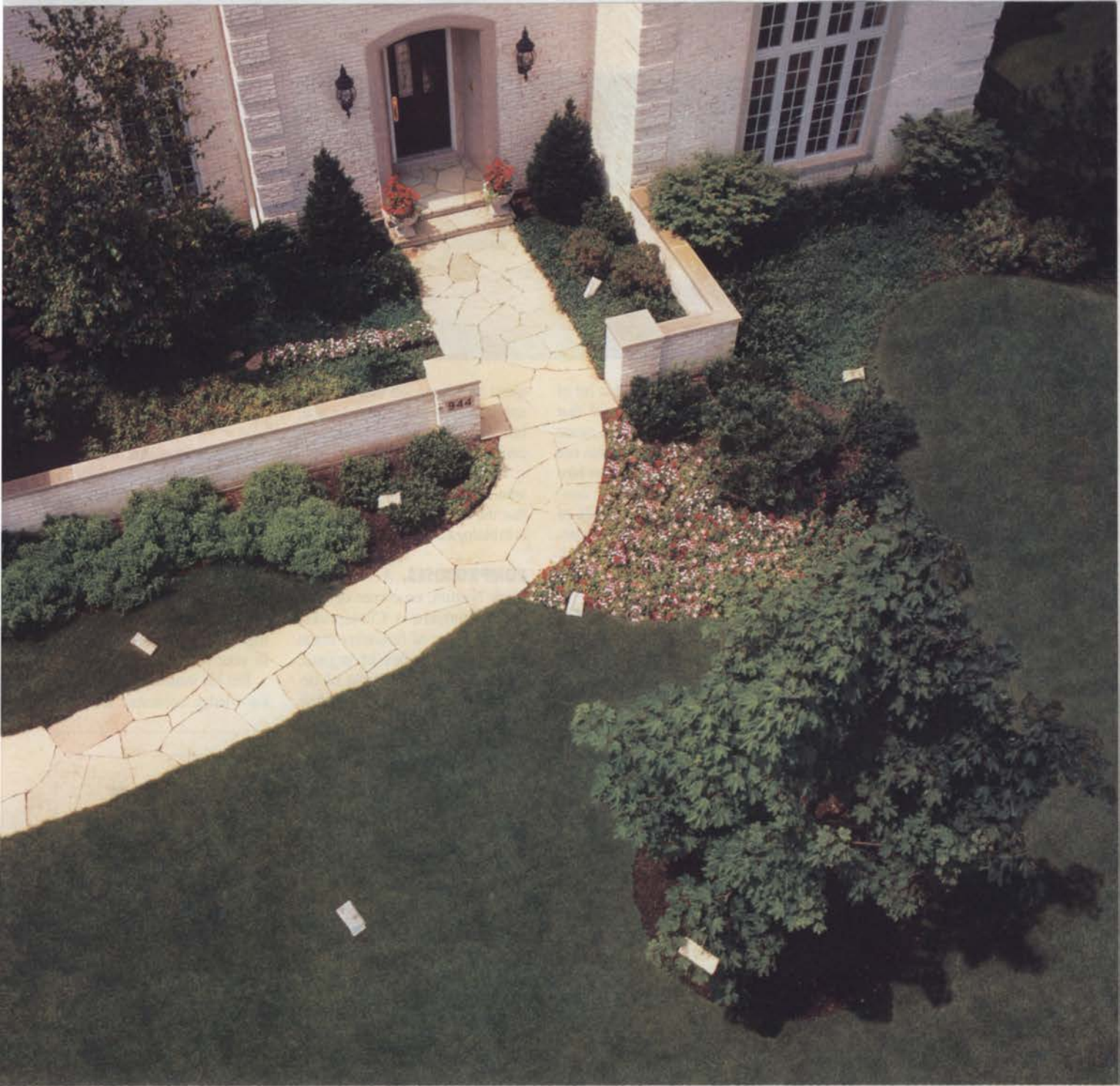
- Organic lawn care is concerned with a complete maintenance program that includes mowing, grooming, watering, core cultivation, fertilizing, liming and the use of soil conditioners and pesticides.

- Organic lawn care places an emphasis on the application of organic (containing carbon) products either natural or synthetic that are biodegradable (provide a source of carbon for non-photosynthetic soil organisms).

These may be chelated micronutrients, bioactivators, biostimulants, enzymes, hormones or growth regulators, surfactants or pesticides.

- Organic lawn care recognizes the value of natural or synthetic inorganic (not containing carbon) products.

The "What You Should Know About Lawn Care Products and Services" brochure is available from PLCAA, 1000 Johnson Ferry Road NE, Suite C-135, Marietta, GA 30068-2112; 404/977-5222.



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## Organic Fertilizers

(continued from page 56)

pesticides, other than organic, and we've used some of the organically based products. And we've found that that's worked out pretty well."

He absorbed the higher cost and figured it into his estimate for the next year. The customer, who stayed with this program, eventually was paying for it. It was a large commercial client with a special proactive attitude about the environment, an attitude he imposed on this one small, particular job, Reeve said.

"The organics are much more slow and long-term. If you have an infestation, you can't control it as easily. Sometimes you may have liability if these plants are going to be damaged more," Reeve said. "In this case the client said, 'That's OK, we'd rather have the plant deteriorate than use the chemicals.'"

Rob Zolezzi, co-owner of L&L Landscape Services, Santa Clara, Calif., a 100 percent commercial/



industrial contractor with a lot of Silicon Valley clients, said that aside from putting tabasco sauce on leaves to repel deer, he has not used any organic fertilizer or biological/biorational pesticide controls, largely because of a lack of economic feasibility. He is, however, using "low-category" pesticides which he claims are "utterly non-toxic."

Almost 100 percent of his fertilization is chemical, he said. However, changes may be in the wind in how he does business, he conjectures. He just got a bid re-

quest on a huge job that not only specified mulching of green waste, but nurturing and recycling of earthworms in the lawns.

"In other words they actually want an earthworm farm on site so that the worms would be put back in to biologically promote aeration."

**COMPROMISES.** According to Mark Nuzum, co-owner of Harmony Products, a Chesapeake, Va., producer of fertilizers made from various types of organic materials, the higher cost of organic products is offset by their

Raw materials for organic fertilizers can drive lawn care prices up significantly. Photo: Harmony Products.

attention to life that goes on under the lawn's surface. Traditional chemical fertilizers may make lawns green, but problems can arise when lower-level biocultures don't get the necessary nutrition.

Earthworms are needed, for instance, to provide natural aeration. Some lawn maintenance operators change to organic fertilizers as a switch or in combination with synthetic products, he said.

"Macroorganisms like worms and ants actually create soil. They break things down. Their eating and excreting process makes them very important, they crawl through the soil, they make channels, they eat organic matter, they go up there and eat thatch which passes through them to form castings. The more worms you have in your soil, the better the soil."

But his industry has had to acknowledge economic feasibility,

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and come up with more viable products: compromises, if you will.

He said a huge growth area for him is his professional turf food product, which strikes the compromise between the ecosystemic benefits of organic materials — which, he said, are necessarily expensive, because they're an addendum to the food industry — and the affordability of synthetics.

"A 50-pound bag of professional lawn fertilizer has to cover at least 10,000 square feet. Most organics used to cover 2,500 to 4,000. It was ridiculous; I wouldn't use them either if I was in the lawn care business," he said. "The newer product releases relatively quickly, 40 percent of the nitrogen to green the turf up, with 60 percent being slow-release with a lot of protein in there to feed the soil — at a relatively low cost."

Reduced fertilizer and pesticide use just makes good economic sense, Andrews said. Today, the professional contractor has an economic incentive to selectively

apply chemicals — which is more than can be said for the do-it-yourselfer, whose bag of product from the garden store cannot help but walk him through a series of blanket applications.

The organic fertilizers are made from various chicken, fish and other animal protein derivatives. The fish-based ones offer a special drawback, Andrews said: certain of them can become putrescent, particularly after a warm rain. Employees and customers react negatively.

He might try an organic product if, say, a stubborn case of fusarium blight on an older lawn appears to be getting worse. "Pretty soon we're in danger of losing the turf. The problem is I'm going to walk up to the customer and tell him his lawn care application went from \$45 to \$120, plus we're going to have to increase the number of applications. He'll look at me like I'm stark raving mad."

The main rap on these products over the last five years is that they don't work right away, he said. "In many cases you have to ap-

ply them again and again and again. Gradually," he admitted, "they change the growing conditions to a point where you'll have some effect."

According to Reeve, "The sooner we get to the point where we're using fewer and fewer chemicals, the better. Environmentalist outcries won't quiet down. We're going to get forced into it because of the fear factor."

Sure, there will always be situations where you're going to have to use chemical means, he said. "But we don't depend on chemical usage as a big income; it's very small for us."

"It's an up-and-coming thing," said Rick Gaffney, owner of Gaffney Landscaping, Cleveland, a small but vigorous business. "In the future I expect they will legislate against certain chemical pesticides on lawns. The runoff of toxic chemicals into Lake Erie is bad."

Lebanon, he said, has come up with a chemical fertilizer with a partially organic mix, which he said he's been using with great

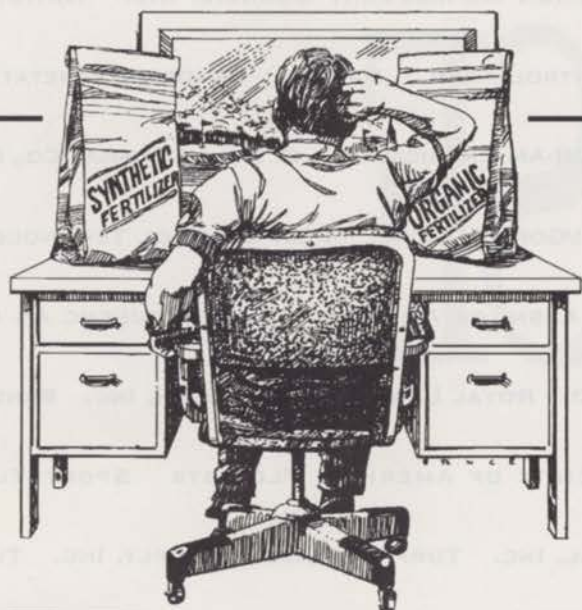
success for certain customers willing to pay for it. The results have been good, he said. Biological spot controls are lacking in some areas, he added.

"There are certain controls for insects such as grubs — the milky spore. But as far as the chinch bug goes, I don't know of any."

According to one Florida contractor (who, because he doesn't want to sound as though he's doing a testimonial, asks not to be identified), there is such a product — at least for one certain turf types.

Made by Hartley Pest Control, Winter Garden, Fla., it's mixed with molasses, then applied, and repels chinch bugs on St. Augustine grass. Does it cost more to repel bugs than otherwise try to chemically treat them? "You guarantee somebody they'll have no more chinch bugs, and it doesn't matter what it costs." ■

*The author is a Contributing Editor to Lawn & Landscape Maintenance magazine and is based in Shaker Hts., Ohio.*



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# SUCCESSFUL DRIP IRRIGATION

*In appropriate settings, drip can be used with a high degree of confidence when designed, installed and properly operated.*

*By Larry Keesen*

DRIP IRRIGATION is used to directly apply water into the soil or at the soil surface above the active root zone of plants. Its purpose is to efficiently irrigate plants in situations where water would be wasted if sprayed in a conventional manner.

Drip emitters disperse water at the emitter location or with the use of 1/8-inch capillary or "spaghetti" tubing. Water is distributed from a single or multi-port emitter to various points above or within the plant root zone at a flow range of 0.5 to 25 gallons per hour (gph). The emitters should be spaced to provide wetting of 70 percent of the active root zone.

Drip is synonymous with water conservation and Xeriscape.™ Drip, if operated properly, is one of the most efficient means of irrigating, providing many benefits.

*Photo: Olson Irrigation, Santee, Calif.*

*As drip is used more frequently in the landscape, contractors will become more confident and products more standardized.*  
 Photo: Olson Irrigation.

**Advantages include:**

- Healthier plants*, longer lasting blooms and less disease. This results from a slow application of water that prevents soil saturation while improving the oxygen level in the soil. Additionally, foliage is not wetted by irrigation.
- Reduced soil erosion* in which the flow rate is less than the infiltration rate of most soils, and runoff is non-existent.
- Lower liability* from runoff and spray on roads and sidewalks, and fewer personal accidents caused by conventional irrigation equipment.
- Low flow rate* allows for the use of irrigation close to structures when properly operated, and reduces drip system costs.
- Inexpensive temporary* system that can be abandoned after two or three years.
- Anytime operating hours* that won't interfere with activities or traffic.
- Less expensive* than conventional systems for a cost savings of 30 percent to 60 percent.
- Lower maintenance costs* than conventional overhead irrigation if properly designed.

*Pays for itself* in water savings alone — usually within three to five years.

*Reduced vandalism* when lines and emission points are installed below grade in the soil.

Drip irrigation equipment and

**Sample automatic drip control valve detail. (Not shown to scale.)**

methods have improved dramatically over the last 10 years. The disadvantages of drip are rapidly disappearing and the level of maintenance is greatly reduced. The phrase "I can't see it operate" is a lazy excuse for not checking the soil moisture level or visually checking plants for potential stress and disease.

Keesen Water Management has been designing drip for more than 10 years, but not without initial problems. However, by learning better techniques over the years, we designed numerous drip systems that have operated successfully with little or no maintenance. Spray-type systems usually require more maintenance than drip systems.

Drip has been used successfully in agriculture for more than 15 years and its transition to landscaping is now complete. Drip can be used with a high degree of confidence *when designed, installed and operated properly.*

For instance, Merle Moore, the horticulturist for the Denver Zoo, is planning to use drip emitters and dripper lines (porous pipe) to irrigate the indoor

"jungle" in the new Tropical Discovery exhibit. Porous pipe is used to irrigate vertical "plant walls" and drip is used in plant pockets and inside exhibits.

**DESIGN.** Design is critical to the success of a drip irrigation system. Selection of quality drip equipment that meets the needs of the plant is the first step in the process. Self-cleaning emitters and water filtration are the most important factors in the design process.

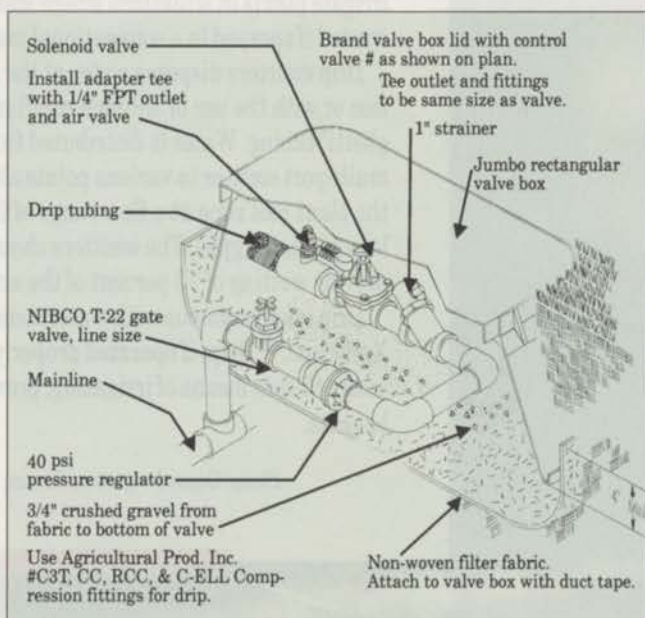
Five years ago, a landscape contractor hired me to resolve a problem with a drip system. I went to the site, observed the system in operation and checked for flow restrictions. The system was producing a steady stream of water at the emitter outlet instead of small drops of water.

This system had pressure compensating, self-flushing emitters. If I plugged half of the emitters or removed the pressure reducing device, the system dripped properly.

This problem occurred because the drip tubing line was undersized, and the contractor was not told about the need to size the valves and drip piping to accommodate the flush mode. Self-flushing emitters flush at the beginning of every drip cycle (you will see a steady stream of water instead of drips).

This continues until the pressure builds up in the drip lateral line and the emitter goes into the drip mode. During the flush cycle, the emitter requires up to 750 percent higher flows to flush than the gallons per hour indicated in the catalog for drip operation.

Filtration of any water source is required to ensure the longevity and uni-





formity of the drip system. Historically, the industry has installed a strainer at the zone control valve, but this may change. Today, some multi-outlet emitters have built-in, serviceable strainers to protect the emitter from plugging and to save

the cost of installing a strainer at the control valve.

I prefer a minimum filtration size of 150 mesh. (See the November 1992 article on filtration in *Lawn & Landscape Maintenance* magazine.)

I consulted on a project in Denver in

which the pressure reducing valve was installed downstream of the control valve. The maintenance contractor complained that some of the drip components were coming apart. We investigated the problem and, with the help of the manufacturer, determined the cause.

Because the pressure reducing valve was installed downstream of the automatic control valve, it took some time for the pressure reducing valve to set at the correct pressure. This resulted in a downstream surge which literally blew the emitters out of the drip tubing.

When pressure reducing valves were installed upstream of the automatic control valve, constant pressure and pressure memory were maintained and downstream surges eliminated.

Pressure compensating emitters, with little variation in pressure, are essential because drip irrigation is sensitive to elevation change within the zone. Twenty feet of elevation change within the lateral line results in a 8.6 psi pressure change.

If the system is operating at 20 psi it translates to nearly a 50 percent change in pressure. Keep the pressure fluctuation within the zone under 10 percent using pressure compensating devices.

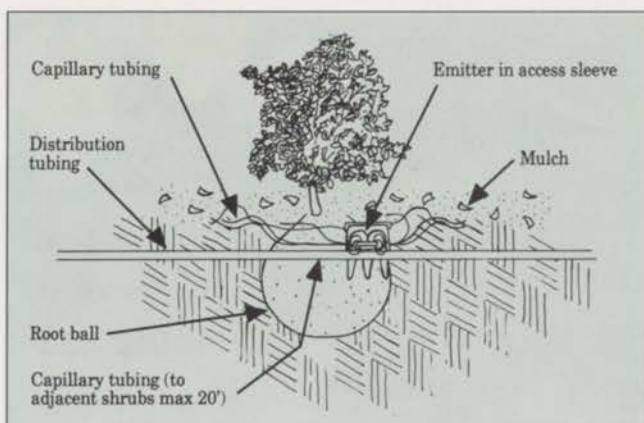
With new plantings, it's important that emission points are at least 6 inches inside the edge of the root ball. If the emitter is at the edge of the root ball or beyond, most of the water will bypass the root ball.

The root ball is usually compacted soil, but the soil around it is generally loosened — not compacted — backfill. Because it is less dense, this loose soil

tends to drain most of the water away from the roots inside the compacted root ball.

Try to match the varying plant water requirements within the zone by using flow rates from 0.5 gph to 24 gph, and single/multiple emission points for each plant. A 1-gallon shrub might have a 0.5 gph emitter; a 5-gallon shrub, two 0.5 gph emitters; and a 2-inch caliper tree, six 1 gph emitters. It's all proportional to the water requirements of the various plants within a zone.

Several years ago, a local water purveyor discovered a drip system that had run non-stop over a long holiday weekend. The trouble occurred because the



Sample emitter in access sleeve. (Not shown to scale.)

automatic control valve failed to close. A combination electric control valve and pressure reducing valve had been used, but would not close under such low flow conditions. Check with a manufacturer to ensure that the valve you use will close under low flow rates.

Always use a pressure reducing valve

operate. For cost containment and ease of operation, use a preset (40 to 50 psi) plastic pressure reducing valve in drip irrigation systems.

Most of the systems we design use multi-port emitters with capillary tubing to the emission point (with a bug cap) staked above the root ball, soil and

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USE READER SERVICE #42



mulch. This avoids potential for root intrusion and allows personnel to see the emitter in operation.

In cases where vandalism is a problem, we installed the emitter outlet 3 to 4 inches below soil surface and taped a handful of pea gravel wrapped in filter fabric to the end of the capillary tubing. This created a larger surface area for the water to move into the soil.

As root barriers are perfected and education persists I expect to see more subsurface irrigation that is efficient with little maintenance.

I prefer self-cleaning emitters with a flush rate, if any, of less than 110 percent of the drip flow rate, and a pres-

sure regulation range of 30 to 60 psi allowing for greater elevation changes and flexibility in zoning the drip system. The minimum size drip tubing should be 3/4-inch to allow for future drip demands and changes. The price difference between 1/2-inch and 3/4-inch isn't worth the smaller size and limitations.

As with other forms of irrigation, drip should be zoned for varying plant needs, slopes and exposures (See the February 1993 issue of *Lawn & Landscape Maintenance* magazine).

**INSTALLATION.** Drip distribution tubing should always be installed with a mini-

mum 4 to 6 inches of soil cover. I have seen drip tubing installed under the mulch or staked to the soil surface in many landscape projects. After only one or two years the tubing is clearly visible above the mulch and the stakes are forced out of the ground by the freeze thaw cycles, and sometimes by animals and people.

If drip is used in cultivated gardens, distribution tubing should be installed below the tilling depth. In mulched beds and non-cultivated areas, the capillary tube should be installed several inches below the soil surface to better protect the tubing.

A common method of attaching the

## FINALLY, DRIP IRRIGATION MADE EASY!

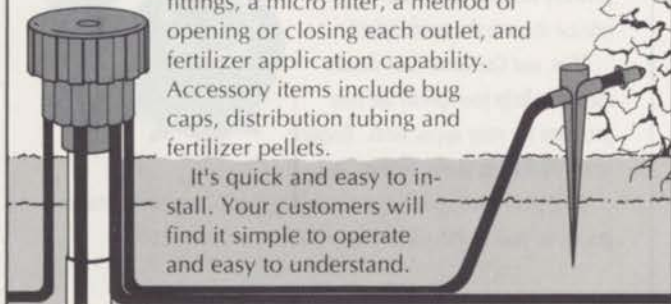
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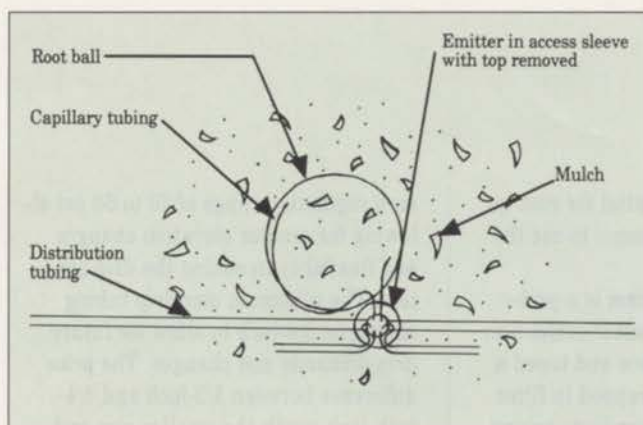


USE READER SERVICE #40

emitter to the drip distribution tubing is by placing a barbed fitting on the emitter and pushing it into a hole in the tubing. A hole punch is used to place the hole in the tubing.

I know a contractor who thought he could save money by using a different hole punch than specified by the manufacturer of the drip emitter. He did so and then turned the project over to the owner's maintenance contractor.

Within a few weeks, drip emitters were blowing out of the tubing on a regular basis. The manufacturer's rep was called out to the job site where he determined that the punched hole was too large for the barbed fitting on the



emitter. The problem was solved by plugging the large holes and using the appropriate hole punch. Always use the hole punch recommended by the manufacturer.

I prefer to install multi-outlet (6 or more) emitters on a 1/2-inch pipe riser connected to ridged PVC in the non-

*Emitter in access sleeve with top removed. (Not shown to scale.)*

freeze (soil) climates. In freezing climates, a resilient, flexible pipe is preferred. The main advantage of the resilient pipe is that it's easy to snake the pipe

through plant beds.

It's important to keep all the components clean during installation and to flush tubing before, during and after the components are installed. An automatic flush valve should be installed at every dead end in a drip irrigation line.

*(continued on page 70)*

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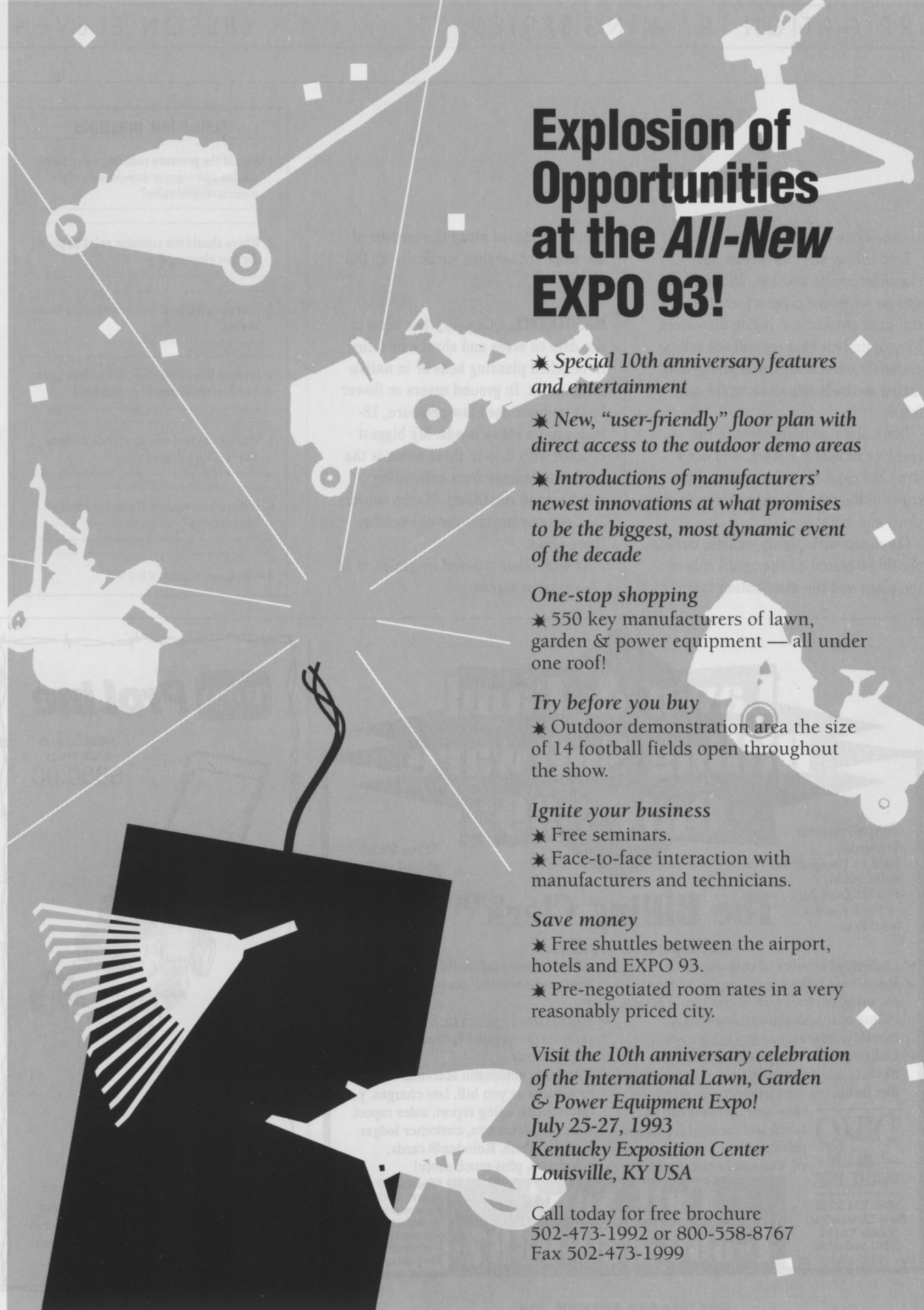


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(continued from page 68)

Drip tubing sizes vary from one manufacturer to another, unlike PVC and polyethylene pipes which have standard outside and inside diameters. I am optimistic that we will see tubing manufacturers standardize sizing and fitting methods sometime in the near future.

Don't place emitters close to the trunk or base of the plant, and don't wrap the capillary tubing around the trunk of the tree. This may strangle the plant and kill it.

On slopes with plants, emitter outlets should be placed on the uphill side of the plant and the distribution tubing

should be routed along the contour of the slope rather than vertically up the slope.

**MAINTENANCE.** Our policy has been to use drip on trees and shrubs installed in mulched planting beds or in native grass areas. In ground covers or flower beds we have used low-pressure, 12-inch pop-up spray heads. My biggest concern with drip in these areas is the potential damage from cultivating, weeding and rototilling. Maybe subsurface systems provide the answer for these areas.

As with other types of irrigation, it is  
(continued on page 80)

### IRRIGATION QUESTIONS

1. Should the pressure reducing valve be installed upstream or downstream of the electric control valve?
2. Where should the emission point be placed for new plantings?
3. How should drip distribution tubing be installed?
4. Do most electric control valves close under low flow conditions (1 gpm or less)?
5. What is the best way to provide uniform flow within a drip zone?
6. Is filtration required if potable water is used for drip?

Answers appear on page 82 of May LLM.

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# People

HUNTER INDUSTRIES expanded **John Buechner**'s duties as district manager to include nine Southeastern states. Buechner coordinates sales and marketing of sprinklers, valves and controllers in Delaware, Georgia, Kentucky, Maryland, North Carolina, South Carolina, Virginia, West Virginia and Tennessee.

Dixon Industries appointed **Lynn Altomare** as territory manager of the Washington/Oregon region, and **Rick Schneider** as territory manager in Florida.

Donlar Corp. named **Bernardo Rico** vice president, sales and marketing, and officer of the company. Rico previously served as general manager for Nalcomex, an affiliated company of Nalco Chemical Co.

ZENECA Professional Products promoted **Roy Lee Carter** to national sales manager. Carter joined ZENECA (formerly ICI) as technical sales representative in 1982.

**Lauren Treu** joined the crop protection division of Uniroyal Chemical Co. as business manager for specialty products. Treu develops and implements marketing strategies for the company's turf and ornamental products.

Longhorn Supply named **Mark Smith** customer service and sales representative for the Fort Worth, Texas, area.

Jacklin Seed Co. promoted **Jim Kinservik** to the domestic marketing department. Kinservik served as traffic manager for four years, coordinating domestic and international shipping arrangements.

ISK Biotech Corp. announced the following appointments: **Robert Terry** as senior process engineer at the IPN Unit, **John Kolbe** as DCD technician in the industrial biocides division and **Brandon Calder** as field sales representative, Northern area. Terry previously served as staff engineer for Exxon Baytown Texas Refinery. Kolbe has a background in electronics training. Calder previously served as a sales trainee.

ISK Biotech Europe Ltd. named **Valerie Wain** secretary to Dr. Lewis Kamiri in the technical department, Orpington office. Wain previously served as secretarial assistant.

**Anders Stroby** joined Husqvarna Forest & Garden as worldwide marketing director. Stroby succeeded **Ake**



Buechner



Kinservik

**Hammerlid** who retired after more than 40 years of service. Stroby joined the Electrolux Group in 1980, serving a variety of positions until he became managing director for Jonserved Power Products in 1988.

Briggs & Stratton appointed **William Reitman** as marketing director, New Ventures; and **Richard Acker** as sales administration manager, industrial division. Acker was formerly manager, technical services. Reitman formerly served as senior director for Golden Entertainment/Sight & Sound businesses at Western Publishing Co.

Ringer Corp. named **Edwin Motch** vice president of marketing. Motch previously served as vice president of marketing for Carlisle Plastics. ■

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USE READER SERVICE #34

# Products

The new Promaster 100 zero-turning radius mower from **Gravely International** features a hydrostatic drive system with two cast-iron wheel drive motors and two variable displacement pumps.



Powered by either a 16-h.p. or an 18-h.p. engine, the Promaster 100 reaches ground speeds of up to 5.7 mph. The pressure-sensitive T-bar steering levers provide independent wheel control, maneuverability and the ability to change from forward to reverse without switching gears.

**Circle 126 on reader service card**

Acclaim IEC Herbicide from **Hoechst-Roussel** is an emulsifiable concentrate formulation containing one pound of active ingredient per gallon. Acclaim is used for postemergence control of annual and perennial grassy weeds in established turfgrass and ornamental species.

The herbicide soaks through the foliage, causing visual injury to weeds four to 10 days after application. Weed control takes 12 to 21 days.

**Circle 127 on reader service card**

**Mustang Manufacturing Co.**'s material handlers are available in several models of two- and four-wheel drive, with payload capacities ranging from 20 to 91 cubic feet. The two-wheel models feature rear-wheel steering; the four-wheel vehicle has up to 30 degrees articulation and 10 degrees oscillation.

All models feature power steering and maneuverability in close quarters. Flotation tires help minimize turf damage and lug-type tires allow them to handle uneven terrain.

Operators stand behind and slightly above the forward-tipping dump body for improved visibility in all directions.

**Circle 128 on reader service card**

The **Crary Co.** introduces the Bear Cat model 1020 chipper/shredder, a top-of-the-line machine powered by a 20-h.p., V-twin cylinder engine.

## PRODUCT SPOTLIGHT

The **Turf Choice** 55-gallon ATV sprayer provides 15-foot spray application of fertilizers, herbicides and insecticides to grass, trees, shrubs and hard-to-reach ornamentals.

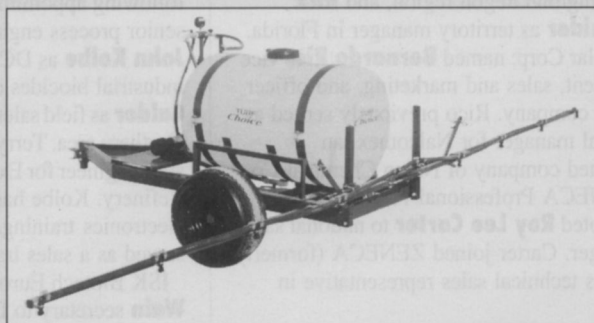
Ideal for parks, golf courses and industrial and institutional grounds, the ATV sprayer can be used on garden tractors and all-terrain vehicles. Flotation tires maximize weight distribution and minimize footprints.

The Turf Choice sprayer features a 12-volt electric diaphragm pump that delivers 3.5 gpm and up to 50 psi, and a manifold that regulates pressure from 5 to 50 PSI.

The sprayer's standard 25-foot by 3/8-inch gun hose allows access to hard-to-reach places while the breakaway, folding boom provides wide swath applications.

Other features include an adjustable spray pattern tip, a non-corrosive poly tank with a 5-inch screw-on lid, 18-feet by 8.5-feet by 8-foot flotation tires and an adjustable hitch.

**Circle 125 on reader service card.**



The 1020 features tool steel chipping blades to cut tree limbs up to 5 inches in diameter, 36 pairs of knives to quickly shred leaves, grass and other debris into a 30- by 20-inch hopper and a manual clutch to allow the operator to engage and disengage.

**Circle 129 on reader service card**

The biodegradable **Futerra** revegetation/erosion control mat from Conwed Bonded Fiber promotes fast turf growth in large areas.

Contractors apply seed and fertilizer to the ground, then roll out the mats. After watering, the mats bond to ground contours, holding seeds in place even over irregular terrain. The mats protect the seeds from weeds, birds, dry spells and high-volume rain washouts.

The absorbent mats are made of natural wood fiber which decomposes into mulch to feed and nurture emerging sprouts. No reseedling should be needed.

**Circle 130 on reader service card**

**Spyker Spreader** adds the Border Patrol to its line of broadcast spreading equipment. The Border Patrol controls the spread pattern, preventing application on walks, driveways and selected areas.

The unit deflects material uniformly across the spread band and diverts the spread pattern from the left side of the



spreader to the front and right sides only.

**Circle 131 on reader service card**

AquaGro 20S Spreadable, the granular formulation of **Aquatrol**'s soil weeding agent/penetrant, is available in 12.5-pound and 40-pound bags.

The formulation consists of AquaGro liquid, impregnated on a corncob grit carrier, which may be applied to turf and landscape beds using a drop or rotary

(continued on page 76)

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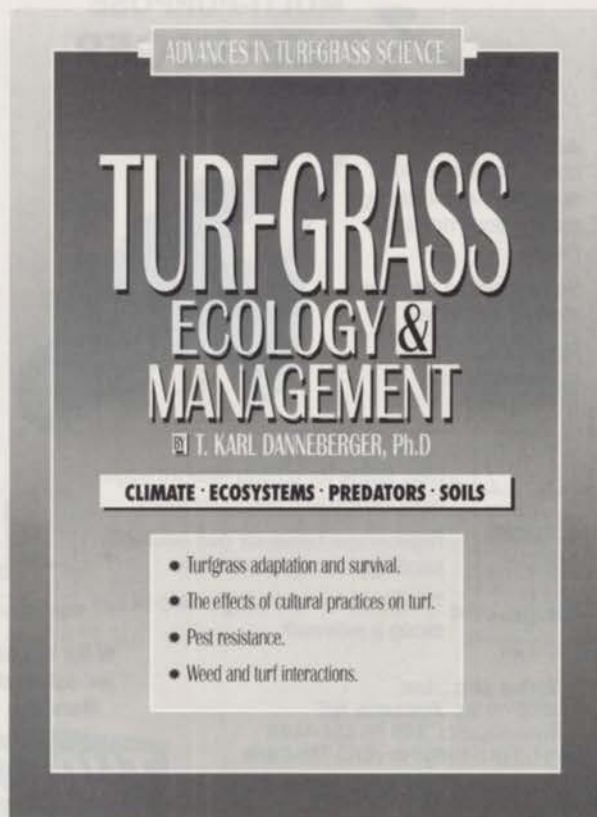
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**Products**

(continued from page 74)

spreader. AquaGro reduces water's surface tension to help water-soluble chemicals and fertilizers infiltrate the plant root zone.

**Circle 132 on reader service card**

A 14-h.p. engine combining overhead valve design with iron cylinder features is new from **Briggs & Stratton**.

Designed for riding lawn mowers and garden tractors, the 14-h.p. engine's OHV construction allows it to run cooler and



cleaner for longer engine life.

Features include a cast iron cylinder sleeve, laminated blower housing, exhaust valve, dual-clean air cleaner, powder-painted sheet metal components and synchro-balancing.

**Circle 133 on reader service card**

The MD-96 dual-purpose hay and straw mulch crimper from **Reinco** is ideal for landscapers needing to anchor mulch without using a tackifier. The mulch disk blades crimp hay or straw mulch into moderate to loose soils, inhibiting the mulch from blowing away. While crimping, the unit also gently compresses the soil and crushes any large clumps, ensuring an ideal seedbed.

**Circle 134 on reader service card**

**Permaloc** offers five types of L-shaped aluminum restraints for paver, asphalt and aggregate installations. Each restraint readily forms curves, radii and angles.

The products withstand power edgers, and snap-down connections prevent potential weak points, long-term cracking and rotting. The tight-fitting L-shaped design accommodates irrigation heads.

**Circle 135 on reader service card**

The MS-5 backpack sprayer from **Echo** features a 5-gallon high-density polyethylene tank, a 24-inch brass lance with adjustable nozzle and an oversized actuator with a lock-on feature. All seals and o-rings are made of chemically resistant Viton.

An interchangeable pump handle gives



users the option of left- or right-hand operation while adjustable shoulder straps and ergonomic lumbar support help distribute weight for improved operator comfort. A built-in carry handle and slimline simplify transporting and storing.

Additionally, the backpack sprayer from Echo comes with a 90-day commercial warranty.

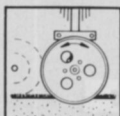
**Circle 136 on reader service card**

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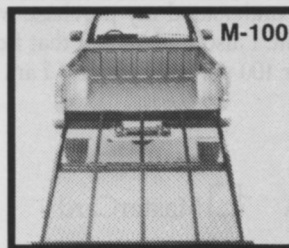
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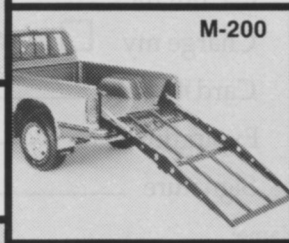
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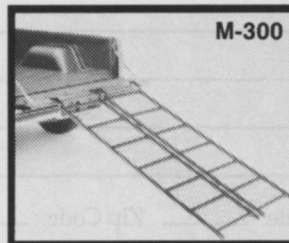
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**M-300 Porta Ramp**—fits any pick-up, trailer or van.



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The **Verti-Trac** turf maintenance vehicle contains a powerful engine capable of pulling all types of equipment. The vehicle features a hydrostatic drive system to provide optimum speed and cruise control and to help the operator maintain constant ground speed.

The Verti-Trac incorporates a three-wheel configuration. Equipment is carried between the wheels, distributing weight more evenly. The design enhances turning and general vehicle operation, accessibility to hard-to-reach areas and prevention of turf damage, especially on uneven or undulating surface areas.

**Circle 137 on reader service card**

**Dixon Industries** adds the ZTR 560 mower to its line of commercial riding mowers.

The ZTR 560 features a 60-inch cutting deck, 20-h.p. engine, twin hydrostatic units with hydro-gear drive, a large capacity reservoir, separate fans and a charge pump to actively cool the hydraulic fluid.

The system also uses a tilt-up body, which allows instant easy access to fluid tanks, control adjustments and gear drive.

**Circle 138 on reader service card** ■

## FYI...

**Charcoal neutralizes herbicides.** Parkway Research produced a brochure on its 52 pickup flowable activated charcoal, which is ideal for neutralizing herbicides, minimizing oil spill damage on turfgrass and chemically neutralizing spray tanks inexpensively.  
**Circle 139 on reader service card**

**Growing low-water flowers.** *Low-Water Flower Gardener*, a new book from Ironwood Press offers complete information on growing more than 270 colorful perennials, ground covers, small shrubs and ornamental grasses in Western states.  
**Circle 140 on reader service card**

**Building curves and corners.** The VERSA-LOCK retaining wall systems brochure describes how to build inside and outside curves and corners into a segmental wall system using standard units. Outside corners from 25 to 90 degrees and inside corners from 90 to 140 degrees are easily constructed.  
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**Videos teach turf care.** New from Monsanto, these Lawn Management videos help teach employees and the public about environmentally sound turf care. The set is available with an eight-page manual.  
**Circle 142 on reader service card**

**Company offers safety products.** The Direct Safety Co. offers its 1993 Master Catalog featuring personal safety products, back support and other ergonomic products, lead detectors, environmental monitors, first-aid kits, right-to-know materials, protective clothing and safety training.  
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USE READER SERVICE #28

**JUNE 5** Estimating and Management Principles for the Landscape Contractor seminar, Phoenix. Seminar will be repeated June 22 in Tuscon. Co-sponsored by the Associated Landscape Contractors of America and the Arizona Landscape Contractors Association. Contact: ALCA, 12200 Sunrise Valley Drive, Suite 150, Reston, VA 22090; 703/620-6363.

**JUNE 7-8** Management of Environmental Technology Conference, University of Tennessee at Chattanooga. Contact: Dr. Phil Kazemersky, 615/755-4121.

**JUNE 10** Cornell Turfgrass Field Day, Cornell Research Plots, Ithaca, N.Y. Contact: Department of Floriculture & Ornamental Horticulture, 20 Plant Science Bldg., Cornell University, Ithaca, N.Y.; 607/255-3134.

**JUNE 17-18** 1993 Park & Recreation Design Symposium, Little Rock, Ark. Contact: National Institute on Park and Grounds Management, P.O. Box 1936, Appleton, WI 54913; 414/733-2301.

**JUNE 17-20** Outdoor Power Equipment Institute Annual Meeting, Ritz-Carlton Hotel, Amelia Island, Fla. Contact: OPEI, 341 S. Patrick St., Old Town Alexandria, VA 22314; 703/549-7600.

**JULY 8** The University of Georgia Turfgrass Field Day, Georgia Station, Griffin. Contact: Douglas Moody, Georgia Turfgrass Association, 5198 Ross Road, Acworth, GA 30102; 404/975-4123.

**JULY 9-10** Second Annual New York ReLeaf, Urban and Community Forestry Conference, Cornell University, Ithaca, N.Y. Contact: Dr. Nina Bassuk, 607/255-4586.

**JULY 14** Annual Nursery Field Day, Hampton Roads Agricultural Experiment Station, Virginia Beach. Contact: Dr. Bonnie Appleton/HRAES, 1444 Diamond Springs Road, Virginia Beach, VA 23455; 804/363-3906.

**JULY 14-15** Midwest Grounds Management Conference, Miami University, Oxford, Ohio. Co-sponsored by the Professional Grounds Maintenance Society and the Association of Physical Plant Administrators. Contact: Matt Vehr, Spring Grove Arboretum, 4521 Spring Grove Ave., Cincinnati, OH 45232; 513/681-6680.

**JULY 14-16** Mailorder Association of Nurseries Summer Convention, Greenville Hilton, Greenville, S.C. Contact: MAN, 8683 Doves Fly Way, Laurel, MD 20723; 301/490-9143.

**JULY 14-16** Summer Convention & Field Days, American Sod Producers Association, Opryland Hotel, Nashville, Tenn. Contact: ASPA, 1855-A Hicks Road, Rolling Meadows, IL 60008; 708/705-9898.

**JULY 18-24** International Turfgrass Research Conference, Breakers Resort Hotel, Palm Beach, Fla. Contact: Dr. George Snyder, University of Florida, IFAS, Everglades Research and Education Center, P.O. Box 8003, Belle Glade, FL 33430-8003; 407/996-3062.

**JULY 19-21** IAN Summer Meeting and Field Day, Indianapolis. Contact: Philip Carpenter, Indiana Association of Nurserymen, 202E 650N, West Lafayette, IN 47906; 317/497-1100.

**JULY 24-29** American Society for Horticultural Science's Annual Meeting, Opryland Hotel, Nashville, Tenn. Contact: Christine Radiske, 703/836-4606.

**JULY 25-27** International Lawn, Garden and Power Equipment Expo, The Kentucky Exposition Center, Louisville. Contact: EXPO 93, 6th floor, 6100 Dutchmans Lane, Louisville, KY 40205; 800/558-8767.

**JULY 27-29** East-Penn Allied Nursery Trade Show. Contact: Pennsylvania Nurserymen's Association, 1924 N. Second St., Harrisburg, PA 17102; 717/238-1673.

**JULY 28-29** LCA Summer Conference, Holiday Inn Crown Plaza, Rockville, Md. Contact: Landscape Contractors Association, 9053 Shady Grove Court, Gaithersburg, MD 20877; 301/948-0810.

**AUG 5** National Turfgrass Evaluation Program Turfgrass Research Field Day, USDA Beltsville Agricultural Research Center-West, Beltsville, Md. Contact: Kevin Morris, USDA-BARC-West, Bldg. 001, Rm. 333, Beltsville, MD 20705; 301/504-5125.

**AUG. 6-8 1993** AAN/TAN Annual Convention, Dallas Convention Center. Contact: Kevin Morales, AAN, 1250 I St. NW, Ste. 500, Washington DC 20005; 202/789-2900.

**AUG. 12** Landscape and Garden Tours, St. Paul, Minn. Various locations. Contact: Jim McCarthy, c/o Minnesota Nursery and Landscape Association, P.O. Box 130307, St. Paul, MN 55113; 612/633-4987.

**AUG. 13 1993** Summer Meeting and Trade Show, Bailey Nurseries Inc., St. Paul, Minn. Contact: Jim McCarthy, c/o Minnesota Nursery and Landscape Association, P.O. Box 130307, St. Paul, MN 55113; 612/633-4987.

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## Irrigation Training

(continued from page 70)

important to check the system weekly and the soil more frequently for system function and adjusted schedules. If a large number of emitters are failing, contact your distributor or the manufacturer and they will be glad to assist you in solving the problem.

In cold climates avoid blowing out drip lines because the air pressure can become too high, driving components apart.

When chloride and/or sodium are found in the water supply or soil, salt leaching is required to assure plant health. When designing emitter locations, it may be necessary to provide 100 percent coverage of the wetted area over the active root zone in order to flush the salts away from the plant roots.

Once this is done, the salt builds up along the edges of the wetted area where evaporation and drying occur. This sometimes results in white rings on the soil

surface. Rain can also force the salts back into the root zone. This can be prevented by turning on the system when it rains and shutting it off after a couple of inches of rain have fallen.

By going to subsurface drip irrigation, vandalism could be eliminated with all the components buried and accurately located on an as-built drawing.

For information on drip irrigation scheduling, see the articles on water management in the July through October 1992 issues of *Lawn & Landscape Maintenance* magazine.

As contractors become more familiar and confident with drip, and as drip emitter outlets are protected from root intrusion and plugging, subsurface applications will be designed more readily.

Toro/Netafim's Techline is currently the only drip line that will resist root intrusion according to a three-year study at the Center for Irrigation Technology in Fresno.

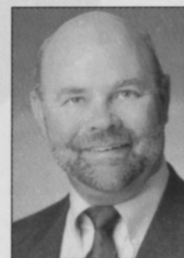
We are currently testing these products

using subsurface drip lines in narrow areas for planting beds and turf where spray irrigation is wasteful. Soon we hope to recommend some of these products to our clients on a limited basis.

Next month's lesson is the first of two parts on irrigation system installation techniques to reduce maintenance and water costs. The first part will look at the installation of irrigation control systems including solar, backflow, grounding, valves, valve boxes and wire.

I have received many cards and notes of thanks and encouragement. Thank you. It's nice to know that readers appreciate these articles, and it certainly helps motivate me to move on and write the next one.

*The author is vice president of Keesen Water Management, 10700 E. Bethany Drive, Suite 103, Aurora, Colo. 80014-2625.*




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### Ornamental Beds

(continued from page 30)

sents problems, Derrick said. "You can use certain products for broadleaf. But you have to be careful; you can't get the herbicides on existing plants. If it's real weedy, I tell the crew to just pull the things (weeds) out. Once you get them out, you can put preemergents down."

A particular job site and initial herbicide application dictate which method is used, Kohlmann said. "There are always instances where you will have to hand weed. The goal is to minimize that. If the bed didn't get an even application of a product or you have a resistant species, then you didn't match the herbicide with the landscape.

"Hand weeding is the most costly method you can use," he added. "It equals one day of weed control, whereas herbicides provide three to six months of weed control."

Lawn and landscape firms also have varying methods for handling requests to rid weeds from a new job acquired in mid-season.

"If a client calls in the middle of the season and says he has problems with weeds, a landscaper will write an estimate for hand picking the weeds. The client will look at the price and opt for chemical application," Houseworth said. "On the other hand, a lot of landscapers will say it's too late this year, and set up a program for next year."

Hurto believes clients need to be better educated about weed control in general. "Customers have this idea there won't be any weeds in the bed, so they walk away dissatisfied," he said. "If the customer accepts the fact there will be an occasional weed, then treatment will be more acceptable."

**HERBICIDE WRAP-UP.** Contractors and manufacturers agree today's herbicides

provide adequate control, though none conquer all weeds. A number of herbicides are used to attack grassy weeds; only a few effectively control broadleaf.

"Products on the market are very good. There's a lot of literature and research behind them," Broughton said. "I'm a little gun-shy. Before I use a product, I talk to people in the trade about results they've gotten. I try to avoid using sprays."

There are about seven herbicides currently marketed for ornamental application, most of which are preemergents. "There are no postemergents I would recommend for ornamental beds with annual flowers," said Jeff Norcini, assistant professor of environmental horticulture at the University of Florida.

American Cyanamid Co., Wayne, N.J., offers Image, a postemergent which controls a limited number of ornamentals. Valent USA Corp., Walnut Creek, Calif., is testing a postemergent for selective grasses, but the product will not be available for ornamental use until at least next year, Norcini said.

Several of the ornamental herbicides available can be applied only to woody plants or perennials, but not annuals. "It's very important to read the labels to know what plants a product can be used on," Kohlmann said.

Some lawn and landscape professionals avoid taking on ornamental bed care because they don't trust the herbicides, Houseworth said.

"All they have to do is read the label and follow the directions," he said. "If they do that, it's the companies making the herbicides that are at risk to make sure their recommendations don't get them into trouble."

*The author is Associate Editor of Lawn and Landscape Maintenance magazine.*

## IRRIGATION TRAINING SERIES LESSON ELEVEN

Answers to questions on page 70.

1. Upstream
2. 6 inches inside the edge of the root ball.
3. Drip distribution tubing should be installed with a minimum 4 to 6 inches of soil cover.
4. No, check the manufacturer's catalog for information.
5. Pressure compensating emitters.
6. Filtration of any water source is required to ensure the longevity and uniformity of the drip system.

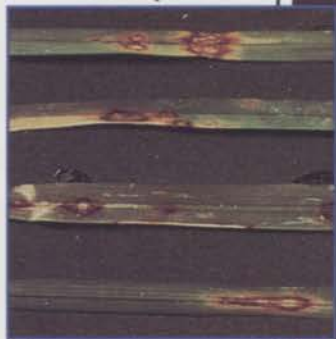
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