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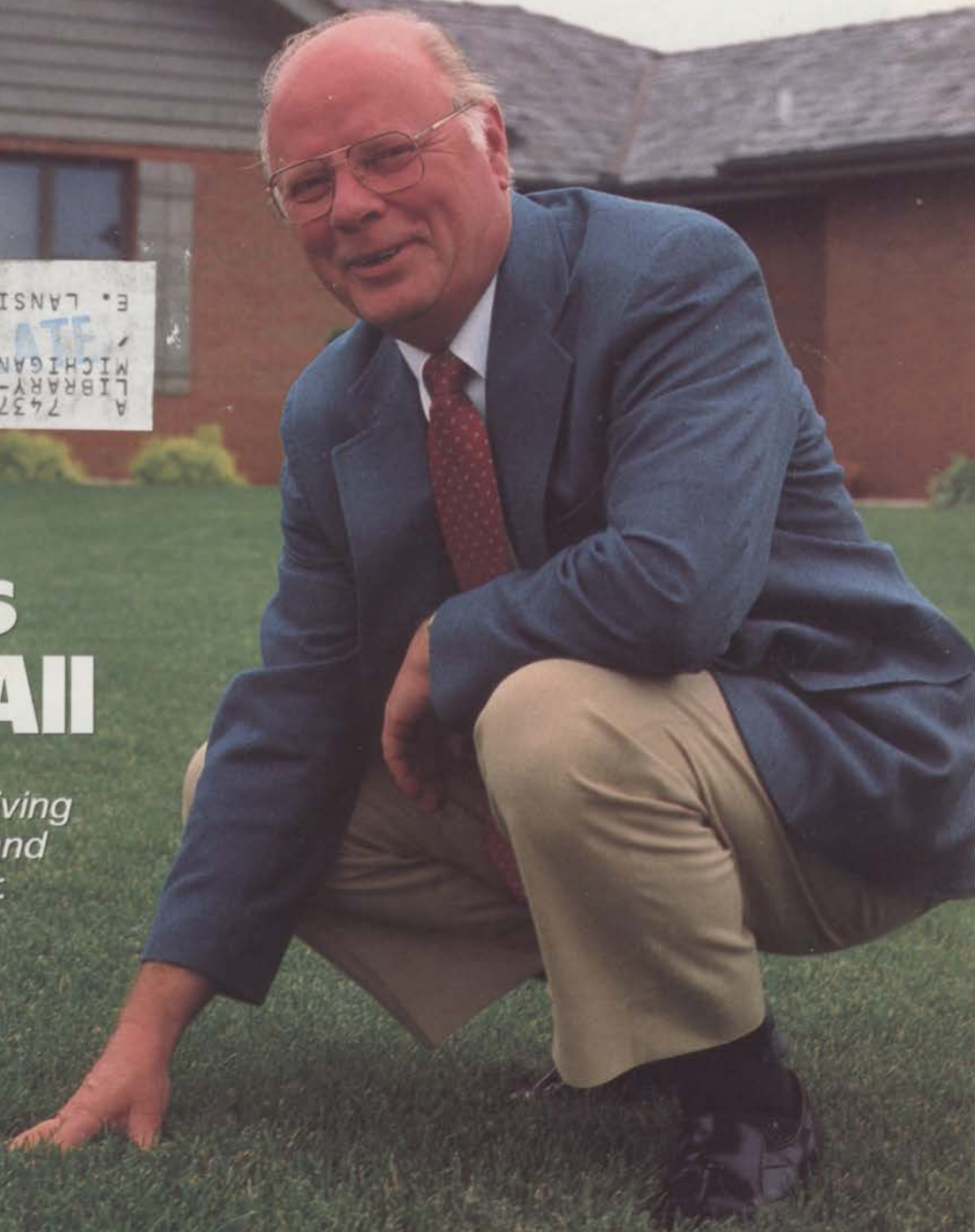
ALSO IN THIS ISSUE:

***Overseeders
Riding Wave of
Popularity***

***Are Power
Blowers Getting
a Bum Rap?***

Expo Preview

***Insect Control in
Warm-Season Turf***





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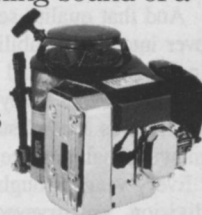
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EDITOR'S FOCUS

THIS TIME OF YEAR YOU DON'T have to look too far to find a professional landscape crew out manicuring residential and commercial property. Unfortunately, the same applies to the unscrupulous operator who swoops into a city, secures plenty of accounts for low pay and then disappears never to be found again.

The free enterprise system makes it possible for these "entrepreneurs" to enter the lawn and landscape maintenance market, and it's OK if they intend to do it right. But their bad habits put a damper on the rest of the industry. Things like smoking cigars, mowing lawns while shirtless and spraying without gloves leaves a negative impact on the industry.

While the professional operator can't dwell on these "competitors," business decisions must be made in an effort to improve the industry's image.

While some operators are enjoying success offering a specialty service, others, like this month's cover subject Bob Kapp, are prospering through diversification.

"Looking ahead and trying to project what was going to happen in five years, I felt that the chemical lawn care industry had to get into full maintenance," Kapp said. "We're trading customers, and there just aren't that many one-time users out there that are in our particular market area.

"That had a definite bearing on our decision to go full maintenance. That's the way society is today. It's just natural. If you're doing lawn fertilization, why not mow the grass? And why not trim the bushes?"

Kapp's been in business for about 13 years, and the customers' opinion has always been important to him.

"My intention was never to be the biggest in the area, but just the best," Kapp said. "Having lived in town for as long as I had, I didn't want to get run out of town on a rail for lousy service."

And that quality service has spilled over into Kapp's ability to market mowing/maintenance and irrigation.

"Having that many chemical lawn accounts was a good start to get into the mowing maintenance business," he said. "Every year, through our chemical lawn division, we surveyed our customers asking them to rate our services and tell us what new services they would like to see.

"They always tell us they'd like one company to deal with their lawn. That way they don't have to worry about a chemical lawn company coming out the



day before or the morning before the mowing contractor comes and mows the grass."

In two short years, Kapp's Green Lawn has converted 263 of his chemical lawn care customers to full-service, some receiving mowing and others a whole spectrum of things. Not bad for a man who thought all his company would ever offer was chemical lawn care.

"We provide everything that customers need in the landscape," he said. "I can't think of anything else we'll add; we don't plan to get into window washing."

In other news, consumers would sharply increase the level of state and federal regulation of professional operators applying pesticides, according to a national survey.

Only 29 percent of U.S. households feel that current state and federal regulations concerning professional pesticide applicators are adequate. Almost 55 percent feel that such regulations need either "substantial" or "some" improvement.

The survey, commissioned by WMI Urban Services, a subsidiary of Waste Management, was conducted by Bruskin Associates, New Brunswick, N.J.

Other key findings: More than 78 percent indicated that chemicals and other materials used by professional technicians should be restricted to their use and should not be available to the public.

About 88 percent feel it's "very important" that public facilities use professional services to protect the health of all who visit those places.

More than 86 percent of respondents felt that implementation of more rigid testing and licensing procedures for technicians was either "extremely" or "very" important. — *Cindy Code*

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HUDSON MANUFACTURING ACQUIRES ENCAP PRODUCTS

H.D. HUDSON MANUFACTURING Co., Chicago, Ill., recently purchased Encap Products, Mt. Prospect, Ill., for an undisclosed price.

No immediate changes are planned for Encap. Hudson continues to offer products under the Encap name.

The sale was announced after the retirement of Encap's president, Walter "Bud" Houston.

Encap manufactures hoses, pumps, spray guns and accessories, while Hudson manufactures compression sprayers. Both are privately owned companies.

"We've had a close association for years and it was a natural transition for us," said John Hepburn, Hudson advertising/public relations manager.

Encap offices will eventually be phased into Hudson's Chicago office. Manufacturing facilities will ultimately move to Hastings, Minn.

Customers should see no difference in the products and their distribution, according to Hepburn.

PLCAA SEEKING APPLICATIONS FOR NEW EXECUTIVE DIRECTOR

The Professional Lawn Care Association of America, Marietta, Ga., is accepting applications for executive director.

Previous green industry involvement is required and prior association experience preferred. The candidate must have ad-

WHITE HOUSE CEREMONIES HONOR LANDSCAPE AWARD WINNERS



The Peabody Hotel in Orlando, Fla., was one of 20 environmental landscape enhancement projects honored by Barbara Bush in formal ceremonies at the White House.

Mark and Laurie Yahn, Ground Control Landscaping, the landscape installation firm for the hotel, were among the recipients. Also honored for the Peabody project were project owner Bocep Venturers, Memphis, Tenn., and the landscape architecture firm, Edward D. Stone Jr. & Associates, Orlando.

The awards were given in conjunction with the 30th National Landscape Awards Program, sponsored by the American Association of Nurserymen.

ministrative, personnel, finance and marketing skills.

A three-member search committee will evaluate candidates and conduct interviews. They hope to recommend a candidate to the association board in August, and have a new director in place by its

high school education "who can read and understand labels."

As a result, companies are having to do a smarter job of hiring to secure people who are "prepared for their jobs and will stick with them."

November conference and show.

The board has hired the Chicago consultant firm Peron, Ambrose and Associates to assist in candidate selection.

Send resume and salary requirements to PLCAA, P.O. Box 37462, Cincinnati, Ohio 45222.

LABOR: THE SEARCH GOES ON

In southern California, immigrants from Mexico and Central and South America assure an ample supply of hands for routine lawn maintenance services. But some firms are having a hard time finding workers fluent enough in English to deal with customers.

And according to a report in the *Wall Street Journal*, even \$8 to \$10 an hour isn't enough incentive for some workers to handle chemicals.

To apply pesticides, companies need people with a

SERVICE INDUSTRIES RIDING FAST TRACK

The U.S. economy may be in its eighth year of expansion, but how healthy it looks depends on which industry you're standing in.

USA Today recently contacted analysts and experts in 24 different industries. Their comments were boiled down to two ratings for each industry's relative performance; hot, healthy, muddling, struggling and slumping.

Specialty chemical makers are said to be enjoying boom times because their products are mostly developed and sold

DOWELANCO CEREMONIES SET FUTURE COURSE

INDIANA'S LT. GOV. FRANK O'Bannon and Indianapolis Mayor William Hudnut were just two of more than 600 people participating in ground breaking ceremonies for Dow-Elanco's global headquarters.

The joint venture, announced about a year ago, combines the plant science and specialty pest control businesses of the two companies. First year sales are estimated at more than \$1.5 billion.

Construction of the 800,000-square-foot global headquarters

complex, located on 325 acres in northwest Indianapolis will begin immediately.

The state of the art research laboratories, administration building and employee development center will be completed separately over the next few years.

The headquarters will house nearly 1,000 employees and cost more than \$100 million to complete.

The venture sets up four key segments in the company's specialty products organization:

turf and ornamentals, professional pest management, vegetation management and over-the-counter/formulations.

"All four offer growth opportunities," said Richard Holzschu, general manager, North American Specialty Products.

More specifically, Holzschu said, development in the areas of landscape maintenance and design and golf courses will continue. Lawn care has slowed, but should grow if the industry can address the issues surrounding aesthetics.

for specific niches. Profit margins are high, advances are rapid and the long-term outlook is bright, according to the newspaper.

Makers of machinery are also said to be in an exceptional position. The sluggish economy is expected to help sales, as businesses seek profit increases by investing in more efficient technology.

In addition, the slow labor market should force businesses to buy machines because they can't easily hire people.

Over the next five years, the chemical industry received a "hot" rating, while the equipment industry collected a "healthy" mark.

PENNANT NOW LABELED FOR LIMITED TURF USE

Ciba-Geigy's Pennant® liquid herbicide received a special local need label for use in commercial sod production in Florida. This is the first time Pennant applications have been allowed on turf.

The herbicide was initially labeled for use on ornamental plants in 1987.

Currently, the preemergence herbicide can only be used in Florida on commercially grown St. Augustinegrass (*Floratam* variety only). It can be applied to established, newly sprigged or ribbon plantings.

Testing is under way to expand the product's uses in Florida and across the country.

ILLINOIS LANDSCAPE CONTRACTOR FIELD DAY SET FOR AUG. 1

The Illinois Landscape Contractor's Association will hold its annual summer field day at Ball Seed Co., West Chicago, Ill., on Aug. 1 from 8:30 a.m. to 4 p.m.

The field day features 200 exhibit booths for dealers of tractors, lawn maintenance equipment, mulch, stone, concrete products, chemicals and fertilizers, nursery stock and other green industry services.

A tour of Ball Seed's annual trial beds, short talks on the state of the industry and discussions on landscape product uses will also be held.

For more information, call ILCA at 708/932-8443.

PLANTS, TREES REPLACE CONCRETE AT SEA WORLD

Anheuser-Busch, the new owner of Sea World in Aurora, Ohio, has replaced much of the park's concrete with an oasis of plants and trees.

The \$5 million facelift will add naturalized plantings to make the park more en-



Yardmaster employees discuss design for Shamu Stadium at Ohio's Sea World.

joyable for visitors, according to Rob McCartney, Sea World horticulturist.

Formal rose gardens will be replaced with colorful annual beds and concrete has given way to the more natural look of boulders.

Yardmaster, Painesville, Ohio, is overhauling the area surrounding Shamu Stadium. Once an unappealing wall of railroad ties, the hills around the stadium now boast rugged boulders and naturalized plantings.

Yardmaster Design Consultant Ed Bayer suggested the use of boulders that come from the 88-acre Sea World quarry. His decision, which eliminates the use of concrete walls to hold the hill surrounding Shamu Stadium, save Anheuser Busch about \$30,000 in landscape construction.

The boulders will be surrounded by Russian olive trees, a variety of junipers, spruce, azaleas and other native woodland plants.

OTF INITIATES SURVEY OF OHIO TURFGRASS INDUSTRY

The Ohio Turfgrass Foundation will sponsor a survey of Ohio's turfgrass industry and will be conducted by The Ohio State University's Department of Agricultural Economics. All of the state's turfgrass industry including professional, private and residential sectors are being surveyed.

"Ohio's turfgrass industry has experienced tremendous growth in the past 10 years," said John Fanning, foundation president. "The only way to accurately assess the size of this industry is through a comprehensive survey. Collectively, these results will be used to convey to the general public, state legislators, university administrators and others the importance

of the turfgrass industry in Ohio."

The survey is expected to be completed in early 1991.

TROUTMAN RESIGNS FROM PLCAA EDUCATION POST

When Barry Troutman recently resigned from the Professional Lawn Care Association of America it represented the second major change in the group's senior staff in as many months.

As director of education, Troutman was instrumental in organizing educational sessions for the association's annual trade shows and putting together many of the technical booklets the association offers to members.

Last month, Troutman became director of operations for Green Up Lawns, a division of Massey Inc., Orlando, Fla. He had been with PLCAA since March 1988. Before that he had spent 10 years with ChemLawn Services Corp. as research weed scientist and southern zone technical service manager.

In late May, Jim Brooks, executive vice president, announced he would step down to direct his efforts on the new Green Industry Expo and membership recruitment.

PLCAA President Rick Steinau said the education position will remain vacant until a new executive director is chosen. If that person has an education background, the board of directors may choose to divide Troutman's former duties among other staff members.

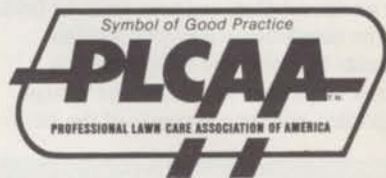
In addition, Steinau said the association has gotten offers from outside sources — such as larger operators and chemical manufacturers — to supply technical information for education purposes.

COUNTDOWN TO GREEN INDUSTRY EXPO/90

THREE...TWO...ONE!

THREE GREAT ASSOCIATIONS...

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Keynote Speaker Michael LeBoeuf talks on 'Winning Customers and Keeping Them for Life.' Mail the coupon below today for details and registration information.

Landscape and Grounds Management Conference

This year's ALCA/PGMS Landscape and Grounds Management Conference features the latest information on a multitude of topics including: Training for the '90s, Customer Service, Plant Material That Warrants Attention, Maintenance and Cost of Utilizing Wild Flowers, Sports Turf and Strategies to Increase Your Bottom Line. The Keynote speaker, Allan Cimberg, will give a presentation, 'How to Sell in Tough Times to Difficult People.' Mail the coupon below for more details and registration information.

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ASSOCIATION NEWS

THE NATIONAL ARBORIST ASSOCIATION has a newsletter for the industry's field personnel called "The Tree Worker."

Each issue covers technical material, safety information, customer relations, tips for worker relations and news from the field.

The newsletter is designed to offer benefits beyond basic information. It shows employees they're part of a large, important industry; stewards of the environ-

ment; and workers whose purpose is greater than just putting in hours for a pay check.

It will motivate and complement your efforts to increase productivity and professionalism within your company.

The annual cost starts at \$14.50 for up to nine subscriptions and decreases slightly as the number of subscriptions increases.

Testifying before both house and senate appropriations subcommittees, the American Association of Nurserymen urged increased funding for nursery and landscape industry research in the 1991 federal budget.

The association again requested the creation of an automated plant handling systems research program which recommends development of engineering technology to address decreasing labor availability.

Support was also requested for several research programs maintained by the USDA Agricultural Research Service, Cooperative State Research Service and Extension Service. This would provide additional plant scientists, germplasm research, pesticide clearance, water quality, global climate change research, continued pesticide research on Japanese

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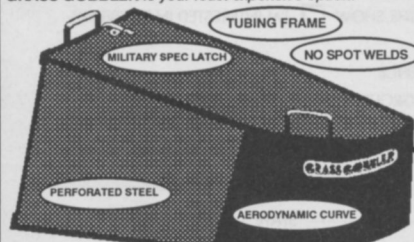
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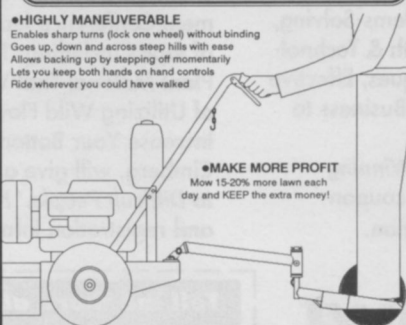
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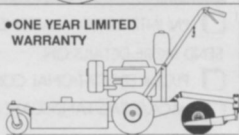


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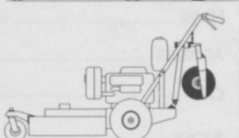


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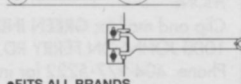
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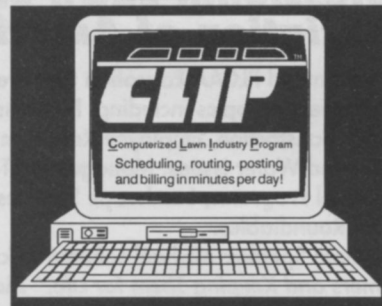
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beetle and whitefly research.

The AAN also voiced its support for a program supported by the USDA Animal and Plant Health Inspection Service — Plant Protection and Quarantine. Specific programs addressed by this organization include imported fire ant, gypsy moth, golden nematode, witchweed and support for funding of a National Plant Germplasm Quarantine Center.

Dennis Watkins of Lords Valley Country Club, Hawley, Pa., has been elected president of the **Pennsylvania Turfgrass Council**. Watkins has been club superintendent at Lords Valley since 1985. He's also been a member of the council's board of directors since 1983.

Elected to be first vice president is Charles Cadiz Jr., Eagle Lodge Country Club in Lafayette Hill. He has been golf course superintendent there since 1981 and has served on the board of directors since 1980.

John Yakubisin, Youghiogeny Country Club in McKeesport, is the second vice president. He has been at Youghiogeny for three years and has served on the board of directors for the same period.

Joseph Baidy, Acacia Country Club, Lyndhurst, Ohio, is the past president. He served as president of the council for

two years.

Re-elected directors to the 12-man board are: Yakubisin and James Walters, president, Specialty Spraying Inc., Latrobe, who was appointed to serve a three-year term as director.

Others on the board: Baidy; Jamie Breuninger, Fisher & Son, Malvern; Kenneth Dietrich, Lancaster Country Club, Lancaster; Robert Jackson, Meadowlands Country Club, Bleu Bell; Edward Roynan, Limekiln Golf Club, Ambler; Michael Smith, Gulf Mills Country Club, King of Prussia; Samuel Snyder, Colonial Country Club, Harrisburg; Watkins; and Michael Zedreck, Butler Country Club, Butler.

Thousands of show-goers poured into the Long Beach Convention Center April 26 and 27 for GreenTECH/90, sponsored by the **California Landscape Contractors Association**.

"This was one of our most successful shows," said Yvonne Fenner, show manager. "They interacted with qualified and interested people who are now potential clients."

A special judges award went to Hardie Irrigation of Laguna Niguel for the most creative and unique exhibit design in the booth judging that took place the first day.

Next year's show is planned for April 18 and 19.

The **Michigan Turfgrass Foundation** has pledged \$1 million to Michigan State University's turf program, creating an endowment to fund faculty and graduate student research.

The foundation's gift will establish the Michigan Turfgrass Endowment Fund. Annual income from the new endowment will enable MSU to attract more graduate students to the program.

"Because our work is so labor-intensive, bright, dedicated graduate students are absolutely vital," said Joseph Vargas, professor of botany and plant pathology.

Vargas is currently investigating alternative pest management strategies, using biological methods to control pests and diseases and to minimize pesticide use. Developing environmentally safe methods is time-consuming and expensive, he said.

MTF will solicit contributions to the endowment from its 1,000 members and others interested in turfgrass research.

Gordon LaFontaine, executive secretary of the foundation, reported that 10 percent of the \$1 million goal has already been raised.

Since its founding nearly 60 years ago, the foundation has provided more than \$500,000 to support faculty and students at MSU's College of Agriculture and Natural Resources. ■

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FOCUS ON:

IRRIGATION

CALIFORNIA LANDSCAPES USE ONLY 4 PERCENT OF STATE'S WATER

THERE'S MUCH MORE THAN MEETS the eye to California's irrigated landscapes. They're products of a huge industry — environmental horticulture — that annually pumps billions of dollars directly into the state's economy.

Statewide, the industry has an annual sales and services value of more than \$6.5 billion, perhaps as much as \$10 billion, and it employs at least 100,000 Californians.

These findings are based on a 1989 study by the Sacramento-based consulting firm of Dangermond and Associates under the direction of a UC Riverside project designed to define the size and scope of the environmental horticulture industry.

"The study has turned out to be very timely in light of the water shortage problem facing the state and our environmental horticulture industry," said project coordinators Victor Gibeault, Dennis Pittenger and Stephen Cockerham of UC Riverside. "Water is the industry's number one concern."

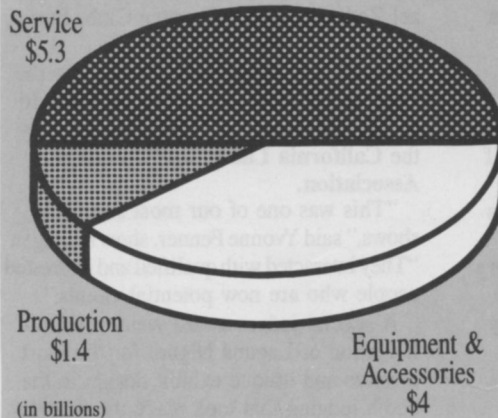
Gibeault and Pittenger are turfgrass and urban horticulture specialists in the Botany and Plant Sciences Department, and Cockerham is Superintendent of Agricultural Operations for the campus.

Contrary to popular opinion, eliminating the water supply to California's irrigated landscapes — home lawns, golf courses, parks, freeway plantings, school grounds, athletic fields and so on — wouldn't significantly ease the statewide water shortage.

No more than 4 percent of this state's total water use goes to irrigating California's landscapes, according to calculations from state and water district actual use figures and projections.

Policy decisions leading to a reduction

VALUE OF CALIFORNIA'S Environmental Horticulture Industry



in water available to irrigated landscapes could make a significant impact on this industry, and ultimately lead to employment cutbacks, according to Gibeault, Pittenger and Cockerham.

The trio has been taking a close look at California's environmental horticulture industry, its structure, problems and value to the state.

By definition, they said, California's environmental horticulture industry encompasses all firms and people involved in plant production, wholesale and retail sales, landscape design and maintenance and businesses that provide equipment and materials.

Here are some additional findings from the Dangermond and Associates study of the industry:

Total product value of California turfgrass sod, floriculture and nursery plant production totaled more than \$1.4 billion

in 1987, the latest figures available. Wages for the production of ornamental plants, flowers, seeds and bulbs topped \$427 million, and an average of 28,834 people were employed in this segment of the industry that same year.

The use of ornamental plants in the landscape has an even larger economic impact. This segment of environmental horticulture includes services such as retail sales, design, installation and maintenance activities. Their value is estimated at \$5.3 billion.

Gross receipts in 1987 from retail sales totaled more than \$1.8 billion. Landscape design brought in more than \$262

million while installation and maintenance work grossed about \$2 billion.

Total wages for these businesses, plus those for state parks and recreation and city and county district parks topped \$1.5 billion. These wages went to about 75,000 employees.

The study's figures are conservative and don't include gross sales, wages and number of employees in the equipment and accessory firms that support the plant production and service industries.

Dangermond and Associates reported a total of more than \$6.5 billion for those segments of California's environmental horticulture industry included in its study.

Several other identified areas where a value couldn't be estimated based on current information probably account for another \$2 billion to \$4 billion, bringing the total sales and services value of the industry to about \$10 billion annually. ■

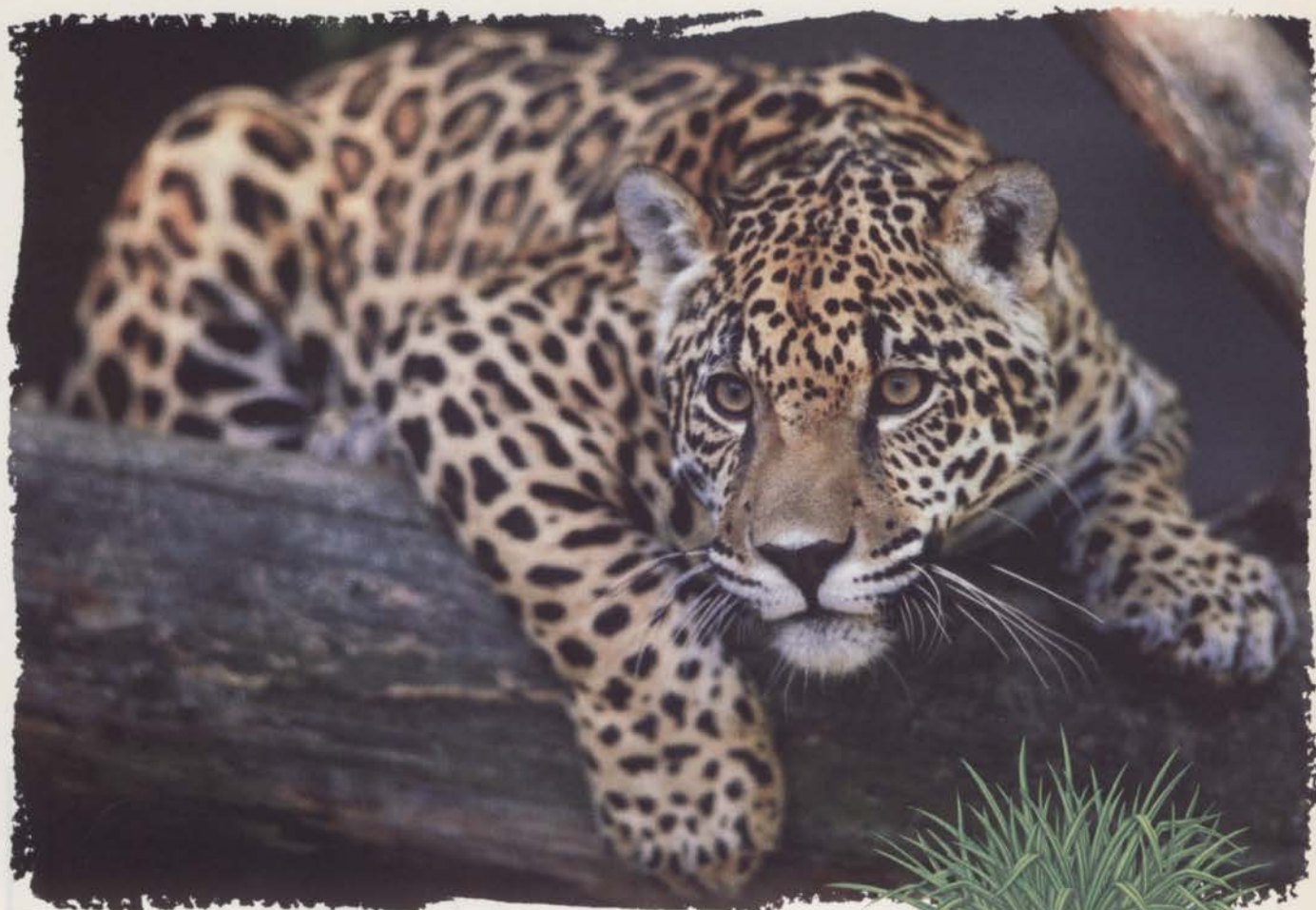
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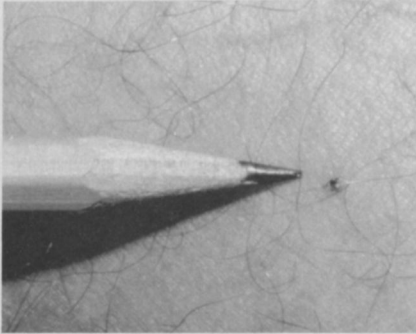
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FOCUS ON: LANDSCAPE

PREVALENCE OF LYME DISEASE SPREADING ACROSS THE COUNTRY



Deer tick feeding on a man's leg.

LYME DISEASE IS A RECENTLY DEFINED, tick-borne illness caused by a spirochete, a type of bacteria. It occurs in the United States, Europe and Australia, and is spreading.

The first case in North America was discovered in Old Lyme, Conn. — from which it was named. In the past 15 years,

however, it has spread with nearly every state reporting cases. It's most frequently diagnosed between May and July.

BULL'S-EYE EFFECT. The most common sign in the initial stages of lyme disease is the characteristic skin rash, which first appears as a red, raised area that occurs within several days or weeks after a tick bites.

The circular or oblong rash may increase in size and develop well-defined margins with clearing in the center, giving it a "target" appearance. This is often referred to as a bull's-eye effect.

The rash may be itchy, warm, tender and/or "doughy." In about 50 percent of all cases, the rash may be accompanied or preceded by fever, headache, fatigue, malaise, muscle and joint pain or stiff neck. If not treated promptly, chronic arthritis, heart and/or nervous system disor-

ders may develop in some patients.

The disease is difficult to diagnose because of the variety of symptoms and the delay between bite and rash development.

Early discovery of the disease and prompt antibiotic treatment usually prevents later, more severe health problems.

THE CARRIERS. Ticks are not insects, but are more closely related to spiders and mites.

People get lyme disease when an infected tick bites them, taking blood and passing along the spirochete.

Although many kinds of ticks can be found in the country, only the deer tick (*Ixodes dammini*) and the lone star tick (*Amblyomma americanum*) are known lyme carriers, with the deer tick responsible for the majority of cases.

Female deer ticks are black and red and about 1/4-inch long, males are smaller

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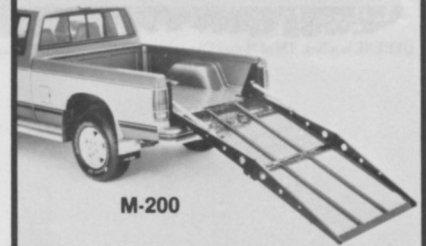
Most commercial mowing operations are using walk-behind mowers because they have concluded no rider mower is compact or maneuverable enough to mow landscaped areas. Now maintenance operators all across the country are discovering the compact, maneuverable *Mid-Size Walker Mower* fits their job and saves labor (usually cuts labor 1/2). The labor saving *Walker* looks good whether your business is trying to produce profit or is operating on a budget. Write or call for a free brochure. Ask for a demonstration.

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and all black, lone star ticks are larger and are a chestnut brown color and the females have a white spot on their backs.

WHEN BITTEN. Using forceps, grasp the tick's mouthparts as close to the skin as possible and apply firm and steady backward pressure. Never try to remove the tick by burning it or smothering it with noxious chemicals. After the tick is removed, avoid infection by applying antiseptic to the wound.

AVOIDING TICK BITES. There is no way to entirely protect yourself from tick bites especially when working outside, but the following steps can be taken to reduce your risks:

- Check yourself frequently for ticks.
- Always tuck your pant legs into your socks or boots and keep your shirt tucked into your pants.
- While in tick infested areas, wear light-colored clothes so they can be easily spotted.
- Using skin or clothing repellent may be helpful, but make sure you read and follow the directions carefully.
- Avoid walking through or into wooded areas whenever possible.

PREVENTIVE MEASURES. Only three products have specifically been registered

by the Environmental Protection Agency for the control of deer ticks, said Durland Fish, director, medical entomology laboratory, New York Medical College, Valhalla, N.Y.

These include names that operators are probably already familiar — Sevin,[®] Dursban 50W and Damminix — a rather innovative method.

However, lawn maintenance operators who spray to control deer ticks need to be careful. In a number of states tick control falls under pest control licenses, said Barry Troutman, director of education for the Professional Lawn Care Association of America. Your best bet is not to mention tick control in advertising unless you are absolutely sure your state's license permits it.

In tests, Sevin[®] carbaryl insecticide



Adult male and female deer ticks.

from Rhone-Poulenc proved a potent control of deer ticks. An application of 2 pounds per acre controlled nearly 95 percent of deer tick nymphs on home lawns.

Another familiar name, Dursban 50W from DowElanco is also effective in ridding lawns of the tick. Available in pre-measured water soluble packets for safe, simple handling and in 2-pound fiber canisters, Dursban 50W controls ticks and a broad spectrum of other insects.

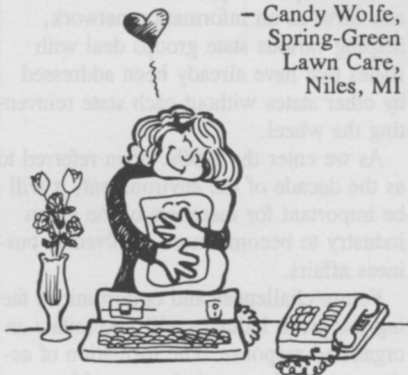
EcoHealth Inc., Boston, Mass., offers an ecological solution to ticks with its product called Damminix. It uses mice that are naturally found in wooded and fringe areas to help eliminate the deer ticks.

Damminix tubes contain treated cotton which should be placed at 10-yard intervals in a grid pattern around the area to be protected. Mice will find the cotton and take it to their burrow to create a nest. The cotton treated with permethrin will then kill the ticks attached to the mice.

Fish emphasized that research into lyme disease has been lacking the past several years. While these products have EPA registration, they aren't necessarily the best. There may be other products better at controlling deer ticks that haven't been tested. ■

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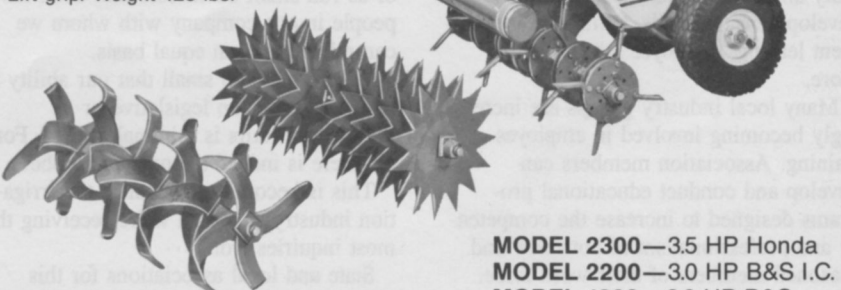
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INDUSTRY VIEWPOINT

LOOMING LOCAL ISSUES FORCE INTEREST IN STATE ASSOCIATIONS



Andrews

VARIOUS GREEN industry operations are turning their attention to regional, state and local trade associations.

Why? For the first time, more regulatory and legislative activity is emanating from state and local governments, and these challenges are best dealt with by groups closer to home. And with issues sprouting regularly, state associations are better positioned to act proactively and generally find their input more accepted by local governments.

In addition, state or city participants are better acquainted with the regulatory and legislative agenda in their area, and are more knowledgeable about the peculiarities of the industry in their locale. A true trade association often finds itself more able to legally serve as a lobbyist than a foundation or conference.

State irrigation associations, in particular, haven't received a lot of attention because legislative issues had been infrequent. However, with an increased emphasis on water management, the industry may see a change.

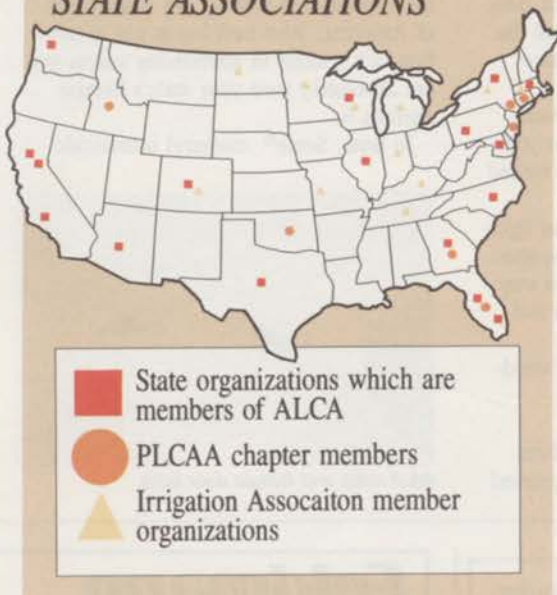
Local associations play a key role in the public's perception of the industry. News releases regarding industry activities, participation in civic groups and the promotion of environmental concerns can go a long way in enhancing the local image in their city or state.

Many local industry groups have discovered they can offer potential members a variety of services not available from other sources. They can be involved in member services such as group casualty and health insurance, business development materials, vehicle and equipment leasing, employee job banks and more.

Many local industry groups are increasingly becoming involved in employee training. Association members can develop and conduct educational programs designed to increase the competency and professionalism of both new and seasoned members of their work force. Licensing and certification requirements can more easily be conveyed at the state and local levels.

Professional and personal enrichment is also available to the business person par-

ESTABLISHED STATE ASSOCIATIONS



ticipating in industry affairs. Members have the opportunity to increase their knowledge of the industry as well as expand their horizons. Many of the relationships developed through involvement in a trade association become lifelong friendships.

One of the biggest advantages of state and local trade associations is their ability to involve more of their members in organized affairs.

My experience in the green industry has shown me that most maintenance operators are often in greater need of trade associations — at all levels — than their counterparts in other sectors. Most of us run small businesses and don't have people in our company with whom we can relate to on an equal basis.

We are often so small that our ability to have an impact on legislative or regulatory affairs is minimal at best. For us, there is indeed strength in numbers.

This is becoming evident in the irrigation industry; the area we're receiving the most inquiries from.

State and local associations for this field are few and far between because, as a whole, this portion of the green industry hasn't run into as much litigation and legislation as other sectors.

Mowing is another area in which in-

terest in the formation of new associations is growing. With issues such as whether to bag grass clippings and where to dispose of horticultural wastes becoming more prevalent, an association can meet the bill.

While we do need to be more involved in starting a new or participating in an existing state group, we must not lose sight of our responsibility to support and build our respective national associations. We cannot forget that no state-oriented group has the ability to be a player in national affairs.

National trade groups have the staff, the resources and the ability to offer a much broader scope of services to our business than any local group. National associations can also serve as an adviser to state associations.

Most importantly, a national association can serve as an information network, helping various state groups deal with issues that have already been addressed by other states without each state reinventing the wheel.

As we enter the 1990s, often referred to as the decade of the environment, it will be important for members of the green industry to become more involved in business affairs.

Future challenges and opportunities facing the green industry will necessitate an organized response. The formation of active state trade associations provides a tool for all of us to successfully deal with this future. — Bob Andrews ■

The author is president of the Indiana Lawn Care Association and executive director of the Irrigation Association of Indiana. He has also served as a consultant in the formation of various state trade associations in Pennsylvania, Idaho, Montana, Wisconsin, Oklahoma, New Jersey and Colorado. He has been responsible for the design of initial applicator training programs and is a frequent lecturer on proactive involvement in industry affairs. He is a member of the board of directors for the Professional Lawn Care Association of America.

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Diversification Makes Sales Soar at Kapp's Green Lawn

MOST PEOPLE HOPE they're lucky enough to have one satisfying career in a lifetime, but for some, one is not enough.

And for Bob Kapp, 55, early success in finance encouraged him to seek other career opportunities.

"I got spoiled very young in my career. I was made a corporate controller two days before my 31st birthday," Kapp said. "I had always wanted to get into some type of business and I enjoyed working outdoors."

Subsequently, in 1977 at the age of 41, Kapp joined his nephew in a lawn care partnership. Even though his nephew, Larry Kapp, had been in business for 20 some years, Kapp maintained 80 percent share in the partnership.

"There was no connection between his operation and our operation other than the fact that he was a 20 percent partner and he had the experience in the industry and pointed us in the right direction," Kapp said. "Larry helped us out as far as locating suppliers and things of that nature."

Kapp set up shop in Munster, Ind., a town of 22,500, just 24

miles outside of Chicago. His nephew's business was situated in Fort Wayne.

Kapp's Green Lawn exploded from the beginning; easily doubling sales from year to year.

Kapp modestly admitted that the competition wasn't as fierce back in those days, and that he benefitted from strong name recognition as a result of a local political career and kids who were active in school and the community.

"My intention was never to be the biggest in the area, but just the best," Kapp said. "Having lived in town for as long as I had, I didn't want to get run out of town on a rail for lousy service."

And service has been the key to success for Kapp's Green Lawn.

In the early days, the company solely offered chemical lawn care services primarily to the residential market with a few commercial jobs here and there. Sales that first year totaled \$32,400.

Today, however, it's a completely different company. In 1989, Kapp's reported \$908,000 in sales — \$836,000 of which came from chemical lawn care sales and the

balance from tree and mowing jobs.

It was in 1986 that the company took its first turn from its original course. That year, Kapp decided to add tree care to its service roster. The service included chemical control as well as pruning, trimming and stump removal. All of the work was done in-house.

Then, in 1989, Kapp's diversified further, taking on a stronger maintenance profile including landscape design and installation.

Kapp's most recent departure from company origins resulted in the addition of irrigation sales, service and installation.

"That pretty much covers the entire landscape area. Right now, we're the only company in Northwestern Indiana that does it all. One-stop Chuck," Kapp said.

The company also takes on such jobs as decorative ponds, back yards and low voltage lighting. Deck building is one area the company subs out.

Today's chemical lawn business is 92 percent residential and 8 percent commercial. Kapp's handles 4,800 chemical accounts. Mowing/maintenance, on the other hand, is 64 percent residential and 36 percent commercial.

Kapp maintains 263 full-service accounts. Of those jobs, about 130 of them are total landscape management, while the remaining are chemical lawn care and mowing.

The average residential property is 6,200 square feet, while commercial properties run between $\frac{3}{4}$ of an acre and 6.2 acres.

Chemical crews consist of both one- and two-man teams. Since the company applies only granular products, two men are used to apply broadleaf weed control.

Mowing contracts have grown from 56 in 1989 to more than 260 this year. Kapp's has already bill-

KAPP'S GREEN LAWN

Headquarters: Munster, Ind.

Branch Offices: Fort Wayne, Ind., and Romeoville, Ill.



Founded: Through a partnership in 1977; incorporated in 1985.

Owner: Bob Kapp

Primary Services: Full-service maintenance work for both residential and commercial properties, irrigation installation and maintenance for residential and some design.

Employees: 24 year-round, 47 seasonal.

1989 Sales: \$908,000



Kapp resisted going full service until two years ago. Now he wouldn't have it any other way.

ed in excess of \$250,000 in mowing this year.

"This is based on our reputation. We had a lot of requests for mowing in the early days, but I didn't want to get involved," he said. "About three years ago I changed my mind. With Chicago being one of the 10 most saturated markets in the country, I felt we were going to have to diversify in order to survive."

Not knowing the mowing business, Kapp knew he had to hire someone who did — easier said than done. After two managers had come and gone, Kapp finally succeeded; putting someone in place who could help make decisions needed to make the mowing a success.

Two crews this year share three 48-inch Scag mowers, a 36-inch Toro, a 52-inch Toro, six 21-inch Toro walk-behinds, edgers, weed-whips and back-pack blowers. Equipment is carried in 7 feet by 16 feet enclosed trailers pulled by one-ton dump trucks.

"One thing we stressed with the mowing maintenance division was that service is our number one issue," Kapp said. "We're known to have the best chemical lawn service in the area, and we want to be known as the best mowing maintenance."

Each mowing crew has a foreman who inspects the lawn before the crew pulls away. Three men and the foreman make a crew.

After turning away more than a hundred mowing customers, Kapp has struggled with the idea of adding a third crew.

"I had to make a decision, do I want to go out and outfit another crew or do we just service the customers that we have?" Kapp said. "We're at the point now where we could take on another 25 to 30 accounts."

Mowing services are available only in limited areas, typically within an eight-mile radius of headquarters. That service area will change, however, once Kapp's hires more experienced

people. He plans to expand mowing/maintenance to the Illinois branch area.

In its first year of irrigation, Kapp decided to target the residential market. "There's an awful lot of home building going on in this area and many of the customers require irrigation," he said.

One two-man crew handles the irrigation work. The design manager meets with the customer, completes a drawing and conducts the selling of the job. Since the company has been so busy with repair work, irrigation is only offered in a limited area.

To date, the company handles turn ons/offers for 50 to 60 people plus repair work. Four new systems have been installed this year.

The total landscape division, including irrigation and mowing/maintenance, is expected to do about \$400,000 this year.

In the following interview, Kapp shares his insights into the lawn and landscape maintenance field.

Q: *What kind of capital outlay did you need to purchase your mowing equipment and get your crews on line?*

A: We were fortunate enough to finance everything out of cash flow; we didn't go out and acquire additional debt.

This year it's a slightly different story. Getting into landscaping heavier than last year, we had to buy two-and-a-half ton dump trucks, four 340 tractor loaders, a lot of landscape rakes, more trailers and things of that nature.

To put one crew on the road last year — the truck, the trailer and the rest of the equipment — cost us \$35,000.

We've got three trucks that we're leasing at the present time, and they're all set up on a four-year lease because I like to trade trucks every four years. I like to have new equipment, that's one thing I'm particular about and always have been.

Q: *What are the benefits of leasing compared to buying and owing?*

A: You don't have the big capital outlay for the down payment on the vehicle when you lease. It's just the first month's payment and that's it. With a four-year lease, you turn it back in and have another new truck in four years.

In addition, with changes in the tax laws, there's no longer an investment credit. They've also changed the depreciation mode; you used to be able to write them off in three years and now it's five years.

Q: *What difficulties did you experience in mowing that are different from chemical lawn care?*

A: Probably the biggest thing is getting people trained. People problems and the weather.

.....

We have a variable pricing schedule. For instance, for 6,000 square feet we'll charge \$18 for cutting, edging, bagging and clipping. It's just like buying a car. There's a base price, and if you want a particular service, we price it for you.

Last year it didn't bother us that much, but this year with the explosion of the customer base in lawn maintenance it was more noticeable. Those lawns have to be cut that week, whereas with the chemical lawn care, you can let it slide a couple of days.

In mowing maintenance, particularly in the springtime with the grass growing as fast as it grows, if you don't mow that lawn that week, you're in big trouble. Customers just don't understand, I mean, some of them do, but some of them can become unreasonable.

We're on a five-day mowing schedule with Saturday as a rain day.

I didn't feel it was that hard to get into the mowing maintenance business. I hired a good manager finally, after having gone through two others. The fellow heading up the landscape division, is not a young kid, he's got a formal education and he's been in the business all his life. And that's what it takes. You have to have people that know the business, that's the key. I would never have attempted it on my own.

Q: *What kind of contracts do you offer your mowing customers?*

A: It's based on 32 cuts a year. And that's the average. If we ever get into another drought situation like we experienced in 1988, we don't bill our customers for that; we bill for what we do. With the mowing maintenance business, it

includes lawn clean up in the spring and fall.

Also with the mowing maintenance business, we got pushed into snow removal. We have a lot of customers, what we call full maintenance, where we go in and trim ornamentals, prune their trees, cut the grass, edge it, trim it, fertilize, etc. At some point in time, they began getting their driveways plowed.

I never really wanted to get into snow plowing, it just goes with the territory.

Q: *What do you charge for the 32 cuts?*

A: We have a variable pricing schedule. For instance, for 6,000 square feet we'll charge \$18 for cutting, edging, bagging and trimming.

We have our menu, it's just like when you go to buy a car. There's a base price and if you want a particular service, we price it for you. So we leave the customer to pick and choose what he wants over and above the base package. If he wants just the base package, that's fine too. If he wants to add on, then he's priced accordingly.

The size of the property and the number of ornamentals are also included in pricing the property.

Q: *Are your crews interchangeable? Can chemical crews do mowing and vice versa?*

A: We don't want to take our senior technician in lawn care and make him do mowing maintenance. Number one, there's a different pay scale and number two, we always have the same technician on the same route. They get to know their customers and their customers have confidence in them.

Now the second man in the truck, which is a seasonal employee, we cross-train so if we have to switch people around, he's ready to cut lawns.

We haven't taken anybody out of mowing maintenance for chemical control, however.

Q: *Why did you choose to use strictly granular products over liquid products?*

A: Back when we started, I was afraid of an applicator going out there and burning up the lawn. It's much easier getting into the industry using a granular product because it requires less start-up capital.

I think the customers, and potential customers, accept the granular a lot quicker than they do the liquid. When we started, there were some problems that I had heard about, not a lot of it, but enough that I decided I'd go with the granular.

Plus my nephew had a 20 percent stake in the company at that point and he had been doing granular so I decided to stay with granular.

Q: *Why do irrigation contractors shy away from repairing someone else's system?*

A: Some just don't want to work on anybody else's system. With irrigation becoming so popular, a lot of the irrigation contractors are just busy putting in new systems and don't want to get involved with the repair work.

What I've found is nobody makes a drawing of a residential irrigation system, and sometimes it takes a little longer to locate problems when you haven't installed it yourself. That's basically why other contractors have shied away from it.

This leaves a void in the industry and is another reason why I decided to enter the service.

Q: *What kind of expansion are you looking at?*

A: We have branch offices in Indiana and in Illinois and are

.....

Technicians without business backgrounds will often grow to the point where they can no longer manage it. That's why there's so much buying and selling.

looking to go into some other markets, mainly in these two states. I have no intention of becoming a national company.

Q: *What's the Indiana economy like? Has it helped or hurt you?*

A: During bad times for the steel industry, we (as a business) never knew there was a recession. That was due to living in close proximity to Chicago. A lot of people in our area worked downtown for companies that weren't steel related so the money was there. That, coupled with the fact that we were the only company based here in Northwest Indiana helped us out.

In the years that we've been in the lawn care business, it's been mostly a prestigious thing, trying to keep up with the Joneses. 'My next door neighbor's got a lawn care company so I've got to have one.'

Fortunately, we live in a community which is a bedroom community and houses more professional people. It's a transient area

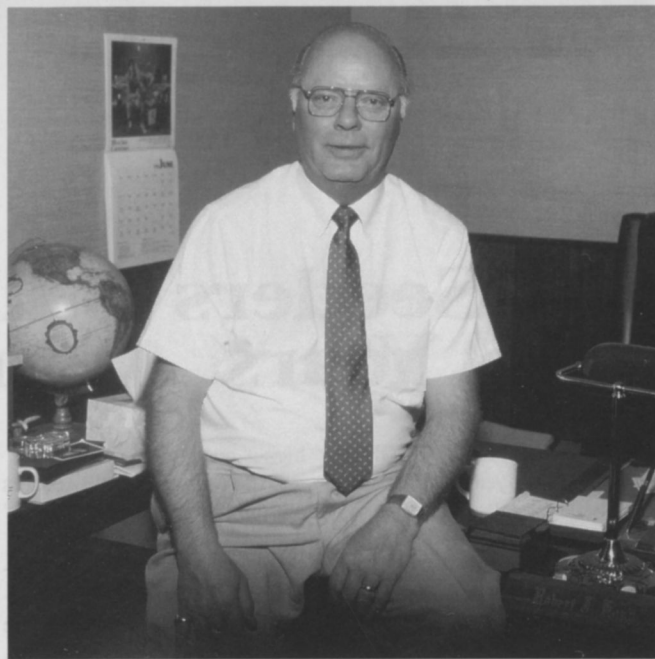
petition. I wouldn't want to try and start a chemical lawn care company at this point in time. We got in at the right time.

Q: *What can you offer your customers that a national firm can't?*

A: The fact that we do everything. We've been servicing these areas for years. We stay within our designated service area and word-of-mouth has contributed to the big picture. We're flexible and don't have the red tape involved in a big corporation. We can change courses much more quickly.

Having come from the corporate world, I know how corporate politics work and we don't have any of that in a family-owned company.

If we have problems or want to change some of our procedures, it's a matter of the managers and me sitting down, having a discussion and everybody agreeing on a specific project or change. It can be implemented within just a few days or a few weeks, depending on the size of the project.



Kapp has set some hefty sales goals for the next five years.

Q: *What goals do you have for your company in the next five years?*

A: At my age, I'm only looking to work another eight to 10 years. I'm not getting any younger and 65 is getting closer. Once my sales goals are achieved I'd like to relax.

In six to eight years, this could be a \$5 million company. Based on what happened last year and what's going on this year, it can easily be achieved. However, we're going to maintain the attitude that we want to be the best in what we do in business, not necessarily the biggest.

Q: *How do you ensure a profit margin?*

A: You have to know what your price is; start from zero and work backward. We've always been able to maintain a good profit margin. We know exactly what our costs are.

Having an accounting background has been beneficial, no doubt about it. You have to control your costs; that's the only way you're going to guarantee a profit. You cannot run it by the seat-of-your-pants.

We've incorporated plans and procedures that I learned when I was in the corporate world and we know exactly what our costs are and we have a good handle on them and it's in control.

Q: *Why do others in the industry have problems ensuring a profit?*

A: What I've found throughout the industry, particularly with the smaller companies, is that people with technical backgrounds started new businesses and were good at what they did. Their businesses grew, but not having the business background, they didn't know what to do with it.

That's why I say I think my business background is more beneficial than a technical background because you can always go to school and pick up the technical background. And the people that have the technical background were so busy growing their companies that they didn't have time to go to school.

Q: *In addition to a business background, what advice would you give a newcomer?*

A: Don't try to buffalo your customers. Make sure what you do is right and if you don't have the knowledge, find somebody who does so you can correct the customer's problem. As long as you're honest with the customers, and you give them the service that they expect, you're doing all right.

— Cindy Code ■

The author is Editor of Lawn and Landscape Maintenance magazine.

.....
“We had a lot of requests for mowing in the early days, but I didn't want to get involved. Saturation forced diversification.”

and the income is just there.

Home building in this area is really booming, regardless of what's going on in the commercial accounts. If you go out the back door of our warehouse, and walk 30 feet you're in the state of Illinois. There's a lot of people moving in from Illinois, and they get twice the house over here for the same amount of money.

Q: *How is your competition different now from the early days?*

A: ChemLawn moved into Munster two years after I started the business. And then about five years later TruGreen opened a branch, followed by a lot of smaller companies. Barefoot Grass has opened a branch in a northern suburb of Chicago, and they're slowly drifting down into Northwest Indiana.

So we do have increased com-

Q: *What's surprised you most about the green industry?*

A: When I started out, I didn't envision 14 years down the road we would become a total landscape management company. I felt at that point in time, that chemical lawn care would be all that we would ever get involved. But as the need arose and we had more inquiries from customers we had to evolve.

Years ago, we used to turn mowing customers away every spring so I began to feel that was the way the industry was going to have to go.

I never expected the pressures from the environmentalists. Years ago when we started there were no pressures. They are becoming more active, and that's had a definite bearing on the chemical lawn business.

Slit-Seeders Still Sought Two Years After Drought

WHILE THE DROUGHT of two years ago brought devastating results to most parts of the country, it forced maintenance professionals to rethink some of their practices. In doing so, some methods of operation changed, and different equipment came into high demand.

One piece of equipment that prospered during, and since, the drought is the slit-seeder for overseeding and renovating lawns. No one needs to be told the drought killed immense amounts of grass; but it also led to increased demand for better seeding methods in an effort to return lawns to their former lushness.

Slit-seeding is a preferred method for overseeding because slit-seeders have verticutting blades that cut through the thatch layer and open up a slit or furrow usually about 1/4-inch in the soil.

The equipment also has concave disk blades that follow the blades into the slits, keeping them open while the seed is dropped. This ensures that the seed gets into the soil and leads to a much

higher germination rate.

Overseeding with slit-seeders was the answer to many operators' demands.

Classen Manufacturing, Norfolk, Neb., has only been producing slit-seeders for a little more than a year, said Larry Classen, vice president. The company saw a void and tried to fill it.

"We were constantly getting calls asking if we made them and hearing that other manufacturers were backlogged with orders," Classen said. "They're very weather dependent, but if we have acceptable amounts of moisture, people aren't going to be clamoring for them."

Sales have definitely fallen off from the height of the Drought levels, but they remain higher than pre-Drought sales, said Bob Brophy, manager of lawn care product sales, Cushman Inc., Lincoln, Neb.

Sales have remained high because operators recognize the benefits of overseeding and realize it's another service they can sell customers.

The product saw incredible demand in 1988. Sales of the Ryan overseeder more than tripled the 1987 sales figures, Brophy said. After initial use of the equipment, operators wanted to keep using it, getting their money's worth.

"Now two years later when so many guys have seen the benefits of reseeding with hardier fescues

seeders was developing gradually before the Drought, mainly because of water concerns. Even before the dry weather two years ago, some areas of the country were beginning to look at water usage and water restraints, Brophy said. Overseeding fits in because it results in less wasted water. Water goes right into the

.....

The equipment today is much better; the old stuff used to shake apart and was tough to operate.

or other varieties, they're beginning to sell the programs," he said. "Most are doing it because they had to buy the equipment to survive in '88, and now can't afford to have it sit around unused."

The onset of the slicer-seeder's increased use was more a product of lawn and landscape maintenance operators' desire to find alternate revenues, said Jeff Lefton, of the agronomy department at Purdue University, W. Lafayette, Ind.

"They became popular in the last several years because people in the lawn care industry are always looking to diversify," he said. "First it was aeration and when that became commonplace, the trend moved to slit-seeders. The Drought definitely had an impact; it sped up the acceptance, but it's not the only reason."

Another reason for the increase in overseeding with slit-seeders is the improved turfgrasses developed in the last decade or so. Their increased tolerance to disease and pests along with better heat and stress resistance make them attractive for being placed in existing lawns that don't have those characteristics.

The increased use of over-

slits and not as much is lost to runoff.

While slit-seeders were first developed in the early 1960s, mechanically they haven't changed all that much in almost 30 years, said Steve Rogers, president, Olathe Manufacturing, Industrial Airport, Kan. It was Rogers' father who developed the first slit-seeder.

"If you had an early model sitting next to a brand new one, they really wouldn't look all that different," Rogers said. "Some improvements have been made in the blade design and the feed mechanisms, but they're pretty much the same."

Brophy agreed and said most additions have been "creature comforts," nothing that drastically changed the product's basic performance.

But Lefton places a little more importance on these creature comforts, and credits them for some of the increased sales and interest.

"The equipment today is much better; the old stuff used to shake apart and was tough to operate," he said. "Today's are better balanced, give a more vertical cut and are just easier to operate. The



As a result of the Drought, end-users demanded better seeding methods to return lawns to their original lushness.

maneuverability has been improved and that really helped for tight areas.”

While slit-seeders are designed to do practically the same thing, each manufacturer generally offers something to make their product stand out.

DOLLARS AND SENSE. Economically the use of overseeders is quite apparent, several manufacturers claim. Using a slit-seeder can reduce by about one-third to one-half the amount of seed used in broadcast seeding, Rogers said.

The time factor alone accounts for a substantial financial savings. The slit-seeders prepare the ground and drop the seed in during one pass, while dethatching or verticutting and then seeding is not only more time consuming, but more labor intensive.

The combination of reduced labor hours and less seed generally helps pay for a slit-seeder in the first season of use, Brophy said. Costs for new slit-seeders range from \$2,500 to \$4,000.

Estimating the amount of work that can be accomplished in a day is a major pitfall for many maintenance operators when they are considering an overseeder purchase, Brophy said.

“They read the product literature and see that it will seed 15,000 square feet an hour,” he said. “Then they automatically assume that by working 10-hour days, they’ll be overseeding 150,000 square feet.

But it doesn’t work that way. Our estimates show that about 40 percent of the day is spent with the seeder not in action.”

What accounts for all the downtime? Typical activities that take place between jobs: Loading and unloading the equipment, travel time between job sites, etc.

Cushman has devised a work



Slit-seeders prepare the ground and drop the seed in during one pass. Most manufacturers recommend two passes at 45-degree angles, leaving a diamond-shaped pattern.

sheet for helping to determine how much “ground time” — actual work hours — a piece of equipment will seed.

A major obstacle remaining in overseeding is the method of pricing, Lefton said. Too many operators are still depending on a set price per 1,000 square feet rather than considering a cost per hour.

“Just because two lawns have the same square footage doesn’t mean they’re going to take the same time to overseed,” he said. “One could take twice as long depending on hills and slopes and number of trees or tight corners. If you’re pricing by square feet, you’re going to end up giving the service away on some lawns.”

WHEN TO OVERSEED. Late summer and early fall remain the best time for overseeding. Overseeding in mid-August to mid-October gives seed the needed time to establish and the ability to ward off competing weeds in the

spring, said Greg Richards, an agronomist with LESCO, Rocky River, Ohio.

Temperatures during this time are most favorable for good germination and growth. With adequate moisture, fertilizer and sunlight, the seed will be well established before cooler weather hits. Weed competition is less of a factor at this time, just as extreme heat is not likely a concern.

Some operators are turning to spring overseeding, but that can bring about a number of problems. Caution should be used when applying herbicides to newly planted seed. Always follow label instructions.

“Spring overseeding can be done, but expectations have to be lower,” Richards said. “The lawn will be green, but it won’t be all grass.”

Most manufacturers recommend using what they call a “diamond method” of overseeding. This involves making two passes seeding at 50 percent of the rec-

ommended rate. Make the two passes at 45-degree angles, leaving the diamond-shaped pattern. The method is fast and results in seed being placed a maximum of two inches apart, which will produce a “full” cover faster.

Midsummer overseeding is rarely done and not recommended, but sometimes there’s no choice, Lefton said. If forced to do summer overseeding, make sure you have proper irrigation and good control of weeds.

Lefton is currently researching ways to improve summer overseeding. The research isn’t finished and he’s not ready to disclose any of the findings.

“We’re trying to see if there is a right way to something at the non-optimum time,” he said. “Let’s face it; landscapers are asked to that regularly. We’re looking for things that can be done to improve the situation even though we know it’s a bad time.”

CARE AFTER OVERSEEDING.

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The most important thing to convey to customers are the watering needs of a recently overseeded lawn.

Immediately after seeding, the lawn needs a heavy watering to help wash the seed into the soil. Until the grass seed germinates — about 10 to 14 days — a light watering is needed, soaking about the first inch of soil. Water is needed less often after germination, but it still needs deep soakings to encourage root growth.

Convincing property owners of the watering requirements is the toughest part of selling overseeding services, said Fred Biddle, Biddle Lawn Care, Savoy, Ill.

"You can tell them, but most

process."

Also be sure to leave all the proper information about watering. Telling a person isn't enough; give them something in writing, he advised. Also some customers will feel better if you make them feel involved.

"You're always going to have callbacks for missed spots or whatever," he said. "But try to leave some people a couple pounds of seed and tell them to throw it down if they see a bare spot."

But also know your work doesn't end when the seeding is finished.

"Make sure to make the follow up call in a week or 10 days,

.....

The chances of the lawn not growing are reduced and return trips are less numerous.

don't follow through with it," he said. "Then they come back and saying the lawn isn't green and the seed wasn't any good. It's a never ending battle."

Biddle customers have had the opportunity to slit seed since the Drought.

"We've been using it quite a bit," Biddle said. "A good amount of the people asking about overseeding have seen the results on neighbors or friends yards."

Because slit seeding leads to better germination than other seeding methods, Rogers said, operators can offer more of a guarantee on their work. The chances of the lawn not growing are greatly reduced and return trips are not as numerous.

But Lefton advises operators to be more careful and not to view slit seeding as a care-free endeavor. When selling, if you point out all the benefits without mentioning the grass doesn't come up overnight, some customers will become dissatisfied quickly. The best way to avoid disgruntled customers is to thoroughly explain the process beforehand.

"Show them what to expect; carry a notebook with photos of actual jobs," he said. "Show them pictures of a lawn practically dead, then one of the same lawn two weeks after slit-seeding and then another showing what it looks like after two months. Let them know it is close to a year

whether they call or not," Lefton said. "Check their watering schedule and try to reduce anxiety. Remind them that it takes time."

Finally Lefton made the point that most residential operators already know: they'll have a more difficult time selling the service than commercial operators. Part of that selling has to involve convincing the homeowner that a decent lawn is an investment just as important as a new roof or windows.

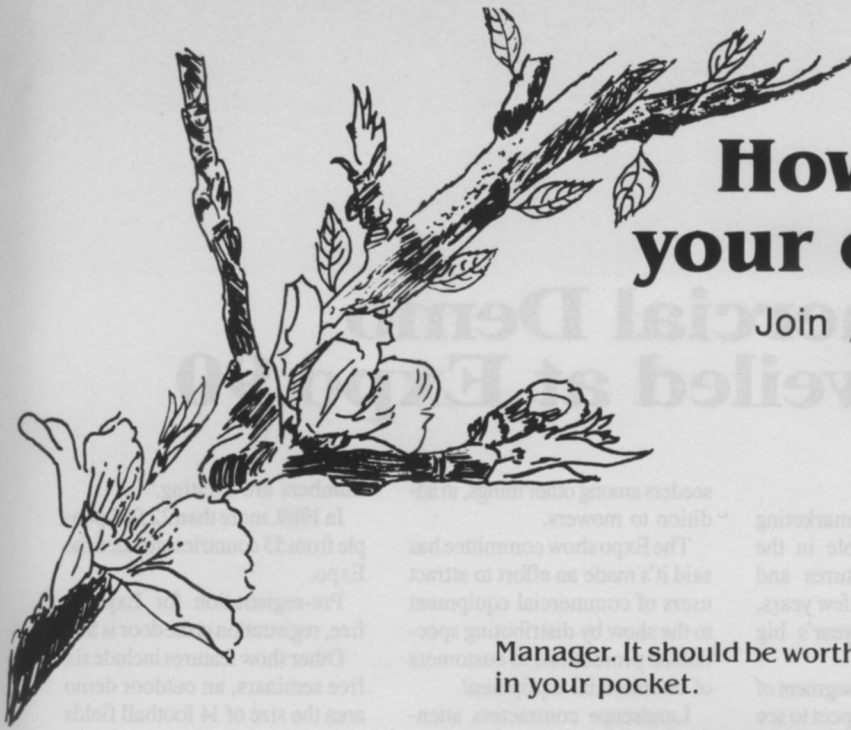
DIDN'T MIND WAITING. At Fertilawn Inc., Bloomington, Minn., Reid Anderson has been watching the increased use of slicer-seeders over the last several years with some curiosity. He was interested, but wanted to see how others fared before making the investment.

"It's all most people were talking about during the Drought," he said. "I wasn't convinced they'd have a use after things got back to normal."

He's currently looking at the equipment with the intentions of having one ready for fall use."

The main selling point for Anderson was the labor and time savings. Being able to make one pass rather than four — dethatching, raking, aerating then seeding. — David Westrick ■

The author is Assistant Editor of Lawn and Landscape Maintenance magazine.



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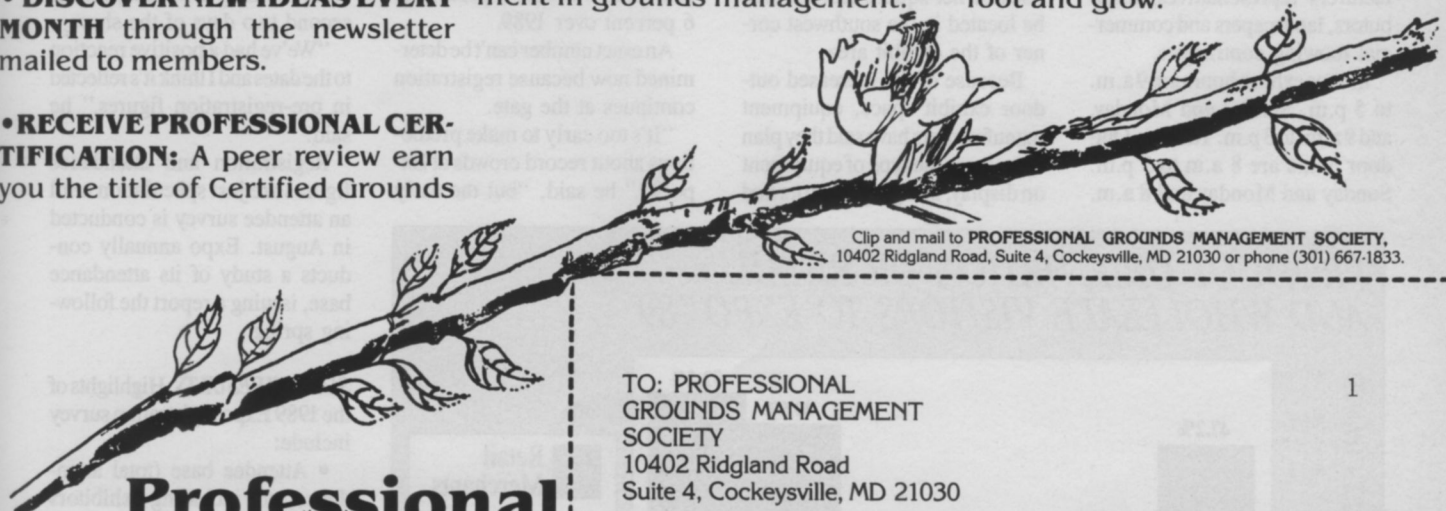
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4-Acre Commercial Demo Site to be Unveiled at Expo 90

WHEN LANDSCAPE contractors and commercial mowing operators represent pre-registration trade show figures 155 percent higher than the previous year, show management takes notice.

For its first five years, Expo, sponsored by the Outdoor Power Equipment Institute, was targeted toward the retail end of the green industry. But as interests of attendees and exhibitors alike expanded, so did the show's slant.

Now in its 7th year, the annual International, Lawn, Garden & Power Equipment Expo will spotlight a new four-acre commercial outdoor demonstration area.

The show is July 29-31 — Sunday through Tuesday — at the Kentucky Fair and Exposition Center in Louisville; and attracts buyers, dealers, retailers, manufacturers' representatives, distributors, landscapers and commercial mowing contractors.

Indoor exhibit hours are 9 a.m. to 5 p.m. Sunday and Monday, and 9 a.m. to 3 p.m. Tuesday. Outdoor hours are 8 a.m. to 5 p.m. Sunday and Monday and 8 a.m.

to 3 p.m. Tuesday.

Subtle commercial marketing influences were visible in the show's exhibits, features and seminars over the past few years, culminating in this year's big splash.

"As the commercial segment of the show grows, we expect to see an ever-increasing representation by commercial end users, plus dealers and distributors who carry commercial products," said Show Director Warren Sellers.

Efforts to attract commercial interest to the show flourished. By mid-May, nearly 95 percent of the allocated space for the new commercial demonstration area had been reserved.

Thirty-five manufacturers of commercial outdoor power equipment will exhibit in the outdoor site. The new area will bring the total demonstration site to 500,000 net-square-feet and will be located in the southwest corner of the exhibit area.

Because of the increased outdoor exhibit space, equipment manufacturers have said they plan to increase the type of equipment on display, bringing aerators and

seeders among other things, in addition to mowers.

The Expo show committee has said it's made an effort to attract users of commercial equipment to the show by distributing specialized promotions to customers of commercial equipment.

Landscape contractors attendance has tripled, increasing from 304 in 1988 to 868 in 1989.

In addition to the commercial segment, Expo is experiencing general all around growth. By mid-June, pre-registration for Expo attendees was 20 percent higher than last year at this time.

Early registration figures show a 14 percent increase in distributors and a 25 percent increase in dealers/retailers for this year's show.

These figures compare registration to the same time last year. Sellers said he expects overall growth to increase 5 percent to 6 percent over 1989.

An exact number can't be determined now because registration continues at the gate.

"It's too early to make predictions about record crowds at Expo 90," he said, "but the early

numbers are exciting."

In 1989, more than 22,000 people from 55 countries attended the Expo.

Pre-registration for Expo is free, registration at the door is \$10.

Other show features include six free seminars, an outdoor demo area the size of 14 football fields and about 560 indoor exhibits spanning 280,000 net-square-feet of landscaped exhibit space.

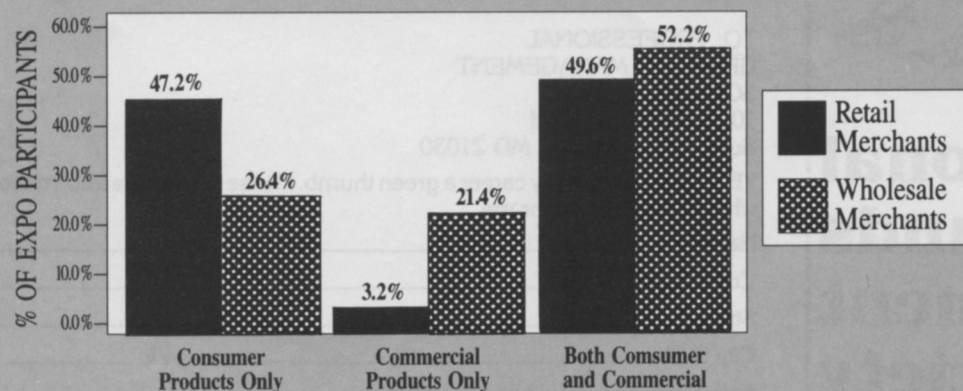
Generally held Monday through Wednesday, this year's show is set for a Sunday start. The show's format was changed to accommodate travelers who can receive cheaper airfare for a Saturday stay, and to better spread show traffic over three days.

The last day of the show is traditionally the lightest in attendance, but Sellers is counting on some visitors coming in on Saturday for the first two days of the show and others coming in Monday for the second two days of the show.

"We've had a positive reaction to the dates and I think it's reflected in pre-registration figures," he said.

Registration and attendance figures are just speculation until an attendee survey is conducted in August. Expo annually conducts a study of its attendance base, issuing a report the following spring.

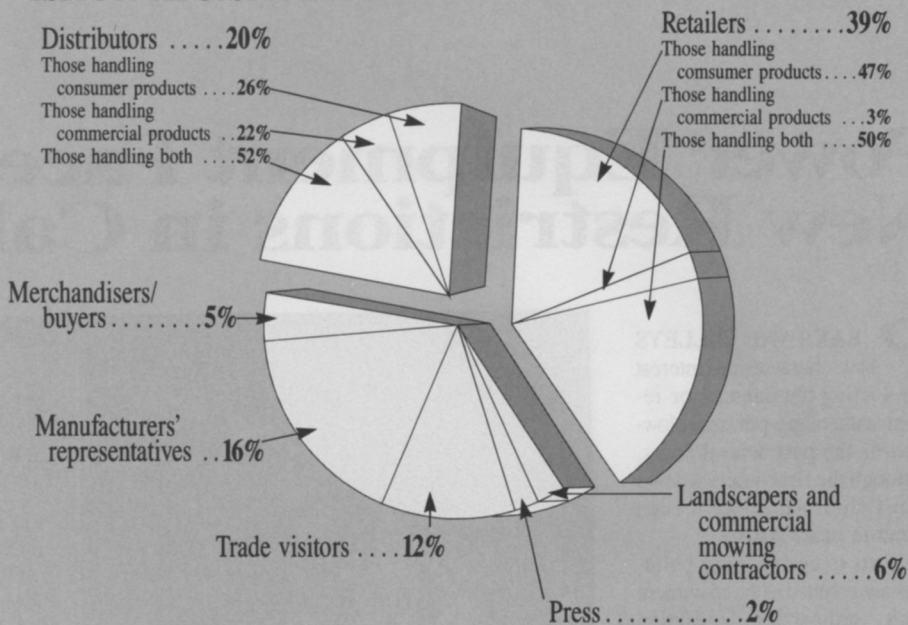
PRODUCT ORIENTATION OF RETAIL AND WHOLESALE VISITORS TO EXPO '89



SURVEY RESULTS. Highlights of the 1989 Expo registration survey include:

- Attendee base (total attendance, not including exhibitors and show officials) increased 11 percent from 1988 to 1989.
- International participation rose 30 percent from 1988 to 1989. International percentage of total show participation rose from 4.6 percent to 5.6 percent.
- Attendance at Expo is geographically driven: 84 percent of

PERCENTAGE OF EXPO '89 VISITOR REGISTRATION



attending retail merchants and 70 percent of attending wholesale/distributors in 1989 came from within 500 miles of Louisville.

• 32 percent of Expo 89 visitors had never before visited Expo, 16 percent had attended once before, 17 percent twice and 13 percent three times.

Visitors attending Expo are generally a buying influence in their firm, presidents and/or owners, and come to see new suppliers and new products.

Products with the highest amount of purchases at Expo 89 were mowers, mowing accessories, chain saws and accessories and replacement parts and supplies.

The estimated average purchases of those products increased from 1988 to 1989, rising from \$17,823 to \$20,438.

In 1989, the main reason visitors attended Expo was: 54.2 percent to see new products, 23.6 percent to find new sources of supply, 19.1 percent to see specific manufacturers; 5.5 percent to learn of exhibitors; 4.1 percent other; 1.8 percent to see dealers; and 1.8 percent to attend seminars.

The average attending company sends two people to Expo, employs 10 or fewer people and has less than \$500,000 in sales.

Fifty-three percent of 1989 exhibitors were power-oriented and 47 percent exhibited non-power products.

The Expo study and marketing audit were conducted by Giltner & Buskey, a market research firm based in Louisville, Ky.

SHOW FEATURES. Exhibit awards will be sponsored by the Louisville Chamber of Commerce. Ten awards will be distributed—first, second and third among the larger indoor exhibits; first, second and third among the

smaller indoor exhibits; first, second and third among outdoor exhibits; and a best of show that won't be named elsewhere.

In addition, up to 11 winners will receive innovative product awards on Monday, July 30.

Other special events at the show are the Hall of Yesteryear, Innovative Product Awards, Ultimate Garden Tool Giveaway, Model Store, the All-American Engine Repair Championship, a concert by Barbara Mandrell and a party at the Kentucky Kingdom Amusement Park, new to the fairgrounds this year.

In its second year, the Hall of Yesteryear will display vintage mowers, engines, chain saws, shop and service equipment among others.

The Model Store, sponsored by the North American Equipment Dealers Association, will feature two stores, one more than 1989, featuring specialized computer systems for parts inventory, merchandising and promotions.

Six "Speaking of Business" seminars are offered free to Expo attendees. As keynote speaker, Lawrence Steinmetz, president of High Yield Management, Boulder, Colo., will discuss "How to Make Your Prices Stick."

Steinmetz is well known for his work in helping people generate profitable results in business.

More recently, he has concentrated in making prices stick and how to maintain high profit margins in growing businesses.

Steinmetz is also the author of nine books including his most recent, "Nice Guys Finish Last."

The keynote speech is Tuesday, July 31 from 11 to 11:50 a.m.

Sunday, July 29, seminars include: "Unhappy Customers? Be Glad!" from 1 to 1:50 p.m. and "Merchandising for Profit," from 2 to 2:50 p.m. Consultant Bill Sharp, president, The Percon Group, will lead both sessions on selling skills.

Monday, July 30, includes seminars on "How to Sell and Service the Commercial Market," from 1 to 1:50 p.m. by Phil Catrol, a training consultant since 1976. Catrol new works with MAVC Services Corp., a training and consulting, specializing in business start-ups, expansions, internal corporate philosophies and marketing plans.

Also on Monday, "Selling, The Art of Gentle Persuasion," from 2 to 2:50 p.m., by Lawrence Helms, president, Western Training Systems.

Before the keynote speech, a dealer panel will be held from 9 to 10:50 a.m. The four panelists — Tom Hazel, Grand Rental Station; Barry Maher, Barry Maher Seminars; Robert Aiken,

RMA Educational & Training Services; and Timothy Chambers, Cullman Seed & Feed — will discuss the rental market, yellow pages advertising, pricing for profit and selling extended warranties.

JUST OUT PRODUCTS. New products to be introduced at Expo include an 8- and 11-h.p. wheeled blower from Billy Goat; the Hustler 260K Turbo Shredder from Excel; a 21-inch rear-bagging commercial rotary mower from Jacobsen; Command 11, 12.5 and 14 horizontal OHV air-cooled 4-cycle engines; chain saw 644-H and 021 from Solo; engines and drive train components from Tecumseh Products; and a 48-inch walk-behind and commercial rider from Yazoo Manufacturing.

In addition to OPEI, associations participating in Expo are the Engine Marketing and Service Association, Engine Service Association, National Equipment Servicing Dealers Association, North American Equipment Dealers Association and the Outdoor Power Equipment Distributors Association. — *Cindy Code*

The author is Editor of Lawn and Landscape Maintenance magazine.

Power Equipment Faces New Restrictions in California

PEAKS AND VALLEYS have characterized interest surrounding the banning or restrictive use of gas-powered blowers over the past several years. Although the first outcries came from California, concern soon spread to other states.

Efforts to curtail noise pollution have resulted in the enactment of city ordinances; legislation which more often than not died because of a lack of enforcement.

But now attention returns to California — Irvine to be exact — where an ordinance has been passed setting up detailed and specific regulations for the use of blowers along with the guaranteed enforcement of the law.

Under this new law, which goes into effect Sept. 6, operators will have to license their blowers every two years at the cost of \$20 or \$25 per blower. Each person operating a blower will also have to complete a one-day training session on the proper use of power blowers. Operators will then be required to carry a training certification card at all times.

Establishing a license for blowers is not new. Pasadena, Calif., too, enacted a licensing requirement in 1987. The difference in Irvine is the specific plan for enforcement. Pasadena's licensing was not effectively policed and became widely ignored.

Also included in the law are specific hours equipment can be used — 8 a.m. to 5 p.m. weekdays and 9 a.m. to 5 p.m. Saturdays — with their use completely forbidden on Sundays. As far as sound regulations: blowers shouldn't emit more than 70 decibels at a 50-foot horizontal distance.

Another provision in the regulations states that blowers should be operated at the lowest possible speed, indicating full-speed



BLOWER BANS PREVALENT IN CALIF.

When blowers were first introduced, they were heralded as an alternative clean-up method as opposed to hosing down areas. Now they are the subject of much scorn and disdain.

Three communities have passed total bans on their use: Beverly Hills, Hermosa Beach and Carmel.

Not including Irvine, 15 other communities have enacted ordinances restricting the use of blowers. They are: Bakersfield, Bellflower, Claremont, Hillsborough, Los Angeles, Laguna Beach, Menlo Park, Newport Beach, Palm Desert, Palm Springs, Palo Alto, Pasadena, Redondo Beach, Sacramento and Santa Barbara.

Photo: International Marketing Exchange

is rarely necessary. It also states that blowers shouldn't be operated within 10 feet of any door, window or building opening.

The regulations even specify how to clean up after blowing, stating it must be done within six hours and adding that blowing debris onto city streets or other property is against the law.

While the regulations are detailed, they really aren't more than just common sense, said Robin Pendergrast, a partner in International Marketing Ex-

change, Northfield Ill.

"The idea behind the Irvine plan is not to regulate their use and say blowers cannot be used," he said, "but to set ground rules stating how and when their use is acceptable."

OPERATOR REACTIONS. Several maintenance operators who work in Irvine said they viewed the new regulations as a minor nuisance, but not a major interference with how they conduct their business.

Janet Williams, J. Williams Landscaping, said she'd much rather have to conform to restrictions than be forced to find alternate clean-up methods if a ban were imposed. The regulations won't affect J. Williams, except for the cost of licensing its 10 blowers.

"As far as I can tell, the other parts of the law are basically common sense," she said. "I understand why they had to pass the law. Some people really misuse blowers. It seems sort of silly that

(continued on page 32)



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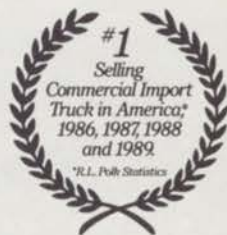
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Noise Pollution

(continued from page 30)

you have to legislate common sense."

The idea of a "blower police" is what seems silly to Allen Chariton of Tierra Verde Landscaping in neighboring Huntington Beach.

"Right across the street from one of my projects in Huntington Beach there are always major drug deals going on, but when I called the police about it I'm told there isn't enough man power," he said. "Does the city of Irvine have that few problems that it's going to pay someone to check blowers? Where's the sense in all of this?"

Chariton does realize that much of the concern about noise and proper use of blowers is a result of a lot of improperly trained workers.

"That's a problem that will probably never go away," he said. "So cities are taking it upon themselves to tell us how to use our equipment."

The idea of not using blowers is old hat to Chariton. He current-

.....
The Irvine program will probably become a benchmark for other cities devising noise ordinances. Some 25 to 30 cities have asked for updates as the program starts.

ly has several condominium complexes that specified before the contracts were written that they didn't want blowers used on the properties.

"That's not a problem; I knew upfront," he said. "The extra man hours for clean up were figured into the cost and they knew they would have to pay extra."

Aside from the cost of licensing, Chariton agreed, the regulations would cause few if any problems for his business.

"Some people think the restrictive hours are bad, but you're not blowing at 8 in the morning," he said. "You don't get around to that until midafternoon."

The regulations will cause the biggest problems for neighbor-

hood gardeners, said Bob Baier, Plant Control Corp.

"Most of the landscapers in the area are either all commercial or have a decent commercial/residential mix, so they have decent-sized crews that can pick up the slack," he said. "But the area gardeners who are small and work certain neighborhoods will certainly feel it. The actual regulations won't hinder them, but with some houses so close I bet people will decide blowers are too loud and ask the gardener not to use them anymore."

MAY BE DUPLICATED. The Irvine program is sure to be watched and scrutinized by other municipalities interested in regulat-

ing the use of power blowers, and will probably become a benchmark that others use to devise their policies, Pendergrast said.

Already, about 25 to 30 municipalities mainly from California, but including several other states, have requested updates as the program is initiated.

"There is certainly interest out there," he said. "This can't be dismissed just as what's happening in one town. It's assured to spread."

In California alone, about 20 cities have passed legislation concerning the use of blowers. These individual laws range from time restrictions to complete bans.

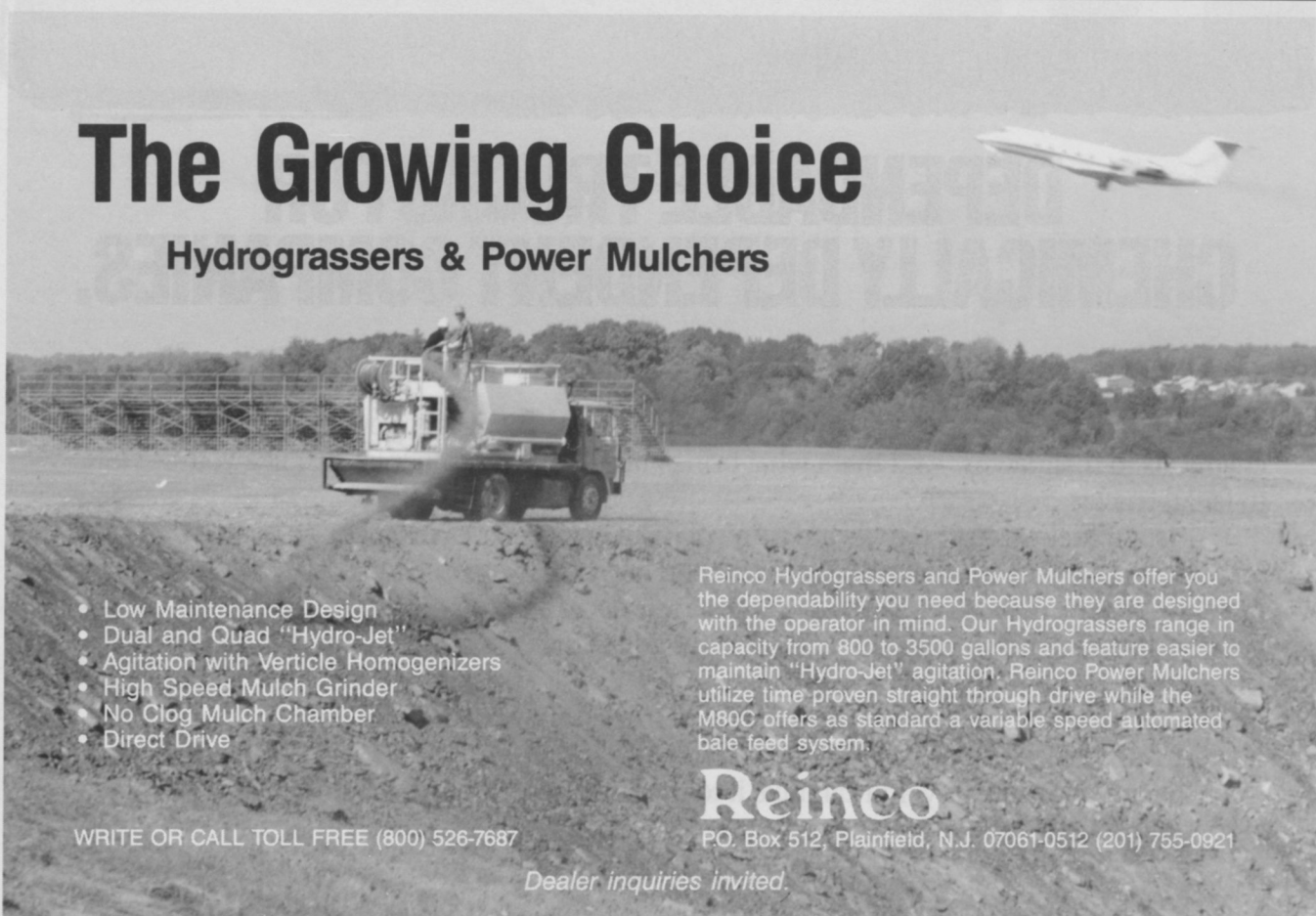
The interest in restricting blower use is not isolated to California. On the other side of the country in Montgomery County, Md., a law regulating the use and eventual ban of blowers recently went into effect.

As in Irvine, the law covers both commercial and consumer operators. Noise levels are not permitted to be higher than 75 decibels measured at 25 feet. In addition, as of this month the sale

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or use of blowers that average more than 70 decibels at 50 feet is prohibited. The only exception is for equipment bought or made before July 1990. They can be used by businesses until July 1995 and by homeowners until July 1998.

Irvine is definitely serious about the new law and regulations. Monies generated from the licensing fees will go toward paying for an enforcement officer, Pendergrast said. With an estimated 6,000 blowers operating in the city, enough money will be generated to enforce the regulations. Also from those funds, a sound measuring device will be purchased so the enforcement officer can perform both spot checks and make inspections after a complaint is filed.

NOISE RESPONSIBILITY. While a good portion of the burden falls on the operator, Pendergrast said, manufacturers also have a specific role to play in reducing the noise level produced by blowers.

No law exists now that dictates manufacturers' products adhere to any certain noise level. The American National Standards Institute, however, has a power blower test standard and has also proposed a sound level labeling standard.

The labeling standard would require manufacturers to post a label stating the noise level of the equipment. Manufacturers' compliance to these standards is voluntary.

Manufacturers following these standards would include a reference to ANSI on the label so buyers could be assured the stated sound level came from reliable, standardized testing methods.

The proposed standards do not specify an acceptable noise level.

The ANSI proposal prescribes specific steps to follow in testing equipment, including instrumentation, test site, blower operation and measurements.

The site is supposed to replicate operating sites as much as possible. According to the proposal, it should be a flat and open space that could be covered with turf not exceeding three inches. The sound level at the point of measurement (including wind effects) coming from sources other than the blower being tested should be at least 10 decibels



When using blowers, operators should use common sense to protect themselves as well as others.

lower than the sound level of the blower. Measurements should be taken only when wind gusts are below 12 miles per hour.

The ANSI standards are expected to be approved within a year.

If enough manufacturers adhere to the standards, it could become a potent form of regulation, said Don Purcell, president, Portable Power Equipment Manufacturers Association, Bethesda, Md.

"It's not a difficult or costly measure and it has benefits," he said. "You don't always need a federal law to get something done. The marketplace will provide

regulating on our own, the federal government won't have to get involved," Purcell said. "Self-regulation is probably less expensive."

Products manufactured by Homelight division of Textron, Charlotte, N.C., are being prepared to meet ANSI standards, said Robert Rhodes, advertising manager.

"While the standards are voluntary, the smart marketers are venturing the handwriting on the wall," he said. "You want to be ahead of the competition, you want to be the innovator. We'll do what's required to keep our customers satisfied."

Homelight wants to produce

.....

"If enough manufacturers adhere to the standards, then it could become a potent form of self-regulation."

good, effective pressure to comply. You don't want to be doing less than the competition. It will also become a marketing tool."

According to Purcell's thinking, there won't be problems with manufacturers being untruthful in their labeling.

"It wouldn't be a wise move to have a misleading label," he said. "All you'd need is to have one of your friendly competitors find out and there'd be some real problems."

In addition, self-regulation should give manufacturers added incentive.

"If we can do a decent job at

products that, when used responsibly, can meet the city restrictions. The company tests equipment and plans to begin labeling before the ANSI proposal is passed.

As far as taking steps to reduce noise level, Rhodes said, that too will be done. But it's the development of alternate equipment that is costly. The company has found that equipping blowers with low tone mufflers will add at least \$25 to the price tag.

When using blowers, operators should use common sense and consideration for others as well as common sense to protect

themselves.

"I really can't believe the number of people I see using blowers, and other equipment, that aren't wearing ear muffs or gloves," he said. "No matter what we do to make the equipment better, people like that will always be misusing it, which can lead to problems."

While most noise attention has focused on blowers, all power equipment used in lawn maintenance will eventually face the same scrutiny, said Kent Kepner, test engineer, Jacobsen Inc., Racine, Wis.

"We're attempting to reduce the noise and vibration levels on each piece of equipment we make," he said. "It's become a real necessity for some of our customers. The problem comes in how it affects the selling price for the equipment."

Recently, slight alterations to the air cleaner and muffler of a tractor added more than \$100 to the price, Kepner said.

The additional costs may create some backlash among operators who want to choose what's cheaper, not necessarily quieter. But many don't have a choice.

"Some buyers have 'buy quiet' clauses written right into their contracts," he said. "They're allowed to spend more money on equipment if it meets certain noise level requirements." — David Westrick

The author is Assistant Editor of Lawn and Landscape Maintenance magazine.

An Understanding of Chemical Classes Leads to Options

THE LANDSCAPE MAINTENANCE PROFESSIONAL IS often faced with choosing from a number of competing products to meet business needs. Among these are various chemicals used for managing pest problems with insects and mice.

A confusing variety of insecticides and miticides (or acaricides) are available in today's market. One useful way to consider the chemical control options, however, is to know what chemical class to which each belongs.

Several potentially useful pesticides are often chemically related, carrying with it other like characteristics. For example, a pesticide's mode of action is related to the chemical structure, and similar pesticides are often effective against similar groups of pests.

Problems with pesticide resistance are often linked to the chemical class (cross resistance). Environmental characteristics such as leachability and hazards to birds, and use characteristics such as systemic activity and odor, may also occur among compounds in the same chemical class.

ORGANOPHOSPHATES. Organophosphate insecticides currently comprise the largest single group of insecticides used for landscape plant protection. Familiar products such as diazinon, chlorpyrifos (Dursban, Pageant), malathion and acephate (Orthene) are among the organophosphate insecticides.

These insecticides have a wide range of activity against plant pests with most capable of killing insects that chew on plants like caterpillars and leaf beetles, as well as those that suck on plants like aphids and leafhoppers. Many organophosphate insecticides have some effectiveness against mites as well.

Organophosphates kill by interfering with cholinesterase, a chemical involved in transmission of nerve impulses. By inhibiting the function of cholinesterase, nerves are stimulated in an uncontrolled manner, ultimately killing the insect.

They also affect the nervous system of other animals in a similar manner. Furthermore, effects on cholinesterase inhibition are cumulative. Several small exposures may not individually result in poisoning, but the combined effect over a period of time may result in poisoning.

The length of time that cholinesterase is affected varies among the different insecticides.

Several organophosphates are highly toxic to



Few insecticides are effective against soil insects such as the white grubs.



Exposed, soft-bodied insects, such as aphids, are susceptible to insecticidal soaps.

birds and most serious human insecticide poisonings have resulted from exposure to organophosphate insecticides. However, most insecticides in the class used in landscape maintenance are relatively non-toxic to earthworms and fish.

In general, organophosphates are only moderately water soluble and have been associated with having a few problems with leaching into groundwater.

Again, the water solubility varies among different insecticides, ranging from quite soluble materials such as trichlorfon (Dylox/Proxol) and isazophos (Triumph) to highly immobile materials such as chlorpyrifos (Dursban).

However, several have the ability to move systemically within the plant, a feature that is often desirable for improving plant coverage. These systemic insecticides include acephate (Orthene), dicrotophos (Bidrin), oxydemetonmethyl (Metasystox-R), dimethoate (Cygon), disulfon (DiSyston) and phorate (Thimet). The latter four are also systemic, through root uptake, when applied to the soil.

CARBAMATES. Carbamate insecticides used in landscape maintenance are relatively few in number. However, use of one carbamate insecticide, carbaryl (Sevin), is widespread for control of insects on woody plants, bedding plants and turf.

Many of these insecticides tend to be more effective against chewing insects than against those that suck sap. This generalization has numerous exceptions. For instance, carbaryl is effective against most woolly aphids but gives poor control against most other aphids.

Most carbamates are ineffective against spider mites and may even aggravate spider mite problems.

The mode of action of a carbamate insecticide is similar to that of the organophosphates; cholinesterase is inhibited. However, persistence of the effects is much shorter (spontaneously reversible) so that cumulative effects are much less of a hazard.

Carbamates are often highly toxic to earthworms. Effects on birds and fish vary. For example, carbaryl (Sevin) is quite non-toxic to most birds and is even used to control poultry pests. Bendiocarb and carbofuran are highly toxic to birds.

Carbamates are moderately to highly water soluble and a few used in agriculture (aldicarb/Temik, carbofuran/Furadan and oxamyl/Vydate) have caused problems with groundwater contamination. Among products for landscape plants, there is little or no ability of the chemicals to move systemically within the plants.

PYRETHROIDS. The class of pyrethroid insecticides is one of the newest and fastest growing both in landscape and agriculture.

Chemistry of the pyrethroids is based on modifying the structure of naturally occurring insecticides (pyrethrins) found within the pyrethrum daisy (*Chrysanthemum cinaerifolium*). Pyrethroid insecticides are also termed synthetic pyrethrins.

Pyrethroids have a broad spectrum of activity against various insect pests. They tend to be more effective against insects that chew

than against sucking insects. Some, however, are effective as aphicides and miticides.

The pyrethroids have several unusual properties. They are extremely fast acting, with several of them capable of knockdown activity that rapidly incapacitates the insect. They are also irritants to insects and have sometimes been used in "flushing agents" to increase movement of the pest

insect.

Finally, pyrethroids are insecticidally active resulting in low use rates of active ingredients. For example, typical rates of active ingredient in a 100-gallon tank mix may involve less than an ounce of active ingredient of a pyrethroid insecticide.

This compares to carbamate and organophosphate insecticides that may typically be used at rates of 8 to 16 ounces of active ingredient per 100 gallons.

Pyrethroids are fairly non-toxic to mammals and birds. However, several formulations have caused irritation problems to humans exposed to the materials. Pyrethroids are extremely toxic to fish.

Pyrethroids are non-soluble in water and have not been involved in problems with leaching. They are non-systemic in plants.

CHLORINATED HYDROCARBONS. Thirty years ago, insecticides in the chlorinated hydrocarbon class dominated insect pest control. Materials such as DDT, toxaphene, chlordane and others were widely used until a variety of environmental concerns forced their cancellation.

For the most part, this was because of their extremely long persistence in the environment as well as their fat solubility — a combination that caused build up of residues in animal tissues. Some were also considered to be mildly carcinogenic.

A few chlorinated hydrocarbons remain and are chemically structured to avoid the associated environmental hazards. Dicofil (Kelthane), methoxychlor and endosulfan (Thiodan) are examples of chlorinated hydrocarbons that still have remaining uses in landscape plant protection.

These pesticides are nerve poisons, acting on the nerve axon as do the pyrethroids. However, the mode of action is still poorly understood, despite their long history of use.

The remaining chlorinated hydrocarbons are primarily used for some specific pest control purposes. For example, dicofil (Kelthane) is a fairly short-residual miticide, although chemically it's closely related to the highly persistent insecticide DDT. Methoxychlor, also similar in chemical structure, is primarily used for control of bark beetles,

particularly smaller European elm bark beetles, which transmit Dutch elm disease.

SPRAY OILS. Certain specially refined "horticulture oils" have been developed for use in woody plant protection. These materials have long been used for control of scales and mites on apple and citrus production, but interest in their use on landscape plants is increasing. They are sold under a variety of names including "dormant oils," "spray oils," "foliar oil sprays" and "supreme" or "superior oils."

Oils act mainly by suffocating the insect or mite, plugging breathing openings. They are contact insecticides with no residual activity. Their selected method of killing plant pests makes them quite safe to applicators, humans, pets and most wildlife.

A primary limitation of spray oils is potential for plant injury (phytotoxicity). Manufacturers seek to get around this problem by refining oils so that they are more plant safe, but still have insecticide/miticide activity.

One way this is achieved is by removing sulfur-containing materials in the oil, measured as the percentage of unsulfonated residue (USR), a rating that is typically 92 percent or higher with most spray oils.

Plant safety is also increased by using oil fractions that distill at fairly low temperatures. Presently, most spray oils distill around 412 to 416 degrees Fahrenheit.

Application of oils to dormant plants (dormant oil sprays) is the most common use. These treatments are targeted against stages of the insect or mite (usually eggs) that overwinter on the plant. Higher rates of oil and use of less refined oils can usually be used for these dormant treatments.

An increasing use on landscape plants is application to plants that have already produced foliage (foliar sprays). Young scale insects that have recently settled on the plants, mites and insect eggs, are among the targets of these treatments. Because of the increased possibility of plant injury, only highly refined oils should be used at relatively low rates.

INSECTICIDAL SOAPS. Insecticidal soaps are increasingly being

INSECTICIDES AND MITICIDES USED IN PLANT PROTECTION

Class	Common Name	Trade Name(s)
Organophosphate	chlorpyrifos	Dursban
	diazinon	Diazinon, Spectracide
	acephate	Orthene, AceCap
	dimethoate	Dimethoate, Cygon
	isazophos	Triumph
	malathion	Malathion
	fenitrothion	Pestroy, Sumthion
	oxydemetonmethyl	Metasystox-R
	isofenphos	Oftanol
	ethoprop	Mocap
	dicrotophos	Bidrin
	trichlorfon	Dylox, Proxol
Carbamate	carbaryl	Sevin, Sevimol
	bendiocarb	Turcam, Ficam, Dycarb
Pyrethroids	fluvalinate	Mavrik Aqua-flu
	cyfluthrin	Tempo
	bifenthrin	Talstar, Brigade
	fenprothrin	Danitol, Patriot
Chlorinated hydrocarbons	dicofol	Kelthane
	methoxychlor	Methoxychlor
	dienochlor	Pentac Aqua-Flo
	endosulfan	Thiodan
Oils	Superior oil	Volck, Sunspray,
	Dormant oil,	Scalecide, Ultra Fine
	Supreme oil, etc.	Spray Oil, etc.
Insecticidal soaps	salts of fatty acids	Safers Insecticidal Soap, Acco Plant Wash
Microbials		
<i>Bacillus thuringiensis</i>	var. <i>kurstaki</i>	Dipel, Thuricide, Sok-Bt, others
	var. <i>san diego</i> var. <i>tenebrionis</i>	M-One, M-Cap experimental products spp. BioSafe, ScanMask, others
<i>Neoalectana</i>		spp. experimental products
<i>Heterorhabditis</i>		
Derived from microbes	abamectin	Avid
Insect growth regulators (IGRs)	kinoprene	Enstar 5E
Inorganics	sulfur	wettable sulfur, dusting sulfur
	calcium polysulfides	lime sulfur
	sodium fluoaluminate	Kryolite, Pro-Kill Cryocide 96
Miscellaneous compounds	hexakis oxythioquinox	Vendex 50 WP Morestan

Table 1.

used in woody plant protection. Although soaps have long been used for insect control, currently used soaps (salts of fatty acids) have been selected to have a high degree of insecticidal/miticidal activity, balanced with plant safety.

Soaps act by non-residual, contact action. They are fairly fast acting and apparently kill by disrupting the function of cell membranes. Soaps can also help "wet" the waxy coating of insects, improving their coverage.

Mites and small, soft-bodied insects such as aphids, psyllids and scale crawlers are the most common target of soap sprays. Larger insects, such as caterpillars and leaf beetles, are less sensitive to the treatment.

Because of the non-residual action and selective activity, insecticidal soaps can be used in control programs that conserve many of the natural enemies of landscape insect pests.

MICROBIALS/BIOLOGICALS.
In nature, insects and mites suf-

fer from numerous biological controls including disease organisms. These include strains and species of viruses, bacteria, fungi, protozoans and nematodes.

A few of these organisms have been able to be manipulated so that they can be produced and applied as microbial insecticides.

Most disease organisms of insects are highly specific in the organisms they can infect. Some may only be able to infect closely related insects such as leaf beetles, white grubs or certain caterpillars.

Others can kill a fairly wide range of insects, such as the insect parasitic nematodes and some fungi. However, none of the insect disease organisms being developed for insect control can infect "higher" organisms such as mammals and birds.

This highly selective activity can be advantageous where there are significant environmental concerns surrounding pesticide applications.

Bacterial diseases have had the most extensive use. *Bacillus popi-*

lliae (milky spore) is a bacterial disease of Japanese beetle grubs that has been widely used in the Eastern United States for almost 50 years to help suppress that pest.

More widely used are the various strains of *Bacillus thuringiensis*. Since the 1950s, strains have been used that control most leaf feeding caterpillars. These have been developed into products such as Dipel, Thuricide or Sok-Bt which have been adapted by the landscape industry for problems such as gypsy moth.

More recently, strains have been developed that control other organisms. For example, the "san diego" (M-One) and "tenebrionis" strains are effective against leaf beetles and have recently begun to be used for control of shade tree pests such as elm leaf beetles.

Insect parasitic nematodes are one of the developing areas for control of insects that develop underground. Most work with these organisms has involved control of turfgrass pests, such as white grubs, billbugs and cut-

worms.

Insect parasitic nematodes can also control certain woody plant borers that leave external openings while developing, such as carpenter worms.

Present development of insect parasitic nematodes involves species in the genus *Neoaplectana* (*Steinernema*) or (*Heterorhabditis*). The latter group has looked particularly promising against immature beetles such as white grubs and billbug larvae. *Neoaplectana* has been effective against many caterpillars.

Because of public interest in developing biological controls there is tremendous interest by many manufacturers in developing microbial insecticides.

The lawn and landscape maintenance industry is a dynamic area and we can expect to see a number of advancements in the next few years. — *Whitney Cranshaw* ■

The author is an associate professor and extension entomologist at Colorado State University, Fort Collins, Colo.

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Even Urban Sprinkler Systems are Prone to Blockage

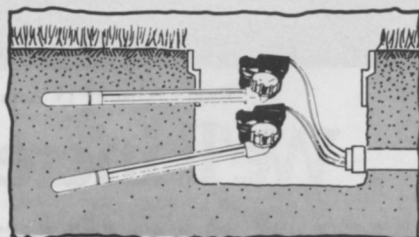
“DIRT IS the enemy,” according to district manager Ken Brown of Rain Bird Sales/Turf Division, Glendora, Calif., “and wherever you go, the key to effective turf irrigation is ‘working clean’ to prevent blockage or clogging of the system.”

Problems caused by sprinkler debris can include “substandard water pressure, valves fully or partially stuck open or outright failure of the system,” Brown said. “For maintenance operators, such problems translate into uneven lawns, angry customers and costly callbacks.”

Sprinkler nozzles in particular are vulnerable to blockage, suggested Kurt Thompson, national marketing manager for Buckner, Fresno, Calif. “Many sprinkler rotation and water distribution problems are due to a total or partial nozzle blockage,” he said.

On new systems, “even after the utmost care during installation, some amount of dirt, rocks and debris are left in the supply lines,” Thompson said. “Nozzle blockage also results when pipe line breaks occur, because no matter how careful you are, some debris always enter the pipe network.”

Brown agreed that “preventing clogging and blockage begins with the initial installation.” Whether the sprinkler system uses polyethylene or PVC pipes, all open ends should be capped and tapped when the pipes are laid. At that time, all lines must be thoroughly flushed before the



Most blockage problems are associated with the installation. Illustration: Irrrometer.

valves and sprinklers are installed.

Potable sprinkler systems, however, are generally considered low-maintenance once the system is in operation, according to Brown and others.

“It’s important to flush the system and make sure there’s no dirt to start with. But after that, clogging is usually a minor problem in urban areas because the water quality is good,” said Ken Solomon, director of the Center for Irrigation Technology.

Located at California State University/Fresno, CIT is an independent testing laboratory.

While clogging is a problem in agricultural irrigation where non-

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Improvements in sprinkler technology have reduced the potential for clogged nozzles and valves.

potable water is often used, urban lawn maintenance operators shouldn’t ignore the potential on their properties, Solomon said.

“If turf irrigators aren’t worried about dirty water, that can create a Catch-22 situation,” he said. “They think they don’t need screening or filtration and then problems can arise.”

George Cook, turf products marketing director at Hardee Ir-

rigation, Laguna Niguel, Calif., said difficulties associated with water quality only arise with small orifices generally found in low-volume, micro-irrigation components such as drip emitters. Even in these situations, the problem is easily corrected.

Manufacturer improvements in sprinkler technology have also reduced the potential for clogged nozzles and valves.

“The biggest change has been sealed-case rotors,” Brown said, “because you don’t have to worry about cleaning clippings, mulch or salt and sand from winter. Open case, impact spray rotors are still the best for watering turf. But over the past eight to nine years, sealed case rotors have taken over.”

All the workings in “closed-case rotors are sealed,” explained O.J. Warner, field service manager for Hunter Industries, San Marcos, Calif. “With our products, whatever passes through the filter screen passes through the nozzle. So substandard water quality is about the only reason your screen could get clogged.”

WHAT CAN HAPPEN. Though most blockage problems are associated with installation, or with pipeline breakages, there are several other circumstances in which dirt and debris can enter the sprinkler system:

- Local construction activity can often cause water quality problems. For example, if water lines are cut or if new water service is just turned on, construction dirt and debris can be flushed into the system, Warner said.

- In cold-weather areas, mechanical snow plows can also cause inadvertent damage to sprinkler lines.

- Many residential areas use well water. If the water supply comes from a new well, debris

problems can result, according to Brown. After the well is drilled, you still get shavings from the bottom of the well for six to 12 months.

“If the customer has filtration with the water in his house, that’s a good indication of potential problems,” Brown said. He added that when water tables drop, such as during droughts, dry dirt from the sides of the well can fall into the water.

- Though today’s equipment “is largely maintenance-free,” said technical services manager Jim Goodrich of Weathermatic, a Dallas-based manufacturer of turf irrigation products, “you’ve still got to exercise some common sense.”

When maintenance operators are careless, ice can clog and rupture sprinkler lines should an early freeze occur.

“Before winter, you need to shut off the water,” Goodrich added, “and if the system doesn’t have an automatic drain, it should be drained with an air compressor. Then each spring, run the system to test it, checking each sprinkler head for any problems.”

- Not all potential blockage problems are waterborne. During the winter, for example, insects can nest in the sprinkler nozzles, according to Goodrich.

In addition, blockage of lawn sprays can be caused by surrounding grass, while blockage of spray from shrub sprinkler heads can be caused by surrounding foliage, according to Chet Sarsfield, an irrigation consultant from Lafayette, Calif.

WHAT TO DO. Like any other piece of equipment, Sarsfield said, “a lawn sprinkler system requires periodic inspection and maintenance for best operation.” Occasional visual checks of the

system in operation will help detect such things as nozzles that are plugged with dirt or pebbles. Generally, such minor items can be taken care of in a few minutes by simply cleaning and flushing the sprinkler head and riser.

Should surrounding grass block spray, Sarsfield added, trim the grass around the head, raise the head or both. And if spray from a shrub sprinkler is blocked by foliage, the foliage must be trimmed back, or the riser lengthened to bring the head above the new foliage height.

When several sprinklers "in a line or a group suddenly become weak or inoperative," Sarsfield said, "a rock or other obstruction has probably washed through the piping and become lodged in a fitting or valve. Then you'll have to locate the point of the blockage, so the line can be cut and the obstruction removed."

Leakage through a valve indicates either a stone or some debris is wedged between the seat and the disc — or the disc is damaged.

"If this occurs, don't apply more pressure to the handle in an attempt to stop the leakage," Sarsfield said. "Instead, open and close the valve several times to dislodge any foreign matter. Then if the leakage continues, open the valve and inspect the disc for damage or wear."

Thompson recommended taking precautions to keep dirt out of the system during general service procedures. For example, Buckner advises operators to lubricate and clean sprinkler head

parts with water only, rinse all parts with clean water prior to assembly or reassembly, avoid using abrasive cleaning materials unless otherwise recommended and inspect seals and seating surfaces for debris.

Total or partial nozzle blockage can cause improper rotation and/or water distribution in im-

sprinkler lever arm during removal. Then clean any debris from the nozzles.

• Next, using a pair of long-nosed pliers, remove the stream straightener from the sprinkler head. With a special cleaning tool, available from most manufacturers, clean any foreign matter from the veins of the stream straightener. Some sprinklers have stream straighteners inside the head, while others have it within the nozzles.

• With the nozzles and stream straightener removed, maintenance operators should turn on the water briefly to flush away any debris in the pipeline and sprinkler.

• After replacing the stream straightener and nozzle, check the unit's water pressure. "Consult the manufacturer's catalog or specification sheet for the pressure range of the sprinkler in question, but remember that normal operating conditions may vary," Thompson said.

Take pressure measurements when the maximum number of

sprinklers designed to operate simultaneously are all running.

In the case of Buckner's cam-driven rotors, Thompson said, dirt and debris in the housing can cause the sprinkler to rotate slowly or not at all.

"Just loosen the cover screw and remove the cover and internal assembly," he said. "Next, clean all dirt and debris, rinse thoroughly with water, rein-

stall and test."

HOW NOT TO CUT CORNERS.

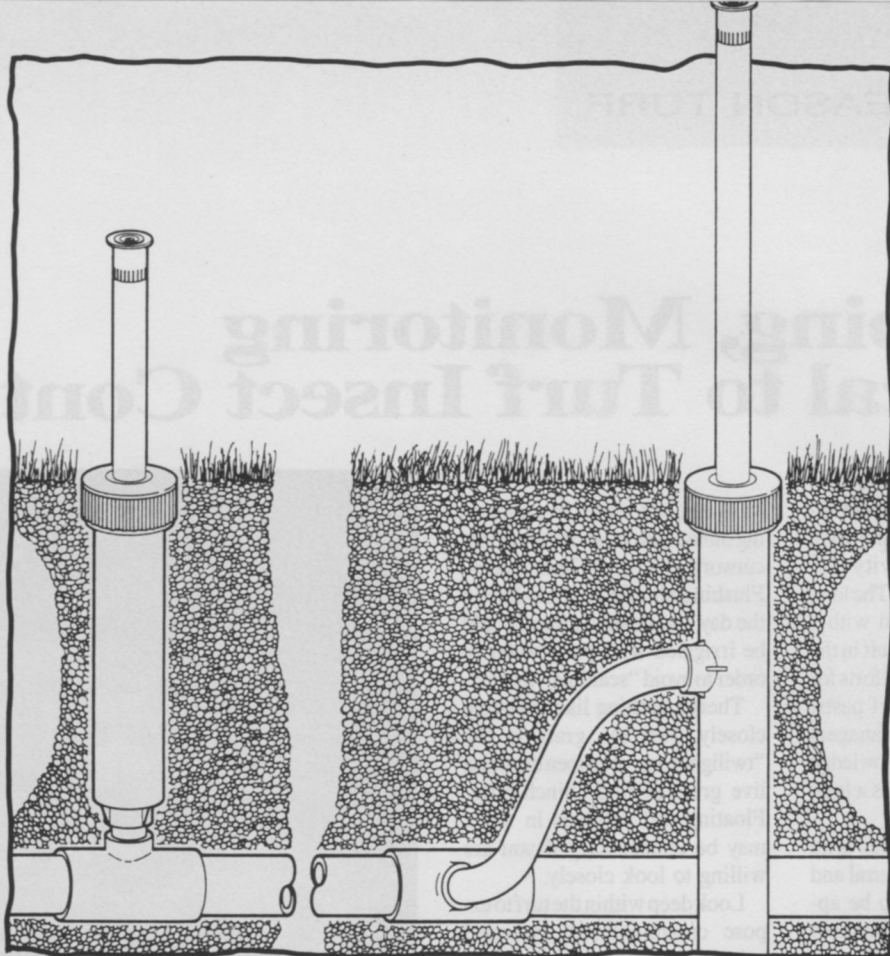
When maintenance operators employ irrigation contractors to install sprinkler systems, Brown advised them to not automatically go with the low bidder.

"Irrigation is complicated and involves a background in horticulture, landscape design, hydraulics and electrical," he said. "The lower priced 'quickie' companies simply 'bury their sins' — and you get stuck with a big mess."

There are a lot of ways to cut corners in irrigation in an attempt to save money. But cutting costs by laying pipes closer to the surface, for example, will only cause problems.

"Suppose the homeowner breaks a sprinkler line when he's out tilling the garden. Where are you then? You've got an angry customer, dirt in the pipes — just a big mess," Brown said. "It's better to do things right when the sprinklers are installed, and do things right when the sprinklers are operated." — Mark Ward ■

The author is a free-lance writer based in Schroon Lake, N.Y.



Pop-up sprinklers should be installed so that the top is flush with the root zone of turf. Illustration: Nelson.

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Irrigation involves horticulture, landscape design, hydraulics and electrical.

compact-spray sprinklers, Thompson said, or cause the sprinkler not to reverse.

A stream with substantial water break-up usually indicates a blockage in the nozzle. In such cases, Thompson advised the following procedures:

• Remove the nozzle after turning off the water. A socket set is best for a non-breakup nozzle, while a boxed-end or open-end wrench works well for breakup nozzles. Avoid bending the

Mapping, Monitoring Critical to Turf Insect Control

INSECT PEST MANAGEMENT can be an expensive, time consuming activity for Southern turf managers. The long growing season coupled with a variety of insects can result in the need for annual control efforts for a series of damaging turf pests.

Consequently, most managers are learning that a little knowledge about common pests goes a long way.

Knowledge of life cycles is an absolute necessity if cultural and chemical controls are to be applied in the pest's vulnerable stages leading to more effective control.

The best control strategies are often the most expensive. As a result, poorly executed plans with improperly timed — and therefore less effective — controls are simply out of the question for most budgets.

All of the control measures in the world won't help you if you don't know what's out there. Monitoring turf areas for the presence of insect pests is a common sense component of any management program. Managers often check the turf anyway, so monitoring insect life stages may be all in a day's work.

Soap flushes, ½ to 1 ounce liquid dish detergent in 1 gallon

of water, are useful in monitoring mole crickets, sod webworms, cutworms and green June beetles. Flushing should be done late in the day and flushed areas should be irrigated with plain water in order to avoid "scalding" the turf.

There's nothing like checking closely. Part the grass in the "twilight zone" between dead and live grass to find chinch bugs. Floating turf samples in water may be unnecessary if you are willing to look closely.

Look deep within the turf to expose cream-colored, red-eyed spittlebug nymphs within spittle masses. Use a spade or shovel to dig for billbugs and white grubs. Usually, the sample can be cut on three sides and folded back to expose the grubs. Shake the sample to dislodge grubs that may be there.

Sound, effective insect control should be part of a maintenance operator's total turf growing agenda. The specifics of such programs are tailored by up-to-date managers with the assistance of extension and research scientists. As a manager, you should know your turf situation better than anyone else.

The following general comments are provided as background information to aid in the development of your own insect control strategy. Note that specific insecticide recommendations are not included. Since annual changes or updates are often made within states, keep in touch with extension control recommendations for your area.

CONTROL STRATEGIES. Soil insect pests in any area are the most



Monitoring turf areas for the presence of insect pests is common sense for any program.

difficult and most expensive problems to control. Pests that spend a major portion of their life below the soil surface, however, are even more difficult to monitor and difficult to contact with insecticides.

Moisture within the soil usually determines how near the surface these pests are found. Extremely dry conditions generally do not favor pest activity in the grass root zone. During drought, pretreatment watering may be needed to move pests up into the insecticide treatment area.

Biological control agents such as insect infecting nematodes are dependent upon soil moisture for survival and mobility as they seek out insect hosts.

The Southern and tawny mole crickets, the Southeast's most damaging turf pests, continue to spread westward into Louisiana and Eastern Texas. The Northern mole cricket, a native species, has been reported in increasing numbers associated with tunneling activity within the Southeast, Oklahoma and in parts of the mid-

Atlantic states.

The voracious feeding of tawny mole cricket nymphs can result in turf loss in untreated, infested areas during late summer and early fall. A single annual generation of mole crickets overwinter as adults and older nymphs. Visible activity increases in March and April. Adults fly and mate, eggs are laid in the soil and hatching begins in May or early June.

Mole cricket nymphs are easier to control in early stages than larger nymphs and adults. For many turf sites, spring treatment of mole crickets is optional. In some highly maintained turf areas, however, spring treatments are necessary. Recent studies indicate that areas of overwintered tawny mole cricket activity can be "mapped" in the spring and treatment of young nymphs done in these areas after hatching begins.

MONITORING BENEFITS. The success of this approach depends upon monitoring areas for spring

IDENTIFICATION AND TREATMENT OF WARM-SEASON INSECTS

PEST	WHAT TO LOOK FOR	WHEN TO TREAT
Billbugs	Spring: Adult billbug active in late March to early April. Summer: (June and July) tiny legless grubs with rear end wider than head.	When adults become active in late March to early April. When infested area has tiny grubs in soil, usually June to mid-July.
Chinch bugs	Spring: Adults active in late March to early April. Red bodied, first generation nymphs usually present in May; Summer damage appears as dead areas.	During warm part of day. Mid to late afternoon.
Cutworms	Closely chewed areas, especially around aeration holes.	Late in the day.
Fall Armyworms	Birds feeding on an area; dead patches on lawns. Caterpillars feeding on grass.	Late or early in the day, usually mid-to late-summer or early fall.
Fire ants	Mounds, or strings of ant hills containing several sizes of workers.	Avoid treatment during hot, dry periods. Treat when ants are actively foraging, usually late or early in the day. Apply area bait treatments April to June.
Ground Pearls	Unthrifty, slow grading turf; may be no specific visual symptoms. April to May 1/8 to 1/16-inch pink wrinkled creatures in or on the soil. Summer to winter: 1/8-inch pearly cysts in soil, up to 8 to 10 inches deep.	No insecticide treatment recommended. Follow soil test and disease control recommendations. Do not allow drought stress to grass.
Grubs	Green June Beetle: when grub mounds are present with finger-sized holes. White grubs: Loose grass; patches that won't green up. C-shaped larva with brown head, three pairs of legs.	Nymphs in May to mid-July, depending on selections of control. Treat late in the day.
Mole Crickets	Spring: Tunneled areas, loose grass; Summer: Grass thins, becomes loose or patchy. Late summer: bare areas where tawny mole cricket feeding occurs.	Nymphs in May to mid-July depending on control selections. Treat late in the day.
Sod Webworms	Close-cropped areas that brown out. May resemble damage from disease such as dollar spot.	Early or late in the day, two weeks after peak moth flight.
Two-lined Spittlebugs	Look for small, cream colored nymphs in spittle masses deep in turf. Heavily infested areas feel "squishy." Areas may become reinfested; look for 1/3 inch flying adults with black tent-like wings with two red stripes across them.	Late in the day, mid-May to early June, before nymphs are large enough for visible damage to grass to occur. Monitor area closely and treat for nymphs.

Mole cricket damage to hybrid bermuda turf. Mole cricket nymphs are easier to control in earlier stages.



mapping and later determining when hatching begins. Mole crickets are active at night, therefore treatments done late in the day are preferred.

Fire ants are considered "people pests." Their painful stings may limit accessibility of infested areas, and mounds may interfere with mowing. Worker ants forage actively on the soil and turf surface when conditions are favorable.

These workers leave and return to the colony through tunnels that radiate out from the mound. Immature ants, workers and queens are all found within mounds. How deep the queen(s) and immatures are found depends upon the age of the colony, soil type and environmental conditions.

Worker ants move immatures quickly to areas within the mound that meet temperature and moisture requirements for development. Winged reproductive individuals fly from established colonies and mate. Queens then begin new colonies from spring

through the fall after rains.

Control is ultimately dependent upon destroying the "egg laying machines" — the queens. Area treatment with baits during spring, followed a few days later by mound treatment with a contact insecticide usually results in the reduction of mounds that pop up during midsummer.

Bait particles are picked up by worker ants and fed to queens, leading to the death of the queens and a disruption in the reproductive potential of colonies. Treatment of worker-active mounds a few days later eliminates workers that are left behind. Mound treatment thereafter is necessary only as reinfestations occur.

Grubs such as chafers, May

and June beetles and, in some areas, Japanese beetles, are also pests of Southern turfgrass. Most pest species have one-year life cycles.

Treatment of young grubs in summer or early fall is usually the most effective. Spring treatment of larger grubs during late March or early April is possible, but reinfestation of these areas during summer is not uncommon. In many cases grubs have already pupated by the time dead patches become obvious during spring green up of Southern grasses. Most of this damage probably occurred the previous season.

Green June beetle grubs are the only grubs that move out onto the

turf surface. These large grubs crawl "belly up," legs in the air, on their backs. The mechanical injury to turf where these grubs are numerous can be significant. However, green June beetle grubs are more easily controlled, and lower rates of insecticides are usually sufficient.

Billbug grubs are usually present in the soil by June or July. These small, legless grubs work their way down the grassy stems, into the soil where they feed on roots.

Ground pearls or "pearlbugs" are scale insects that pierce root tissue and suck out juice. There are usually no significant symptoms of infestation other than un-

(continued on page 66)

Hydroseeding Makes New Inroads into Landscaping

IT'S A SCENE YOU'VE UN-doubtedly been a part of before. The needs of customers and clients continue to escalate, and your current methods and equipment won't meet these expectations.

But it's no help to anyone involved to jump into providing another service or buying new equipment without first thoroughly investigating the possibilities.

Hydroseeding is one such service that has witnessed increased demand in both the residential and commercial markets. Once relegated to highway rights-of-way and reclamation projects, the hydroseeder has emerged as a common landscaping tool in new residential and commercial properties.

Evidence of that can be observed by the number of smaller sized hydroseeders now on the market. Machines as small as 300 and 500 gallons are now available.

In one pass, hydroseeding applies a slurry of seed, fertilizer, hydromulch, lime and tackifier.

Benefits abound. There is the obvious advantage of fertilizer



Hydroseeding has experienced an increased demand in both the residential and commercial markets.

ially the rate of new construction in an area, said Bob Jones, sales manager, Bowie Industries, Bowie, Texas.

"There are always a couple pockets where they're selling fairly well," he said. "It moves around the country. The Northeast was

of machinery that requires more training," he said. "You have to be much more careful when applying or you'll end up throwing away your profits. But it's not that highly technical that the typical landscaper can't integrate it into his operation."

Hydroseeders are not inexpensive. Expect to pay about \$6,000 to \$7,000 for the small 300-gallon machines, all the way up to \$30,000 to \$35,000 for a 3,000-gallon version.

According to several manufacturers, generally accepted rates for seeding are about four to six pounds per 1,000 square feet, which works out to about 220 pounds per acre. Fertilization rates range from about 875 to 1,300 pounds per acre and mulch about 900 to 1,400 pounds per acre.

When operators begin hydroseeding, they often experience difficulties becoming accustomed to the look of a properly hy-

drosseeded application, said Neil Reinecker, vice president, sales, Reinco, Plainfield, N.J. The sprayed area should be brown and green — somewhat splotchy — covered with soil, seed and mulch. It shouldn't be an even undisturbed blanket.

OPERATING COSTS. According to a cost analysis prepared by Reinco, the cost of hydroseeding a lawn averages two cents per square foot regardless of what size machine is used.

Norman Gray Jr., a long time hydroseeding operator and owner of Transit Seeding Inc., Norfolk, Mass., said the 2-cent per square foot cost figure is often mentioned, but it's wrong to make it sound as though cost is readily uniform.

"There are so many factors that go into pricing the service that you can't say it costs X amount no matter where you are," he said. "You have to consider the individual site and the economic condition of the region."

The Reinco analysis is based on the "one-step" method, a process with which most people are familiar. A two-step method puts the seed down first. The mulch, however, is put down in a separate application.

While the two-step method sounds like more work, Reinecker said, it often can save time and money on larger jobs. He uses a 1,500-gallon seeder hydroseeding a one-acre lawn for an example.

Using the one-step method, he said, it would take about two hours filling the seeder twice. On the other hand, the two-step method would take about 1½ hours, with an hour for seeding and another half hour spreading mulch with a straw blower.

"Not everyone is going to agree

(continued on page 46)

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The best way to get work is by already having worked with general contractors on other developments.

being applied with the grass seed. Along with that, the mulch shades the seed, keeps it from shifting, retains moisture and, to an extent, controls the soil temperature. The resulting turf also germinates faster and is more evenly distributed.

Hydroseeding, however, tends to be dependent on the local economic conditions — espec-

strong for quite a while with all kinds of housing starts, but that's gone."

Some operators who exclusively do hydroseeding claim it's much more technical and more difficult to do properly than other seeding techniques. Jones said that assertion is exaggerated.

"It is more technical; you're dealing with a sophisticated piece

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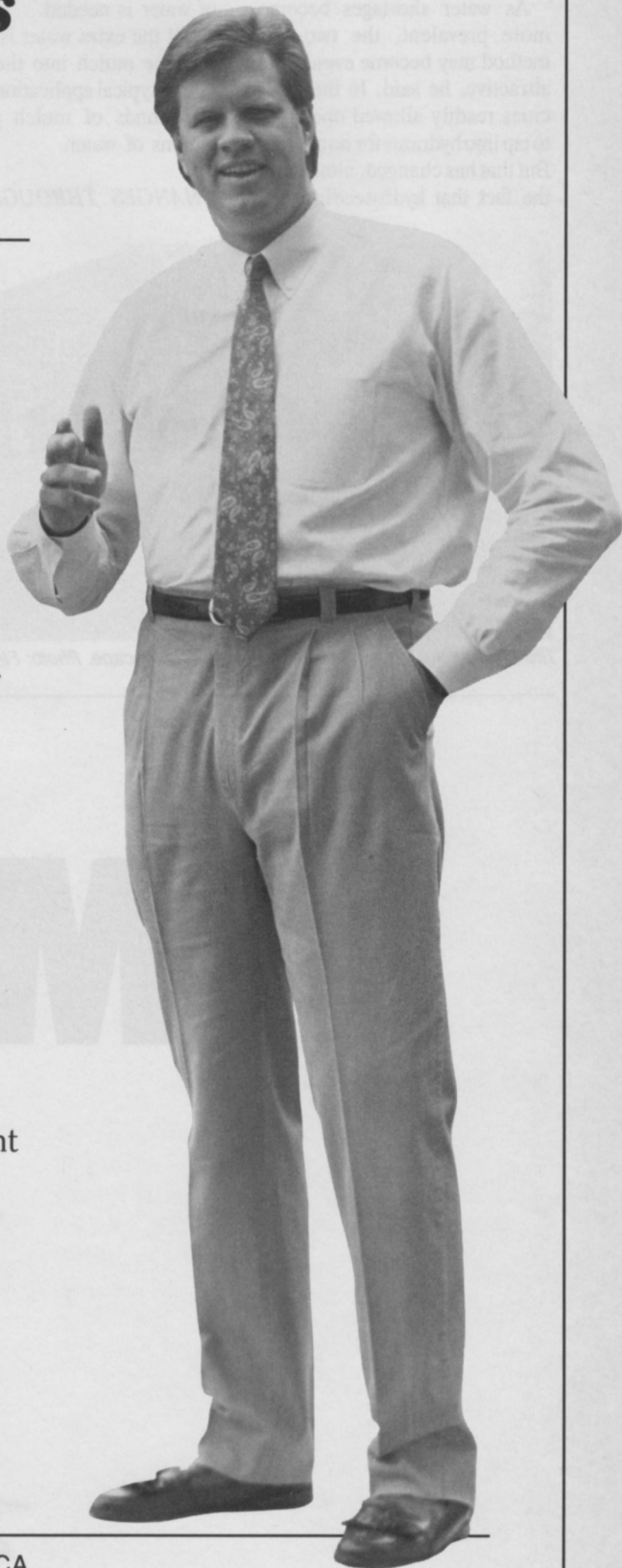
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ASSOCIATED LANDSCAPE CONTRACTORS OF AMERICA



Hydroseeding

(continued from page 44)

with that, but it's what I believe works best," he said. "It saves some time and increases the pumpability of the hydroseeder."

As water shortages become more prevalent, the two-step method may become even more attractive, he said. In the past, cities readily allowed operators to tap into hydrants for no charge. But that has changed, along with the fact that hydroseeding is a

highly visible use of water.

According to Reinecker, an acre treatment with a 1,500-gallon seeder will use 3,000 to 3,500 gallons of water. But seeding the same acre with the two-step method, only about 600 gallons of water is needed.

All the extra water is used to mix the mulch into the slurry. With a typical application, there's 40 pounds of mulch per 100 gallons of water.

CHANGES THROUGH THE

YEARS. Gray was once a landscape contractor, but in 1981 changed his company to one that solely provides hydroseeding. But Gray is no novice when it comes to hydroseeding. He's been involved in the field most of his adult life.

In the 1950s his father created what is believed to be one of the first hydroseeders. It was developed initially to seed easements after sewer and pipe contractors had finished their work. Before long, the operation moved into seeding airports with several hundred acres.

By the mid-1950s, Gray was involved in the business full time.

The size of the equipment and the number of competitors he contends with represent the most noticeable changes over the years, he said.

"Up until about five years ago, we really had no competition," he said. "But then smaller units — 800- and 1,000-gallon machines — came on the market around the same time that the economy took off, and the area saw a great deal of new construction."

But that economic upswing has leveled off and the number of hydroseeders in his vicinity dropped last year. He expects to see even fewer this year.

"Purchasing and owning the equipment doesn't necessarily make a person a hydroseeder," Gray said. "I saw some repossessed, and tend to think the number will continue shrinking."

So how does Gray manage to keep his company afloat while construction is down and others are abandoning hydroseeding? It's the fairly familiar story of having experience and established contacts.

"No market is easy to break into, but hydroseeding is a little more difficult than other areas in the green industry," he said. "First it takes a decent capital investment. Then it takes some guarantee of steady business. The best way to get that is by already having worked with some general contractors on new developments."

Beyond that, it takes some willingness to stand behind your work. For Gray that means re-seeding or refertilizing a project



The hose allows more care around existing landscape. Photo: Finn.

MITE.



the season following application if it doesn't come in properly.

Another advantage he has is knowledge of the product and service.

"It's always apparent when a new guy really doesn't know about the process," he said. "We always emphasize our ability to do a job on short notice and the quality materials we use. In the long run, I think it's a lot wiser for lawn care guys to hire us to follow them around from project to project."

OPERATORS MAKING IT WORK. Obviously not everyone is going to agree with that assessment. While maintenance operators may have a tougher time establishing hydroseeding services, several are managing to do so.

Dave Schodde, Enumclaw Landscape Maintenance, Enumclaw, Wash., recently bought a hydroseeder and plans to take things slowly. Several factors led to his purchase decision.

First was the population influx in the region that naturally has led to an increased building rate.

Other than that, Schodde said, the desire to be a true full-service operator also influenced his decision.

"We own all our own equipment and like to think that we have control over all phases of a project," he said. "But before we bought the hydroseeder, it was as if we were doing everything except putting the icing on the cake."

An increased demand for hydroseeding was the main reason Enumclaw's ventured into hydroseeding. The number of project specifications calling for hydroseeding has risen.

"I'm not looking to make the hydroseeder my most used piece of equipment," he said. "I'm looking at it as another tool to use when it is called for, another option to have at my disposal. It may end up sitting a week or 10 days between uses, but that's how I think it'll best help my company."

Lee Fulmer, Lee & Lea's Nursery, Killeen, Texas, has offered hydroseeding services for six years. He never had to make the decision of adding the service. He was lucky enough to buy an ex-



Hydroseeding applies seed, fertilizer and mulch. Photo: Reinco.

isting company that already had hydroseeding in its ranks.

His market is mainly driven by the military installation Fort Hood, which is about one mile outside Killeen, but recent cutbacks in U.S. defense spending has led to the rapid demise of new building in and around the area.

"Hydroseeding is good and being able to do it will get you a good amount of business when there's a call for it," he said. "But it definitely helps us to be involved in different aspects and not just hydroseeding."

"Now that housing starts have grinded to a halt, people are turning to sod for restoration projects. We sell and install the sod. If we were just hydroseeding, I don't see how we'd get through a time like this."

His best year for hydroseeding was close to 1,000 jobs several years ago. This year he'll be lucky to get 150 jobs, he said. — David Westrick

The Author is Assistant Editor of Lawn and Landscape Maintenance magazine.

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Cypress Gardens provides 365-day flower show.

TO MOST PEOPLE, THE MENTION of Cypress Gardens conjures up visions of the water skiing shows the Central Florida theme park has become famous for in recent decades.

However, a stroll along the park's winding pathways reveals that the attraction was appropriately named. After all, Cypress Gardens was established as a tropical showplace a full 10 years before the first water show was ever held.

"Granted, there are a lot of shows and attractions for visitors to enjoy," said Norman Freel, vice president of horticulture for Cypress Gardens, "but people

still want to see flowers, and they still come just to see the gardens."

Freel and his staff aren't about to disappoint them. Together, they maintain more than 8,000 species of plants from 70 different countries on approximately 170 of the park's 200 acres. Additionally, annual flower beds are changed five to seven times a year, with some areas being replanted as often as nine times a year.

In fact, it has been said that a visitor could visit Cypress Gardens every day of the year and see something different in bloom each time.

"What we try to do is put on a 365-day flower show," said Freel, who has been with the horticulture department since 1968. "This means that we are constantly renovating the beds and planting new annuals or perennials."

Naturally, this calls for plenty of plants — as well as a lot of work if you grow them yourself like Cypress Gardens does. "We contract nothing out," Freel said. "We grow our own plants, including the trees, draw up our own landscape designs and handle all the installation and maintenance."

Nevertheless, a lot has changed in the 22 years that Freel has been guiding the department.

"When I came here, we had a staff of 55 people taking care of 63 acres," he said. "Today, thanks to new technology and chemical weed control, a full-time staff of 41 manages 170 acres. The labor savings, however, can be attributed to a number of things, including broad-spec-

trum preemergence herbicides, slow-release fertilizers, specialty mowers and gas-powered string trimmers."

Still, there is more to Cypress Gardens than the average tourist sees. Calling the nursery "the nucleus of the operation," Freel explained that greenhouses and outside growing areas cover an additional 7½ acres, not counting trees. Of this, 3½ acres are covered with nothing but container pots. In the course of a year, the nursery will grow between 500,000 and 700,000 plants, including more than 400,000 annuals.

"We also have literally hundreds of trees that are ready to go anytime we need replacement stock for a new landscape or renovation project," Freel added, pointing to trees bordering the parking lots, service roads and vacant corner lots.

"Years ago when we could come up with an extra piece of real estate, we'd plant trees and shrubs on it. So I always tell people around here 'you better not have a spot you're not using, or I'm liable to plant it,'" he said.

"When you figure that you can take a \$2 plant and with only minimal care, turn it into one worth \$250, you can save a lot of money," Freel said. "Right now, for example, we have one field with more than 300 25-foot oak trees already root pruned and everything. If we had to go out and buy those, they would cost several thousand dollars each."

Because of the vast inventory of plant material, Freel and his crew often install what Freel refers to as "instant landscaping." A case in point was the landscape change that followed the relocation of a foot bridge. Once the new and safer bridge was installed, the old one was taken out along with the sidewalk leading to it; mature trees, shrubs and flowers were brought in, and the average park visitor never knew the difference.

They do notice the results of seasonal color changes, however. In fact, the most extensive of these has become famous as the largest floral event in Florida, and one of the largest in the Southeastern United States.

Each November, a six-acre section of the "Gardens" surrounding the Italian fountain and the Mediterranean waterfall becomes a rainbow of color during the



Six acres covered with more than 20,000 chrysanthemums draws thousands to Cypress Gardens.

(continued on page 52)

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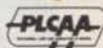
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Cypress Gardens

(continued from page 50)

park's annual mum festival. Again, thousands of potted plants are needed to fill the void — more than 20,000 plants to be more specific.

"We actually came up with the idea of having a mum festival five years ago," Freel said. "Everyone else was having Oktoberfests, so we decided to have a flower event a month later when activities had slowed down."

Since that time, the mum festival has grown more extensive and beautiful with age. And each year, the staff strives to make the exhibit better than the year before. The 1989 mum festival, for example, included chrysanthemums in columns, arches, balls, bonsai form and even floating baskets.

"We're primarily growing and using cascading varieties developed in Japan," Freel said. "They bloom a little later, but they are excellent for our needs because of their wide range of color and because they respond to being trained."

He goes on to explain that plants are grown in either two-gallon pots, or 7½ gallon containers arranged on a special rack. Flowers in the latter often cascade five or more feet over the side of



Replacement stock saves thousands of dollars every year.

the pot and down the support rack — making them ideal for their ultimate role in covering the sides of streams and waterfalls. Finally, all mums are grown outdoors to develop the hardiness they need to withstand the month-long display.

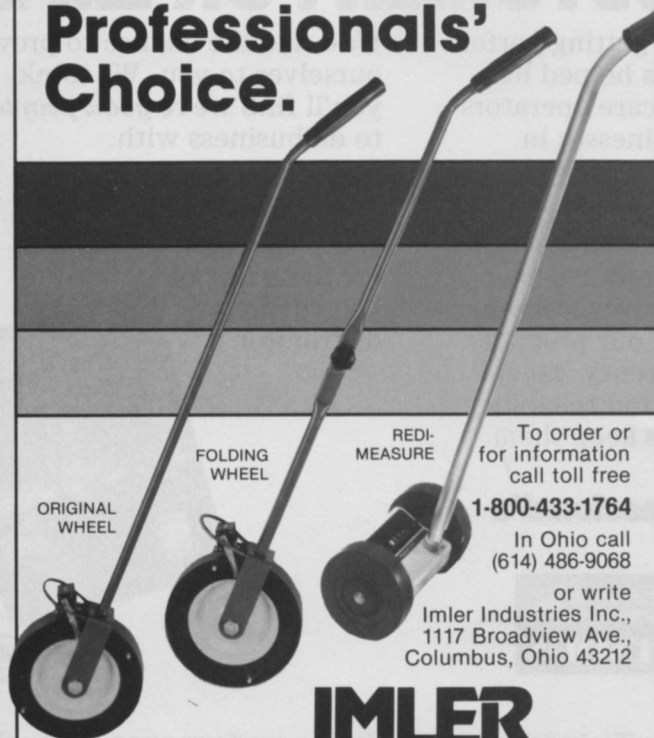
"Some of those plants will cover up to 15 square feet of surface with more than 1,000 blooms," he added, pointing out that the entire display often features as many as two million blooms. "We figure

anyone can grow a potted mum. So we try to do the unusual by building mini-arches, cones and columns, as well as 'poodle clipping' some of them."

As one can imagine, there is a great deal of time and effort invested in the mum festival alone. To begin with, Freel hires a helicopter and a photographer to take aerial photos of each year's display. Those photos and accompanying diagrams are then used by the staff to design succeeding displays.

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Meanwhile, plants are started 15 months before the festival date, which means that the flowers for 1990 have been growing in the nursery area since August 1989. In the meantime, the plants receive daily attention to control weeds, pests, plant diseases and moisture level.

"We use low volume drip irrigation and emitters to water each pot separately," Freel said. "There is at least one emitter per pot with up to four in some pots. Once the plants go on the landscape, we again use emitters supplemented by overhead irrigation and hand watering as necessary.

"You don't dare let them dry out," he stressed, noting that plants are not yet in bloom when they are set out. "One day of improper watering can cost you a large percent of the flowering capability."

Fertilizer applications are equally important to plants throughout the gardens, as well as those in the nursery area. According to Freel, fertilizer is applied three to five times annually, depending on the plant type, with liquid nutrients added as needed.

Finally, to control weeds both in and out of the nursery and greenhouse, horticulture crews apply one of several pre-emergence selective and non-selective herbicides.

Selecting a herbicide that's not likely to harm the flowers is of prime importance to Freel.

"If we put out a soil sterilant, for example, it could tie up the soil for up to six months and reduce or eliminate our rotation options. As two of our mainstays, Surflan and Treflan have been used in almost every application they are labeled for in the park, especially the ornamentals."

Surflan is sprayed directly over the top of most established flowers and shrubs, or is sometimes tank-mixed with Round-up and used around trees in the nursery area and where no vegetation is desired.



Trees transplanted into new landscape plots.

"I've done calculations that show that without the wide variety of herbicides we are using, we would need a 30 percent larger staff just to keep up with the weeds," Freel said. "When I came here 21 years ago, there wasn't anything we could use besides hand weeding. Treflan was one of the first to come along, and we've been using it for 15 years now. At the same time, we've developed a wide spectrum of products for a variety of applications."

Hand weeding still holds a place when it comes to controlling weeds in the beds, however. Because the plants are in place for such short time, Freel generally relies on the preemergence herbicide that accompanies the transplant, and hand weeding to remove weeds that come up between the plants.

After all, four to six weeks after the mums are planted on the landscape, they all come out — only to be replaced by the 6,000 poinsettias from the greenhouse. Like Freel said, people still come to see the flowers. And he and his staff aren't about to discourage them by showing them the same thing twice. — *Tharlan Gaines*

The author is public relations supervisor for Carmichael Lynch, Kansas City, Mo.



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FOCUS ON:

SEEDING

TREATED SEED A STRONG DEFENSE AGAINST TURF DISEASE

IN THE FAVORABLE CLIMATIC CONDITIONS of spring and fall, you can practically watch newly seeded turfgrasses grow. What you can't see — but can prepare for — is the subversive activity occurring below; soilborne fungi attacking unprotected seeds and tender emerging roots.

Delayed germination and blighted stands can be avoided, by planting seed treated with fungicides and by maintaining a careful watering program, said Phillip Colbaugh, a research plant pathologist at Texas A&M's Agricultural Experiment Station in Dallas.

Colbaugh recently completed a series of laboratory and field trials in which seedling growth and *Pythium* blight disease control were evaluated on turfgrass seeds treated with a combination of commercial fungicides. The resulting data showed average stand counts were

significantly enhanced, and the incidence of infection diminished when seeds were treated with a fungicide mixture.

The tests were on perennial ryegrass, fine fescue, tall fescue and two Kentucky bluegrasses supplied by Gustafson Inc. of Plano, Texas.

Seed treatments with combinations of fungicides consistently gave excellent results for disease suppression of *Pythium*, Colbaugh said.

The study also showed that treated varieties emerged more quickly (with the exception of the inherently slow germinating bluegrasses) and produced stands 20 percent to 95 percent fuller than untreated varieties.

"*Pythium* and other soilborne diseases, like *Rhizoctonia* and *Fusarium*, lurk in almost every soil that benefits from regular watering and fertilization," Colbaugh said.

Ironically, market estimates indicate that less than 25 percent of the overseeded turfgrass uses a seed treatment for disease control.

"I just don't think enough growers realize the economics of planting treated seed," Colbaugh said. "It's like term insurance. You get 30 days of protection while those new roots are getting established and a good stand started."

A good example is perennial ryegrass, which treated with a primary fungicide, costs only about four cents more per pound, or 16 cents per thousand square feet, according to commercial suppliers in the Pacific Northwest.

Many disease problems affecting turfgrass seedlings are generically described as "damping off," a disease complex that can be caused by one of several pathogens in the soil. *Pythium*, however, is the most common culprit. ■

EASY COME.



Top row: Leaf-feeding caterpillar, Mealy bug, Japanese beetle, Bagworm, Gypsy moth. Bottom row: Cankerworm, Leaf skeletonizer, Tent caterpillar, Webworm.

PEOPLE



Brandon



Freyermuth

AT SUNBELT SEEDS, DIVISION OF Lofts Seed Inc., **Greg Freyermuth** was named Florida Sales manager. He specializes in representing Sunbelt's winter over-seeding blends as well as the company's full line of seed and turf care.

An additional responsibility is coordinating the new sales arrangement between Sunbelt and the Par Ex division of Vigoro Industries.

Paul Brandon is a new district sales manager for Cushman's Mid-Atlantic region. He works with Cushman turf

equipment dealers in Pennsylvania, Maryland, New Jersey, Virginia and parts of North and South Carolina.

Kubota has named **David Chapman** northern division regional sales manager. His duties include overseeing dealer development, product training, inventory management and new dealer recruitment in Illinois. Previously, he was consumer products dealer development manager for the company's northern division.

Also at Kubota, **Jerry C. Wrenn** is now pump and generator supervisor in the Southeast division.

His new responsibilities include working with regional sales managers and dealers to develop the market for pumps and generators in the division which includes Delaware, Maryland, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Alabama, Georgia, Mississippi and Florida.

He joined the company with more than 17 years of experience in the pump and

generator industries.

Bryan Juwig has filled the newly created position of irrigation marketing manager at the Lasco Fittings Division of Phillips Industries Inc.

He supervises national sales activities for the division's PVC irrigation pressure pipe fittings, including its line of swing and swivel joints, as well as assisting in development of new irrigation products.

Juwig is a 10-year veteran of the irrigation industry and belongs to the Arizona chapter of the American Society of Irrigation Consultants.

Rene Evelyn Veere is engineering scientist at Lytone Engineering Inc., which serves as engineering consultants to Rain Bird Sprinkler Mfg. Corp.

He joined the company in 1976 and was the original designer of the CRC, CIC and MAXI systems. His expanded responsibilities include system design, systems group manager and technical consultant to the engineering and marketing groups. ■

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Circle 11 on reader service card

PRODUCTS

THE NEW RYAN LAWNAIRE V aerator increases work capability for lawn maintenance operators.

Built similarly to the Lawnaire IV, the new Lawnaire V covers a 26 1/2-inch aerating swath and can aerate up to 29,000 square feet per hour, or 38 percent more area per hour.

Powered by a 4-cycle, 3.5-h.p. Honda engine, the Lawnaire V is equipped with 3/4-inch, open-sided coring tines that can



penetrate up to 2 3/4 inches deep, depending on soil type and conditions. The unit comes equipped with a 38-pound removable weight bar and a polyethylene water drum that holds up to 10.2 gallons of water for extra penetrating pressure.

The Lawnaire V features 5/8-inch axles with needle bearings, thrust washers and V-ring seals at both ends. Pneumatic 4-ply tires minimize chances of turf-scuffing on turns.

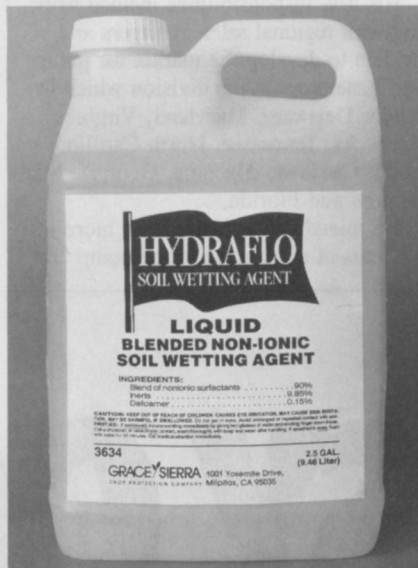
With its 42 tines, the Lawnaire V pro-

duces an aerating pattern of 3 3/4 inches by 7 inches from core to core.

Circle 127 on reader service card

GRACE-SIERRA HORTICULTURAL Products Co. has enhanced its Hydraflo® Liquid, a non-ionic soil wetting agent. The improved product mixes more easily and rapidly in all water temperatures, eliminating the gelling previously experienced when wetting agents were mixed with extremely cold water.

New Hydraflo has been tested effective in temperatures as low as 30 below.



technology affords increased resistance to leaching, meaning lower application rates can be used.

The liquid is available in 2 by 2 1/2 gal-

lon jugs per case and 55 gallon drums. Hydraflo is also manufactured as a granular, available in 40-pound bags.

Circle 128 on reader service card

JACOBSEN DIVISION OF TEXTRON has introduced a commercial 21-inch walk-behind rotary mower. It features a 21-inch cut, rear bagging capability, quick cutting height adjustment without tools and rugged reliability.

The mower deck has a deep tunnel design for excellent cutting and efficient removal of clippings. A rear-mounted 2.5-bushel grass catcher is also available.

The commercial 21 has a 2-cycle engine with the industry's only two-year crankshaft warranty. Jacobsen's exclusive crankshaft protection device guards



against twisting, bending or breaking of the crankshaft even after hitting a 1-inch solid steel rod at full throttle.

The lightweight aluminum alloy cutting deck can be quickly adjusted to five positions without tools.

Circle 129 on reader service card

TURFCO HAS INTRODUCED A SOD cutter designed to cut sod wider and at faster speeds.

The PRO model can cut at widths of 12, 15, 16 or 18 inches and is powered by an 8-h.p. Honda engine. Several features have been incorporated into the model including simplified controls, roll cages for protection during transport and replaceable rubber traction tires.

Circle 130 on reader service card

REMKE ENTERPRISES INC. HAS introduced a line of two-year fertilizer tablets for the fertilization of landscape installations, field liners and maintenance of established plantings.

The premeasured tablets are available in a 16-gram 14-3-3 analysis and a 21-

PRODUCT SPOTLIGHT

RECOGNIZING THAT BERMUDAGRASS IS CONTINUING TO GAIN WIDE industry attention, **Jacklin Seed Inc.** has developed several new varieties that are now available.

Cheyenne was released out of Jacklin's warm-season breeding program, and will make seed available this fall. It's a cold-tolerant, dark green grass that is an improvement over common bermudagrass. It will be marketed by Pennington Seed Co. in the U.S. and by Jacklin internationally.

CJ-23, still waiting for name approval, will be marketed by Turf Merchants, a wholly owned subsidiary of Stanford Seed Co., Buffalo, N.Y.

It's characterized as having a dark green color, fine-leaf texture and distinct low growth habit. Seed availability is limited to testing only for 1990.

Sundevil will be marketed by Northrup King and Co. This variety is also a marked improvement over common bermudagrass, having a lower growth habit, shorter internode spacing and higher density.

Circle 126 on reader service card

gram 20-10-5 analysis. Both tablets contain micronutrients.

Circle 131 on reader service card

TWO NEW WALK-BEHIND MODELS from **Simplicity Manufacturing** mulch and recycle clippings. Models 1570PS and 1575PP both feature a 2-blade deck design that cuts clippings into fine pieces and returns them to the base of the lawn.

The 1570PS has a Briggs & Stratton 4-h.p. Quantum™ engine and includes twin-cutting blades, a cast aluminum deck and multiposition handle.

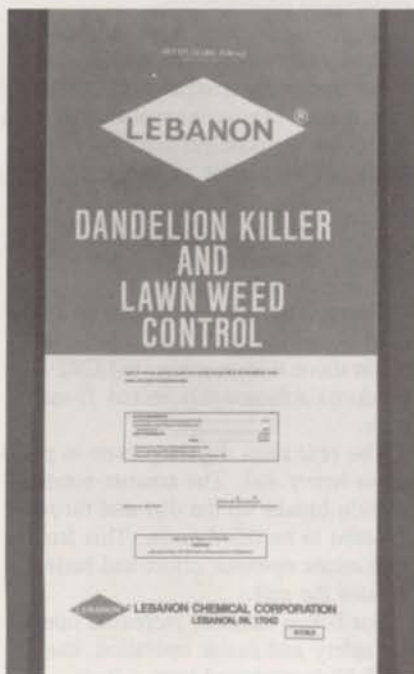
A 5-h.p. version of the Quantum engine powers the self-propelled 1575PP, which also includes the same features as the push model.

Circle 132 on reader service card

AVAILABLE FROM **LEBANON Turf Products** in a 20-pound package for professional use is its dandelion killer and lawn weed control.

Designed for landscapers, lawn care operators, grounds maintenance personnel and other turf care specialists, it kills dandelions, chickweed and many other broadleaf weeds.

It contains 2,4-D and MCPP — an effective, time-tested combination for post-emergence broadleaf weed control. Its granular formulation allows for



good spreadability and provides dust-free application. Spray hazards are virtually eliminated.

This new package treats up to 10,000 square feet when applied at the recommended two pounds per 1,000 square feet rate.

Circle 133 on reader service card

THE GRAZER DIVISION OF M & W



Gear Co. has introduced four new liquid-cooled grounds mowers — models G3200C, 3210C, G4200CD and G4210CD.

These models use gear reduction hydraulic motors at each drive wheel to provide a smoother drive and reduced maintenance. Dual steering levers provide independent control of each drive wheel for quick response and easy operation. The levers control mower speed forward, reverse, turning and braking.

The G3200C and G3210C are equip-

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—Mr. Gary Q. Miller, President, Pittsford Tree and Landscape, Inc., Mendon, New York

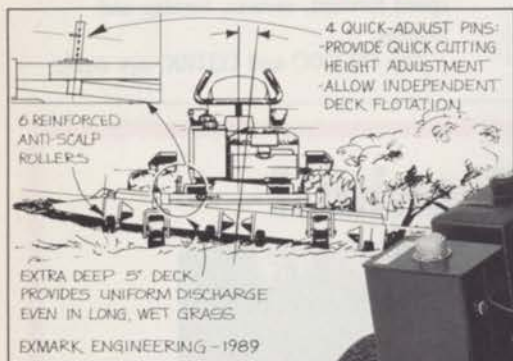
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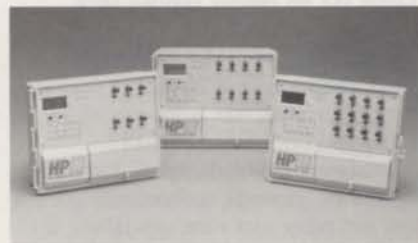
ped with 21-h.p., 3-cylinder Kubota gas engines. The G4200CD and G4210CD use 22-h.p., 4-cylinder diesel engines. Mowing decks in 52-, 62- and 72-inch sizes are available.

A vacuum grass collector and dozer blade are available as options. Dual tail wheels and ROPS with seat belt are also available.

Circle 134 on reader service card

A SERIES OF HIGH PERFORMANCE hybrid controllers from Rain Bird Sales Inc. combine the ease of electromechanical programming and the precision of solid-state design with advanced water management capabilities.

These controllers also offer excep-



tional reliability and resistance to power failures. Available in 6-, 8- and 12-station models, the HP series features individual station timing knobs that offer the user simple, easy-to-understand programming.

Dual programming with independent program shut-off and independent water budgeting from zero to 200 percent permit precise control of irrigation schedules for efficient water use.

Circle 135 on reader service card

A NEW TILLER WITH 12-INCH, counter-rotating rear tines is now available from Husqvarna.

Powered by a 5-h.p. Briggs & Stratton engine and backed by a reliable chain drive transmission, the CRT-50 produces a thoroughly mixed 17-inch path.

The rear tines dig deep even in packed or heavy soil. The counter-rotating motion breaks up the dirt and throws it forward to be tilled again. This feature minimizes operator effort and better aerates the soil.

For better balance, increased operator safety and easier operation, the CRT-50 is equipped with a front counter weight, durable 18 1/2-inch side shields and power reverse. Fully covered tines ensure long tiller life and shield the operator.

Circle 136 on reader service card

EARTHGRO INC. HAS DEVELOPED a line of all-natural, organic mineral fertilizers under the brand name Earth's Best.

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The company's products are said to be environmentally safe, non-toxic and non-burning when used as directed and are more effective than chemical fertilizers.

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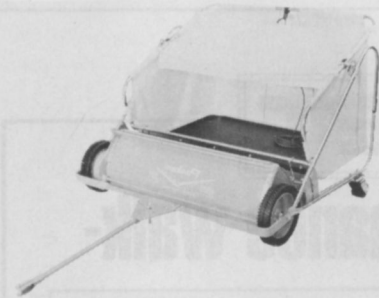
A FOUR-WHEEL UTILITY VEHICLE for use in governmental, municipal, commercial and industrial applications has been introduced by **Haul Master Inc.**

Model HX-4480F-B is equipped with a 16-h.p. OHV Briggs & Stratton engine. Standard features include electronic ignition, automatic transmission, automotive style controls and steering wheel and hydraulic disc brakes.

Options for the vehicle include dual fuel tanks, steel cab, turn signals and hydraulic tilt cargo bed.

Circle 138 on reader service card

THE POPULAR TRAILLETTE MODEL trailing sweeper has been redesigned for 1990 by **The Parker Sweeper Co.** The 10-cubic-foot capacity lawn sweeper is being preassembled in the factory



to reduce customer set up time.

It features a remote control, easy dump basket that collapses for convenient storage, heavy-duty cast iron drive wheels, eight polypropylene brushes and a sturdy reinforced vinyl basket fully supported by rear swivel casters.

Circle 139 on reader service card

A COMPLETE NEW DESIGN AND size make the new Model 9048 48-inch low profile EZ-Lift Deck from **The Grasshopper Co.** one of the most agile, efficient and versatile outdoor decks in the industry. It can be attached to all models in the Grasshopper 700 Series.

The front profile of the 48-inch deck has been designed for added agility and clearance in reaching under low fence rails, low hanging trees and shrubs. The new front caster wheel design eliminates wear points to reduce maintenance and extend service life.



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— **Lon and Aldo Bruzzi**
Connecticut Landscaping
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It also incorporates rubber shock absorbing stop for safe transporting on a trailer. Moveable spacers allow increased cutting height range — from 1 to 5 inches — for special mowing conditions.

Underneath, a new chambering design increases airflow control for faster, more efficient dispersal of clippings. Wider, more massive box beams and 10-gauge welded steel construction throughout assures strength and long life.

Circle 140 on reader service card

LESCO INC. HAS INTRODUCED its Soil Prep, a non-selective, non-permanent soil fumigant for broad-spectrum pest control. It eliminates competition from weeds, germinating weed seeds, fungi, insects and nematodes, resulting in bigger and better ornamentals and yields.

This is an easy-to-use, water-soluble liquid that is mixed with water and requires no agitation. It can be applied with either a sprinkling can or hose-end sprayer.

Once in the soil, it becomes a gas that kills all common soil pests — even difficult-to-control weeds like nutgrass, Johnsongrass, quackgrass, ragweed and



pigweed. The gas escapes two to four weeks after application, leaving no residue.

It's ideal for use on lawns prior to reseeding, in gardens, fencerows, greenhouses and nursery beds. It can also be used on driveways, walkways and patios.

Circle 141 on reader service card

A ZERO TURN RIDER WITH THE close cutting ability of an out-front rider and the turn-on-a-dime maneuverability of a compact belly-mount is produced by **Scag Power Equipment**.

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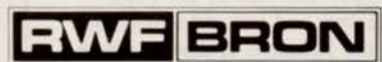
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CALENDAR

JULY 25-27

The American Sod Producers Association Summer Convention and Field Days, The Westin Hotel, Ottawa, Canada. Contact: ASPA, 1855-A Hicks Rd., Rolling Meadows, Ill. 60008; 708/705-9898.

JULY 29-31

International, Lawn, Garden and Power Equipment Expo, Kentucky Fair and Exposition Center, Louisville, Ky. Contact: Andry Montgomery and Assoc., 6100 Dutchmans Lane, 6th Floor, Louisville, Ky. 40205; 800/558-8767 or 502/473-1992 in Kentucky or outside the U.S.

AUG. 1

University of Georgia, Athens Turfgrass Field Day, Griffin Experiment Station, Griffin, Ga. Contact: Georgia Turfgrass Association, 4565-A S. Berkley Lake Rd., Norcross, Ga. 30071; 404/447-4985.

AUG. 12-15

CONSERV 90, National Conference and Exposition Offering Water Supply Solutions, Phoenix Civic Plaza, Phoenix, Ariz. Contact: National Water Well Association, 6375 Riverside Dr., Dublin, Ohio 43017; 614/761-1711.

AUG. 21

Facilities Management Workshop, College of the Holy Cross, Worcester, Mass., jointly sponsored by the Professional Grounds Management Society and the Sports Turf Manager's Association. Contact: PGMS, 10402 Ridgland Rd., Suite 4, Cockeysville, Md. 21030; 301/667-1833.

AUG. 24-26

Farwest Show and Ornamentals Northwest Seminars, Portland Memorial Coliseum, Portland, Ore. Contact: Farwest Show, c/o OAN, 2780 S.E. Harrison, Suite 102, Milwaukie, Ore. 97222; 503/653-8733.

SEPT. 2-4

International Professional Lawn, Garden and Outdoor Power Equipment Exhibition, Kempton Park, England. Contact: The GMA Show, Interbuild Exhibitions Ltd., 11 Manchester Square, London W1M 5AB; 01/486-1961.

SEPT. 7-9

Managing Urban and Suburban Trees Through Ordinances workshop sponsored by the American Society of Consulting Arborists, Radisson Airport Hotel, Columbus, Ohio. Contact: ASCA, 700 Canterbury Rd., Clearwater, Fla. 34624; 813/446-3356.

SEPT. 14-16

The Second Annual Bonsai & Orchid Expo, Expo Center, Orlando, Fla. Contact: BOE, 26 Pine St., Dover, Del. 19901; 302/736-6781.

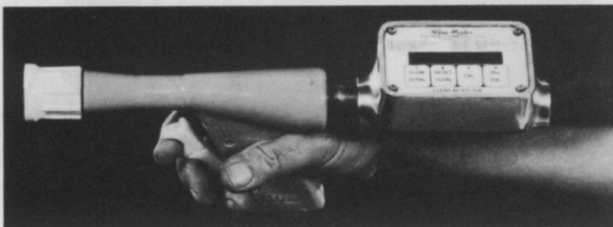
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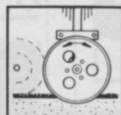
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ference and Field Day, University of California, Riverside. Contact: Avis Mueller, Cooperative Extension, University of California, Riverside, Calif. 92521; 714/787-3433.

SEPT. 18-19

Virginia Tech Turfgrass Research Field Days, Virginia Tech Turfgrass Research Center, Blacksburg, Va. Contact: J.R. Hall III, Department of Crop and Soil Environmental Sciences, 424 Smyth Hall, Blacksburg, Va. 24061-0403; 703/231-9736.

SEPT. 27-30

The Central Horticultural Association of Bonn's First International Trade Fair for Horticulture, Frankfurt Fairgrounds, W. Germany. Contact: Messe Frankfurt GmbH, Dept. 1202, P.O. Box 970126, D-6000 Frankfurt 1; 069/7575-6297.

SEPT. 30-OCT. 3

Florida Turfgrass Association Annual Conference and Show, Orange County Convention Center, Orlando, Fla. Contact: FTA, 302 S. Graham Ave., Orlando, Fla., 32803-6332; 407/898-6721.

OCT. 3-4

The 30th Annual Southern California Turfgrass Expo, Orange County Fair-

grounds, Costa Mesa, Calif. Contact: Chuck Wilson, 714/951-8547.

OCT. 21-24

Interior Plantscape Division of the Associated Landscape Contractors of America Annual Conference and Trade Show, Radisson Hotel, Denver, Colo. Contact: ALCA, 405 N. Washington St., Falls Church, Va. 22046; 703/241-4004.

OCT. 21-24

National Institute on Park and Grounds Management Annual Educational Conference, Reno, Nev. Contact: National Institute, P.O. Box 1936, Appleton, Wis. 54913; 414/733-2301.

OCT. 24-27

The American Society of Consulting Arborists Annual Meeting, Innisbrook Resort, Tarpon Springs, Fla. Contact: ASCA, 700 Canterbury Road, Clearwater, Fla. 34624; 813/446-3356.

OCT. 29-31

Tree Care Industry Exposition, Richmond Convention Centre, Richmond, Va., sponsored by the National Arborist Association and the International Society of Arboriculture. Contact: NAA, The Meeting

Place Mall Route 101, P.O. Box 1094, Amherst, N.H. 03031-9967; 603/673-3311.

OCT. 28-NOV. 1

Irrigation Association Annual Conference and Show, Convention Center, Phoenix, Ariz. Contact: R.C. Sears, 1911 N. Fort Myer Dr., Suite 1009, Arlington, Va. 22209-1630; 703/525-1200.

NOV. 6-7

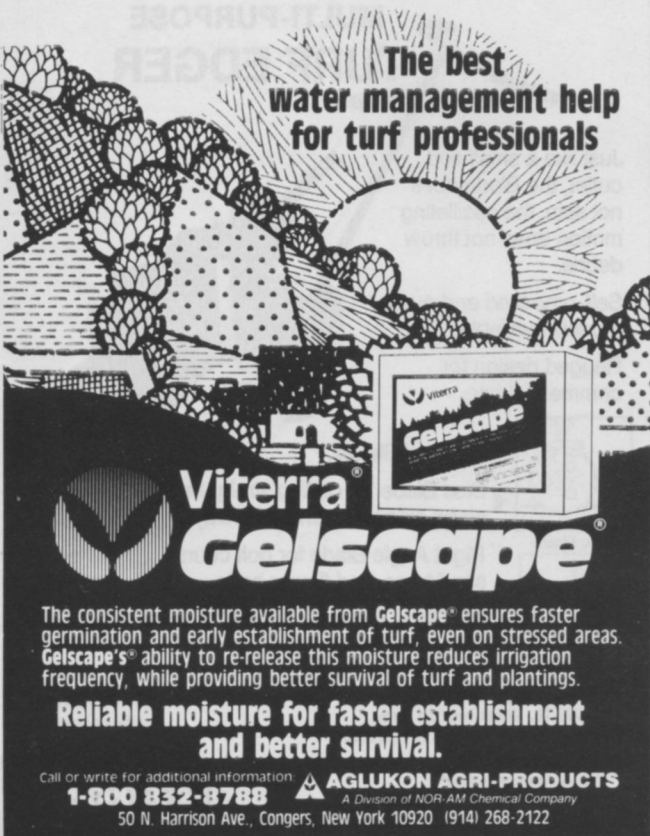
Indiana State Lawn Care Association Conference and Show, Indiana State Fairgrounds, Indianapolis, Ind. Contact: ISLCA, P.O. Box 481, Carmel, Ind. 46032; 317/575-9010.

NOV. 12-15

The Green Industry Expo, Nashville Convention Center, Nashville, Tenn. Contact: ALCA, 405 N. Washington St., Falls Church, Va. 22046, 703/241-4004; PGMS, 10402 Ridgland Rd., Cockeysville, Md. 21030, 301/667-1833; or PLCAA, 1000 Johnson Ferry Rd. NE, Marietta, Ga. 30068-2112, 404/977-5222.

NOV. 13-16

New York State Turfgrass Association's Turf and Grounds Exposition, Rochester, N.Y. Contact: NYSTA, P.O. Box 612 Latham, N.Y. 12110; 800/873-8873.



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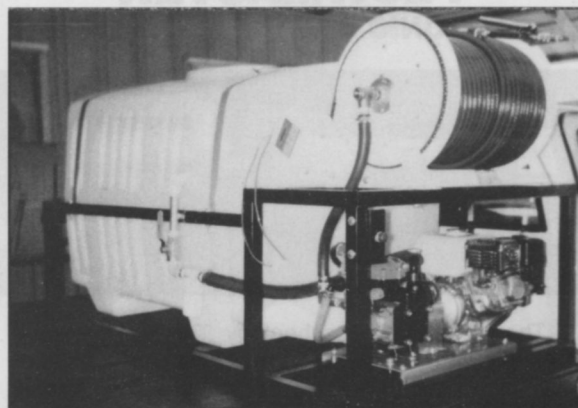
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Warm-Season Insects

(continued from page 43)

thrifty turf. Ground pearl males are rare, and females usually reproduce without mating.

Bright pink females emerge from pearly cysts during the spring. Eggs are deposited within cottony masses in the soil and nymphs hatch during the summer. A pearly wax coating develops around each individual. This impermeable coating and the depth of the ground pearl in the soil makes control efforts with insecticides ineffective.

Effective management, including proper watering, fertilizing and disease control, usually results in improved turf although ground pearls are still present.

Thatch-dwelling pests such as chinch bugs and spittlebugs must be monitored closely in order to avoid visible turf injury. Both pests damage grass by piercing plant tissue, extracting plant sap and probably injecting toxins. Grass turns yellow in spots that soon merge. Grass browns and dies.

Overwintered chinch bug adults become active during late March and early April. Treatment at this time, or May for first generation nymphs, reduces or eliminates summer damage. Adult chinch bugs are most active at the warmer midday hours during cool spring weather. During hot summer weather, chinch bugs are active early or late in the day. There are usually two to five generations annually, with more and overlapping generations in Southerly areas.

Spittlebug nymphs, surrounded by spittle masses, are feeding deep in the turf by May. Heavily infested turf may feel squishy to walk on before yellowing is visible. Two-lined spittlebug adults begin to emerge by June. There are at least two generations a year, probably more in

coastal areas.

The manner in which damage appears should be noted. Most varieties of St. Augustinegrass are preferred by chinch bugs, whereas spittlebugs may damage all kinds of turfgrasses. Chinch bugs damage grass in sunny areas, while spittlebug damage usually begins in the shade before spreading to sunny areas. Chinch bugs are usually more prevalent in dry periods; spittlebugs, during wet seasons.

THATCH REMOVAL. Dethatching is an important component of management where thatch dwellers are prevalent. Removing excess thatch reduces humidity within the turf — a factor essential to spittlebug development. Insecticide penetration is simplified by reduction of excess thatch.

Surface feeding insects such as cutworms, sod webworms and fall armyworms are evident in areas of the Southeast each year. Caterpillars not visible on the surface can be flushed out with soapy water as mentioned earlier. Green pellets of frass (excrement) may be found on the soil surface where larger caterpillars have fed.

Cutworm moths emerge from pupae in the soil during the spring; eggs are laid in the turf. Cutworm caterpillars spend daytime hours in the soil, but move up at night to feed on tender grass plants especially around holes left from aeration. Treatment done during late afternoon is most effective.

There are a variety of sod webworms that feed on turf. Generally, the most common kinds overwinter as larvae in the thatch or turf. They begin feeding about the time spring green up begins.

Moths emerge in April or May and are strongly attracted to light. About two weeks after peak moth emergence, new

generation larvae have begun hatching in the turf. Treatment at this time controls young larvae before damage becomes severe.

Sod webworm damage superficially resembles disease injury. Larvae move in and out of silken tubes within the soil and/or thatch. There are usually two to four generations annually in most areas.

Fall armyworms are cutworm relatives, however, moths generally fly in from tropical areas. Larvae are reported by midsummer in more Southerly areas. There are several generations each season.

Primarily pests of lush, green bermudagrass, these caterpillars feed most during cooler hours — early morning and late afternoon. Hundreds of larvae may be seen at one time in an area.

Caterpillars chew the tender leaf portions of grass plants. The remaining foliage desiccates quickly and turns brown. Well established bermudagrass usually suffers no permanent damage from fall armyworm feeding, but turf remains brown until regrowth appears.

Birds usually control small outbreaks of fall armyworms. Larger populations of young larvae can effectively be controlled before damage becomes extensive.

Pest identification and life cycle information is only as important to the Southern manager as is the quality of the turf. Monitoring and appropriately timed cultural practices and insecticide treatments can result in dollar savings and maintenance of turf quality. Pest recognition is a part of good management. — *Patricia Cobb* ■

The author is an extension entomologist and professor in the Department of Entomology, Auburn University, Ala.



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