AN HBJ PUBLICATION

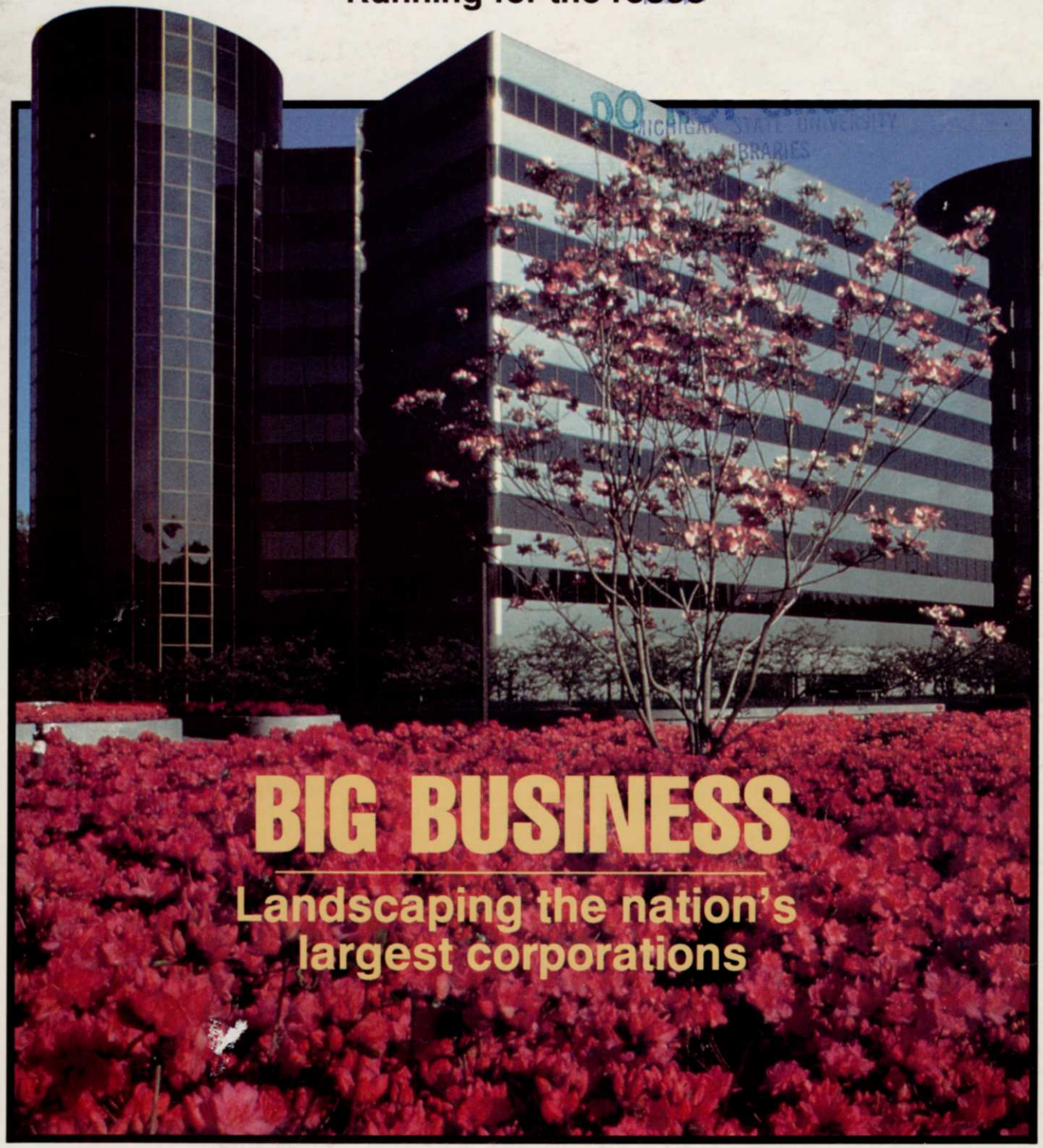
MAY 1986/$2.50

WEEDS TREES & TURF

The Magazine of Landscape and Golf Course Management Since 1962

Insect Control Guide

Running for the roses



BIG BUSINESS

Landscaping the nation's largest corporations

MICHIGAN STATE UNIVERSITY LIBRARIES

New water soluble packaging conquers one more hazard.

DURSBAN* 50W insecticide: even more operator safety. Because it's a wettable powder, DURSBAN 50W insecticide contains no irritating solvents. Now it comes in water soluble pre-measured packets which are even safer for operators to handle since they do not need to come in contact with the powder.

Reduced phytotoxicity, too. DURSBAN 50W controls insects on turf, trees, and ornamentals without causing damage. Even sensitive bentgrass varieties in greens are not harmed by treatment with DURSBAN 50W.

Controls a wide range of pests. DURSBAN 50W is particularly effective against cutworms, armyworms, billbugs, sod webworms and chinchbugs, among others. And it remains effective for significantly longer periods than solvent-based insecticides.

Priced for value. Available in 2-lb. fiber containers as well as the new water soluble packaging, DURSBAN 50W is priced in line with other comparable insecticides. Four 4-oz. water soluble packets are sold in foil-wrapped 1-lb. pouches. For golf course and turf uses, one packet in 100 gallons of water will treat 5,000 sq. ft.

DURSBAN 50W insecticide in water soluble packaging. One less hazard for your course. See your ag chemicals distributor.

DURSBAN*50W

One less hazard

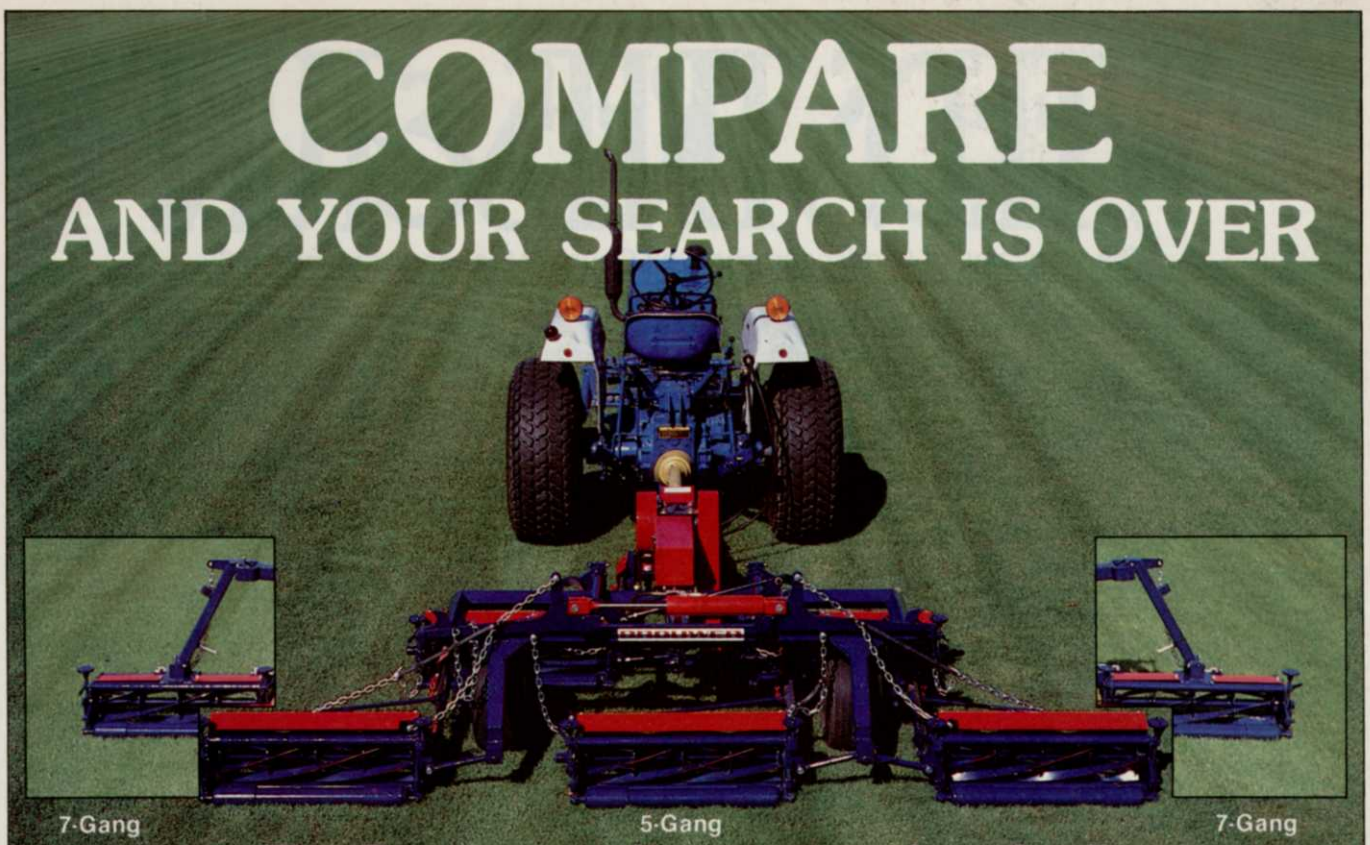
Circle No. 115 on Reader Inquiry Card

DOW*

©Copyright 1986 of The Dow Chemical Company
*Trademark of The Dow Chemical Company

6204

COMPARE
AND YOUR SEARCH IS OVER



The Brouwer reel mower — does it all

- Quality
- Reliability
- Service

EXCELLENT TRANSPORTABILITY

OPTIONS

- Tractor Track Removal Brush
- 4, 5, 6 or 7 Bladed Reels
- Skid Shoes
- Ball Hitch
- Highway Tires
- Backlapper

TRACK REMOVAL BRUSH

OUTSTANDING FEATURES

- Rugged lightweight high-stress steel frame
- Variable reel speeds, independent of travel speed
- P.T.O. driven with proven V-Belt drive system
- Hydraulic or manual lift for easy storage
- Unique pivot design to follow contours
- Highest quality steel reel blades for prolonged life
- Adjustable Jack-wheel for easy one man hook-up and storage
- Terra Tires for maximum flotation

BROUWER
TURF EQUIPMENT LIMITED

7320 Haggerty Rd./Canton, MI. 48187 Telephone (313) 459-3700
Woodbine Avenue/Keswick, Ontario, Canada L4P 3E9 Telex 065-24161 Telephone: (416) 476-4311

84-48

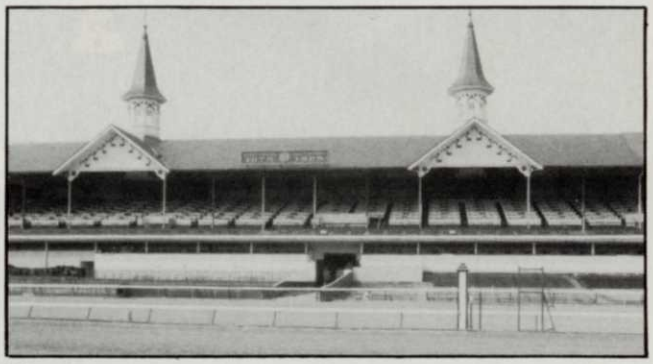
Circle No. 105 on Reader Inquiry Card

MAY 1986, VOLUME 25, NUMBER 5

WEEDS TREES & TURF

The Magazine of Landscape and Golf Course Management Since 1962

16



66

DEPARTMENTS

Mobil Oil Marketing and Refining Headquarters, Fairfax, Va.

WEEDS TREES & TURF (ISSN 0043-1753) is published monthly by Harcourt Brace Jovanovich Publications. Corporate and Editorial offices: 7500 Old Oak Boulevard, Cleveland, Ohio 44130. Advertising Offices: 7500 Old Oak Boulevard, Cleveland, Ohio 44130, 111 East Wacker Drive, Chicago, Illinois 60601 and 455 East Paces, Ferry Road, Suite 324, Atlanta, Georgia 30305. Accounting, Advertising Production and Circulation offices: 1 East First Street, Duluth, Minnesota 55802. Subscription rates: $25 per year in the United States: $35 per year in Canada. All other countries: $70 per year. Single copies (pre-paid only): $2.50 in the U.S.; $4.50 in Canada; elsewhere $8.00; add $3.00 for shipping and handling per order. Second class postage paid at Duluth, Minnesota 55806 and additional mailing offices. Copyright© 1986 by Harcourt Brace Jovanovich, Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher.

POSTMASTER: Send address changes to WEEDS TREES & TURF, P.O. Box 6198, Duluth, Minnesota 55806-9898. HBJ A HARCOURT BRACE JOVANOVICH PUBLICATION

Rubigan is the best value for dollar spot, and it effectively controls fusarium blight, snow mold, stripe smut and is active on large brown patch when used with a Daconil 2787® tank mix.

Four years of field use show excellent control of dollar spot—even resistant dollar spot, at only 10-14 cents per 1,000 square feet per day of control.

For gradual reduction of *Poa annua* use cumulative rates of 2-3 oz./1,000 square feet and proper management practices. With Rubigan, you can maintain disease-free *Poa* or gradually reduce it.

For more information, call your distributor or write:

Elanco Products Company
A Division of Eli Lilly and Company
Dept. E-455, Indianapolis, IN 46285, U.S.A.

Rubigan®—(fenarimol, Elanco Products Company)
Daconil 2787®—(chlorothalonil, SDS Biotech Corporation)

Circle No. 117 on Reader Inquiry Card

Rubigan® controls dollar spot on greens, tees and fairways.

And you get more for your dollar.

NEWS/TRENDS by the Editorial Staff


Jerry Roche


Ken Kuhajda


Heide Aungst

Costlier homes, landscapes on upswing

■ Demand for new luxury homes in the United States has soared, according to recent real estate reports. One report said that eight out of 10 builders will be catering to upscale buyers by 1990, compared to last year's 66 percent.

Part of the reason for this new demand is that baby-boomers are no longer first-time buyers. They are now becoming what are termed "move-up buyers."

Because more emphasis is being placed on luxury homes, the trend is expected to carry over into the landscaping market. It would be natural for homeowners to also place more emphasis on luxury landscapes, too.

And that could be a big boon to the landscape contracting industry.

More bluegrass billbugs?

■ Dr. Paul Heller of Penn State University thinks that the bluegrass billbug is pushing white grubs and chinchbugs as the No.1 insect problem in turf.

"And it's not just on bluegrass," he claims. There is another problem, he adds: "It is mis-diagnosed 50 to 75 percent of the time as disease or drought resistance."

According to Dr. Heller, the St. Louis area and parts of the east coast had severe outbreaks of bluegrass billbugs last year that peaked in late May and early June.

"We are trying to get you folks out there to do a little sampling," Dr. Heller told Maryland Turfgrass Conference attendees. "You have to get out there and monitor them. Insects won't wait for you, and they are out there doing the damage."

Seed report was misleading

■ An article in the March issue of WT&T was misleading. It reported a pessimistic outlook for 1986 turfseed availability. In truth, availability for the 1986 crop is undetermined.

"References were to the 1985 crop, which supplies seed for spring and summer usage in 1986," points out Art Wick of Lesco, Inc. "The 1986 crop will be harvested in July and August of this year. All species look very promising at this time. Seed from the 1986 crop should be available beginning in late August."

Mike Robinson, president of Seed Research of Oregon, Inc., agrees. "The supply for fall 1986 won't be harvested until July," he says. "If we have a good spring, weather-wise, we will have a better crop than last year."

WT&T

STAFF

Editor
Jerry Roche, Cleveland
Managing Editor
Ken Kuhajda, Cleveland
Associate Editor
Heide Aungst, Cleveland
Publisher
Dick Gore, Atlanta
Associate Publisher
Ron Kempner, Atlanta
Senior Vice President
Tom Greney, Chicago
Group Vice President
Robert Earley, Cleveland
Production Manager
Anne MacLean, Duluth
Production Supervisor
Marilyn MacDonald, Duluth
Graphic Design
Denise Johnson, Duluth
Graphic Coordinator
David Komitau, Cleveland
Circulation Supervisor
Judy Bogenholm, Duluth
Directory Coordinator
Sheryl Alvar, Duluth
Reader Service Manager
Gail Kessler, Duluth
Promotion Director
Linda Winick, Cleveland

OFFICES

ATLANTA
455 East Paces
Ferry Road Suite 324
Atlanta, GA 30305
(404) 233-1817

CLEVELAND
7500 Old Oak Boulevard
Cleveland, OH 44130
Editorial: (216) 243-8100

CHICAGO
11 East Wacker Drive
Chicago, IL 60601
(312) 938-2344

SEATTLE
1333 N.W. Norcross
Seattle, WA 98177
(206) 363-2864

DULUTH
120 West Second Street
Duluth, MN 55802
(218) 723-9200

MARKETING REPRESENTATIVES

Dick Gore
Atlanta (404) 233-1817
Ron Kempner
Atlanta (404) 233-1817
Jon Miducki
Cleveland (216) 243-8100
Robert Mierow
Seattle (206) 363-2864

HBJ HARCOURT BRACE JOVANOVICH PUBLICATIONS

Robert L. Edgell, Chairman; Richard Moeller, President; Lars Fladmark, Executive Vice President; Arland Hirman, Treasurer; Thomas Greney, Senior Vice President; Ezra Pincus, Senior Vice President; Joe Bilderbach, Vice President; James Gherna, Vice President; George Glenn, Vice President; Harry Ramaley, Vice President.

A PREVIEW OF OUR COMPETITORS' 1989 MODELS.

You're looking at a new tractor that will still be new three or four years from now. That's about how long we estimate it will take our competitors to play catch-up.

In the meantime, our L2850 is loaded with forward thinking.

Under that streamlined hood is a 4-cylinder high torque-rise diesel engine. Most competitive tractors are 3-cylinder. It also has direct fuel injection, a feature no competitive model has.

Other advanced engineering ideas add to maneuverability. A mechanical shuttle transmission is one. Another is 4-wheel drive with our bevel gear system.

Of course, our Kubota L2850 works best with Kubota implements. They're perfectly matched to each other. For example, you can attach the mid-mount mower without removing the subframe or front loader. It's a neat trick.

With all of these new L Series models (rated at 27, 23.5 and 21 PTO hp), Kubota hasn't just left the competition behind. We've left them behind the times.

KUBOTA
Nothing like it on earth.

© 1985 Kubota Tractor Corporation

Circle No. 126 on Reader Inquiry Card

INSURANCE

Premiums to rise through 1988, says exec

There's not much relief in sight for insurance policy holders in the green industry and the general population.

As long as interest rates stay low, insurance rates will continue to rise, says James Leatzow, president of Leatzow Agency/Financial Guardian, an Oak Brook, Ill., insurance agency.

He predicts a 10 to 25 percent increase over the next two years. "I don't think (interest rates) are going to change until after the election," he told his audience at the recent Landscape Expo in Valley Forge, Pa.

Policy holders can expect their agents to pitch a theme of higher deductibles, he says, and one would be wise to accept the higher figure.

He notes several factors that have contributed to sky-rocketing rates: the insurance companies themselves who have been way behind in the development of computerized records ("they literally don't know how much to charge," he says); the public's propensity to sue; lawyers (in the U.S., there's one lawyer for every 600 people, he says, and that number will increase to one for every 250 by 1990); and juries (juries tend to draw people who are satisfied with the $25 per day you get to sit there, he says).

Juries, he says, have fallen into the "deep-pocket theory" where the injured party is entitled to recovery no matter who is at fault.

To avoid the lawsuit he suggest several points:

1) find an insurance broker who "speaks your language, communicates, and specializes;" 2) examine your own procedures and management (know exactly what is insured and what isn't); 3) document everything you do (with photos, for example); and 4) manage your loss control (losses do occur so try to minimize them).

When shopping for insurance, one should learn about the industry; avoid choosing the low-baller; and call on the services of a third party (a consultant).

James Leatzow addresses the Landscape Expo in Valley Forge, Pa.

Exhibitors and attendees exchange pleasantries during the first Landscape Expo held in Valley Forga, Pa. Attendees roamed over 50,000 square feet of exhibit space during the three days.

Guests of HBJ Conventions and Expositions line up for food and drink during a special party held during the first Landscape Expo in Valley Forge, Pa. recently.

CONFERENCES

Landscape Expo hailed a success by its founder

The first Landscape Exposition, held March 5-7 in Valley Forge, Pa., is being hailed by its founder, HBJ Conventions and Expositions, as a success.

"We had more than 2,600 attendees," says Expo manager Dawn Pratt. "It was a good cross-section of quality buyers across the entire landscape industry" perusing the exhibits of chemical, equipment, seed and service companies.

"We've had a tremendous response. A lot of people were saying it was the best first-time show they'd ever exhibited at," says Pratt.

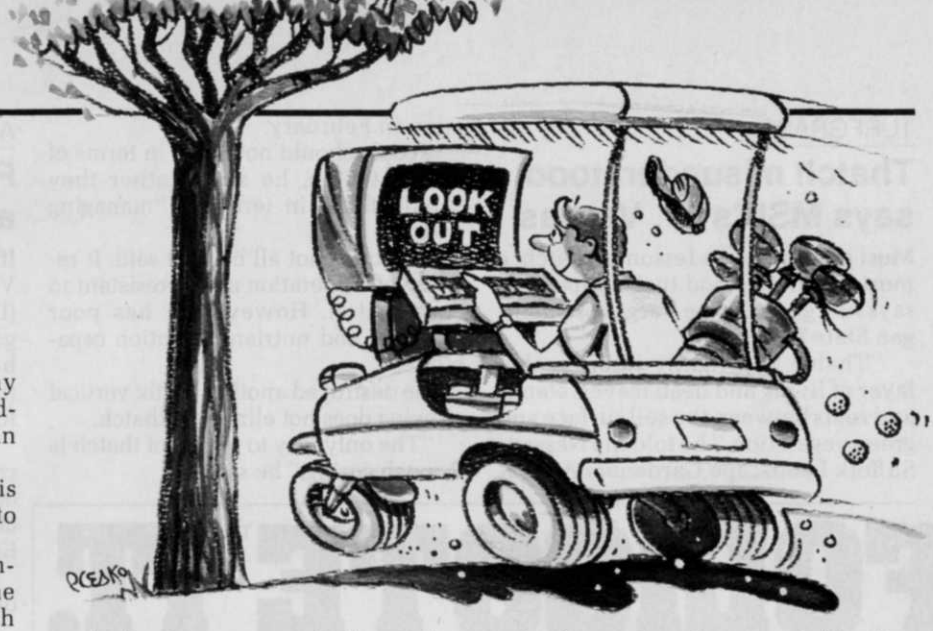
The few complaints were generated by the fact that the convention was held on two levels, and main-level exhibitors outdrew others.

Next year's Landscape Expo will be held at the O'Hare Exposition Center, Rosemont, Ill., March 3-5.

"It will be 1½ times this year's size in square footage," Pratt relates. "And we're going to expand our conference (educational) program."

TECHNOLOGY

Ex-fireman hopes to ignite the golf car industry



Fireman-turned-entrepreneur Tony Bonito mated your basic putt-around-the-course golf car with a Pac-Man machine.

And gave birth to what he says "is the most exciting thing to happen to golf cars in 20 years."

The product, the Pro Cart Computer, gives a graphic display of the layout (on a six-inch screen) of each hole of a given course. Sandtraps, trees, lakes, and greens are shown along with the hole's distance from each of its three tees. Flashing lights indicate the hole's 150-yard markers.

But that's not all, says Bonito, who just one year ago was fighting fires in south Florida and now heads a 40,000 sq. ft. computer manufacturing facility in Hollywood, Fla.

The Pro Cart Computer, with the addition of game cartridges, can be used to figure the scores of nassaus, scrambles, and other unique scoring methods. A stop at a printing station spits out 9- and 18-hole totals.

Bonito claims his invention can help speed play with its 4½-hour "diminishing clock." And, if that isn't enough, the unit monitors the cart's batteries.

Says Bonito: "When a cart dies on the course, about a third of its power is forever lost. Since there are six batteries in a cart and each one costs about $40, it is an extremely huge expense when a cart stalls out on the course."

Bonito claims the idea of computerized score-keeping came to him five years ago after losing his pencil on a course. When he couldn't generate enough interest with golf car manufacturers, he decided to market the idea and resulting product himself.

"Most people don't realize the size of the golf car rental business," he points out. "Last year, it was $1.7 billion in rentals. There are 750,000 cars in use."

Bonito's first units are expected to start turning up on golf courses this summer.

SURVEY

It's no surprise: money is No. 1 motivator

Money is the best way to keep employees happy in their jobs. A WEEDS TREES & TURF survey shows that wages, bonus pay, and paid vacation are the most popular ways to motivate workers.

The survey went to 300 grounds workers at golf courses, parks and sports complexes, schools, industrial areas and cemeteries. About 23 percent of those surveyed responded.

Of those, 17 percent say they have an established program for motivating employees, although only five percent have such a program for seasonal employees.

Wages, bonuses, and other monetary incentives are used by 33 percent of those responding. One employer said, "Recognition is vital, but it must be accompanied with cash or a substantial prize to avoid a hollow, cheap effect."

Bonus programs vary greatly. One employer gives his workers a bonus at the end of the year if the department comes in under budget expenses. Another offers each crew a certain percentage of the profits if there are no complaints about the job.

WHAT BENEFITS DO YOU OFFER?

Overtime pay	79%
Paid vacation	77%
Health insurance	68%
Life insurance	55%
Merit raises	53%
Training programs	47%
Bonuses	45%
Uniforms	44%
Company-paid job-related education	43%
Personal use of truck or equipment	40%
Time off in lieu of overtime pay	24%
Non-monetary awards	19%

Good benefit packages are also important. One lawn care company gives Saturday off with a set amount of production dollars. Most companies (77 percent) offer overtime pay and paid vacations.

Environment was rated second as a motivating factor. "A company must be a winner, a grower, to create more opportunities for employees, instill pride. A person's work has got to amount to more than pay," said one respondent. Another emphasized the importance of working with employees. "Sometimes it helps the Indians' attitude if the chiefs get down and dig a little dirt too."

Praise and good communication are also important in the employer/employee relationship. "If good work goes unnoticed, employees tend to feel it is not appreciated or necessary and slack off on the job next time," says one employer.

"Let the employee know where he stands and what opportunities are available for advancement...if he has no goals to strive for, he will be a ship without a rudder," says another.

Quality equipment also keeps workers interested in their job. "If equipment is broken down, the employee is on the defensive, whether a problem is his fault or not. In either case, he is unable to accomplish anything."

TURFGRASS

Thatch misunderstood, says MSU's Dr. Vargas

Most people need a lesson in thatch, a most misunderstood turf component, says turf guru Dr. Joe Vargas of Michigan State University.

"Thatch is a tightly intermingled layer of living and dead leaves, stems, and roots between the soil surface and green vegetation," he told the Nassau-Suffolk Landscape Gardeners Association in February.

People should not think in terms of killing thatch, he said. Rather they should think in terms of "managing thatch."

Thatch is not all bad, he said. It reacts well to aeration and is resistant to compaction. However, it has poor moisture and nutrient retention capabilities.

He destroyed another myth: vertical mowing does not eliminate thatch.

"The only way to get rid of thatch is through coring," he said.

FOLICOTE™ IT.

Lock moisture in the leaves and increase plant survival — use FOLICOTE™ transpiration minimizer. If you're transplanting or transporting ornamental plants or sod...or want to protect established plants from weather extremes, FOLICOTE™ reduces moisture loss by partially blocking stomates, without limiting actual photosynthesis.

FOLICOTE™ is a wax emulsion that mixes easily with water and stays mixed. When used as directed, FOLICOTE™ has been proven to be effective and non-phytotoxic on a wide range of plants.

And FOLICOTE™ costs as much as 50% less to use than any other anti-desiccant or anti-transpirant on the market.

Your plants use available water more efficiently and you profit from increased plant survival when you use FOLICOTE™. If your local distributor doesn't carry FOLICOTE™ yet, or you'd like our free brochure, **call 1-800-257-7797, in NJ (609) 665-1130.**

FOLICOTE™
transpiration minimizer

Aquatrols Corporation of America, Inc.
1432 Union Avenue, Pennsauken, NJ 08110
The Water Management People

Circle No. 103 on Reader Inquiry Card

ASSOCIATIONS

PGRs spotlighted at IVMA meeting

If you attended the recent Industrial Vegetation Management Association (IVMA) meeting in Kansas City, you got the impression that the members believe plant growth regulators (PGRs) have a major growth potential for the industry.

Members, mainly right-of-way contractors, were briefed on several of the PGRs now on the market including Short-Stop, Limit, Oust, and Embark.

Most said they are now using a PGR or will soon in the future.

In addition, members had the opportunity to peruse the latest in bare ground and aquatic herbicides, and spraying equipment. The insurance liability question was examined.

And finally, IVMA named its officers for 1987: president, Robert Cope, Weedcope, Omaha, Neb.; vice president, Paul Jaechsch, JPD Weed Control, Broomfield, Colo.; and secretary-treasurer Larry Crane, Habco, Kansas City, Mo.

The 1987 meeting is tentatively scheduled for Dallas. For more information, write the IVMA, 1015 N. 122nd St., Omaha, NE 68154.

RESEARCH

Bouncing drops key to pesticide study

How many times will a spray droplet bounce before it sticks to a leaf?

"Up to six times," says USDA engineer Donald L. Reichard, who uses high-speed motion pictures to find the answer.

And what will make those droplets stick?

The answer could lead to more economical methods of making pesticides stick to leaves.

"Surfactants appear to be the most effective way of reducing rebound," Reichard tells WEEDS TREES & TURF.

Reichard and colleagues, using experimental equipment they developed, produce high-speed motion pictures that show large portions of droplets rebound as many as six times on the leaf surface.

"One of our major goals in protecting fruit trees from insects is to apply the least amount of pesticide needed to do the job to all sectors of a tree and nowhere else," says Ross D. Brazee, agricultural research engineer. "If we can do this then we can reduce the cost of pest control agents as well as the risk to the environment."

MULTI—PRO 44

The first heavy-duty work vehicle that's light on your turf.

The Hahn Multi-Pro 44 work vehicle sprays, fertilizes, top dresses, seeds, aerates, dumps and hauls...yet is gentle enough on turf to be used on delicate greens.

Fingertip controls and adjustable flow rates give you greater spraying control. A unique low center of gravity helps prevent tipping, even on soggy slopes. And the Multi-Pro's heavy-duty design gives years of low-maintenance, easy operation. Interchangeable dump bed, Aerifier® and spreader attachments are also available. For a free demonstration call:

1-800-457-HAHN

Save the tough jobs for Hahn

Hahn

Hahn Turf Products Division 1625 N. Garvin Street Evansville, IN 47711-4596 In Indiana call: (812) 428-2025 Telex: 27-8429

Circle No. 216 on Reader Inquiry Card

SHORT CUTS

THATCH ANSWERS..... Why do your turfgrass areas have thatch? There is still much research to be done, says Ohio State University's Dr. John Street, but there are also some misconceptions to correct. "Some studies indicate that, in cool-season grasses, there's no relationship between the use of nitrogen and thatch accumulation," he says. Dr. Street also notes this: it's been proven that the higher you mow the grass, the more thatch can accumulate, but there's no consistent relationship between thatch occurrence and pre-emergent and broadleaf herbicide use.

WINTER OF DISCONTENT..... That's what it's been at Dartmouth College. Last month a faculty committee report contended that academic quality was threatened by poor leadership. The report cited college president David T. McLaughlin for a decision-making style that had led to a recurring sense of crisis, according to the New York *Times*. McLaughlin used to head The Toro Co. When he abruptly left in the early 1980s, people were probably saying the same thing. Toro grows quite well now under the leadership of Kendrick Melrose.

AUTHOR, AUTHOR..... Paul Domholt of the Minneapolis Park and Recreation Board recently became a well-known writer. He co-authored "How to Prune Trees the Right Way" in the February edition of *The Family Handyman* magazine. Domholt, who also edits the board's "Knotty News" newsletter, collaborated with Mark Schmidlin on the magazine article.

CONTROLLED CONTROL..... Ciba-Geigy Corp. has come up with a novel idea: pre-measured fungicide. Lawn managers need only loosen one cap, squeeze, and the right amount of Subdue fungicide is pre-measured, in a separate compartment right in the quart bottle. Then you just pour and apply. It's a concept more pesticide manufacturers would do well to emulate, since it also decreases the possibility of a spill.

'PROGRAM' NOTES..... George W. Park Seed Co. is entering the fast-growing market in computer programming for the green industry. It has added landscape, nursery and financial manager programs to its line of GreenHaus software. The landscape manager program consists of estimating, job costing, inventory, purchase order tracking, and accounts receivable. Landscape managers can create hypothetical estimates and often establish more competitive positions in bidding for jobs. For more information, contact Dave Phillips or Greg Gabrels at Park, Cokesbury Rd., Greenwood, SC, 29647-0001; phone (800) 845-3366.

REFERENCE POINTS..... Two special issues of the *Lakeshore News* are being offered as references for green industry professionals. One covers turfgrass and wildflower seed, the other pre-emergence herbicides. To obtain copies, write Grass Seed Issue or Pre-Emergence Issue, Lesco, Inc., PO Box 16915, Rocky River, OH, 44116. Include $1 to cover the cost of postage and handling.

'HOUNDING' THE SOIL..... One of the most popular products in the green industry, judging by the response of WEEDS TREES & TURF readers, is the Rock Hound Landscape Rake, an attachment for a Bobcat loader that picks rocks and debris from soil. Three-hundred sixty teeth are positioned so that stones as small as ¾-inch and as large as eight inches are picked up. Melroe Co. has purchased the rights to manufacture the Rock Hound and to sell the Rock Hound to its own dealers.

the professional's partner™

The Andersons

EAST

ALLEGHENY LAWN PRODUCTS
Wexford, PA (412) 935-2290

FARM & GOLF COURSE SUPPLY CO., INC.
Philadelphia, PA • (215) 483-5000

FISHER & SON COMPANY, INC.
Malvern, PA • (215) 644-3300

CHARLES C. HART SEED CO.
Wethersfield, CT • (203) 529-2537

HISTAND SUPPLY
Wycombe, PA • (215) 598-3102

LOFT'S/MARYLAND, INC.
Beltsville, MD • (301) 937-9292

NORTHAMPTON COUNTY SEED CO.
Bath, PA • (215) 837-6311

ROCKLAND CHEMICAL CO., INC.
W. Caldwell, NJ • (201) 575-1322

TURF SPECIALTY, INC.
Hooksett, NH • (603) 485-7866

WILSON FEED AND SEED
Richmond, VA • (804) 232-6791

MID-WEST

BUNTON SEED COMPANY
Louisville, KY • (502) 583-9040

CORY ORCHARD SUPPLY
Indianapolis, IN • (317) 634-7963
1-800-ORCHARD (Indiana only)
1-800-634-7963 (OH, KY, MI, IL)

LETHERMANS, INC.
Canton, OH • (216) 452-8866
1-800-362-0487 (inside Ohio)
1-800-542-7333 (outside Ohio)*

C.O. LOWE SALES
Columbus, OH • (614) 771-0486

PROFESSIONAL TURF SPECIALTIES
Champaign, IL • (217) 352-0591

TENNESSEE OUTDOOR POWER, INC.
LaVergne, TN • (615) 793-6052
1-800-854-4851

THORNTON-WILSON, INC.
Maineville, OH • (513) 683-2141

TOLEDO TURF EQUIPMENT
Toledo, OH • (419) 473-2503

TURF AND TREE SUPPLIES
Rockton, IL • (815) 624-7578

TURF PRODUCTS LTD
W. Chicago, IL • (312) 668-5537

TURF SPECIALTIES CORP.
Fort Wayne, IN • (219) 484-6338
1-800-552-1989 (Indiana only)

TURFGRASS, INC.
South Lyon, MI • (313) 437-1427
1-800-521-8873 (MI only)

WEST

BIG BEAR EQUIPMENT, INC.
Omaha, NE • (402) 331-0200

BIG BEAR TURF EQUIPMENT CO.
Eldridge, IA • (319) 285-4440

DAKOTA TURF SUPPLY, INC.
Sioux Falls, SD • (605) 336-1873

R.L. GOULD
St. Paul, MN • (612) 484-8411

OUTDOOR EQUIPMENT CO.
Maryland Heights, MO • (314) 569-3232

ROBISON'S LAWN AND GOLF, INC.
Wichita, KS • (316) 942-2224

ROBISON'S LAWN AND GOLF, INC.
Grandview, MO • (816) 765-3333

TURF MANAGEMENT SUPPLY
Sun Prairie, WI • (608) 837-5598

WISCONSIN TURF EQUIPMENT CORP.
Janesville, WI • (608) 752-8766

WISCONSIN TURF EQUIPMENT CORP.
New Berlin, WI • (414) 544-6421

*Outside Ohio only applies to these states: Pennsylvania, West Virginia, New York, Kentucky, Indiana, Michigan

COMPATABILITY.

Introducing Lawn Pride™ Chelated Iron. The Clear-Cut Choice When Compatibility Counts.

New Lawn Pride from The Andersons is the 6% liquid chelated iron that's completely compatible with N-P-K formulas, urea formaldehyde, high pH water and virtually all herbicides and pesticides. That's compatibility ability!

If that's not good news enough, here's more. Lawn Pride is totally non-staining and can safely be used around sidewalks and drives—equipment and houses. It's also non-settling in your tank—another problem solved.

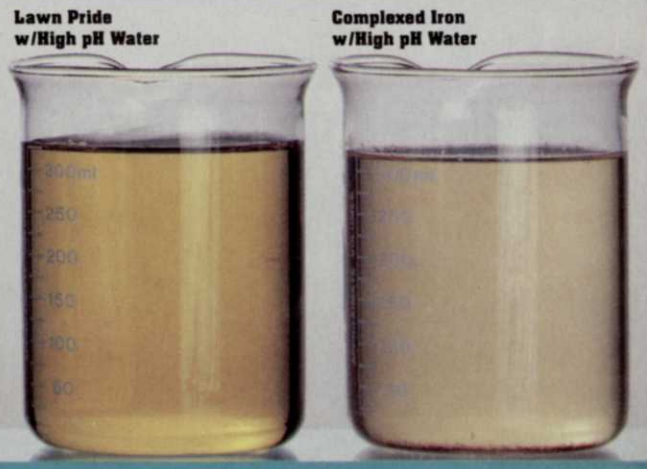
It can be applied anytime of the day with long-lasting results you can see within 24-48 hours. And, if storage is a concern, Lawn Pride stays stable for a minimum of a year.

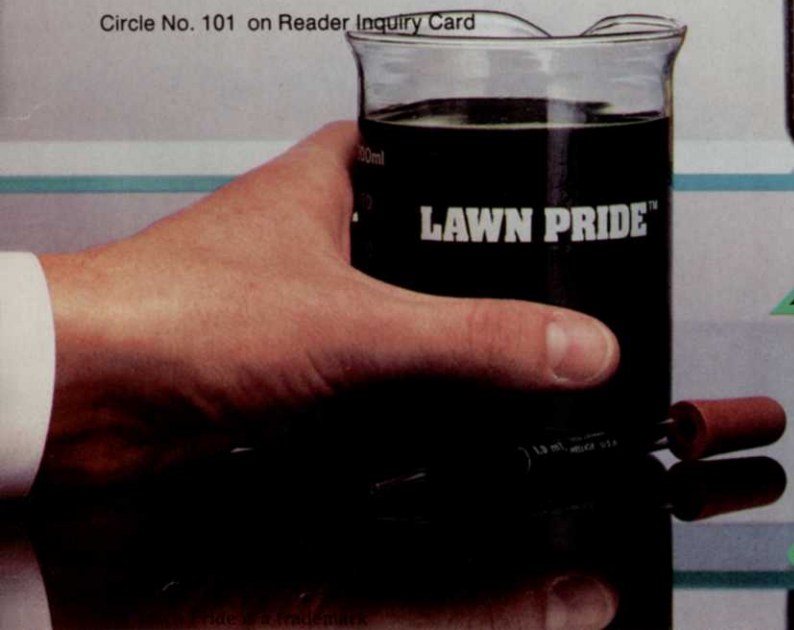
The Andersons' Lawn Pride even saves you money. In comparison with complexed iron products, substantially less Lawn Pride is used in your mix. And that can add up to big savings.

Lawn Pride's budget compatible, too. Lawn Pride from The Andersons is the chelated iron that costs no more than complexed. That means you're getting premium performance without paying a premium price.

Lawn Pride is available now at your close-by Andersons Distributor listed on the adjoining page. Or, if you're not sold yet and want to know more, call The Andersons Product Information Center toll-free. **Call 1-800-225-ANDY.**

Circle No. 101 on Reader Inquiry Card





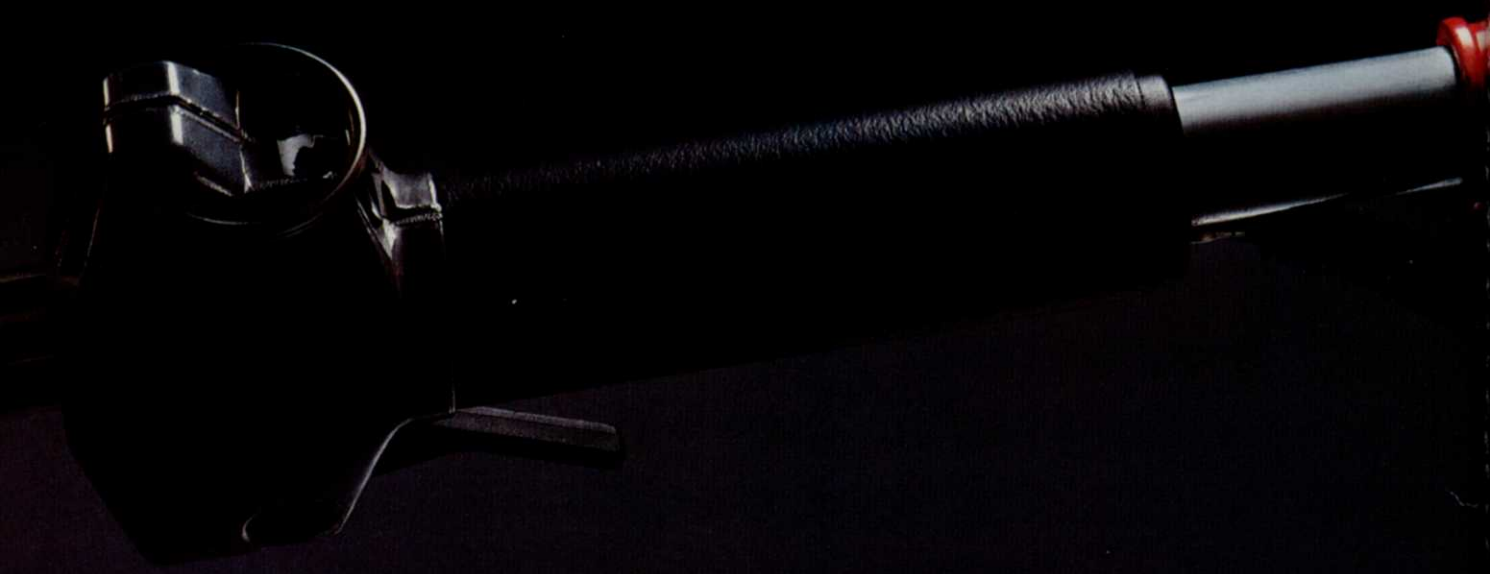
The Andersons LIQUALINE

new

the professional's partner

Lawn Pride is a trademark

THE ADV
OF A BROKE



IF YOUR TORO TRIMMER BREAKS DURING THE FIRST YEAR, WE'LL FIX IT OR GIVE YOU A LOANER FREE.

Introducing the Broken Promise. A bold guarantee that puts an end to downtime by keeping you working even when your gas trimmer isn't. Simply stated, the Broken Promise guarantees if your Toro straight-shaft gas trimmer fails due to equipment failure within the first year, your Toro dealer will fix it right away or give you a loaner at no charge.

We believe our straight-shaft gas trimmers are the finest on the market. In fact, their performance and value equal those of any Toro product. The Broken Promise applies to the

ANTAGES
N PROMISE.

24cc TC3000 and TC4000, and the 33cc TC5000. All three feature Toro's famous straight-line power, plus the versatility of optional blade accessories.

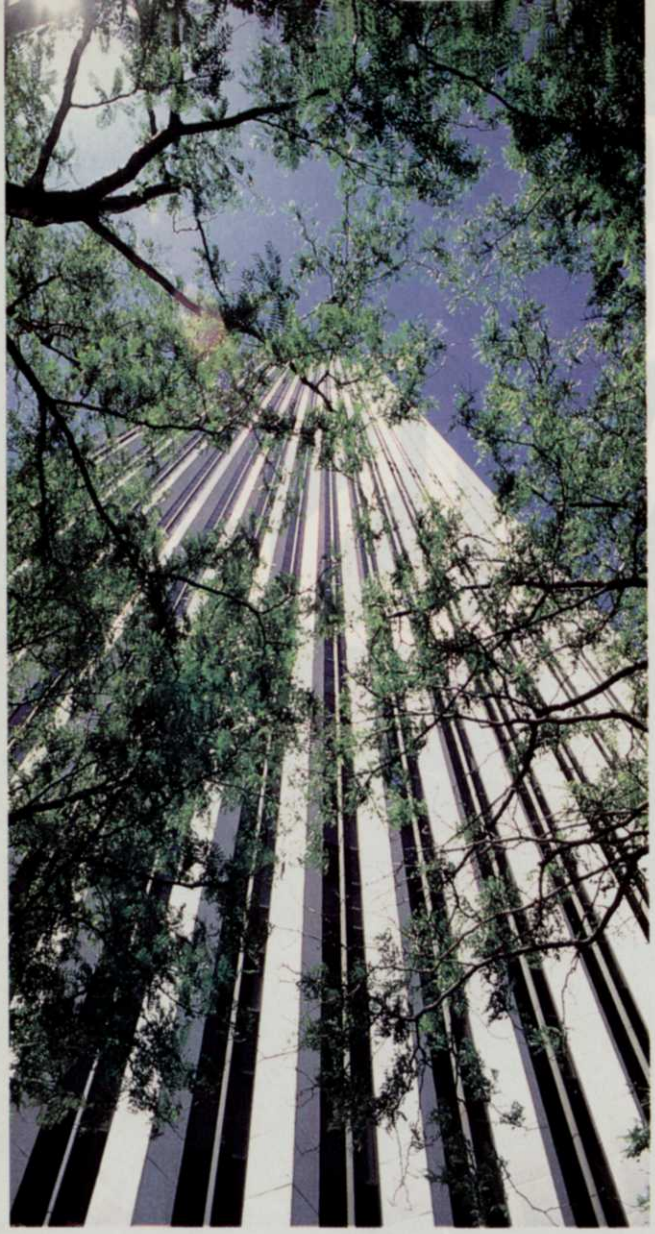
What's more, we want you to take advantage of this time-saving guarantee as soon as possible. Stop in and see your participating Toro Dealer for details about the "Broken Promise" No Downtime Guarantee.

After all, there are many gas trimmer dealers who promise customer satisfaction. Now only your Toro Dealer guarantees it. Promise.

TORO

HAVEN'T YOU DONE WITHOUT A TORO LONG ENOUGH?

Circle No. 151 on Reader Inquiry Card



DRESSED UP

Landscaping is big business at the nation's big businesses. An attractive landscape conveys a positive image.

by Heide Aungst, associate editor

Smart corporate executives keep up their personal image by using dress-for-success techniques. Today, higher-echelon business people are realizing the importance of dressing up their corporate headquarters with landscaping, as well.

Most of the top 10 Fortune 500 companies take pride in their landscapes, whether their headquarters are located in a concrete-entombed city or on sprawling country acreage. Some employ their own staffs, others contract the work out. Either way, each crew has its own tricks to satisfy the company for which it works.

Perhaps the most difficult landscape jobs are New York City-based companies—No. 1 Exxon, No. 3 Mobil, and No. 8 American Telephone & Telegraph.

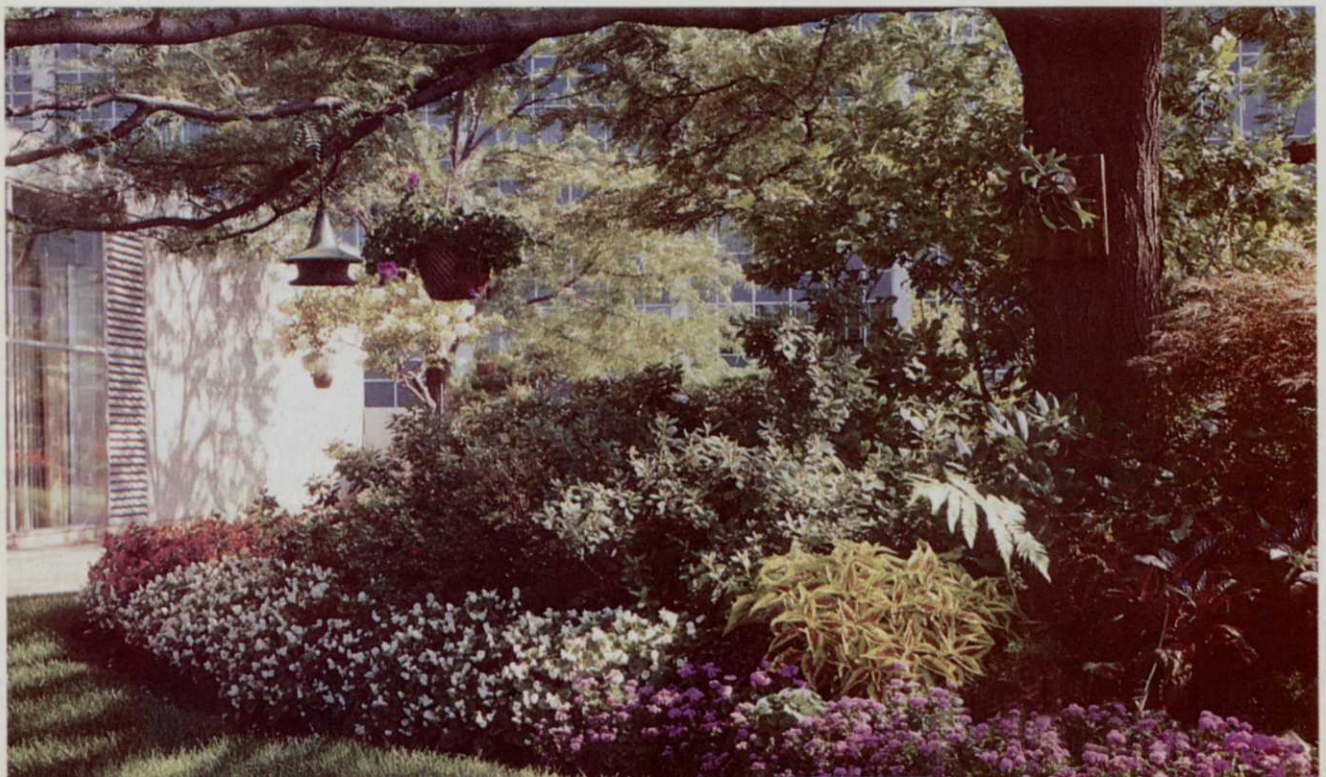
Turf-less Exxon

Rockefeller Center's maintenance staff of seven takes care of Exxon's landscape, though bids are taken on some major projects.

Editor's note: IBM (No. 6) refused to talk with WT&T about its landscaping. A company spokesman says IBM won't endorse one contractor. Settgast's company installed the landscaping at IBM's headquarters in Armonk, N.Y., and has nothing nice to say about how IBM treats its contractors. Similarly, Laflamme's dealings with IBM have been negative.

Amoco, Chicago—no turf, but plenty of ground cover.

Ford Motor, Dearborn, Mich.—when the budget is cut, so is turf care.



THE GENTLE GIANTS

Here are E-Z-GO's hard workers in three-or four-wheel, gas or electric models. With durable, diamond-plated steel Polane-coated panels and load beds, including options such as sprayers, aerators, spreaders, top dressers, and more. Each one tough but easy on turf.

The XT-300

This is a reliable three-wheel electric answer for a wide variety of jobs where maneuverability is critical. It provides a payload capability of up to 1000 pounds in its roomy 5.7-cubic foot, diamond-plated load bed.

The GXT-7

Here's the heavy-duty workhorse in the line. Powered by an 18 H.P. engine for payloads of up to 1500 pounds. For golf course or public grounds, its large load bed has sides and tailgate. Options include a hydraulic dump, PTO, and range changer. The GXT-7 adapts to many accessories: sprayers, spreaders, top dressers, and aerators to handle any job.

The GXT-800

Reliable, economical, this mid-size hauler more than pulls its own weight. It has a two-cycle, 244cc engine with rack and pinion steering, heavy-duty springs, and hydraulic shocks, plus a whopping 1000-pound load capacity. Options and accessories such as cabs, bed covers and loading ramps make it an ideal all-around utility vehicle.

The PC4GX

E-Z-GO's gas-powered, 4-passenger personnel carrier is your best bet for moving staff and clients around resorts, hotels and worksites quickly, efficiently, and economically. Headlights, taillights, brake lights, horn, oil-injected engine are only a few of the standards.

The PC4X

Where quiet is key, our efficient electric-powered personnel carrier is the answer, complete with an onboard charger, retractable AC cord and stainless steel battery racks.

For your resort, campus, office park or other maintenance needs, go durable, dependable E-Z-GO. The most advanced, most versatile line of utility vehicles in the world.

The XT-500

All brains and brawn. 1000-pound capacity, mid-size, powered by a 36-volt high efficiency electric motor. Perfect for hospitals and campuses, wherever quiet efficiency is as important as durability.

The GXT-300

This tough gas-powered three-wheel vehicle is perfect for light to medium-sized loads. A two-cycle, oil injected, 244cc engine keeps it running efficiently. It has a 1000-pound capacity, and is engineered especially for easy maneuverability.

E-Z-GO TEXTRON

If you'd like more information on the complete line of E-Z-GO Turf Vehicles, fill out this coupon and mail to: Turf Products Mgr, E-Z-GO, P.O. Box 388, Marvin Griffin Road, Augusta, Georgia 30913-2699.

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone _____

17

Circle No. 120 on Reader Inquiry Card

Circle No. 118 on Reader Inquiry Card ⟶

The entire Center complex consists of 19 buildings on 22 acres, including two roof gardens and the famous ice skating rink. The Exxon building, finished in 1971, is 54 stories, 750 feet tall.

Concerts and ethnic celebrations are held regularly in Exxon's park from April through September.

Turf doesn't grow in rocky Manhattan, so the park consists of paving and shrubs—mostly taxus, hollies, and rhododendrons—which don't live long either.

"We never plant a plant to grow," says Rockefeller Center's manager of gardens David Murbach.

Instead, Murbach's crew will change the flower beds every two weeks. That's a chore in itself. "I miss the long-term caring," Murbach says. "But it's a very exciting environment for horticulture."

Just replacing a shrub takes more teamwork than the Yankees executing a triple play. It often takes 45 minutes to get from one building to the next.

If the shrub on a roof garden is being replaced on a Saturday, security has to be notified first. Memos are sent out to notify everyone else. Furniture movers, elevator operators, and carpet cleaners are all in on the master plan.

Street trees, mostly honey locust, suffer injuries not mentioned in most tree manuals, like car door damage, and damage from hot dog vendors dumping steaming water. So Murbach's crew keeps the trees well fertilized.

Twenty trees are irrigated, but with four levels of plantings most of the Center is watered manually to avoid leakage.

Last summer, when the city banned watering, Murbach devised a scheme to water the trees. He added tanks to a special Cushman to recycle water condensation from the air conditioning system. The water was then held in a reservoir under the building and pumped to the surface for waterings.

No landscaping?

Not much can be said about the landscaping at Manhattan-based Mobil and AT&T. There isn't any.

But both companies showcase the landscapes at division headquarters.

Mobil's Marketing and Refining headquarters (cover photo) in Fairfax, Va., and AT&T Communication headquarters in Basking Ridge, N.J., have both won awards.

E.I. Du Pont de Nemours (No. 7) in Wilmington, Del., also doesn't offer much in landscaping. Du Pont spokesman George Palmer describes the landscaping as "a patio between two buildings with a few bushes and trees...no grass."

De-urbanizing Amoco

Standard Oil (No. 10), now referred to as Amoco, also has to fight the battle of beautifying an urban setting.

Langner & Associates handles the account. President Toby Langner says three- to four-man crews have worked the one-square-block job for six years.

The Chicago headquarters, like Exxon's, has no turf. Instead, *euonymus colorata* (winter creeper) is used as ground cover.

Trees are primarily honey locust, shade master, and majestic varieties. Ornamentals include Washington Hawthorne; shrubs consist of cotoneaster, evergreen, and taxus.

Just replacing a shrub takes more teamwork than the Yankees executing a triple play.

Langner's crew beautifys Amoco with seasonal displays of flowers and evergreen material. The crew takes care of pruning all plant material, some formally, others more naturally.

Windy GM

General Motors (No. 2) of Detroit, also tries to make the most of its city setting. Vidosh Brothers Inc. has maintained the area since 1977.

The GM building, situated on one square block, features landscaped planters on the north, east, and west sides of the building. The largest landscaped areas are two pocket parks developed in 1977.

Vidosh's Pat Conroy, who oversees the site, says the largest park is about 120 by 200 feet, the smaller park about 60 by 60. With a 12-foot circular fountain highlighting the bigger park, summer concerts liven urban Detroit.

Conroy says one of the biggest problems of trees is windburn. Evergreens will "fry up," and pinoaks don't fare well either. Other plants are screened with burlap during the winter.

The most wind-tolerant trees are honey locust and ash. Sugar and Norway maples do well, but often suffer from heat scorch in June and July.

Conroy says they try to combat the problem with a regular watering and fertilizer program, but the combination of being near Lake St. Clair and tall buildings (which magnify the wind), makes it tough to avoid damage. "We're almost a zone within a zone," Conroy says.

Usually, a crew of three works on the GM site, but in mid-May Conroy brings in 7 to 10 people for a week of planting 12,000 to 15,000 annuals.

Geraniums are the main focal point. A combination of red begonias and yellow marigolds are used because they withstand the wind. Turf is a Kentucky bluegrass blend.

During the auto recession several years ago, Conroy saw his budget for new projects cut. Likewise, landscaping at the Ford Motor Co. (No. 4) was hurt by the recession.

'Up time' at Ford

Dave Wood, Ford's building services director, says the turf budget goes first in a recession. But Wood describes this as an "up time" when the company can implement projects set aside during the recession.

Ford is located on 100 acres, including roof gardens and an arboretum. The staff fluctuates from 12 to 20.

Ford has been using its own grounds staff for 30 years, and Wood has been with them from the beginning.

The only problem with that, Wood says, is training people in a union shop. "We had a problem keeping people," Wood says. Now, Ford sends the crew to school to get training in landscaping.

The crew takes care of spraying and mowing the Kentucky bluegrass blend. Wood believes in using dry fertilizer to maintain "grade A turf." Ford does contract out for spraying and pruning of shade trees.

The design of the site has changed over the years. "As years went on, we re-did the roof gardens," Wood says. "We changed things around after we found out what plants would survive. We learn as we go along."

Azaleas and rhododendrons are the mainstay of the roof gardens. Floral displays from tulips in the spring to mums in the fall brighten the gardens.

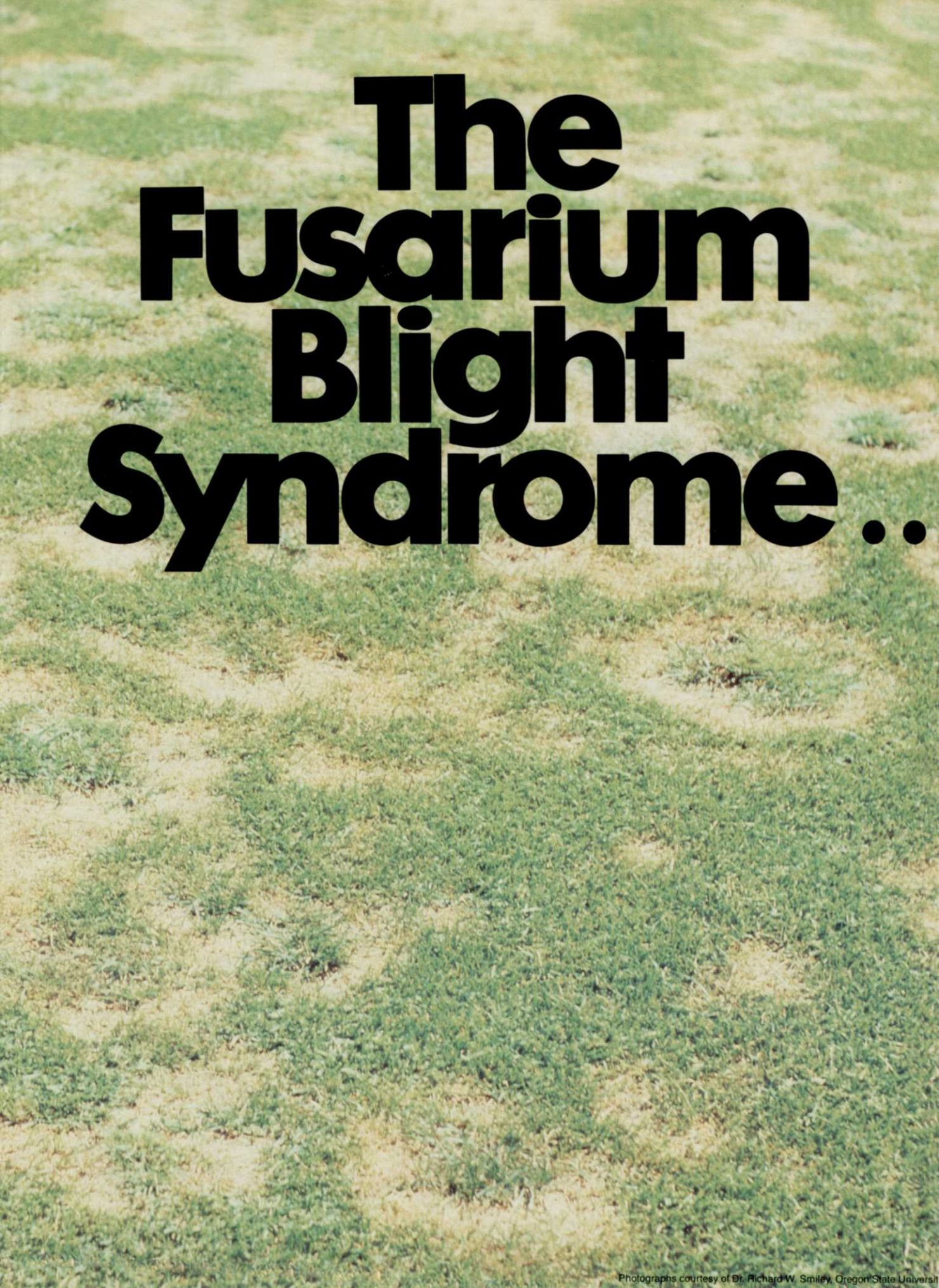
The major project now is updating and remodeling the arboretum, including the addition of a labeling system for the more than 95 varieties of native Michigan trees and shrubs. The project, complete with hard walking paths, will be completed in 1987 or 1988.

GE's full care

General Electric (No. 9) is located on about 100 acres. The company awarded a three-year contract with a two-year option to Laflamme Services last November. The contract calls for full care of the facility including maintenance, snow removal, and installation.

President Edmond Laflamme says

The Fusarium Blight Syndrome...



Photographs courtesy of Dr. Richard W. Smiley, Oregon State Universi

Researchers have shown the Fusarium Blight Syndrome is comprised of three pathogens: necrotic ring spot, summer patch and fusarium leaf spot. Identification of these pathogens is difficult, even with microscopic examination.

Rubigan eliminates the need to identify these pathogens. University researchers have documented Rubigan's effectiveness on all three of the pathogens which make up the Fusarium Blight Syndrome. In fact, Rubigan is the *only* product labeled for their control. Take the mystery out of the Fusarium Blight Syndrome... use Rubigan.

Rubigan is also the best value for the control of dollar spot, and effectively controls snow mold, copper spot, red thread and stripe smut. For large brown patch, Rubigan is recommended in tank mix with Daconil 2787®

Rubigan... the best value your money can buy.

For more information, call your distributor or write:

Elanco Products Company
A Division of Eli Lilly and Company
Dept. E-455, Indianapolis, IN 46285, U.S.A.

Rubigan®—(fenarimol, Elanco Products Company)
Daconil 2787®—(chlorothalonil, SDS Biotech Corporation)

Controlled ... By Rubigan®


Fusarium leaf spot.


Necrotic ring spot.


Summer patch.

S 6274 12/85

Printed in U

the previous landscape company worked on the site from the time it opened 11 years ago. One reason why Laflamme Services won the bid is that all employees are college-educated, including an arborist and turf experts.

The site has about 25 acres of turf, primarily blends of fine fescue and ryegrass.

Because the fescue requires less water and fertilizer, Laflamme's crew is gradually killing off sections with Roundup and reseeding with fine fescue.

Trees include a variety of maples, oaks, and birch. Hawthornes are used as ornamentals. Shrubbery, primarily junipers, is formally cut. Flower usage is kept at a minimum, although begonias are used for color, mostly because they are low maintenance.

The entire property is irrigated, with a drip system used in the flower and shrub beds. Laflamme prefers to use reel mowers rather than rotary.

"A rotary machine tears the grass," he says. "A reel slices for a finer look. It's healthier for the lawn to cut rather than tear. It gives a better look and the blade isn't damaged as much."

Texaco (No. 5) in Harrison, N.Y., is located on 117 acres. That consists of 39 acres of fine lawn (bluegrass mix), 19 acres of meadow, and almost five acres of beds. Only 10 acres of the property is irrigated.

NATRL Plants and Lands Management Co., Ltd. installed the site in 1976 and has maintained it ever since.

Three levels of interior courtyards must be hand-weeded because many executive offices face the courtyards.

The most difficult part to maintain is the four acres located over the two story parking garage. The area has only 12 inches of soil, which must be irrigated since it dries out quickly. A planter holds a Japanese maple and junipers.

Shrubs include taxus hedge, azaleas and rhododendrons. Oak, maples, cherries, pears and dogwoods are among the trees used.

One popular area is the two miles of walking trails which wind through the meadow. Ribbons of shrubs separate the lawn from the meadow area.

Those who don't like hiking can work up a sweat on the company's tennis courts.

General superintendent Richard Settgast uses a crew of 10 to 15, depending on the project. To save on labor, he often combines fertilizers and weed controllers in the same application.

Although each crews' techniques vary depending on the company, most would agree that landscaping is crucial for a strong corporate image. **WT&T**

Detroit bands together for New Center area

General Motors has taken its interest in landscaping a step beyond other Fortune 500 companies. Besides maintaining its own property, the company has donated millions of dollars toward renovation of the 50-block inner-city area of Detroit surrounding its headquarters.

GM isn't alone in its efforts. Other major Detroit corporations, most notably, Burroughs Corporation, Henry Ford Hospital and Trizec Properties, have all contributed toward the multi-million dollar project.

It's become known as the New Center Area.

The New Center Area is 500 acres (5.2 million sq. ft. is office space). It is home to 3,000 people, while more than 27,000 work there.

Teamwork

It began selfishly, perhaps. In the early 1970s, each corporation was involved with beautifying its own property. Burroughs completed its new $30 million complex. At the same time, Henry Ford Hospital began a 10-year $150 million expansion and development program on the hospital's New Center campus. GM followed suit by renovating its headquarters with $35 million in improvements.

In 1977, GM constructed its two pocket parks adjacent to the GM building as part of a $1.25 million program. According to Pat Conroy, project manager for Vidosh Brothers, the materials located in the pocket parks originally came from the GM Technical Center in Warren, Mich.

GM project coordinator Barbara Spreitzer says that after the parks were added, the company began looking for new ways to "halt deterioration" of the area. GM created the Detroit Revitalization Committee to make recommendations for city improvements. The committee decided the best way to revitalize the area was to first renovate the surrounding neighborhoods.

In 1978, GM began working toward that goal. A subsidiary of GM, New Center Community Corporation, and 14-other area businesses funded a multi-million dollar neighborhood revitalization project. Federal grants from the Health and Urban Development office, including a $2.6 million Urban Development Action Grant (UDAG) and a $1 million Community Development Block Grant helped fund the project.

To date, 45 single-family homes and 34 condominium units have been renovated and sold. The housing area has been named the New Center Commons.

Public/private

The New Center Area Council was organized to work with its 150 corporate members in coordinating the overall development plans. The Council's director of special projects Mary Hebert calls the New Center Area "a unique public/private partnership."

The Council, she says, serves as "the maintenance arm of the projects." One of NCAC's responsibility is to contract with Vidosh Brothers for landscaping work in

The New Center area in Detroit, Mich.

continued on page 22

TO PYTHIUM THIS LOOKS LIKE THE

There's one unwanted guest that can eat away at the healthiest turf and cause widespread damage overnight. Pythium.

In rainy, damp or humid weather, Pythium attacks greens and fairways alike, causing blight, damping off, disappointment and expense.

Only Subdue® provides the dual action you need to prevent and control the damage of Pythium, and downy mildew (yellow tuft) as well. First, Subdue stops disease on contact. Then it acts systemically, penetrating the turf for a long lasting, residual defense. In fact, just one or two fluid ounces per 1,000 square feet lasts up

START OF A FULL COURSE MEAL.

to 3 weeks on established turf.
Nothing works better.
Nothing lasts longer.
And nothing costs less.

With so much at stake, don't wait for the weather. Use Subdue and beat Pythium and downy mildew inside and out.

Instead of providing a full course meal, you'll give Pythium and downy mildew their just desserts.

© 1985 Ciba-Geigy Corporation
Ciba-Geigy, Ag Division, Box 18300, Greensboro, NC 27419

CIBA–GEIGY

SUBDUE

Circle No. 222 on Reader Inquiry Card

the entire area, which helps maintain consistency.

Vidosh is also a member of the Council. "We became charter members because of doing the work there," Conroy says. "It's nice to support the area you work in."

Vidosh and the NCAC also have a working relationship on hiring teenagers, usually from the inner-city, to help maintain the grounds in the summer. The Council supervises the teens, while Vidosh pays them and provides benefits.

Vidosh Brothers started on the project by installing and maintaining the landscaping at GM, including the pocket parks. They also did the work for the Commons houses.

Conroy says the houses were renovated during the recession, so budgets for plant materials were tight.

Vidosh used material in keeping with the 1920s theme of the renovation, including lilacs and forsythia, two varieties of privet for the hedge, and kousa dogwood for height. Turf was a blend of Kentucky bluegrass, sodded in the front yards and seeded in the back.

Although Vidosh used the same materials at each house, design varied. Many home owners added their own landscape touches after buying the houses.

Following the housing renovation, a partnership of GM and Trizec Properties, Trizec New Center Development Associates, developed the New Center One Building in 1983. The building, an eight-story atrium office and retail complex, cost $65 million.

Last year GM, along with Crowley's, Trizec Properties and Allied Film & Video, started a $33 million revitalization program for the heart of the New Center business district.

The improvements continue. Construction is set to begin on a new streetscape project in July, which should be completed by the end of 1987. Funding for the project will come in part from a UDAG grant for $5.8 million.

Four blocks along West Grand Boulevard and two along Second Avenue will receive landscape design improvements along the sidewalks and median strips.

Johnson, Johnson & Roy Inc. of Ann Arbor has worked on the landscape design development.

Vidosh has spoken informally with the architects to let them know which materials work best in the area. Windburn and sunscorch are the worst enemies of trees. Bids for installation will probably be taken in early summer.

Spreitzer says the business district improvements have become a necessity to balance the revitalized nearby neighborhoods. Also, GM management has gained confidence in its projects with the success of the neighborhoods and is more open to allocating funding.

"We all have a strong commitment," Spreitzer says. "Despite some economic down-turns, our management has maintained a commitment to the area." □

—Heide Aungst

Bigger may be better for landscape contractors

Large companies may be well known for putting customers through a lot of red tape, but landscape contractors seem to agree that the bigger the company, the easier it is to work for and with.

"My experience is that it's easier to work with large firms than smaller companies or residences," says Toby Langner, whose company services Amoco's Chicago headquarters.

"They set the tone of business in an organized manner, have authority to delegate down the line and understand the value of making decisions promptly."

Large companies also tend to pay their bills on time, according to Langner.

"I think the bigger company knows what it wants," adds Edmond Laflamme, whose Laflamme Services does landscape maintenance at General Electric's corporate headquarters in Fairfield, Conn.

"A smaller company is generally not as concerned or organized.

They don't have one person to concentrate on the grounds. Any change is far slower to come about," he says.

G.E. has one staff member, Elmer Toth, who handles the grounds. Laflamme says Toth has an extensive background in horticulture and the two speak at least once a day.

Communication is the key to a good working relationship between the contractor and company. Langner says that at Amoco both management and employees are environmentally aware and immediately let Langner know if there's something they don't like. In return, if Langner has a suggestion on future design, management listens to him.

Former Ford President R.J. Miller was so concerned about the environment that he initiated the arboretum on the property.

Like G.E., Texaco has a staff horticulturist who inspects all of NATRL's work. General superintendent Richard Settgast calls Texaco tough to work for because "they expect a top notch job."

"The biggest problem is visibility," Settgast says. "The site is constantly visible to a thousand people at a time."

NATRL also maintains the grounds around three houses on the Texaco property, where visiting executives from throughout the world stay.

High visibility is also a problem for Rockefeller Center, home to Exxon Corp. David Murbach, manager of gardens, says the Center always strives toward excellence. "We even have people who scrape gum off the sidewalks," he says.

To keep up that positive corporate image, most corporations are also willing to finance projects. Ford is one of those companies.

"The corporation is conscious of quality landscaping and willing to back it up with finances," Ford's Dave Wood says. "The grounds are a showcase for the company. We keep them in top condition at all times."

Laflamme says G.E. is more conservative with its budget, especially when it comes to new installations.

"I think most Fortune 500 companies are conservative," he says. "I can't blame them. Why rock the boat?" Still, he describes G.E. as "the best company I've ever worked for."

An outstanding landscape is something both the contractor and the company can be proud of. As Ford's Wood put it, "It's a window to the world." □

—Heide Aungst

Satisfaction guaranteed. You have our word on it.

Introducing Toro's YES Warranty Policy.

At Toro, we believe that providing you with excellent after-sale service is just as important as providing you with top quality product. That's why we're making it faster and easier than ever for you to exchange defective products or parts for new ones. Thanks to our new over-the-counter "YES" warranty program. It covers the entire line of Toro residential and commercial controllers, valves and sprinklers.

- Does the "YES" warranty cover all defective parts? *YES!*
- Is it a hassle-free, over-the-counter type warranty? *YES!*
- Does it include extended warranties on 610 and 640 heads? *YES!*
- Does it provide a labor allowance for controller repairs? *YES!*

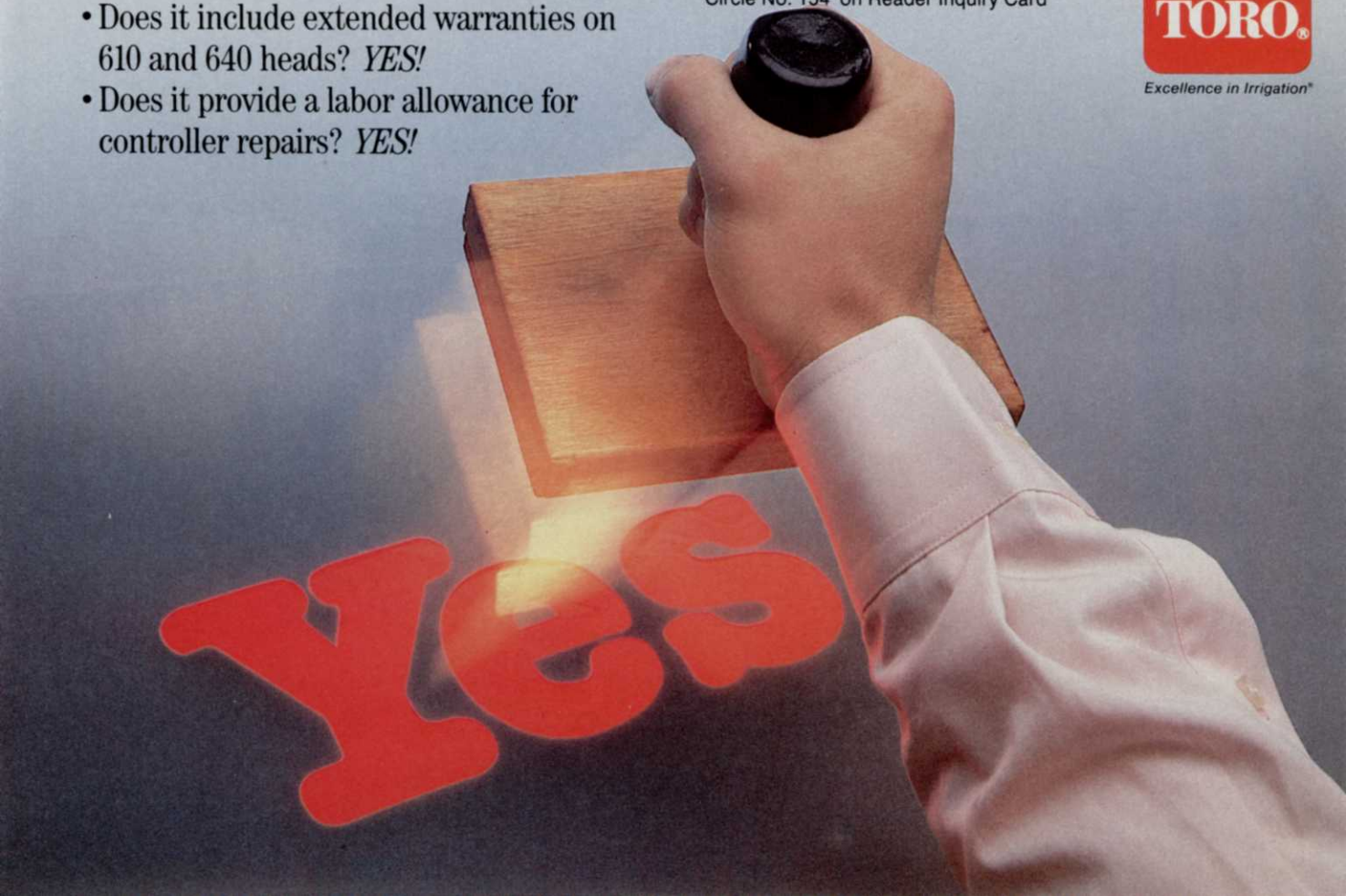
When you bring in a defective Toro product or part, your wholesaler or distributor will ask you just two simple questions: When was the product/part purchased? And, what is the nature of the problem? Returns and exchanges are as fast and easy as that.

At Toro, we're dedicated to becoming the easiest company to do business with in the irrigation industry. We can't think of a better way to show it than with our new "YES" Warranty. For more information or a brochure with complete details about our "YES" Warranty Policy, call 1-800-FOR-TORO. California residents call 1-800-255-TORO.

Circle No. 154 on Reader Inquiry Card

TORO®

Excellence in Irrigation®



The dawn of a new season. Now two out of three courses spray Daconil 2787.®

Unreliable control from narrow-spectrum fungicides. Inconsistent performance from longer residual systemics. That's why two out of every three golf courses are now being treated with regularly scheduled applications of Daconil 2787 fungicide.

And for good reason.

Only Daconil 2787 has a proven record of consistent, first-rate control of eleven major turf diseases. Including tough ones such as Helminthosporium melting out, benomyl-resistant dollar spot and large brown patch.

What's more, there has never been a documented case of resistance in over fifteen

years of use. Even on courses where Daconil 2787 was applied at weekly intervals for many seasons. Convincing proof that you don't have to alternate sprays to avoid developing resistance to Daconil 2787.

And when it comes to cost, nothing is more economical than Daconil 2787. On a per 1000 sq. ft. basis, a single application of Daconil 2787 Flowable Fungicide costs less than Tersan® 1991, Chipco® 26019, Bayleton,® Rubigan® or even Dyrene.®

Plus you never have to add a costly spreader/sticker to Daconil 2787. Because it's already built into the formulation. So you're assured of full and even plant coverage for maximum disease prevention.

This season, be one of the thousands of superintendents who made the right choice. Make your fungicide Daconil 2787 from tee to green.

Now packaged in 2½ gallon containers.

The following names are registered trademarks:

Tersan—E.I. du Pont de Nemours & Company

Chipco—Rhône-Poulenc

Bayleton—Parent Company of Farbenfabriken Bayer GmbH, Leverkusen

Rubigan—Elanco Products Company

Dyrene—Mobay Chemical Corporation

Circle No. 147 on Reader Inquiry Card

Agricultural Chemicals Business
SDS Biotech Corporation
7528 Auburn Road, P.O. Box 348
Painesville, Ohio 44077

TURF INSECT CONTROL

Despite research on alternatives and supplemental methods, insecticides remain the primary means of controlling insect damage to turf.

by Dr. Harry D. Niemczyk, OARDC; and Dr. Patricia Cobb, Auburn University

Many species of insects and other closely related arthropods live in the turfgrass environment. To control the relatively few we consider pests, it is wise to think of them in relation to the specific segment of the turfgrass environment in which they live.

Some, like mites and aphids, spend some or all of their lives on the grass blades; others such as billbug adults, cutworms, chinchbugs and sod webworms live in the thatch. Grubs usually live at the thatch-soil interface where they feed on thatch and living roots.

Larger sod webworm (*Pedesia trisecta*) adult.

Focusing on the specific segment of the environment inhabited by a pest and delivering the control material or management practice so that it has the desired impact on the pest is known as the "*target principle.*" Simple, but the amount of success in achieving control is directly related to the extent to which the *target* was reached.

Keys to control

Knowing the seasonal occurrence and damage of all life stages of each pest common to your area is a major step toward effective control. This information, combined with the characteristics of the particular turfgrass cultivar and the known length of residual of the proposed insecticide, makes insect control scientific rather than speculative.

Still, there will be twists to confuse any control program, such as soil type, heavy thatch, weather, and poor application uniformity.

Differences between the cool- and warm-season zones and among mountains, plains, and coastal areas, also result in variations in pest species and their seasonal occurrence.

Grubs at a thatch/soil feeding, and a sod webworm in the thatch.

Knowledge of each pest's life cycle in your area is often as important as the choice of insecticide.

The purpose of this guide is to point out some major pests to watch out for in cool- and warm-season turfs in 1986, when their vulnerable stages occur, and some insecticides that may be used. No endorsement of named products is intended nor is criticism implied for those not mentioned.

Late winter (Mar.)

Chinchbugs and Billbugs—In northern zones chinchbugs and billbugs both overwinter as adults in thatch or sheltered sites near buildings. They can become active during warm days in March. Infestations of hairy chinchbug and bluegrass billbug also occur in zoysia, Kentucky bluegrass and fine fescues.

In southern Florida, the southern chinchbug is active throughout the year. Most varieties of St. Augustinegrass and some bermudagrass are damaged by southern chinchbugs. Zoysia and bermudagrass are more likely to be infested by the hunting billbug.

When summer damage from chinchbugs and/or billbugs is expected, a preventative application of liquid or granular Dursban (chlorpyrifos-1 lb. AI/acre), or Oftanol (isofenphos-2 lb. AI/acre) may be made as soon as these insects begin to move about. Treatment at this time controls adults before eggs are laid. If spring is early, these applications may be needed as early as the second week of March. During a late spring, applications may need to be delayed until the last week of March.

Retreatment for chinchbugs in mid to late summer may be necessary if reinfestation from adjacent untreated

HOW ROUNDUP® HERBICIDE HELPS YOU GET MORE PROFIT OUT OF

...SITE PREPARATION

With one treatment of Roundup® herbicide you can get broad-spectrum control of just about every variety of grass, broadleaf weed and brush you're likely to come across. Just spray the area to be planted, wait 3 days for annuals and 7 or more days for brush – and plant. It's as easy – and can be as profitable – as that.

...LAWN RENOVATION

This is a great way to use Roundup to expand your business. With Roundup, you'll be able to renovate any lawn in 1/12th the time it would take you to do the job mechanically. Just spray; wait 7 days; slice, seed and water well. Fall is the best time for lawn renovations.

...TRIMMING AND EDGING

Hand-weeding and string trimming are a waste of time. With Roundup, you'll get longer-lasting results – and do the job more easily and quickly. And remember, no matter where you use Roundup – around patios, steps, gravel driveways, fencelines, tree rings – you, and your customers, can feel confident because Roundup is biodegradable, odorless and practically non-toxic to wildlife, pets and people. When you put Roundup to work for you, you'll be helping to make your entire operation more professional – more profitable.

Monsanto

ALWAYS READ AND FOLLOW THE LABEL FOR ROUNDUP HERBICIDE.
Roundup® is a registered trademark of Monsanto Company.
© Monsanto Company 1986
RNC-6-203B

VERSATILE EFFECTIVE

New Lower Price!
See Your Distributor Today.

Circle No. 137 on Reader Inquiry Card

Toro Groundsmasters won't quit until you do.

The last thing you've got time for in grounds maintenance is a breakdown. You need machines that are tough enough to keep you cutting on schedule. No matter what the mowing conditions.

That kind of toughness is what makes Toro's 100, 200, and 300 series Groundsmasters the industry leaders. For over a decade. Each Groundsmaster is ruggedly built for durability and continual performance under the most demanding conditions. Namely, a routine day's job.

Groundsmaster 327

Groundsmaster 322-D

All three Groundsmaster series come with five different engine options—gas, diesel, air or water cooled—and ten different cutting units. With the addition of quality cutting features and accessories, you're able to choose the right combination of equipment to fit your turf maintenance needs.

But grounds maintenance requires more than just reliable and

durable equipment. Parts and service support must be efficient

Groundsmaster 220

Groundsmaster 217-D

and dependable, too. That's why Toro has a nationwide network of distributors and dealers. You can get virtually everything from your distributor quickly and easily.

And that includes detailed support information on specifications, options and features—all you need to know to justify cost-effective expenditures. If you need specialized parts, ask about Toro's Unit Down or Direct Ship Programs.

If you'd like a machine that won't quit on the job, check out the tough, dependable Groundsmasters from Toro. You'll save money in the long run because of increased productivity and fewer breakdowns.

Groundsmaster 117

And that's just what it takes to cut it on the job and in the front office.

For more information on the Toro Groundsmaster advantage and the name of the distributor near you write to The Toro Company, Dept. GM, Commercial Marketing, 8111 Lyndale Ave. S., Minneapolis, MN 55420.

©1985 The Toro Company; Toro and Groundsmaster are registered trademarks of The Toro Company

TORO®

The professionals that keep you cutting.

Circle No. 152 on Reader Inquiry Card

Vertical cross-section of black cutworms in their burrow.

areas occurs.

Preventative treatments may not be successful in southern Florida where the southern chinchbug has multiple generations and is resistant to most organophosphate insecticides in some areas. In southern Florida, where resistance is a problem, the insecticides Pydrin, Pounce, or Baygon have been substituted for organophosphates. Replacing susceptible turf varieties with Floratam St. Augustinegrass, a variety highly resistant to the southern chinchbug, will provide excellent natural control.

Grubs—The larvae of this group of pests normally overwinter six inches or deeper in the soil. If spring comes early, grub activity can be expected along with skunks and racoons who will tear up the turf searching for the grubs. Moles, which feed on grubs and earthworms, also become active at this time.

Application of Oftanol (2 lb. AI/acre) during March when frost is gone from the ground, provides control of overwintered grubs as they return to the surface. This treatment may not provide sufficient residual to control the late summer (July-August) infestation of grubs. Treatment at this time kills overwintering chinchbugs and billbugs and reduces infestations of these insects during the summer.

Mole crickets—Mole crickets have extended their range from Florida and eastern Georgia into southern Louisiana, eastern Texas and up the East Coast into the Carolinas. Timing of treatments is critical and varies from one area to another.

The tawny and southern mole crickets are the primary pest species. Except for southern Florida, both have one generation per year. Mole crickets become active in March from north central Florida throughout their range in the Gulf States after overwintering deep in the ground as adults or nymphs. Tunnelling damage takes place at night in moist soil and increases as mole crickets become more active. Both mole cricket species begin spring mating flights in late March. In most areas March treatment is seldom required.

In years when feeding of overwintered mole crickets resumes earlier than normal, Oftanol (2 lb/AI/acre) has been used with some success. Generally, such applications are better made later in the year.

Black turfgrass ataenius—This golf course pest overwinters as an adult in the soil under debris in roughs or other protected areas. A few may be seen flying about on warm afternoons in early March. Usually this activity begins when crocus starts blooming and intensifies as the bloom of red bud appears.

While an application of Oftanol in March may be successful in preventing summer infestations of larvae, the probability of success is increased by waiting until April.

Greenbug—The only stage of the greenbug known to overwinter in northern states is the egg. Shiny black eggs deposited the previous fall may be found adhering to grass blades fallen tree leaves, or other debris.

Treatment for the greenbug is not appropriate during the late winter.

Sod webworms—In cool-season areas, the most common sod webworm species overwinter as larvae in the thatch or upper inch of soil. Feeding does not resume until hibernation (dipause) is broken by early spring warmth.

Treatment for sod webworm is usually not appropriate during late winter.

Spring (April-May)

Chinchbugs and Billbugs—As warm days of spring approach, movement of chinchbug and billbug adults increases rapidly. Generally, egg laying begins the first week of April on warm-season turf and the first week of May on cool-season turf. Occasionally adult billbugs can be seen wandering about sidewalks on warm afternoons.

Generally, application of insecticides to prevent infestations of chinchbugs and billbugs should be completed by the first week in May in cool-season and mid-April in the South. Such applications are made before significant numbers of eggs are laid. This time may vary as much as a week or more depending upon the spring weather.

When the preventative approach is not used and southern chinchbugs are detected in May, diazinon (4 lb. AI/acre) provides control. In areas with three to five generations, two retreatments at six-week-intervals may be needed.

Grubs—Overwintered grubs return to the surface and begin feeding on turfgrass roots in April. Increased activity and damage from birds, moles, skunks, and racoons foraging on grubs can also be expected. Feeding by birds, mammals and grubs continues through May.

In cool-season areas, a single application of Oftanol (2 lb. AI/acre) made during April has been successful in controlling overwintered grubs with one year life cycles. This treatment and similar applications of Oftanol in May or June may not provide control of late summer infestations.

Infestations of such grubs can also be controlled during April (South) or May (North) by spot or general treatment with Turcam (bendiocarb, 2 lb. AI/acre), Peoxol (trichlorfon, 8 lb. AI/acre) or diazinon (5-6 lb. AI/acre). Golf course superintendents may also use ethoprop (Mocap, Scotts

KOBAN® for resistance free Root Rot Control

If you've been using anything but KOBAN in your fight against root rot, you're teamed with a loser. Only KOBAN has the winning formulation to not only surpress root rot but kill the fungi.

And KOBAN keeps winning with no resistance problems. KOBAN has been proven effective on fine quality turf and seed treating for over fifteen years without a single case of resistance. That's a winner!

KOBAN® Comes in Three Convenient Forms.

Apply KOBAN at your convenience for unsurpassed root rot control. Available in three easy-to-use forms—wettable powder, flowable, and granular.

For more information on KOBAN. Call toll-free or contact your Mallinckrodt Turf Product distributor.

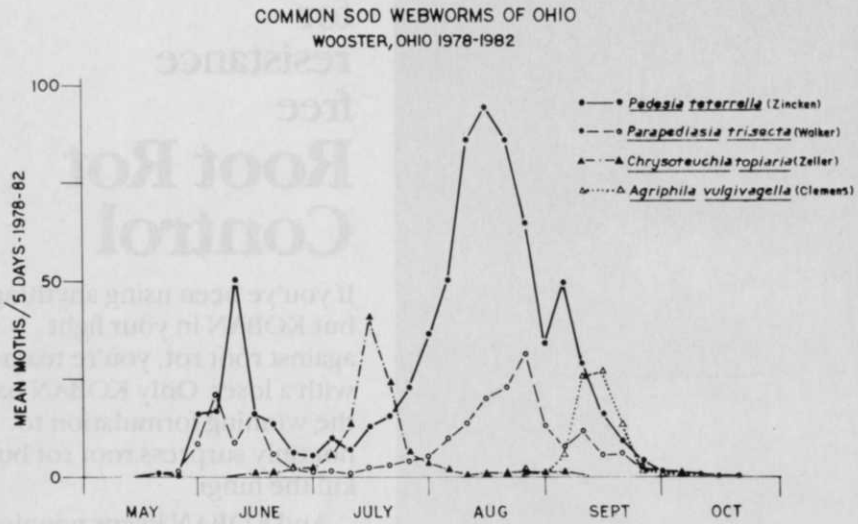
You'll be a Winner!

Mallinckrodt®

P.O. Box 5439
St. Louis, MO 63147
1-800-325-7155

KOBAN®
WP–6 x 2 lb. bag/case
Flowable–4 x 1 gal./case
Granular–40 lb. drum

Circle No. 129 on Reader Inquiry Card



Nematicide/Insecticide, 10 lb. AI/acre). Sevin (carbaryl, 2-4 lb. AI/acre) has been effective against larvae of the green June beetle.

Treatment should be delayed until grubs are in the top one inch of soil. Irrigation or rainfall should allow such applications to aid in moving the insecticides to the target grub as soon as possible.

Although milky spore disease products for control of Japanese beetle grubs may be applied anytime there is no frost in the soil, spring is a good time for such applications. The soil is open and frequent rains move the disease spores into the soil and thatch. It should be noted that only the Japanese beetle grub will be affected by milky spore.

Incidents of large grub infestations (larvae of June bugs) have been increasing in cool-season areas over the past three years. Locations of such infestations should be identified because reinfestation is likely every three years.

Controls such as Oftanol, diazinon, Proxol, or Turcam should be applied in August or September during years of when large numbers of adults are seen.

Eggs are laid in May and June, therefore treatment should be made in late summer, early fall of that year or early the next spring while the larvae are small. Later application against full-grown larvae have given inadequate control.

Mole crickets—Damage increases in April from north central Florida throughout the southern areas of the Gulf States. Mating and dispersal flights continue as egg laying and hatching begin.

Spring treatment may be necessary in areas that were severely damaged last fall. Small damaged areas can be rolled or otherwise packed down so the turf roots are reconnected with the soil. To determine cricket presence, pour soapy water (2 oz. liquid dishwashing detergent in one gallon of water) on turf areas where infestation is suspected. Crickets will usually surface in 3 to 15 minutes (longer in cool weather).

Turcam (2 lb. AI/acrea), diazinon (spray or granules, 5-6 lb. AI/acre, commercial turf only), or Oftanol (granular or liquid, 2 lb. AI/acre) can be used to control spring infestations.

In less critical areas, short residual treatment with Turcam (2 lb. AI/acre) or diazinon (5-6 lb. AI/acre) applied in late April or May may be adequate. Orthene, 755 Tree and Ornamental Spray (2 lb. AI/acre) applied late in the day and left unirrigated overnight may provide quick knockdown but little residual.

Critical turf areas may require greater residual control provided by early April insecticide applications. Mocap 10G (10 lb. AI/acre) provides up to four weeks control and Oftanol (2 lb. AI/acre) up to eight weeks control. Treatments should be made late in the day if possible and watered immediately.

Black turfgrass ataenius—Adults of the black turfgrass ataenius can be seen flying about in April and are often found in clipping catchers after early mowing of golf course greens. These adults begin laying eggs in early May, or about the time Vanhoutte spirea first comes into bloom. Check with local extension entomologists for more precise time if needed.

Applications of Oftanol during April or May has successfully prevented larval infestations during the summer. Diazinon (5-6 lb. AI/acre) applied to fairways during egg laying kills adults and also prevents the development of summer larval infestations.

A word of caution—diazinon applications may be toxic to waterfowl such as geese feeding on the treated turf.

Sod webworms—Overwintered larvae of the sod webworm begin feeding as soon as the grass begins to grow. Usually damage is insignificant, but areas that do not green up may be infested. These areas frequently have probe holes from starlings feeding on the larvae.

In warm-season areas webworm larvae pupate during late March and early April. Moth flights begin in April in southernmost areas and during May in more northern areas.

Young larvae are usually present about two weeks after the spring moth flight peaks, so treatment of young larvae can be done in May in some areas.

Damage from the burrowing sod webworm may be evident in late May in the South. Rubbing a hand over turf suspected of being infested expares larval burrows that are covered with a flap of duff and grass clippings.

When necessary, a wide range of insecticides including diazinon, Proxol, Aspon, Sevin, and others applied at labelled rates may be used to achieve control.

Cutworms—Moths of cutworms begin laying eggs on golf course greens and other turf areas in the spring. These eggs hatch producing larvae that feed on grass blades during the night. The black cutworm is the most common species on cool-season turf.

While visible damage in uncommon on home lawns, damage can be significant on golf course greens in late May.

Black, granulate, and variegated cutworm moths become active in March and April in the South. Larvae are present on turf, especially on golf greens and tees. Damage can become evident as early as mid-April. By May, the larvae are large enough to cause severe damage.

Generally the insecticides effective against sod webworm are also ef-

They are long, the days of splendor in the grass. But only if you make short work of the grubs.

Grubs. They're spoilers. Once they move in, they'll make short work of turf.

To make short work of grubs, you need a product that's fast, effective, and formulated specifically to stop grub damage. You need fast-acting ®OFTANOL 2 insecticide.

Sprayed on and watered in, OFTANOL 2 goes to work immediately in the top 1-1½ inches of soil, where the grubs are. Even before death occurs, grubs stop feeding and damage stops.

Grub infestations can be a costly problem. To save time, money, and turf, apply fast-acting OFTANOL 2. Also available in granular form. Always read the label before use.

Mobay Chemical Corporation
Specialty Products Group
Box 4913, Kansas City, Mo. 64120

OFTANOL 2.
IT STOPS THE SPOILERS.

OFTANOL is a Reg. TM of the Parent Company of Farbenfabriken Bayer GmbH, Leverkusen.

Circle No. 135 on Reader Inquiry Card

Green June beetle grubs in their natural habitat—the turf.

fective against cutworms. The *target principle* of controlling these pests is to apply the insecticide late in the afternoon and allow night feeding cutworms to contact and feed on the treated foliage. Irrigation following liquid application is therefore not advisable unless specified on the product label.

Greenbug—Greenbug eggs begin hatching as early as April, but significant infestations do not develop until later in the year. Aphid numbers are too low to detect.

Winter grain mite—Damage from this mite is often first noted in April when turf areas are receiving spring fertilizer applications. By late May, the mites will have laid their eggs and died. Mites do not appear again until the eggs hatch in October.

If treatment is necessary, liquid diazinon or Dursban will provide control.

Clover mite—Incidents of visible damage to home lawns has been seen in April in several Ohio cities and Denver, Col. Usually a nuisance pest in and around homes, the clover mite appeared in large numbers (5,000 per sq. ft.) across entire lawns and on turf next to building foundations. Symptoms of injury were the same as the winter grain mite. Turf next to foundations was often killed.

The clover mite has a slightly pink body and eight pale colored legs. The first pair of legs are extremely long and protrude well out in front of the mite. The absence of bright red legs distinguishes the clover mite from the winter grain mite.

Treatment with liquid diazinon (2.5 lb. AI/acre) or Dursban (1 lb. AI/acre) readily provides control.

Fire ants—Fire ants are spreading across much of the South causing serious and painful injury to man and animals. They begin establishing new mounds during warm, wet days of spring. During this time, ants are active near the surface of mounds and workers are foraging for food.

Mound treatments include diazinon granules or drenches; Orthene 755 dust, various Dursban formulations, Oftanol, or MC-96 (trichloroethane). Read the label for specific directions for mound treatment. Do not disturb the mound before or during treatment.

Where mound treatment is impractical, the turf can be treated with Amdro fire ant bait (no more than 1.5 lb. AI/acre). All the bait should be used within three days of opening. Retreatment during the fall is usually necessary.

Summer (June-August)

Chinchbugs—In northern cool-season turf, chinchbug eggs continue to hatch into June. Bright red nymphs appear. The number of chinchbugs increases rapidly in June and peaks in July and August when northern lawns can receive severe damage. This damage is often masked by summer dormancy of turf caused by drought. Hot, dry conditions are ideal for chinchbugs.

During August the nymphs molt into adults that mate, lay eggs, thus producing a second generation. Some northern areas have only one generation per year.

Southern chinchbugs are not usually a problem in well-irrigated turf or during summers when rainfall is plentiful. Southern chinchbug-damage first appears during the dry periods of June and July. Damage may continue throughout the summer and into the fall because of overlapping generations.

A wide range of insecticides may be used at label rates to control existing infestations. They include Dursban, diazinon, Aspon, and Sevin. Treatments should be made before injury is severe, otherwise, damaged areas may not recover.

Areas of southern Florida have pockets of southern chinchbugs resistant to these insecticides. Pydrin, Pounce, or Baygon may be substituted. Floratam St. Augustine, a chinchbug resistant variety, should be the primary turf variety grown in more southern coastal areas and Florida where southern chinchbug is a problem.

Billbugs—The bluegrass billbug larvae feed in grass stems during June and move to the plant crowns and roots and rhizomes during July. This feeding causes brown spots that frequently resemble the symptoms of some fungus diseases. Symptoms are also often masked when the turf is dormant from drought. The larvae usually move deeper into the soil under dry soil conditions. During late July and August the larvae burrow deeper into the soil to pupate and transform into adults.

Infestations discovered during this time may be treated at the same rates used for existing grub infestations with diazinon, Turcam, and Proxol.

Southern chinchbugs are not usually a problem in well-irrigated turf or during summers when rainfall is plentiful.

Irrigation or rain following application is helpful for optimal results. If larvae are feeding in the foot zone, control may be difficult to achieve. Insecticide applied during June should control feeding larvae.

Grubs—By June, in cool-season areas, grubs have stopped feeding and are in the pupal stage three to four inches in the soil. Beginning in mid-June and continuing through mid-July, the adults of various species emerge and burrow into the soil to lay eggs. Hatching and appearance of young larvae occur during July and August.

In warm-season areas, beetle flights continue and often peak in June, although the time flights occur varies from year to year. Japanese beetle flights occur mainly from mid to late May and June. Brown May or June beetle flights often follow heavy rains in late May and June. New generation grubs of most southern species can be found by mid-August.

Existing infestations of grubs found in July or August may be treated with Proxol, Turcam, Oftanol, diazinon, or Mocap (commercial turf only) at standard label rates. Sevin (2-4 lb. AI/acre) is effective against the green June beetle larvae.

Extreme heat and drought during the summer may cause some grubs to

continued on page 38

At LESCO, we listen and respond to customer needs. That's been the company philosophy for more than 20 years and it's the reason why we are now introducing The LESCO Greensmower.

Scheduled for production in early May, this new triplex unit is engineered and built to meet your expectations. More power. Better maneuverability. Easier service. Improved filtration. All at a substantial savings.

The LESCO Greensmower is equipped with an 18-horsepower, twin-cylinder engine for added power and less vibration and features power steering for better maneuverability – eliminates cables.

Designed for easy servicing, the mower features access to valve spools without removing the valve bank and a hydraulic pump designed for simple detachment through the use of a flexible coupling. Loosening two bolts allows each reel motor to be disconnected and pulling two pins permits the removal of each cutting unit.

Standard on the mower is an upgraded oil filtration system designed to increase the life of the hydraulic components and minimize downtime.

And then there's the price.

The LESCO Greensmower is available for $7500.00 with nine-blade reels.

Five-blade reels, grooved rollers and vertical cutting units are also available.

Put the LESCO Greensmower to work for you. Talk to your LESCO Sales Representative or call us toll-free.

(800) 321-5325 NATIONWIDE **(800) 362-7413 IN OHIO**

Circle No. 127 on Reader Inquiry Card

LESCO

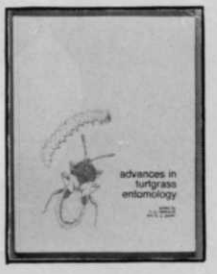
LESCO, Inc., 20005 Lake Road, Rocky River, Ohio 44116 • (216) 333-9250

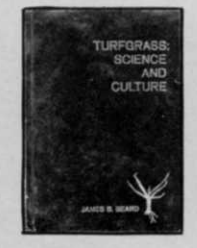
BOOKSTORE

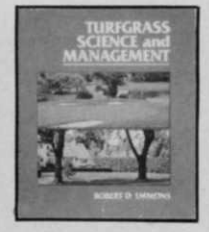
625 - ADVANCES IN TURFGRASS ENTOMOLOGY
edited by Niemcyzk and Joyner
A complete account of the facts presented at the 1980 Symposium on Turfgrass Insects. 200 photographs, tables and graphs make this volume an indispensable reference for anyone connected with the turfgrass industry or research. **$24.95**

010 - ADVANCES IN TURFGRASS PATHOLOGY
by Joyner and Larsen
Leading U.S. turf pathologists report on turfgrass diseases, phythium blight, snow molds, fairy rings, leaf spot of Kentucky bluegrass in Minnesota, initial and field fungicide screening, turfgrass disease resistance, etc. Contains new ideas on how to combat turfgrass problems. **$27.95**

645 - MANAGEMENT OF TURFGRASS DISEASES
by J.M. Vargas
Identifies turfgrass diseases by description and illustration. Includes a holistic approach to healthy turf and lawns. Presents practical management strategies for golf courses, lawns and athletic fields. 204 pages, illustrated. **$26.70**







630 - TURFGRASS: SCIENCE AND CULTURE
by James Beard
Comprehensive basic text and reference source used in many leading university turf programs. Includes findings of current research compiled from more than 12,000 sources. **$30.95**

605 - TURFGRASS SCIENCE AND MANAGEMENT
by Robert D. Emmons
Discusses the establishment and maintenance practices used by successful turfgrass managers. Deals with the relevant scientific theory and practical management skills. Provides guidelines for turf maintenance of golf courses, lawns, athletic fields, parks, cemeteries, sod farms. **$25.79**

640 - TURF IRRIGATION MANUAL
by James Watkins
A guidebook for engineers, architects, designers and contractors. Keeps pace with the latest developments in turf and landscape irrigation. Specific chapters devoted to rotary sprinkler design systems. Golf course design systems and expanded engineering and reference material. **$23.95**

615 - TURF MANAGEMENT FOR GOLF COURSES
by James Beard
Written by an eminent turfgrass researcher, this USGA sponsored text is an ideal reference and "how to" guide. Details all phases of golf course operations including course design and construction, turf management, course administration, irrigation, equipment and disease and pest control. Fully illustrated. **$52.75**

620 - TURF MANAGEMENT HANDBOOK
by Howard Sprague
Practical guide to turf care under both healthy and poor turf conditions. Chapters cover turf in cooler and warmer regions, fertilizer use, regular turf care, weed and disease control and special turf problems. Useful seasonal schedules for management of turf areas. **$19.00**

110 - TURF MANAGER'S HANDBOOK
by Daniel and Freeborg
This specially designed manual by leading turf specialists is a comprehensive, organized approach to turfgrass science and care. An easy, on-the-job reference for planning, purchasing, hiring, construction and plant selection. **$28.95**

305 - FUNDAMENTALS OF LANDSCAPING AND SITE PLANNING
by James B. Root
Covers everything from the evolution of the earth's surface and the primary needs and functions of plant life to site planning and the concept of contours and the methodology of organizing a landscape. Demonstrates environmental design techniques. **$29.50**

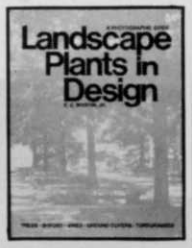
300 - LANDSCAPE DESIGN: A PRACTICAL APPROACH
by Leroy Hannebaum
Geared for the commercial designer/salesperson, this is a one-stop guide to the landscape design process. Covers the entire highly competitive field including design analysis techniques, pointers on land forms, specialized business landscaping methods, environmental design guidelines, specifications, estimations, bids. **$24.95**

370 - LANDSCAPE OPERATIONS: MANAGEMENT, METHODS & MATERIALS
by Leroy Hannebaum
An in-depth examination that combines technical training in landscape science with methods of accounting, business management, marketing and sales. Discusses effective methods for performing lawn installations, landscape planting and maintenance. Step-by-step accounting calculations are explained in simple terms. **$24.95**

365 - LANDSCAPE PLANTS IN DESIGN
by Edward C. Martin
An annotated photographic guide to the design qualities of ornamental plants and their aesthetic and functional use in landscape designing. Over 600 trees, shrubs, vines, ground covers and turfgrasses are described in non-technical language. Over 1900 photographs. Provides a basis for selecting the best plant materials for any particular use in landscape design. Contains detailed indexes that provide quick reference to particular design qualities and growing conditions. **$55.00**

375 - RESIDENTIAL LANDSCAPES
by Gregory M. Pierceall
An excellent reference for individuals involved in the design and development of plantings and constructed features for residential sites. Illustrations and actual residential case study examples are used to communicate graphic, planning and design concepts which are the focus of this text. **$29.95**

635 - IRRIGATION PRINCIPLES AND PRACTICES
by Hansen, Israelsen, Stringham
A new fourth edition of this highly successful textbook presents essential concepts pertaining to water conveyance, application, storage in the soil and use by plants. Basic underlying principles that govern irrigation practices are stressed. **$48.45**

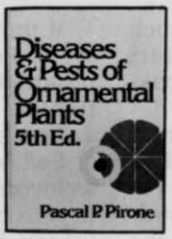


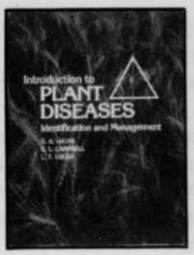
BOOKSTORE

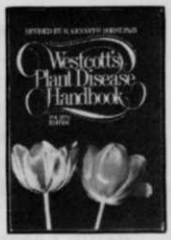
410 - DISEASES & PESTS OF ORNAMENTAL PLANTS
by Pascal Pirone
This standard reference discusses diagnosis and treatment of diseases and organisms affecting nearly 500 varieties of ornamental plants grown outdoors, under glass or in the home. Easy to understand explanations of when and how to use the most effective fungicides, insecticides and other control methods. **$32.50**

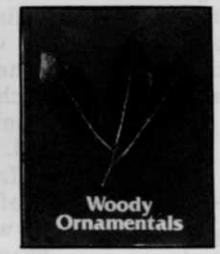
515 - INTRODUCTION TO PLANT DISEASES
by Lucas, Campbell, Lucas
Emphasizes four aspects of plant pathology: how to recognize that a plant has a disease, how to determine the cause of the disease, how to manage diseases, where to seek additional help with disease problems. Gives examples of specific diseases and their management. **$29.50**

570 - WESTCOTT'S PLANT DISEASE HANDBOOK
by Kenneth Horst
This fourth edition offers professionals the latest diagnostic and disease control information. Plant entries designed to simplify diagnosis, plus background on the classification of plant pathogens. This handbook gives a specific description of each disease, susceptible plants, specific symptoms of the disease, reported locations and control measures for each disease and their side effects. **$39.50**









665 - ARBORICULTURE: THE CARE OF TREES, SHRUBS AND VINES IN THE LANDSCAPE
by Richard W. Harris
Provides comprehensive coverage of complete planting, site analysis, preparation and special planting methods, fully detailed coverage of fertilization, irrigation and pruning guidelines on preventative maintenance, repair and chemical control, how-tos of diagnosing plant problems, practical data on non-infectious disorders, diseases, insects and related pests and pest management. **$38.95**

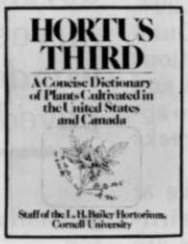
660 - DISEASES OF SHADE TREES
by Terry Tattar
Because shade trees require specialized maintenance rarely used in the forest, this text seeks to aid the arborist in providing necessary care to maintain vigor and prevent shade tree diseases. An in-depth look at infectious and non-infectious tree diseases. Plant pathology not necessary. **$24.50**

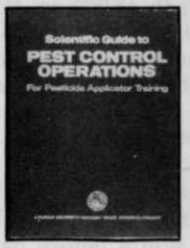
405 - WOODY ORNAMENTALS
by Partyka, Joyner, Rimelspach, Carver
Illustrated plant identification characteristics. Organized in two basic sections: plant identification and plant disorders, this text utilizes 430 color photos, 430 line drawings and 45 black and white photos to simplify identification. **$27.00**

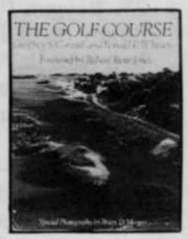
510 - HORTUS THIRD
from Cornell University
A 1,300 page concise dictionary of plants cultivated in the United States and Canada. A reference which every horticulture professional should have. **$125.00**

125 - SCIENTIFIC GUIDE TO PEST CONTROL OPERATIONS
by Truman, Bennett, Butts
Provides a sound basis for studying the technical aspects of pest control. Covers pesticides, safety, health and environmental concerns, equipment, flies and mosquitos, rats and mice, birds and much more. **$35.00**

800 - THE GOLF COURSE
by Cornish and Whitten
The first book ever to give the art of golf course design its due, and golf course architects the credit and recognition they deserve. 320 pages and 150 color and black and white photographs. Traces the history and evolution of the golf course, analyzes the great courses, shows how they were designed and constructed. **$35.00**







ADDITIONAL TITLES

345 - COST DATA FOR LANDSCAPE CONSTRUCTION 1985 $32.00

350 - HANDBOOK OF LANDSCAPE ARCHITECTURAL CONSTRUCTION $45.00

690 - INSECTS THAT FEED ON TREES AND SHRUBS $49.50

720 - SHRUB IDENTIFICATION $12.95

750 - TREE IDENTIFICATION $12.95

760 - TREE MAINTENANCE $49.95

565 - WEEDS $39.95

Mail this coupon to: Book Sales
Harcourt Brace Jovanovich Publications
One East First Street, Duluth, MN 55802

Name _____
Street Address _____
P.O. Box Number _____
City/State/Zip _____
Phone Number ( ) _____
Purchase Order Number _____
Signature _____ Date _____

Please send me the following books. I have enclosed payment* for the total amount.

Please charge to my Visa, MasterCard or American Express (circle one)
Account Number _____ Expiration Date _____

BOOK NUMBER AND TITLE	QUANTITY	PRICE	TOTAL PRICE

*Please add $3.00 per order plus $1.00 per additional copy for postage and handling. _____ (postage & handling)

Please allow 6-8 weeks for delivery.
Prices subject to change.
Quantity rates available on request.

Total Enclosed _____

WTT 586

move deeper in the soil. Under such conditions, irrigation several hours before treatment and a thorough soaking afterward is advisable.

Mole crickets—Egg laying diminishes in late June, and newly hatched nymphs of both species feed voraciously. Tunneling damage suddenly becomes obvious in July as the nymphs grow larger. Because of the potential for sudden damage at this time, turf areas should be inspected several times a week during this period.

Bait formulations have been effective in controlling mole cricket nymphs from June through August in the area from central Florida north and west through the Gulf States. Baits work best in eastern Georgia during spring and fall. Bait applications often must be repeated one or more times.

Bait formulations available include: 2% Baygon (½ lb./1,000 sq. ft.), 20% Sevin (5-10 lb. bait/acre), 5% Dursban (150 lb./acre or two applications of 75 lb./acre three weeks apart), and 2% malathion (100 lb./acre or two applications of 50 lb./acre three weeks apart).

Mole crickets are more active at night in moist soil. Turf should be irrigated several hours before baits are applied. Delay application until later in the day and do not irrigate for two-to-three days thereafter. Orthene 755 Tree and Ornamental spray (2 lb. AI/acre) can be applied late in the day and left unirrigated. However, retreatment may be necessary due to short residual activity.

Residual control of mole crickets with Oftanol (2 lb. AI/acre) may vary with location and amount of rainfall. Applications of Oftanol have given up to 12 weeks control from the Florida panhandle along the Gulf Coast. Residual control was only six weeks in areas where August rainfall exceeded eight inches weekly. Oftanol works faster on mole cricket nymphs when watered in immediately.

Black turfgrass ataenius—Eggs laid by beetles during May hatch in June and the larvae immediately begin feeding on the turf roots and thatch.

From late June to mid-July, symptoms of injury include wilting in spite of irrigation. In July, larvae move deep into the soil, pupate and emerge as adults. These adults lay eggs during August producing a second generation in states such as Ohio. The second generation larvae are capable of damaging turf.

If preventative applications of insecticide were not made, existing infestations may be spot or generally treated with Proxol, Turcam, diazinon, or Mocap at label rates.

Sod webworbs—Damage from sod webworm larvae occurs occasionally in most of the cool-season turf region. Injury is more common in midwestern states and is usually seen in July and August. Older sod fields and heavily thatched turfs are good candidates for infestation. There are generally one or two generations per year, depending upon the species.

In warm season areas most sod webworms complete at least three generations a year with overlapping generations toward the end of the season.

During September, billbug adults that developed from summer larvae are often seen wandering about on paved surfaces.

Damage is most severe from late June through August. In southern Florida where the tropical sod webworm is active throughout the year, damage is most severe in late summer and fall.

Hybrid bermudagrasses are favored by sod webworms, but damage occurs on other warm season grasses. Webworm damage to bermudagrass often superficially resembles symptoms of some diseases. Flushes of soapy water can be used to determine the presence of sod webworm larvae.

Insecticide applications should be made when larvae are present and/or one to two weeks after peak moth flight.

Formulations of Dursban, diazinon, Sevin, Proxol, or Aspon applied at labelled rates provide control. Retreatment may be necessary depending upon the location and number of generations.

Cutworms—Cutworm larvae continue to cause possible damage to golf course greens from June through August. These larvae pupate in the soil or thatch and emerge as moths that lay eggs for additional generations.

Cutworm larvae can be controlled with a wide range of insecticides label rates; including Dursban, Proxol, Aspon, Sevin, and others. Irrigation following liquid applications are generally not advisable unless required on the label.

Fall armyworm—The fall armyworm is seldom a problem of cool-season turf.

But in the South, summer always means the arrival of the moths of this migratory pest. Although in mild winters fall armyworms may overwinter among the Gulf Coast, it is generally believed that the moths are blown in on winds from Central and South America. Several generations occur each season, one about every five weeks. Generations overlap in the fall.

Lush, green bermudagrasses are preferred. By late June, fall armyworm damage to turf has usually been reported along the Gulf Coast. Damage is seldom permanent, unless drought and/or heat stress follow.

Fall armyworms may feed anytime furing the day but are most active in the early morning and late evening.

Treatment is most effective at these times. During hot, mid-day hours, larvae may retreat into the thatch.

Insecticides such as diazinon, Sevin, Dursban, and Proxol can be used at labelled rates to control fall armyworm.

Greenbug—Damaging populations of greenbug can occur from June through August. Populations and incidents of damage frequently varies from area to area, even within a city.

Symptoms of injury include turf under the dripline of trees and in open areas having a burnt orange color. When symptoms are seen, numerous aphids (40 or more) may be seen on a single grass blade. Close examination of damaged turf is necessary because the aphids are small. If left untreated, a heavy infestation can kill the turf.

Greenbug infestation may be controlled with liquid treatments of Dursban (1 lb. AI/acre), diazinon (2-5 lb. AI/acre), or Orthene at labelled rates. If reinfestation occurs following treatment with Dursban or diazinon, Orthene at labelled rates has been effective.

Fire ants—Fire ants are more difficult to control during hot, summer days because they are deeper in the soil. However, during rainy periods, they may become active and establish new mounds. Treatments during these months should be applied early in the morning before the heat of day.

Scale insects—Although Rhodesgrass scale is present in Gulf Coast areas throughout the year, damage be-

continued on page 42

MAVRIK®. ALL THE AMMUNITION YOU NEED.

Now. Take your best shot against insects and mites.

No matter what you're taking care of, MAVRIK AQUAFLOW® Insecticide will take care of your insects and mites.

There has never been a single product that handles so many pests, while being so convenient to use and so safe to plants. MAVRIK is a non-restricted material, and it has been tested on more than a hundred ornamental species without a report of any phytotoxicity.

MAVRIK is a water-based flowable, so it's convenient to mix, and there is no odor and very little visible residue. The dilution range is flexible—use more for mites, less for most other pests.

Use MAVRIK on trees, shrubs, lawns. Use it on aphids, thrips, whiteflies, worms, blackvine weevils, two-spotted and European red mites. Once applied, MAVRIK won't hurt bees or most other beneficials.

You won't find the convenience and broad spectrum coverage of MAVRIK in any other product. And since MAVRIK is available at your local distributor, all you have to do is ask for it.

Zoecon Corporation, a Sandoz Company
Crop Protection Division
Palo Alto, California 94304

Use pesticides effectively. Read and follow label directions carefully.

© 1986 Zoecon Corporation
MAVRIK and MAVRIK AQUAFLOW are trademarks of Sandoz, Ltd.

Circle No. 161 on Reader Inquiry Card


SAM

What they need is an amine herbicide that gets tough broadleaves like an ester. No sweat.

Who wants to go back and re-treat for broadleaf holdouts like spurge, oxalis, chickweed or ground ivy?

Now there's an all-round amine herbicide that gets them the first time around. And at a cost you can afford as a base treatment.

Introducing WEEDONE® brand DPC AMINE herbicide.

It's gentle on turf, but with more weed-stopping power than most three-way mixes.

Safer near ornamentals

WEEDONE® brand DPC AMINE herbicide is a fifty-fifty mix of 2,4-D and dichlorprop. It's a non-volatile amine salt formulation that stays where you spray. WEEDONE® DPC AMINE gives effective weed control but without dicamba or MCPP–which can injure sensitive ornamental and turf grass species.

Spray any time

You can spray WEEDONE® brand DPC AMINE herbicide any time weeds are actively growing. Year-round.

And you can tank-mix with fertilizers for 'weed and feed' treatment.

Have it both ways

A dependable, all-round amine herbicide with the spot control effectiveness of an ester. Ask your turf chemicals supplier about new WEEDONE® brand DPC AMINE broadleaf herbicide. It could make life easier for some people you know.

Circle No. 157 on Reader Inquiry Card

From the turf care group at Union Carbide

WEEDONE® is a registered trademark of Union Carbide Agricultural Products Company, Inc.
Copyright ©1986 Union Carbide Agricultural Products Company, Inc., P.O. Box 12014, T.W. Alexander Drive, Research Triangle Park, NC 27709
Always read and follow instructions on the label.

comes most pronounced during the hot, dry days of summer. Bermudagrass and St. Augustinegrass are preferred hosts, but other grasses are also infested. Several treatments with diazinon and a wetting agent are required for control to be effective.

Ground pearls are scale insects that live in the soil throughout the year, sometimes 8-10 inches deep. In the spring eggs hatch producing nymphs that feed through out the summer by piercing turf roots and extracting plant fluids.

Summary of grub control tests in Ohio - 1971-84[1]

Insecticide	Rate Lb AI/A	No. tests ( )[2] and avg. % control
bendiocarb (Turcam) 76W	2.0	(9) 82%
ethoprop 5G (Mocap)	5.0	(5) 89%
ethoprop 5G (Mocap)	10.0	(5) 95%
ethoprop 10G (Mocap)	5.0	(3) 83%
ethoprop 10G (Mocap)	10.0	(2) 99%
trichlorfon (Proxol) 80S	8.0	(29) 73%
isazophos (Triumph) 4E	2.0	(8) 82%
isazophos 1G (Triumph)	2.0	(2) 99%
isofenphos (Oftanol) 2I	2.0	(12) 90%
isofenphos (Oftanol) 5G	2.0	(17) 86%
isofenphos (Oftanol) 1.5G	2.0	(7) 86%
diazinon 2G	5.5-6	(7) 66%
diazinon 5G	5.5-6	(2) 49%
diazinon 50WP	5.5	(1) 69%
diazinon 4EC	5.5-6	(20) 63%
diazinon 14G	5.5-6	(5) 29%
carbaryl 80S	8.0	(2) 63%
chlorpyrifos 0.5G (Dursban)	4.0	(8) 33%
chlorpyrifos 2EC (Dursban)	4.0	(5) 64%
chlorpyrifos 4EC (Dursban)	4.0	(6) 51%

1 - Includes Japanese beetle, Cyclocephala spp., Phyllophaga spp., only.
2 - Each test replicated 3 or 4X. Generally, treatments applied late summer or early spring. Irrigated (1/4-1/2 inch) after application, thatch - 1/2 inch, readings taken ca. 4-8 weeks after treatment. H. D. Niemczyk & K. T. Power.

Chemical control for ground pearls has not been effective at any time of year. Damage is most severe during summer months when the turf is stressed from heat and drought.

Centipedegrass is especially susceptible to damage, particularly when weakened by overfertilization or drought. Proper fertilization, disease control, and adequate irrigation to maintain healthy turf is the best defense.

Fall (Sept.-Oct.)

Chinchbugs—In the northern U.S. the second generation of chinchbug is at peak numbers in September. Nymphs complete their development to adults in late October. Most chinchbugs overwinter in the turf, but some move to protected areas before winter.

Generally, infestation levels at this time are not high enough to warrant the use of insecticides. Early fall rains and infection by a parasitic fungus (*Beauvaria* spp.) usually provides sufficient control.

Damage by southern chinchbug may continue in untreated areas. Late summer applications of insecticide usually make fall treatment unnecessary.

Billbugs—During September billbug adults that developed from summer larvae are often seen wandering about on sidewalks, driveways, or other paved surfaces. Before winter, these adults seek shelter in thatch, along sidewalk edges, or near foundations and overwinter there. Many, if not most, overwinter in turf.

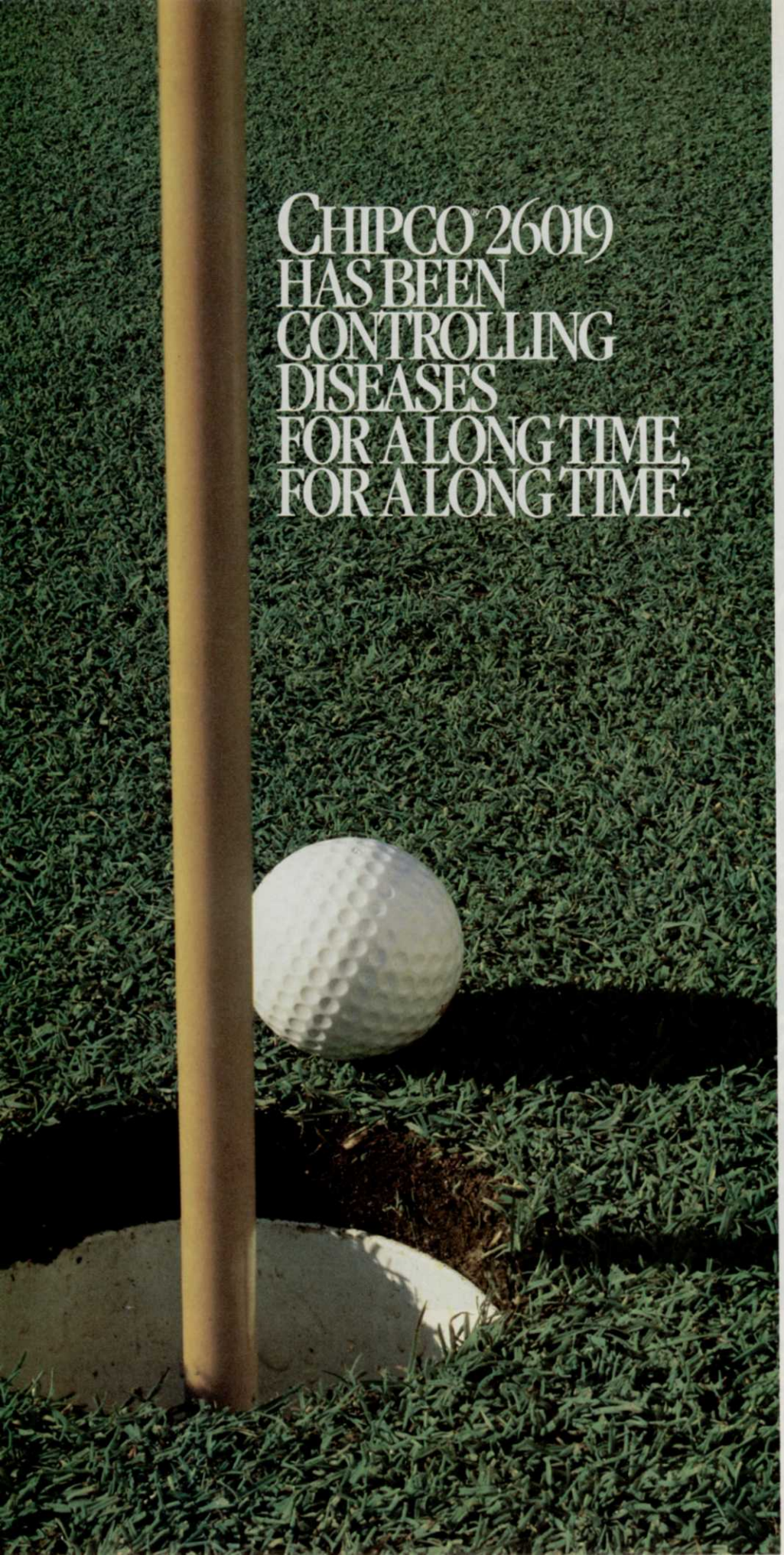
In some areas (Cincinnati, Ohio) a partial second generation is known to occur. Larvae of this generation have been known to cause visible damage in September and October. If necessary, diazinon, Turcam or Proxol may be used to control damage.

Grubs—Most species of grubs are in the third of their three stages of development and are feeding actively. When soil temperatures decrease in late October the larvae burrow deeper into the soil to overwinter. Severely cold winters have little effect on survival.

Treatments of existing grub infestations can be accomplished as late as early to mid-September, using standard grub insecticides. Treatment after this time may or may not kill the grubs before they move deeper into the soil to overwinter.

If the soil is dry, irrigation before treatment is advisable. Whenever treatment is applied, the grubs should be in the top one to two inches of soil.

Black turfgrass ataenius—By Sep-



Years of excellent, long-lasting performance have made CHIPCO® 26019 fungicide the leader in its field.

When it's your business to keep turf healthy and handsome, you don't wait for disease to break out. You strike first and play for keeps.

That's why thousands of superintendents base their disease control programs on CHIPCO 26019 fungicide.

It's unsurpassed at controlling the major turf diseases, like Helminthosporium Leaf Spot and Melting Out, Dollar Spot, Brown Patch, Fusarium Blight, Red Thread, Fusarium Patch and Gray and Pink Snow Molds.

And it stays on the job longer, giving up to 28 days of protection for a lower cost per day.

Add a few extras — no phytotoxicity, low toxicity, pesticide compatibility, and no corrosiveness — and you've got a fungicide that's earned its place as the standard of the industry.

Use CHIPCO 26019 this season and you'll stay with it for a long time to come.

Rhône-Poulenc Inc., Agrochemical Division, Monmouth Junction, NJ 08852. RHÔNE POULENC

CHIPCO 26019

Taking care of business.

CHIPCO® is a registered trademark of Rhône-Poulenc Inc.

Circle No. 145 on Reader Inquiry Card

IT ONLY TAKES FIVE MINUTES TO GET ATTACHED TO OUR NEW HYDROSTATIC TRACTOR.

Changing implements on a tractor is a lot of trouble. Whether you do it once a day, once a week or three times a season, it always takes up time that could be better spent on another job.

That's why you're going to love our new hydrostatic diesel tractor. It only takes five minutes, a pair of pliers and a pair of hands to attach a front loader or mowing deck.

And thanks to a special mounting system we've designed, you never have to take the mowing deck off. You can keep it attached while using any other implement, and operate them independently of each other.

But this tractor doesn't stop there. It also saves you valuable minutes out on the job. Because features like two-pedal-controlled hydrostatic transmission and power steering make this one of the easiest tractors there is to run.

Of course even with all these extra features, our new hydrostatic utility tractors are still built the same way as all our tractors. Rugged and dependable. They're designed around fuel-stingy diesel 3-cylinder engines (16-hp in the 655, a 20-hp in the 755, and a 24-hp in the 855). And they all feature live independent mid and rear PTO.

To learn more about our compact utility tractor line, or the name of the dealer nearest you, call 800-447-9126 toll free (800-322-6796 in Illinois). Or write John Deere, Dept. 79, Moline, IL 61265.

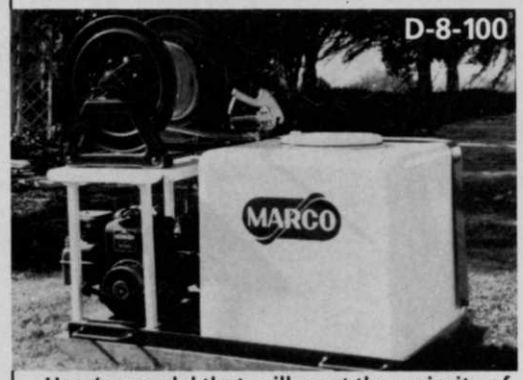
Or better yet, why not go and check out a hydrostatic tractor for yourself. You'll get attached to one in no time at all.

JOHN DEERE

Nothing Runs Like a Deere®

Circle No. 113 on Reader Inquiry Card

MARCO: A Lot of Sprayer in a Portable Unit!



Make applications of herbicides, pesticides and fertilizer quick and easy with a MARCO sprayer! MARCO's Prime Line of more than 20 models of spraying equipment features one-piece, hand-laid and baffled fiberglass tanks in custom sizes – each with a 20-year warranty!

Call or write for a brochure illustrating our complete line. We can custom build to fit your needs, too.

Contact MARCO today – and put our fully professional, fully affordable sprayers to work for you!

Here's a model that will meet the majority of your requirements:

Model D-8-100 Specifications

Pump Cap.	14 GPM
Pressure	550 psi
Power	8HP Briggs & Stratton Engine
Tank Cap.	100 up to 400 gallons
Standard Agitation	Jet
Pressure Control Unit	15 GPM
Standard Drive	Direct

Options

- Turf Trailer Mounting
- Belt-Driven Mechanical Agitation
- Fill Well Basket Filter
- Canopy and Hose Reel to Hold 200' of ½" hose
- Dry Booms in Varying Lengths
- Boom Jet – Pistol Grip Gun
- 52" or 72" Hand Boom and Drift Skirt

MARCO
DIVISION OF LLO-MAR MFG. CO.
(800) 527-1574
In Oklahoma, call (405) 362-3162
210 S. Main St.
Newkirk, OK 74647

SEE MARCO'S NEW 1986 PRODUCTS AT BOOTH 940, GCSAA!

Circle No. 130 on Reader Inquiry Card

TURF VAC®

Only sweeper for both turf and pavement. Grass, glass and trash ... wet or dry. Sweeping widths from 4 to 10 ft. Self-propelled and tow-type, both with ground dump and power lift dump.

Riding Model 80

Model FM-5 with hand intake hose

SANDANCER®

Versatile multi-purpose work vehicle. Hill-climbing 18 h.p. gas engine with a unique power train that eliminates stripped gears and burned-out clutches. Three models and a wide selection of options allow you to build a SANDANCER to match *your* work needs.

3 or 4 wheel models

Write for brochures and distributor in your area.

TURF VAC CORPORATION
P.O. Box 90129
Long Beach, CA 90809
(213) 426-9376

Circle No. 156 on Reader Inquiry Card

tember, adults of the current generation begin to fly into protected areas, such as golf course roughs, to overwinter. Larvae that have not completed development to adults before frost are killed.

Mole crickets—Mole crickets fly again in the fall, but no egg laying is known to occur at this time. The crickets are large and difficult to control at this time. Damage becomes obvious as turf growth slows.

Sprays of diazinon (5-6 lb. AI/acre) or Turcam (2 lb. AI/acre) may have to be repeated several times. Oftanol (2 lb. AI/acre) may work too slowly for adequate control of large crickets in October. Mocap 10G (10 lb. AI/acre, commercial turf only) is usually effective at this time providing up to four weeks residual control.

Sod webworm—Northern sod webworm larvae are small and cause little if any damage in the fall. Late in the fall the larvae construct a cocoon-like shelter in which they overwinter.

Except for the most southern areas where development is continuous, sod webworm larvae present in September will overwinter. Areas treated earlier in the season may be reinfested by this time. Treatment in September reduces the population for next season.

Fall armyworm—Fall attacks on newly established turf from mid-September through October may result in damage that will not recover with fall fertilization. This forces the turf to enter winter in a stressed condition. Such damage can contribute to winter turf mortality.

If needed, apply controls early in the morning or late in the day when fall armyworms are most active. Use diazinon, Sevin, Dursban, or Proxol.

Fire ants—Hot, dry periods in September and October may make fire ant control difficult. Once rain begins, fire ants become active and may be effectively controlled with mound treatments of diazinon, Dursban, Orthene, Amdro bait or MC-96. Larger infested areas where mound treatment is impractical can be treated with Amedro fire ant bait (1.5 lb./acre).

Greenbug—Severe infestations of greenbug have been known to occur as late as the first week of December. Areas having a history of infestation should be reexamined when mild temperatures extend late into the fall. Heavily infested turf will not survive through winter.

Late fall infestations may be controlled with the same insecticides used to control the pest in the summer. **WT&T**

Frank J. McDonald, Director of Marketing
Cushman Division, Outboard Marine Corporation
Lincoln, Nebraska

CUSHMAN®

"Take the new 22-horsepower Cushman Front Line test-cut and we will send you a free solid brass belt buckle that proves our point."

Frank J. McDonald

Test-cut the improved Cushman Front Line, and you'll see why this mower **is** built to last.

There's no obligation, and you'll receive a free, limited edition, solid brass belt buckle.

Cushman engineers gave the Front Line a full 22-horsepower to get you through your tallest grass and toughest mowing conditions.

Engineered and built to last. That's why we stand behind the performance and durability of every Front Line mower with a 2-year warranty*.

So save some of your toughest mowing for the Front Line, then call your Cushman Front Line dealer to arrange for your test-cut. But hurry, this offer ends July 31, 1986.

For more information on the Cushman Front Line write:

CUSHMAN
3226 Cushman, P.O. Box 82409, Lincoln, NE 68501. Or call toll-free: 1-800-228-4444.

*Ask your dealer for details.

Your free gift with a Front Line test-cut.

"OUR REPUTATION IS BUILT TO LAST"

CFL6-8599R

©Outboard Marine Corporation, 1986. All rights reserved.

Circle No. 111 on Reader Inquiry Card

Give us your tired, your grasses yearning to gro
Yes, even your fairways.

huddled
w free.

Fungus diseases. They're spoilers. Give them an inch and they'll take a fairway.

But can you afford to keep your fairways as clean and green as your tees and greens? You can with economical ®BAYLETON Turf and Ornamental fungicide.

BAYLETON is absolutely the most economical fungicide you can use. With its lasting residual, up to 30 days and longer, you make fewer applications. And that saves you time, manpower, and money. Plus, BAYLETON is now available at an attractive new price. For control of dollar spot, anthracnose, and other diseases, there's nothing more effective, or cost-effective, than BAYLETON.

Tee to green and every inch in between, keep your golf course fungus free. With BAYLETON. Always read the label before use.

ATTRACTIVE NEW PRICE

BAYLETON.
IT STOPS THE SPOILERS.

MOBAY

Mobay Chemical Corporation
Specialty Products Group
Box 4913, Kansas City, Mo. 64120

BAYLETON is a Reg. TM of the Parent Company of Farbenfabriken Bayer GmbH, Leverkusen.

Circle No. 133 on Reader Inquiry Card

WOODY ORNAMENTAL INSECT CONTROL

by Dr. D.G. Nielsen and Dr. J.R. Baker

Landscape trees and shrubs constitute a major investment and add significantly to the beauty and value of residential and commercial properties.

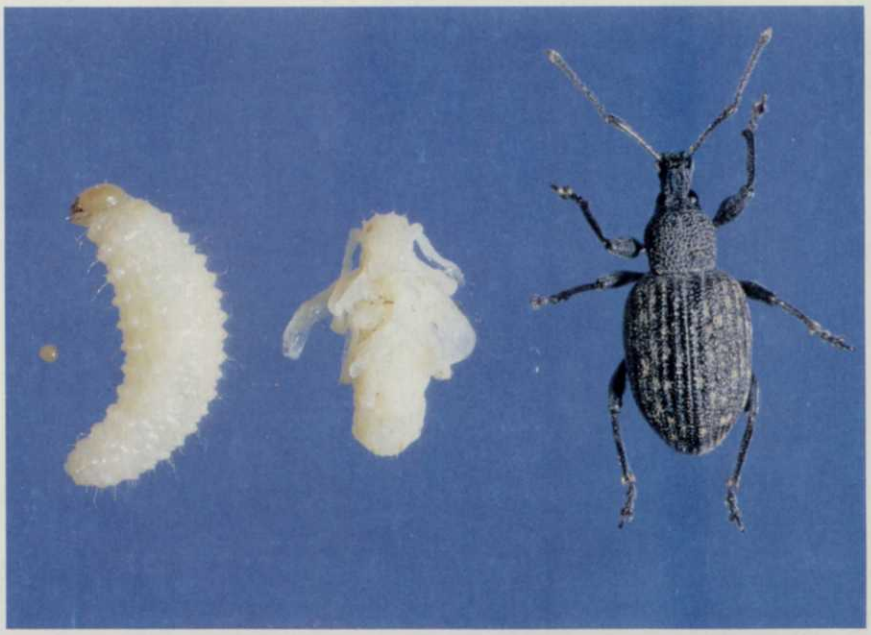
Landscape managers need to be familiar with woody plants, their requirements for survival and vitality and their pest problems to implement effective pest control programs. Most native trees and shrubs on undisturbed sites suffer only rarely from ravages of insect pests.

However, trees growing in landscapes are commonly stressed by construction damage, lack of water (or too much water if there is poor drainage), high temperatures, compacted soils, and other factors that reduce the tree's ability to either repel or withstand insect attacking without suffering decline.

Many major pests of trees and shrubs are probably opportunists that exploit hosts that have been weakened by physical factors.

This article is designed to help landscape managers develop strategies for controlling insect pests of woody plants.

The information is organized according to seasonal insect activity. The time or times an insect is vulnerable to a direct control tactic and up-to-date insect control recommendations are provided.



The life cycle of the black vine weevil (from left): egg, larva, pupa, adult. Four foliar sprays at three-to-four week intervals are required for control.

Control Strategies

In the past, pre-scheduled cover sprays were often used to control insect pests that may be present on the property, because the detrimental side effects of some pesticides were not yet known and landscape managers were not familiar enough with local pests to develop target spray programs.

Many times, all trees on a property were sprayed when only a few harbored a pest species. Today, conscientious tree care specialists use insecticidal sprays only after determining which pest(s) is present and whether or not it has reached a potentially damaging population level. They spot spray only infested plants.

This approach is cost effective in terms of material costs, landscape beauty and longevity, and environmental quality.

Dormant Period (November-March)

Some insect and mite pests are vulnerable to control tactics after trees and shrubs have become acclimated to winter temperatures. Landscape managers can capitalize on this vulnerability by performing pest control functions when other maintenance activities are not competing for their time.

Horticultural spray oils can be used safely on many woody plants to control overwintering eggs of spider mites and aphids and immature forms of adelgids and soft scales.

New information from Cornell University indicates that currently available horticultural oils can be used throughout the year when the temperature is above freezing.

However, four cautions should be considered before using these products:

- Read the label to make sure the product is not phytotoxic to plants on which you intend to use it;
- Do not use oils at the dormant season rate in the fall before plants have become winter-hardy. In the South, woody ornamentals may not go dormant until late December;
- Oil sprays should not be used on plants under moisture stress or when temperatures are high with high humidity;
- Do not apply oil sprays to tender new growth in spring.

Spruce Gall and Pine Bark Adelgids

Adelgids are small, soft-bodied sucking insects that feed on the needlesor bark of conifers.

On spruce they cause pineapple-like galls to form on the new growth.

Eastern spruce gall adelgid and Cooley spruce gall adelgid overwinter

Dr. D.G. Nielsen is a professor of entomology at Ohio State University, and Dr. J.R. Baker is an extension entomologist at North Carolina State University.

CUT A BIG CHUNK OUT OF YOUR MOWING AND TRIMMING.

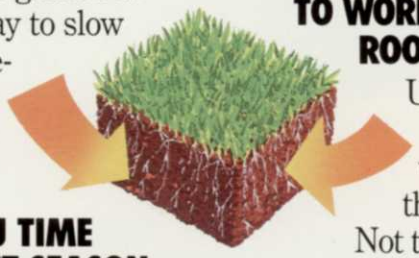
LIMIT® can cut your tough

You know them: all those places where cutting grass is a big headache. And a big time-taker. Hillsides. Roadsides. Wet spots. Bunkers. And pesky trim spots like plantings, monuments and fences.

The places where you wish the grass would grow nice and slow. The places where, sure as grass grows, you need LIMIT® turf regulator.

LIMIT SLOWS GRASS GROWTH FOR UP TO SIX WEEKS.

Monsanto, the company that brought you Roundup® herbicide, now brings you another important turf management tool. LIMIT turf regulator is the guaranteed way to slow the growth of bluegrass, fescue, and ryegrass for up to six weeks.



LIMIT BUYS YOU TIME IN YOUR BUSIEST SEASON.

Five years of testing by Monsanto and turf managers have proven it: LIMIT can reduce *by half* the time you spend trimming and mowing treated areas.

LIMIT buys you time. Time your crews can use for priority projects, especially in the spring.

THE ONLY TURF REGULATOR TO WORK THROUGH THE ROOTS.

Unlike other turf regulators, LIMIT works through the roots.

Not through the foliage.

The result? You can spray LIMIT earlier. Only LIMIT works before green-up, as well as after. It fits your schedule. Not the other way around.

ALL KINDS OF TURF MANAGERS GIVE LIMIT HIGH MARKS:

FRED TRAUT
Grounds Supervisor,
Sheppard and Enoch Pratt Hospital,
Baltimore, MD

"...on real steep, hard-to-mow slopes, LIMIT reduced equipment usage, the hazard to my employees...and my labor of mowing."

JOE KOSOGLOV
Golf Course Superintendent,
Hillcrest Country Club,
Indianapolis, IN

"We use LIMIT in areas that require a lot of handwork. I'd recommend LIMIT to any golf course superintendent spending too many hours in areas he'd rather not be."

est cutting jobs by half.

THE ONLY TURF REGULATOR THAT DOESN'T MIND THE RAIN.

Root uptake of LIMIT also means there's no wash-off worry. Let it rain. You can actually apply LIMIT while it's raining.

LIMIT IS SAFE EVEN WHEN YOU OVERLAP.

LIMIT is safe to turf, too. It's formulated to get consistent response and quality even where there's unavoidable overlapping; unlike other turf regulators that cause overlap browning.

What's more, LIMIT is harmless to ornamentals. And LIMIT won't stain monuments, sidewalks, or other fixtures.

EASY TO MIX, EASY TO APPLY.

Adding LIMIT to your current spraying program is easy. No special equipment is needed.

Plus, LIMIT can be tank mixed with both fertilizer and commonly used herbicides, so you get one-pass efficiency.

And, compared with other turf regulators, LIMIT is unusually tolerant of mixing errors.

MONSANTO GUARANTEES LIMIT WORKS.

This Spring, cut your toughest mowing and trimming jobs by half.

Monsanto guarantees that spraying LIMIT before seedhead will slow grass growth for up to six weeks. *Safely.*

Try new LIMIT where you want to mow and trim less. A lot less. And give your crew better things to do.

LIMIT®
TURF REGULATOR
BY Monsanto

DICK STEDMAN
President
Wright Lawn and Tree Care, Inc.
Clarence Center, NY

"We've had phenomenal results with LIMIT at two cemeteries. For the first time, we can tell our accounts we have a product that will consistently work."

PHIL PIRRO
Lawn Service Manager,
Landscaping, Inc.,
West Hartford, CT

"With LIMIT, I cut my mowing in half and freed up my personnel to do more detail work that my customers notice."

As sure as grass grows, you need LIMIT.®

- One application controls growth for up to six weeks.
- Labeled for repeat applications.
- Reduces mowing and trimming by half.
- Saves you valuable manhours.
- Fits your work schedule—apply before or after green-up.
- Will not wash-off—rain actually improves uptake.
- Overlaps safely.
- Safe to ornamentals, sidewalks, monuments, or other fixtures.
- Can be tank-mixed with fertilizer and commonly used turf herbicides for one-pass convenience.
- Easy to mix and apply.
- Available in quart or gallon size.
- Monsanto guarantees LIMIT will perform as promised on the label. *(Always read and follow label directions.)*

For more information, contact your local LIMIT dealer.
Or call this toll-free number for the LIMIT dealer nearest you.

1-800-225-1212
(except Nebraska and Alaska)

Limit turf growth regulator offer extended until June 15, 1986! Postmark extension until July 15, 1986!

LIMIT®
TURF REGULATOR
BY Monsanto

Get a free quart of Roundup® when you buy LIMIT.®

For every 1 gallon of LIMIT® turf regulator you buy between November 1, 1985 and June 15, 1986, (Postmark extension until July 15, 1986.) you get 1 quart of Roundup® herbicide free! This purchase may include any combination of quart or gallon containers of LIMIT. One quart of Roundup for each whole gallon of LIMIT purchased.

Please use the attached business reply envelope to take advantage of this offer.

LIMIT® and Roundup® are registered trademarks of Monsanto Company.
© Monsanto Company 1985
LIM-6-104

as young nymphs on the undersides of branches on spruce or on the lower leaf surface of Douglas fir, the alternate host of the Cooley gall adelgid.

Pine bark adelgid overwinters as eggs, nymphs, and adults in bark cracks and crevices on white pine.

By late winter the trunks of infested pines may be snow-white from huge numbers of adelgids.

Adelgids can be controlled on all hosts any time after spruce galls open in late summer until just prior to bud break the following spring.

Horticultural oil may reduce the overwintering population, but oil may remove the waxy bloom from the needles of spruces and pines, causing them to become unsightly.

Sevin (carbaryl) or lindane can also be used in a thorough-coverage, hydraulic spray, making sure to cover the underside of spruce branches and Douglas fir needles. A wetting agent may be useful to help penetrate the fluffy wax covering that surrounds the insect, especially when treating the pine bark adelgid.

Mites

Spider mites, including spruce spider mite on coniferous evergreens and southern red mites on broadleaf evergreens, suck plant juices and deposit silk and waste material on their hosts, causing foliage to become dull and bronze-colored.

Mites tend to feed in spring and fall but populations usually crash in very hot or very cold weather. They overwinter in the egg stage which is susceptible to control with horticultural oil used at the dormant season rate.

False spider mites are tiny, flat mites which feed and reproduce slowly throughout the year. Most "winter injury" symptoms on Aucuba, azalea, and Japanese hollies are due to false spider mites.

Horticultural oils or other miticides give adequate control of these pests. Treatment is appropriate at any time of the year except in early spring when new, tender growth is emerging.

Aphids

Aphids are small, soft-bodied insects that insert their mouthparts into the phloem of leaves, stems, and roots to suck out sap.

Aphids excrete honeydew, a sweet liquid that coats heavily infested plants. Some species (melon aphid, apple aphid) feed on the most succulent part of the plant. Other species (giant willow aphid, giant bark aphid, *Cinara aphids*) feed on stems. High aphid populations can cause leaves to

Fuller rose beetles notch the leaves of shrubs in the South.

yellow and fall prematurely.

The honeydew they excrete serves as a substrate for a black sooty mold fungus that reduces the aesthetic appeal of the plant and reduces its ability to manufacture food.

Many aphids overwinter as exposed eggs on conifer needles or on stems and buds of other woody plants.

If a damaging aphid population was detected the previous summer or fall, an application of horticultural oil before bud break will reduce the spring aphid population, thereby giving the tree a chance to recover before aphids build up again during the spring and summer.

Soft Scales

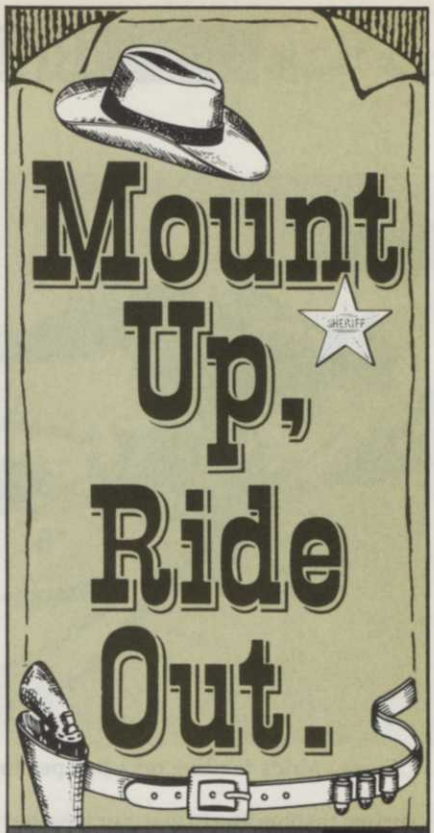
Soft scales are another kind of sucking insect that drain a tree's energy and reduce its ability to manufacture food.

They suck sap from the phloem and produce honeydew. Some (e.g. the tulip tree scale) seriously weaken or kill their hosts.

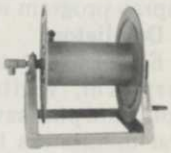
Heavily infested trees and shrubs often become blackened with sooty molds. Some soft scales overwinter as immature forms (cottony maple, cottony maple leaf, magnolia, Pine tortise, and Fletcher scales) that are somewhat vulnerable to horticultural oils used at the dormant application rate.

Spring (April-late June)

Most insects become active in the



When you're gunning for the pests who've been robbing your territory of good health and appearance, put Hannay Reels on your side. Or in the back. Or in a cabinet. Mounted on trucks or trailers, versatile Hannay Reels for pest control give you greater range, better control and neat, convenient hose storage. The trail home is just as fast and easy, with direct crank rewind or chain and sprocket drive powered by an electric or compressed air motor. Mount up with Hannay Reels, and ride with the best.



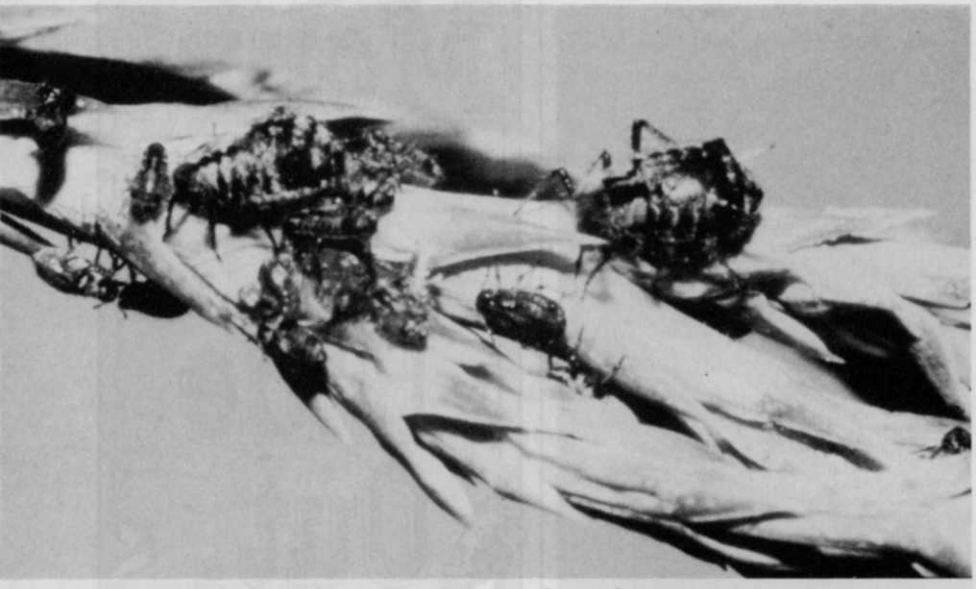
SERIES 1500

The Reels of Progress

HANNAY REELS

CLIFFORD B. HANNAY & SON, INC., 600 EAST MAIN STREET
WESTERLO, NEW YORK 12193 • TELEPHONE (518) 797-3791

Circle No. 123 on Reader Inquiry Card



***Cinara* aphids feeding on a juniper in the early spring.**

spring, responding to warmer weather and resumption of plant growth and development.

Monitoring trees and shrubs for pests during spring is one of the most important tactics in a modern insect control program.

Newly expanding or expanded leaves should be checked for the presence of sucking insects, leafminers, and defoliators.

Tree limbs and trunks should be inspected to determine presence of active borer galleries as early detection will permit time for learning the identity of the pest and determining if a spray program is justified.

Defoliators

Eastern tent caterpillar, fall cankerworm, whitemarked tussock moth, and pine sawflies are among the first defoliators to begin feeding in spring.

The eastern tent caterpillar is obvious and readily detectable because it forms a silken tent in tree crotches, especially flowering fruit and nut trees.

During years of high caterpillar numbers, entire trees may be defoliated. These pests often reach maturity before defoliation is noticed.

The tent caterpillars and their relatives, including mimosa webworm, fall webworm, bagworm, and gypsy moth, are readily controlled with a number of conventional insecticides or with the bacterium, *Bacillus thurengiensis*, commonly known as *B.t.*

Pine sawflies are often difficult to detect since they blend-in with needles on their hosts. They often reach maturity before defoliation is noticed.

Sawflies are related to bees and wasps and are highly susceptible to Sevin. Orthene (acephate) is also labeled for this use.

Elm leaf beetle larvae and adults consume foliage. There are two generations each summer. Sevin, Orthene, or Turcam/Dycarb (bendiocarb) can be used when trees leaf-out in spring. A second generation may require a second application in July.

Armored Scales

Armored scales, soft-bodied sucking insects that suck juices from leaves and stems but do not produce honeydew, are named armored scales because after the first stage molts, later stages are covered by cast skins and tough wax.

Consequently, they are vulnerable to contact insecticides only during the crawler and settled first nymph stages.

Armored scales overwinter as eggs (pine needle and oystershell scale), as mated females (euonymus and white peach scales), or in more than one stage (hemlock and tea scales). As indicated, all of them are most easily controlled with crawler sprays.

Armored scales that overwinter as eggs can usually be controlled with a single application of an insecticide, if thorough coverage is achieved. If application timing is not precise, a systemic insecticide like Metasystox-R (oxydemetonmethyl) or Orthene should be used.

Species like euonymus scale require more than one crawler spray, since the first hatching crawlers molt before the last spring generation eggs are laid.

Three thorough-coverage, hydraulic sprays at 10-to-14 day intervals are needed to provide an adequate level of control.

All armored scales that have more than one generation per year (pine needle, euonymus and white peach scales) should always be controlled during the spring crawler hatch because the hatching period is shorter at that time, so fewer sprays are required to provide control.

Horticultural oils may be effective for armored scale control. Use the summer rate after new plant growth has hardened-off.

Aphids

Aphid populations can explode in a short time, since a new generation can be produced every 10-to-15 days in the North and even faster in the South.

In the North, aphids are often at high population density during summer droughts, or just after a drought period, and should be controlled before they cause premature leaf drop.

In the South, aphid populations are often high in late winter and early spring before lady beetles and other predators become active. However, crape myrtle aphid populations often become damaging later in the summer.

Mistblower applications are excellent against free-living aphids.

Adelgids

Remember, overwintering forms can be controlled by using a hydraulic application of lindane or Sevin, stressing coverage to the underside of branches and leaves before bud break.

After bud break, adelgids on spruce are protected as their galls form. They become vulnerable again in fall after their galls open. Pine bark adelgids can be controlled in spring or summer as long as the pines are not under water stress and after the new growth has begun to harden off.

Leafminers

Birch, boxwood, and holly leafminers are highly specialized insects whose larval stages damage trees and shrubs by destroying tissues within the leaf.

Birch leafminer is a sawfly (closely related to bees and wasps) who emerge as adults in May.

Foliage can be protected by spraying when the adult sawflies are actively mating and feeding on birch trees.

Sevin, malathion, and lindane are effective before eggs are laid within leaf tissue. After egg laying begins or

110 KINDS OF PLANTS. 43 TYPES OF INSECTS. 1 SPRAY.

You're looking at a picture, not of a place, but of an idea: ORTHENE® Tree and Ornamental Spray, and why it means so much to professional gardeners, nurserymen, arborists and golf course superintendents.

ORTHENE offers blanket protection against an amazing variety of insect pests. It's cleared for use on a long list of trees and plants, from orchids to roses to ponderosa pine, even for turf. Cleared last year for use against turf insects, ORTHENE* has just been okayed for mole crickets in Florida—the main enemy of professionals' healthy greens and fairways.

By using ORTHENE, one spray lets you kill pests like tent caterpillars, whiteflies, Japanese beetles and thrips on contact. Plus it provides lasting residual action against other insects from aphids to scale crawlers to sod webworms. It's a great way to make the whole job of protecting flowers, trees and turf simpler, and more effective.

If you're a professional in the plant care industry, ORTHENE can actually make it easier to do a better job of protecting plants. You ought to know more about it. To find out, send in this coupon.

*ORTHENE 75 S Soluble Powder (Florida SLN).

Avoid accidents: For safety, read the entire label including precautionary statements. Use all chemicals only as directed. Copyright © 1985 Chevron Chemical Company. All rights reserved.

Circle No. 221 on Reader Inquiry Card

ORTHENE.

Chevron

ORTHO

Chevron Chemical Company

Mail to:
Lee Sutherland
Chevron Chemical Company
575 Market Street
San Francisco, CA 94105

Please send me more information on ORTHENE.

Name

Company

Street Address

City

State Zip

INSECTICIDE DIRECTORY

Common Name	Brand Name	Company
acephate	Orthene	Ortho/Chevron
B. t.	Thuricide	Zoecon
	Dipel	Abbott Labs
	SOK Bt	Nor-Am
bendiocarb	Turcam	Nor-Am
carbaryl	Sevin	Union Carbide
chlorpyrifos	Dursban	Dow
diazinon	Diazinon	Ciba Geigy
	Sarolex	Ciba Geigy
dicofol	Kelthane	Rohm & Haas
dicrotophos	Bidrin	Shell
dimethoate	Cygon	American Cyanamid
dioxathion	Deltic	Nor-Am
dymet	Dymet	Mallinckrodt
femobutain-oxide	Vendex	Shell
fenvalerate	Pydrin	Shell
fluvalinate	Mavrik	Zoecon
isofenphos	Oftanol	Mobay
malathion	Malathion	American Cyanamid
methoxychlor	Marlate	Kincaid
morestan	Imidan	Stauffer
oxydemetonmethyl	Metasystox	Mobay
phosmet	Imidan	Stauffer
trichlorfon	Dylox	Mobay
	Proxol	Nor-Am

mines begin to form, a systemic insecticide should be used. Metasystox-R, Orthene, and Cygon (dimethoate) are labeled for this use.

There are several generations per year, but the first two generations seem to be most destructive.

Holly leafminer is a true fly that has only one generation per year. Spring application of Metasystox-R or Orthene after the new plant growth has hardened-off is necessary to achieve control.

Boxwood leafminer is a gall midge which also has one generation per year. A mid-to late-spring application of Cygon will adequately control boxwood leafminer.

Spider Mites

Spider mites such as twospotted spider mite and tumid mite are common and damaging on plants under water stress and during long, hot droughts.

They complete many generations throughout the summer. Kelthane (dicofol), Mavrik (fluvalinate), or another miticide should be used before mites cause foliage to turn bronze. A hydraulic sprayer must be used to maximize coverage, especially on plants with dense foliage, including foundation plantings, conifers, and other evergreens.

Two sprays must be used at a seven-to-10 day interval, since most miticides do not kill eggs. A single application will not be effective against spider mites.

Root Weevils

Root weevils (black vine, strawberry root), can be destructive in both adult and larval stages.

Adults chew notches in leaf margins. Larvae consume small roots and girdle larger roots, sometimes causing death of foundation plants, including rhododendron, azaleas, and yews (taxus).

Spray foliage with Orthene or Turcam/Dycarb in mid-June, followed by repeat applications at three-to-four week intervals until August.

Level of control is directly related to the degree of coverage, so use a hydraulic sprayer to control root weevils. Drenching soil beneath host plants may help reduce larval populations.

Borers

Clearwing moth borers are common in lilac, ash, dogwood, rhododendron, oak, and flowering cherries. Flatheaded borers (adults are called metallic wood borers) are common in white-barked birches, oaks, and other stressed hardwoods.

Larvae do the damage by feeding beneath bark, disrupting movement of food and water, destroying the cambium (the growth layer of cells), and causing structural weakness. Clearwing presence and flight periods can be monitored with pheromone traps (see insert).

A single, thorough-coverage bark spray of Dursban (chlorpyrifos) or lindane, 10-to-14 days after first male moth capture, will provide season-long control of most clearwing moths.

Three applications of bark/foliage sprays with Turcam/Dycarb, Dursban, or lindane are required to control flatheaded borers.

Summer (July-Sept.)

Defoliators

Mimosa webworm, bagworm, fall webworm, Japanese beetle adults, and second generation elm leaf beetles sometimes become common in early summer.

All of these pests should be controlled when larvae are small to minimize damage and maximize effectiveness of the insecticide. Caterpillars can be controlled with one of the B.t. formulations. Sevin, Orthene, Turcam/Dycarb, and several other common insecticides will also control these pests.

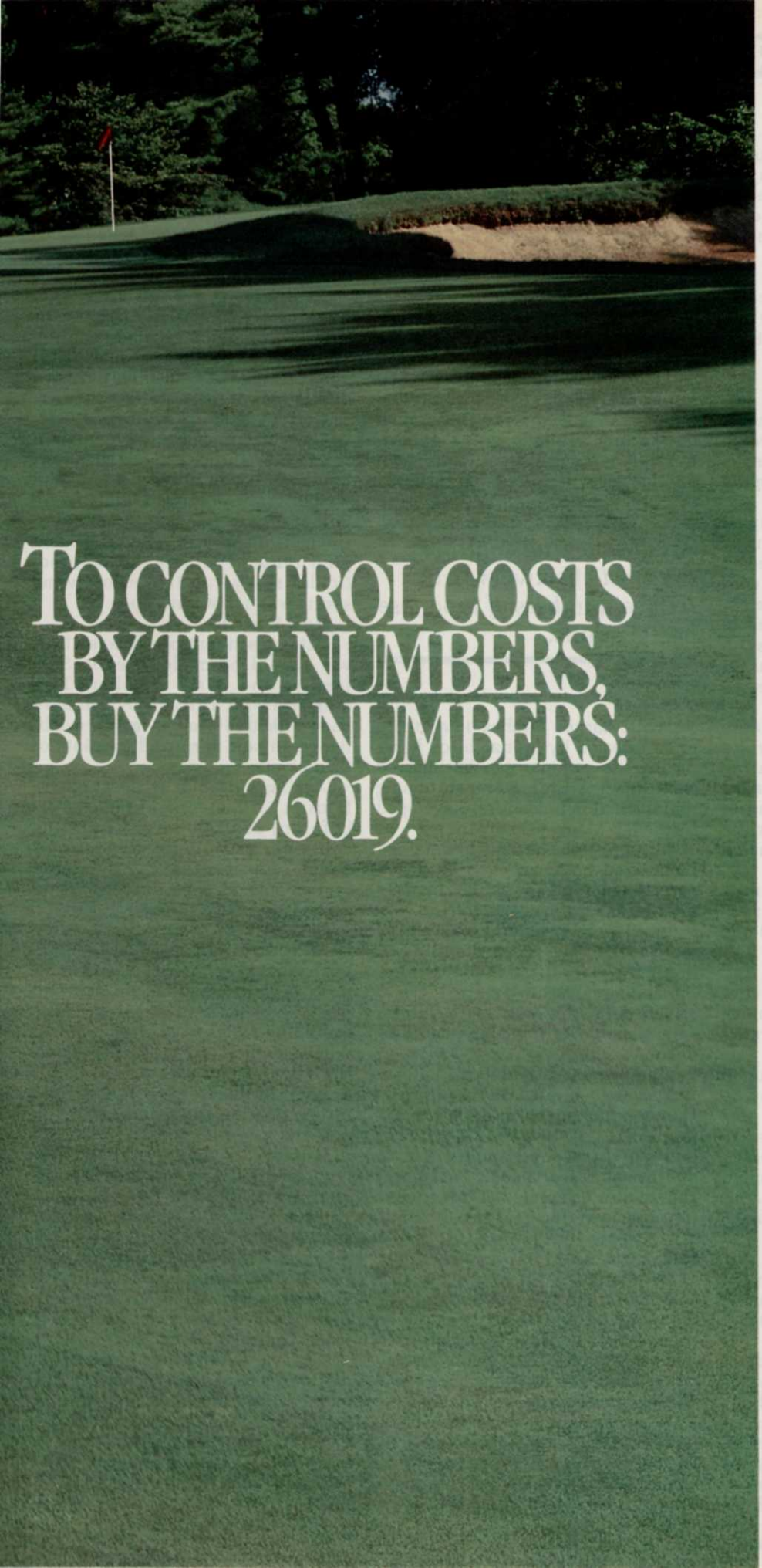
Mistblower application may be cost-effective but may result in unacceptable drift of insecticidal sprays, especially in windy weather.

Japanese beetle adults defoliate many kinds of woody plants and roses in July and August. They are most easily controlled with weekly sprays of Sevin or Turcam/Dycarb.

Mavrik also gives long-term control of Japanese beetle adults. Japanese beetle traps can be used to capture large numbers of beetles, but they do not reduce defoliation or control the beetle population.

Area-wide grub control is the most effective way to reduce numbers of Japanese beetle adults and defoliation they cause.

Second generation elm leaf beetles



CHIPCO® 26019 fungicide costs less because it works longer.

You'd expect a premium product to cost more. But in the case of CHIPCO 26019 fungicide, its quality translates into greater cost-effectiveness than you'll find with any other product.

At the labeled spray interval of 28 days, you can protect your fairways for under 10¢ per 1000 square feet per day.

The cost alone might convince you to give it a try. But performance against turf disease makes CHIPCO 26019 the leading fungicide on the market.

A fairway disease prevention program based on CHIPCO 26019 will give effective, long-lasting protection against the major diseases: Helminthosporium Leaf Spot and Melting Out, Dollar Spot, Brown Patch, Fusarium Blight, Red Thread, Fusarium Patch, and Gray and Pink Snow Molds.

So if you want to economize without compromise, buy the numbers: CHIPCO 26019 fungicide.

Rhône-Poulenc Inc., Agrochemical Division, Monmouth Junction, NJ 08852. RHÔNE POULENC

CHIPCO 26019

Taking care of business.

CHIPCO® is a registered trademark of Rhône-Poulenc Inc.

Circle No. 146 on Reader Inquiry Card

can cause significant defoliation if heavily infested trees are not sprayed. Birch leafminer can be controlled, if trees are sprayed when second or third generation adults are mating and ovipositing.

Scales

Crawlers of several soft scales (Fletcher, cottony maple, cottony maple leaf, pine tortoise, wax and tulip tree) hatch in late June or early July (earlier in the South).

They and settled nymphs are susceptible to scalicides (Sevin, Orthene, diazinon, Dursban, Turcam/Dycarb and Mavrik) in early July. A single, thorough-coverage, hydraulic spray should provide control.

Settled nymphs and other nymphal stages are vulnerable to contact insecticides, because they are not protected by cast skins and wax. Sprays to control soft scales should always be applied after all eggs have hatched to minimize the impact of pesticides on lady beetles and other predaceous insects, to minimize insecticide usage, and to maximize control.

Second generation pine needle scale, euonymus scale, and white peach scale crawlers hatch during July and early August. Two sprays at a 10-day interval may be required to control pine needle scale and white peach scale because crawlers hatch over a three week period.

Summer generation euonymus scale crawlers hatch over a longer period, so three applications at 10-day intervals are required.

Aphids

Aphid populations should be controlled before they secrete copious amounts of honeydew or do irreversible damage to leaves.

If aphids are allowed to build-up in high numbers, plant growth may be distorted and leaves may fall prematurely. Once honeydew and sooty mold are present they may persist long after aphids have been controlled by pesticides or natural enemies. Aphids are vulnerable to contact sprays whenever they are active.

Spider Mites

Spider mites can be controlled whenever they are active by spraying twice with a five-day (South) or 10-day (North) interval.

If trees are receiving repeated applications of Sevin to control other insects, be especially watchful for build-up of spider mites. Sevin selectively kills natural enemies of mites, thereby contributing to increases in spider mite populations.

Woody ornamentals—such as some euonymus varieties, roses, and bedding plants—are frequently infested by twospotted spider mites and tumid spider mites. These mites are dispersed on air currents and may appear suddenly in large numbers in hot dry weather.

Root Weevils

The second and third applications of black vine weevil adulticides should be applied in July and August.

In the South, Japanese weevils and Fuller rose beetles can be controlled with Orthene as a spray and drench during July. A single spring application will not control black vine weevil or other weevils mentioned earlier.

Area-wide grub control is the most effective way to reduce numbers of Japanese beetle adults...

Borers

White-barked birches determined to be infested by bronze birch borer during the summer can be injected with Inject-A-Cide B (Bidrin) using microinjection procedures developed by the J. J. Mauget Company.

Injection must be done by a trained technician between early July and early August but should not be used as an annual, preventive tactic.

Infested trees should be watered weekly during summer and fall drought and fertilized in the fall after the first hard frost.

The following year, bark/foliage sprays should be implemented as indicated earlier.

The peachtree borer can be controlled with a single application of Dursban or lindane in early July (in the North) or late August (in the South). The second application for control of lesser peach tree borer should also be applied at this time to infested flowering cherries.

Fall (Sept.-Oct.)

Defoliators

Mimosa and fall webworms reach their highest population density and cause most defoliation during late summer and early fall. They should be controlled as soon as first generation larval webs are detected in early summer.

However, both pests are susceptible to larvicides in late August and early September. If B.t. is to be used, it must be applied when larvae are small to achieve an acceptable level of control.

Scales

Magnolia scale and tulip tree scale crawlers are produced in late August and early September. Infested magnolias should be sprayed when goldenrod is in full bloom (early September).

A single, thorough-coverage, hydraulic spray with Orthene or Sevin will provide excellent control. Magnolias and tulip trees may be severely stunted or even killed by heavy infestations of these scales.

Gall Adelgids

Galls on spruce caused by eastern and Cooley spruce gall adelgids turn brown and open in August and September. After galls open, adelgids are vulnerable to contact insecticides. Adelgids on spruce, Douglas fir, and pine remain vulnerable to insecticidal sprays until the following spring when new buds open.

Root Weevils

Attempts to control root weevil larvae should be made in early September and early October. Two drenches with Turcam/Dycarb have been effective against larvae established in soil surrounding roots of field plants.

A single drench with Turcam/Dycarb, Orthene, or Furadan (carbofuran) controls larvae infesting containerized plants. Recent evidence indicates that overwintered larvae may also be susceptible to drenches in early spring.

Closing Thought

We believe that the best way to minimize insect damage is to maintain healthy trees and shrubs. Trees should be matched to sites, watered during the first two years after planting and during summer and fall drought, pruned properly, fertilized in late fall, mulched, and aerated to promote root vitality.

Adherence to these basic horticultural practices will promote tree vitality and improve their ability to withstand attack by most insect pest species.

Throughout this article we have stressed the importance of pest identification, proper timing, and thorough coverage for achieving a high level of insect control.

Coverage and timing are often more important than the insecticide or miticide used. So, make sure of proper pest identification, determine when it is most vulnerable to control, and apply a pesticidal spray thoroughly to only infested trees following label directions. **WT&T**

That's Treflan®. It controls annual grasses and broadleaf weeds so effectively, it could easily pass as an "expensive" preemergence herbicide.

But don't let the expensive look fool you. The fact is, Treflan is the lowest-priced herbicide there is for established ornamentals. At less than $1 per 1,000 square feet, nothing beats Treflan on price or weed control. Nothing.

Treflan is labeled for use on more than 175 different varieties of ornamentals. Just spread it on evenly and water or rake it in. It's that easy to get expensive-looking, full-season weed control. Treflan is also available in quarts and gallons.

Call your Elanco distributor today. Or write:

Elanco Products Company
A Division of Eli Lilly and Company
Dept. E-455, Indianapolis, IN 46285, U.S.A.

Treflan®—(trifluralin, Elanco Products Company)

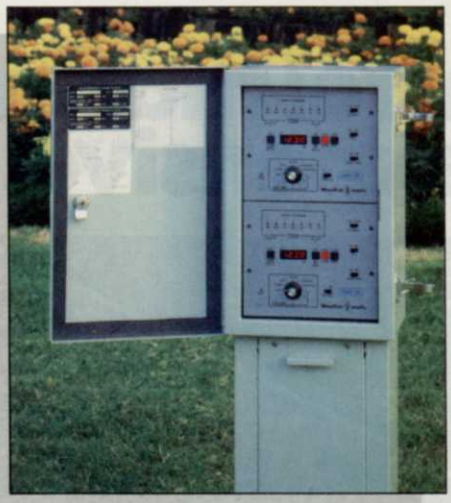
Weed control that only looks expensive.

Circle No. 116 on Reader Inquiry Card

Five simple ways to take control.

Whether you need a 6, 8, 12, 16 or 24 station irrigation controller, you can't beat the microcomputer Mark Series from Weather-matic. All models are available in three types of housings — U.L.-listed rainproof aluminum; economical plastic for indoors or heavy-gauge, industrial-grade steel — so they can fit every application.

The Mark Series is easy to program, too. A function selector switch and large pushbuttons reduce operator confusion and help cut training time, all but eliminating installer callbacks.



Among the advantages are two watering schedules, four daily start times on each program and 0-99 minute timing at one-minute increments. Plus the new Day-Bright™ LED display — filtered and recessed for daylight visibility.

Special features include a self-charging battery back-up system. This retains the program and clock time in the event of a power failure. And it eliminates periodic battery replacement. The controllers will also detect and skip a shorted valve.

Teamed up with Weather-matic's proven valves, sprinklers, Rain-Stat® and other products, Mark Series controllers work and work and work.

They're five reasons why so many irrigation professionals say you can't beat the system — when the one you choose is Weather-matic.

To learn more, write or call tollfree: 1/800/835-2246. (In Kansas: 1/800/362-2421)

We've got your number!

Sprinkler Division, Telsco Industries
P.O. Box 18205 • Dallas, Texas 75218
214/278-6131

Weather matic.
LAWN AND TURF IRRIGATION

Circle No. 159 on Reader Inquiry Card

HIGH-TECH OVERLOAD

Computerization of the irrigation industry is here to stay. Now it's up to the individual companies to educate their clients on the variety of new technology.

by Jerry Roche, editor

Development of new technology...computerized controls, plant stress monitors, more efficient nozzles...this is the future of the irrigation industry as the years wind their way toward the millennium.

Of course, whether the landscape manager is ready for this high-tech overload is another thing.

"I've found that 70 percent of the market doesn't go for computers yet," notes Chuck Hoover of Irri-Trol, Valencia, Calif. "Six, seven, eight years from now, though, people coming out of schools will *want* to know how they can program their computers."

Adds Don Cooper of Weather-matic, Garland, Texas: "You take the average Joe and put a computer console in front of him and it's going to turn him off. He doesn't understand it. But with proper instruction, the digitals are very easy to use."

Hoover says that when the big changeover from mechanical to digital does come, "it'll come so fast that if people aren't prepared for it, it will go right past them."

So the irrigation industry is ahead of everybody? Maybe, maybe not.

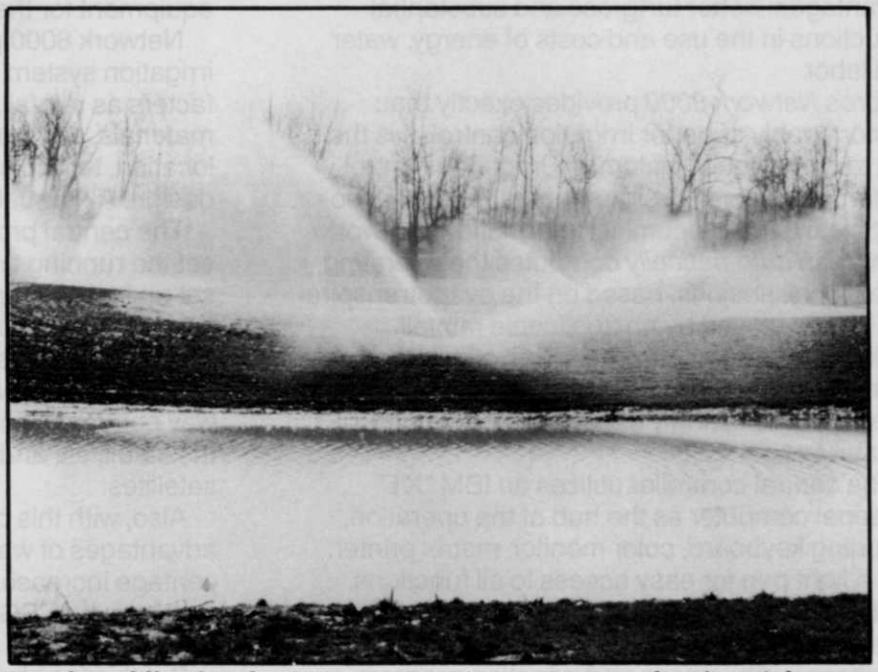
"You could look at it that way," says Dave Davis of Buckner Irrigation, Fresno, Calif. "Or you could look at the new technology as being too late. If it would've been around 20 years ago, we wouldn't have to be so stingy (with water) today."

Also of concern to the industry, then, is conservation of water and energy, each of which has been in short supply at some time during the last 15 years.

Saving water

"I have a personal challenge to all irrigation equipment manufacturers," said Dan Heiny of The Irvine Company, Irvine, Calif., in the August, 1984, issue of WEEDS TREES & TURF. "That is to develop a low-volume pop-type spray head."

Such a system has been developed but cost is still high, notes Gary Panuzzi of Richdel, Carson City, Nev. But they will come down. "It's like a watch you can buy $3. Everybody will be able to afford it."



David Cordillo of Hydro Systems, Warminster, Pa., says there's an inherent evil with throwing water up in the air. Nonetheless, above-ground irrigation remains extremely popular.

But low-volume is not the issue, some other manufacturers claim.

"Application rates are," says Rick Robins of Toro Irrigation, Riverside, Calif.

"The main thing is to apply the water in the right spot at a rate slow enough so the soil will absorb it," says Robins.

The key to slow application is the sprinkler head; the key to location is the controller.

"You use a controller that breaks up application times," Robins continues. "It doesn't make any difference whether the controller is mechanical or solid state. Even though the solid state units can make applications of less than one minute in duration, some mechanical clocks have more start times—23 or 24—compared to the four or six of solid state clocks."

One way to save water is with subsurface irrigation, which is especially effective in convoluted areas and on ornamentals.

"There are inherent evils of throwing water up in the air," says David Cordillo of Hydro Systems, Warminster, Pa., extolling the virtues of his company's sub-surface drip system. "Sub-surface is the irrigation system of the future."

The Golf Course Superintendents Association of America is trying to develop ways to cut water usage in half, a goal that Dr. James Beard of Texas A&M University thinks is attainable.

"The talk is that there's a trend toward controlling water usage," notes Cooper of Weather-matic. "The *professional* irrigation contractor is adhering to that talk. But we've got some contractors out there that definitely are not professional.

"As a company, we are very cognizant of the water shortage. We as an industry have to recognize that water is a finite resource. If we don't, we're going to be out of work."

Monitoring plants

Efforts are being made to avoid apply-

continued on page 62

TORO NETWORK 8000™

The new central/satellite irrigation control system that saves you energy, water, labor . . . money!

Superior irrigation control translates into two major advantages: better turfgrass and substantial reductions in the use and costs of energy, water and labor.

Toro's *Network 8000* provides exactly that: demonstrably superior irrigation control. It is the first and only totally automatic irrigation control system. Just enter design, weather/climate, geographical and agronomical information. Network 8000 then *automatically* computes the operating times for all stations, based on the evapotranspiration rate, modified by an applicable rainfall.

Network 8000 accomplishes all of this by combining a computerized central controller with satellites of amazingly extensive stand-alone capabilities.

The central controller utilizes an IBM "XT" personal computer as the hub of the operation, including keyboard, color monitor, matrix printer and a light pen for easy access to all functions.

This non-dedicated central is capable of "transparent" multiple function, which provides for *simultaneous* business and irrigation program operation. It's like getting two important pieces of equipment for the price of one!

Network 8000 provides automatic adjustment of irrigation system operation, responding to such key factors as rainfall, evapotranspiration rate, plant materials, soil types, soil compaction, geographic location, terrain slope, Ph factor and system design. A manual override is provided for all factors

The central programmer will operate any station, set the running time, assign it to any program and set up to three repeats for any station. It can operate up to 800 satellites of 32 stations each, for a total of 25,600 stations.

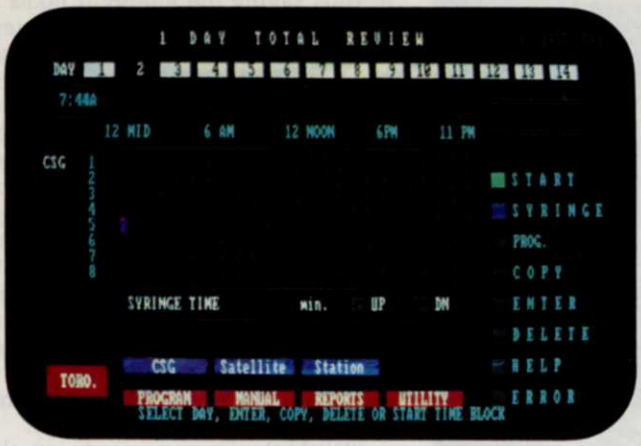
Toro's new Network 8000 central provides two-way communication: "down-loads" information to the satellites, and "up-loads" information from the satellites.

Also, with this central station you enjoy the advantages of water-budgeting by means of percentage increase/decrease control (by station, by program, by CSG, or the total system), from 1% to 900%.

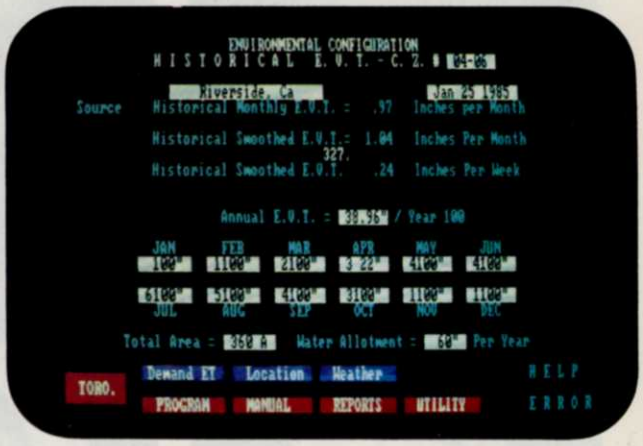
But this is only the beginning of the story. You have to see it perform to fully appreciate exactly what it can do for you and your irrigation. Call *The Man from Toro* for a no-obligation demonstration.

Key components to Network 8000 are the IBM "XT" personal computer with color monitor and keyboard, operated with handy light pen. Shown in the middle is Toro's Delay & Distribution Unit. And on the right, the IBM matrix printer and stand.

TWO TYPICAL SCREEN DISPLAYS



This screen quickly displays complete irrigation program for one full day, for each of 14 days in the system.



Such essential data as evapotranspiration rates for your specific area can be called up to help set proper program.

NETWORK 8000 SATELLITE CONTROLLER

Solid-state satellite may be centrally programmed or provide stand-alone capability.

Matching the Network 8000 central for advanced and innovative design is Toro's new satellite/stand-alone solid state controller. It is a 32-station unit, with each station capable of operating three Toro electric valve-in-head solenoids.

As with the central, this new satellite offers two-way communication. It receives, stores and sends all commands generated by central. At the same time, it up-loads to the central such key factors as satellite status, changes made in station timing at the satellite, and failure sensing.

Each station is capable of minute and hour timing, from 1 minute to 4 hours and 15 minutes per station, in one-minute intervals.

Toro's new Network 8000 Satellite also provides water-budgeting capability, with percentage increase/decrease from 1% to 900%.

The combination of the equally amazing new satellite and central controller makes Network 8000 your first step into the 21st Century, with payoff now in terms of better turfgrass at lower costs.

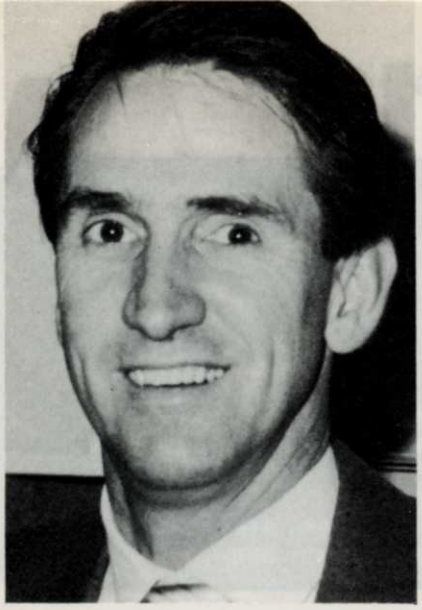
The Toro Company, *Irrigation Division*

Dept. WTT-586, P.O. Box 489, Riverside, CA 92502

Circle No. 153 on Reader Inquiry Card

TORO®

Excellence in Irrigation®



Irri-Trol's Chuck Hoover says computerized irrigation systems will be the norm in the future.

Ron Zwiebel of Green Care, calls irrigation installation a "very viable add-on service."

ing water when the plant doesn't need it, thus saving the energy it takes to run irrigation equipment, not to mention the water itself. To that end, sophisticated plant stress monitors are being manufactured.

One major company will soon be marketing a portable monitor that calculates plant stress as an early and accurate means of determining irrigation requirements. It senses temperature, solar radiation, humidity and air temperature readings, runs them through a microprocessor, and provides a digital read-out of irrigation needed.

Fully automatic control systems are also saving water and energy.

"With these, you can input the weather and the controller will calculate evapotranspiration rate and generate times for each zone to be irrigated, based on the product, the nozzle and so on," says Toro's Robins. "It runs on the basis of what the soil and plants demand. It's a very expensive system, but its price will probably come down, in time."

Dr. Bruce Augustin of Lesco Inc. and Dr. Charles Peacock of the University of Florida once did some field tests concerning irrigation. They discovered (and wrote in their newsletter):

"We can grow turf with less water than many people think. By exploiting rainfall as much as possible, we can reduce the amount of irrigation that is applied to turf. Also, by more carefully managing the irrigation, we can reduce nitrogen leaching and get better results from the cheaper, water soluble sources of nitrogen."

Homeowner market

Granted, there will always be a market for irrigation equipment among users of high-maintenance turf like golf course superintendents. But more and more, irrigation suppliers are seeing a boom in the homeowner/residential market.

Homeowners took the a step toward beautiful lawns 15 years ago when the lawn care industry first boomed. Lately, homeowners are going one step farther with the installation of sophisticated underground irrigation.

Lesco, Inc., Rocky River, Ohio, seeing this trend, recently opened an over-the-counter irrigation equipment store. Bob Hobar is its director.

"There is a marketplace in the residential sector. That's the concept our store is based on," Hobar contends.

"If you went in as a landscaper and sold a lot of plants and shrubs and then the homeowner didn't water it, that homeowner would be wasting

TROUBLE-SHOOTING VALVE MALFUNCTIONS

Valve malfunctions are probably the number one cause of headaches and stress among contractors who install sprinklers for a living.

"There's nothing more aggravating than digging a valve out of the ground to figure out why it won't open, why it won't close or why it weeps," say irrigation service reps.

In an effort to alleviate some of those problems and show professionals what to look for when a valve won't function properly, here is a list of the most common problems and their remedies.

Valve won't open

1) First, make sure the water is turned on.

2) See if electricity is reaching the coil. If not, there may be a problem with the controller or breaks in the electrical line. Check for this with a voltmeter across the two field wires.

3) If the coil is receiving current, remove it and see if the plunger moves into the housing of the coil. If not, replace the coil.

4) Make sure there is no downstream blockage in the communication port from the top side of the diaphragm into the coil area or from the discharge seat through the cap and body to the downstream of the valve. To check for these problems, remove the coil and inspect the area for debris and remove any particles with a fine piece of wire.

Valve won't close

1) Make sure nothing is clogging the diaphragm port hindering water from metering to the top. If debris is spotted, flush the port.

2) Make sure the solenoid spring is not missing or debris is not restricting the plunger. To check for this, remove the spring; if the plunger hangs in the housing, flush with water.

3) Check to see if the diaphragm is damaged. If it is ripped or pieces are missing, replace the diaphragm.

4) Check for external body leaks. This may mean a damaged or missing O-ring or loose screws. Check the manual bleed screw. If it is left in the open position, it will allow water to bleed out. To prevent this, tighten the screw. In addition, the flow control knob should be adjusted to allow maximum peformance of sprinkler heads.

Valve weeps

1) Check to see if the diaphragm is seated properly on the valve body. Inspect to see if any debris has accumulated, then flush.

2) Check to see if the body seat is damaged. A damaged seat requires body replacement. □

Reprinted with permission from "Toro SpecTalk," August, 1985.

Announcing the dawn of a new era in pythium prevention. Chipco® Aliette®

FUNGICIDE

The first fungicide that helps your turf defend itself.

You've heard about it. You've read about it. And now it's here. New CHIPCO ALIETTE® fungicide for turf. And with it comes a revolutionary new way to stop the spread of pythium blight. Unlike conventional fungicides, CHIPCO ALIETTE stimulates a natural defense mechanism within each blade of grass. In doing so, it actually helps your turf defend itself against pythium blight.

CHIPCO ALIETTE also eliminates the need for costly, time-consuming watering in of fungicides. And that's important for two reasons.

First, watering in adds to the high humidity that favors pythium development. Plus, soggy turf can interrupt play. But CHIPCO ALIETTE goes on quickly and easily to keep your course in play.

Best of all, CHIPCO ALIETTE gives you long-lasting pythium protection at a down-to-earth price. Based on cost per day of control, CHIPCO ALIETTE is one of your best fungicide values.

This year, don't let pythium ruin your turf *or* your reputation. Call your turf products dealer today and ask for new CHIPCO ALIETTE. Rhone-Poulenc Inc., CHIPCO Department, P.O. Box 125, Monmouth Junction, NJ 08852.

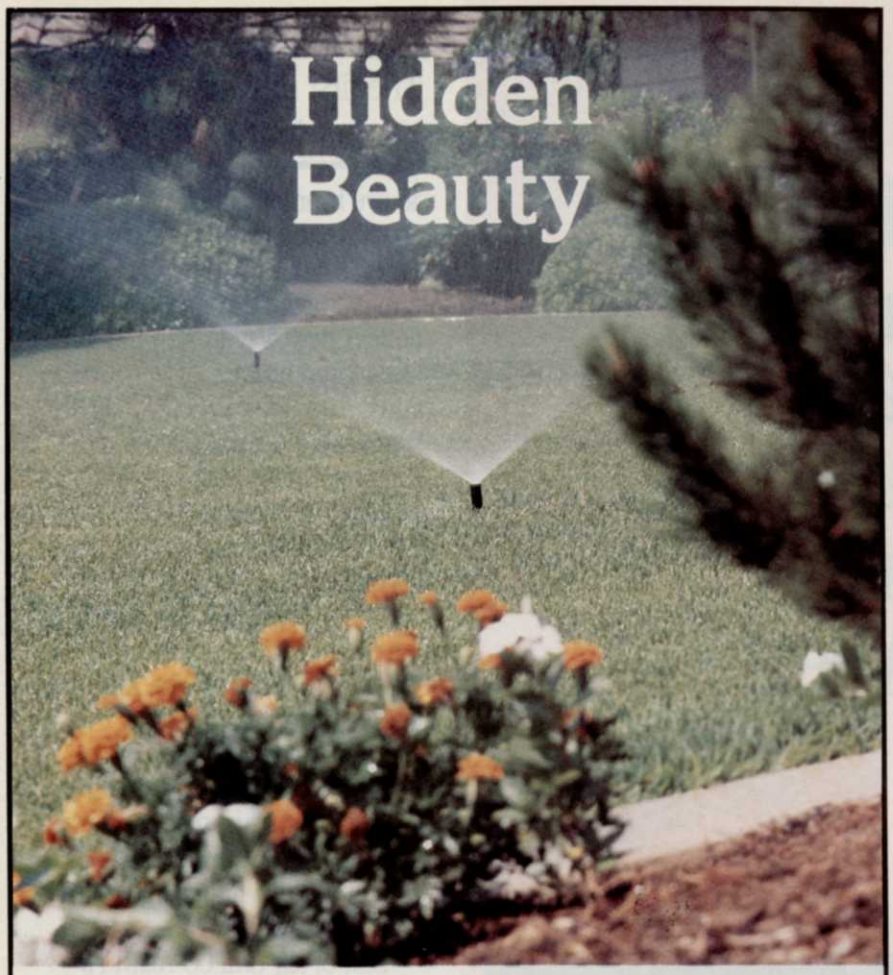
RHÔNE-POULENC

CHIPCO® ALIETTE®

FUNGICIDE

Please read label carefully and use only as directed. CHIPCO® and ALIETTE® are registered trademarks of Rhone-Poulenc Inc.

Circle No. 144 on Reader Inquiry Card



Because Buckner's plastic pop-up sprinklers hide just below the surface, you can't see the most beautiful aspect of this lovely ornamental landscape. Developed to meet water-saving requirements, Buckner brass or plastic nozzle pop-ups — in 3", 6" and 12" heights — rise to every irrigation situation . . . then disappear completely when not in use.

Bringing you the best since 1912

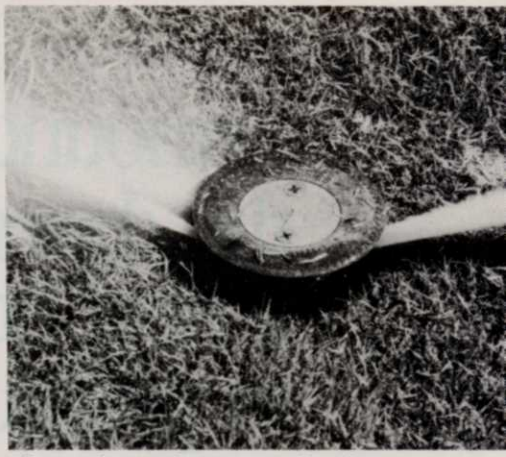
Buckner®

Royal Coach Sprinklers, Inc.

4381 North Brawley Avenue • Fresno, California 93711
(209) 275-0500 • TWX 910 350 6333

Circle No. 107 on Reader Inquiry Card

IRRIGATION *from page 62*



The traditional irrigation head.

money. The point is, if a homeowner is spending thousands of dollars on landscapes, why not spend hundreds on irrigation?

"Lots of landscape architects are putting irrigation specifications right into the design now," says Hobar.

'There are inherent evils of throwing water up in the air. Subsurface is the irrigation system of the future.'

—David Cordillo
Hydro Systems
Warminster, Pa.

In the South, irrigation installation is catching on. Says Ronnie Zwiebel of Green Care, Birmingham, Ala. (a chemical lawn care operation):

"We've added irrigation installation, and as long as we can figure out how to get the system in the ground, we are by all means going to pursue it. It's a very viable add-on service, but you almost have to have two very separate profit centers."

Zwiebel notes that management, equipment, and labor for irrigation operations is completely different than its counterparts in the chemical lawn care industry. But the market is nonetheless a money-maker.

"We have managed as an industry to bring the cost of owning an irrigation system down to where the average homeowner can afford one—rather easily," adds Weather-matic's Cooper. "That represents a tremendous growth market, mainly because of refinements in our industry's own capabilities." **WT&T**

How to trim your time.

Think Green Machine

Weeds, grass, brush . . . even tree branches up to 4 inches thick! No problem for this team of gasoline powered string trimmers/brushcutters/tree pruners from THE GREEN MACHINE®.

Model 2500 LP
- 1.25 HP, 22.5cc L-PAT engine, favorable power-to-weight ratio
- Weighs 12 lbs., but is no lightweight in getting the job done
- 4" Tap-For-Cord™ head – optional blades

Model 3000 LP
- 1.4 HP, 25.4cc L-PAT engine
- For almost a decade has set the standard for professional landscaping
- Features all-position carburetor with re-circulating primer system
- 6" Tap-For-Cord™ head – optional blades

Model 4000 LP
Model 4500 LP (not shown)
- 2.2 HP, 41.5cc engine
- For specialized day-after-day trimming/brushcutting/tree pruning
- Equipped with harness, hip pad and wide handlebars
- Swivel driveshaft for hillside brushcutting and pruning
- Model 4000 LP equipped with 6" Tap-For-Cord™ head, optional blades
- Model 4500 LP equipped with hand guards, brush and saw blades

The Green Machine keeps working, so you do too.
Less down time means more profit.

The Green Machine®
High-performance yard-care tools.
HMC, 20710 SO. ALAMEDA STREET, LONG BEACH, CA 90810
(213) 603-9888

Circle No. 188 on Reader Inquiry Card

The Churchill Downs' clubhouse garden on Derby Day in 1985.

THE MAIN EVENT

Landscaping at Churchill Downs in Louisville, Ky., is year-round for one of sport's great days: the Kentucky Derby.

by Ken Kuhajda, managing editor

It almost doesn't seem fair: 365 days of preparation for two minutes in May.

Everybody knows about the two minutes in May, but few know about the 365 days of preparation that makes the day one of the greatest in sport.

The famed Kentucky Derby, held the first Saturday in May, is the *piece de resistance* for the men who landscape and maintain the 147 acres at Churchill Downs in Louisville.

It's only one day in a three-month racing season but it's special, in that it gives employees great satisfaction.

The "Main Event," 112 years young, is watched by 130,000 people in person, and another 80 million or so on television. ABC television bills the day as the greatest in sport.

1985 Kentucky Derby winner Spend-A-Buck with jockey Angel Cordero. Surprisingly, Spend-A-Buck did not run in either the Preakness or the Belmont, the two later legs of horse racing's Triple Crown.

How many landscape workers have their work viewed by such a throng? Churchill Downs' workers don't need a pep talk to get them ready for Derby Day, a time when the twin spires atop the grandstand seem all the more impressive.

Providing the guidance are plant superintendent Raymond "Butch" Lehr and greenhouse manager Don Lord. Lehr supervises 24 landscape employees while Lord oversees a crew of eight greenhouse workers.

The 32 year-round workers manicure fine turf, the dirt track, a new $3.2 million turf track, annuals, trees, and shrubs. They also perform general maintenance chores such as upkeep on the 47 barns where some 1,350 horses reside.

By early May, Churchill Downs is colored regally, its turf the lush spring green, its annuals a maze of hues, the sky above usually popsicle blue.

It's ready for the 45,000 people who crowd the grandstand and the

What is so rare as a day in May? Especially with no leaf spot.

Leaf spot. It's a spoiler. Give it half a chance and it'll go after your grass.

To protect the beauty and playability of your turf from leaf spot, get new ®DYRENE 4 Turf fungicide.

Now available as a flowable, it is not only easier and cleaner to use, but much more economical, too. For control of leaf spot, DYRENE 4 can be applied at *half the rate* of DYRENE wettable powder, yet will provide *twice the residual.*

DYRENE has always been an essential part of any complete program of disease control. Now, it's economical, too. Always read the label before use.

DYRENE.
IT STOPS THE SPOILER.

MOBAY

Mobay Chemical Corporation
Specialty Products Group
Box 4913, Kansas City, Mo. 64120

DYRENE is a Reg. TM of Mobay Chemical Corporation.

Circle No. 136 on Reader Inquiry Card


Special promotional offer for limited time only. Contact your Jacobsen Distributor for details. But, hurry, offer expires JULY 31st.
JACOBSEN
JACOBSEN

King of the hill

Get 4-wheel traction, 4-wheel steering, with Jacobsen's versatile G-4x4 Tractor.

Only Jacobsen's G-4x4 Tractor combines four-wheel drive, four-wheel steering, a wide stance and a low center of gravity. With plenty of power for a wide range of task-oriented implements. Power, where you need it . . . when you need it.

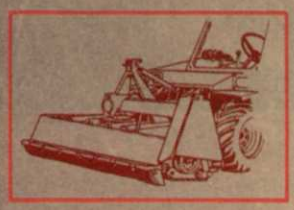
PTO's front and rear, each with a three-point hitch, make changing implements quick and easy. Attach rotary or flail mower, rotary brush, snow blower or snowblade to the front hitch. Then, raise or lower any one of them, hydraulically, from inside the cab. Fixed 3-point rear hitch and tow bar accommodate towed gang mowers, aerators, blowers, seeders, spreaders and sweepers.

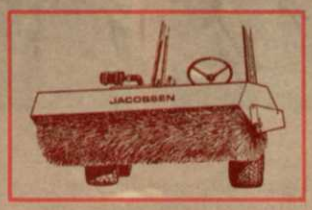
Powered front axle with rigid-link steering and differential lock, plus the powered swing-type rear axle, take rough terrain in stride. And the 24-hp, 3-cylinder, water-cooled diesel engine provides the power you need when the going gets tough. Yet, the G-4x4 Tractor's true-track steering and Softrac tires tread softly on turf.

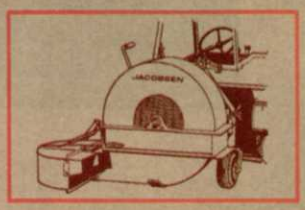
For versatility and stamina, this true mobile power source reigns supreme. Jacobsen's G-4x4 Tractor. The king of the hill.

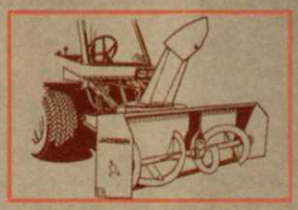
Lease and finance plans available.

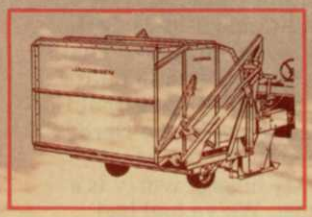
Jacobsen Division of Textron Inc., 1721 Packard Avenue, Racine, WI 53403.

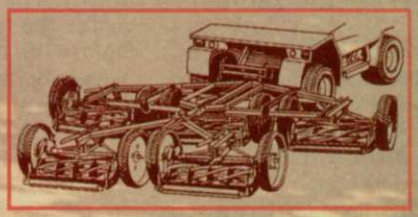












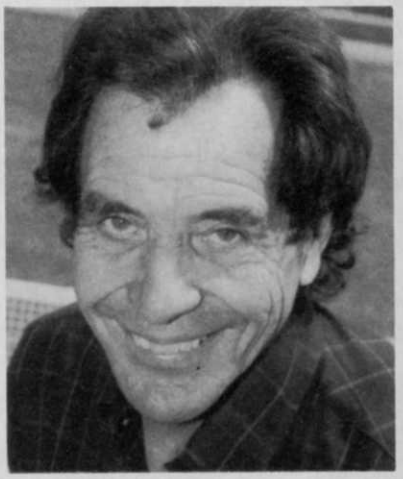
JACOBSEN
TEXTRON
Jacobsen Division of Textron Inc.

Engineered from the ground up.

Circle No. 125 on Reader Inquiry Card

©Jacobsen Division of Textron Inc. 1985 J-8-5

Workers install the irrigation system for the turf track in August 1985. The track measures 7/8-miles and should be ready for racing in early 1987.



Right, Don Lord, manager of the greenhouse. Far right, Don Lord's pride, the Churchill Downs' greenhouse, where some 60,000 annuals are nurtured for planting.

90,000 fans in the infield who form one of the nation's largest parties.

60,000 annuals

Lord and his crew are busier than usual in the spring preparing for Open Day, the Saturday prior to the Derby. That's officially the beginning of the "Spring Meetings," or spring racing season that lasts until the end of June.

By late April, 60,000 annuals—begonias, marigolds, geraniums, petunias, dusty millers—are in full bloom in the many gardens in and around the oval. Everything is nurtured in the Churchill Downs greenhouse.

The 15,000 tulip bulbs that were planted the previous fall are sometimes in bloom for Derby Day, sometimes not.

In 1985, a warm April left Churchill Downs tulip-less for the Derby. The tulips came up early and lasted the traditional 7-to-21 days before the blossoms dropped. That was only the second time in Lord's 35 years at Churchill Downs that the tulips failed to show for the Derby.

Lord is used to the unpredictability. "My biggest worry is a freeze or a frost. We've had bad freezes here in April that have really hurt us. They say our last freeze can come anytime through May 10 but I've found that if it doesn't come by the third week of April, we'll be all right," he says, a definite Louisville twang in his voice.

That's the way he's learned his job. "I've educated myself. I've always had an instinct for it," he says. The Louisville native doesn't have a horticulture degree. He works at Churchill Downs because his father, the late Herbert, got his son a job there when the boy was 17. Thirty-five years later, Don Lord is still there. There's a lot of tradition at Churchill Downs.

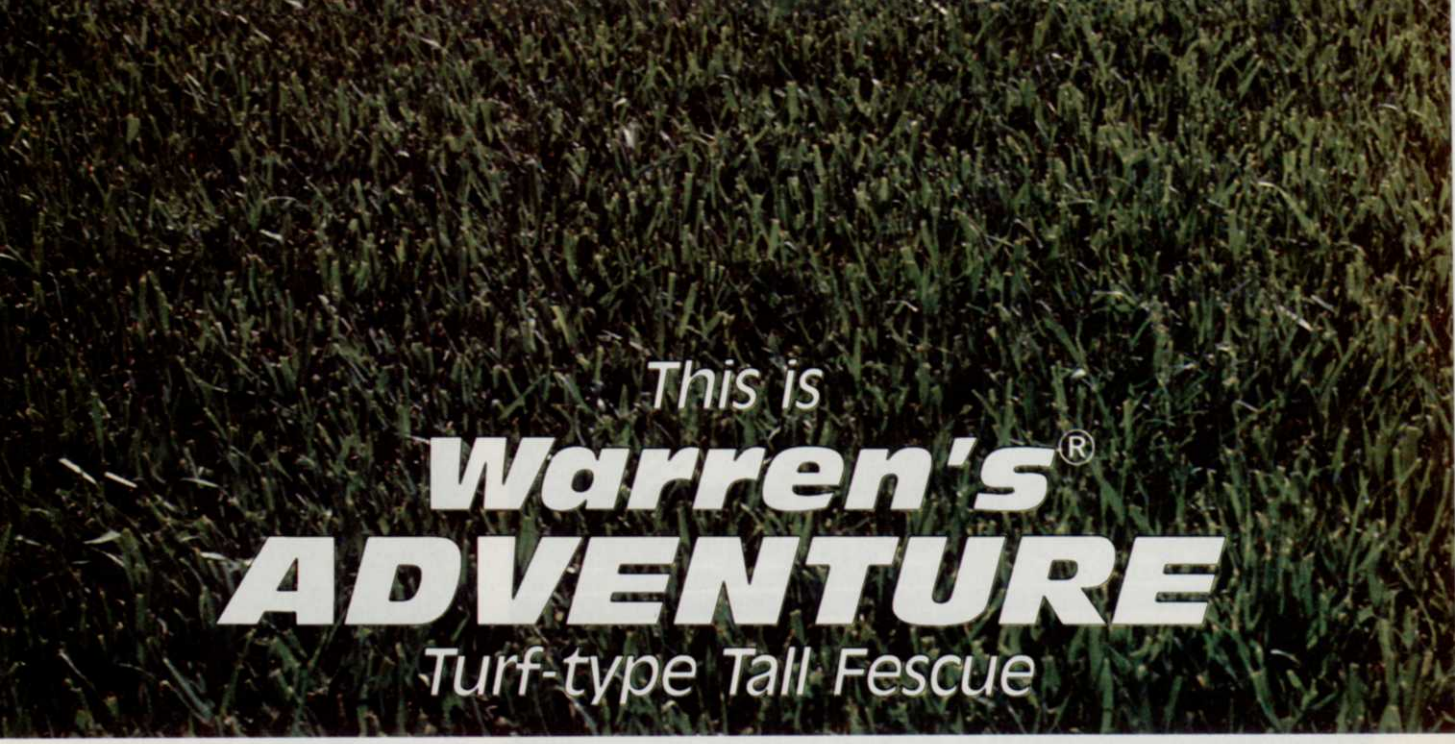
Roots to 1875

That tradition dates to 1874 when Colonel M. Lewis Clark organized the Louisville Jockey Club and directed construction of a thoroughbred race track on land purchased from John and Henry Churchill.

On May 17, 1875, Aristides won the first Kentucky Derby in front of 10,000 spectators.

Since that time, 112 Derbys have been run, each one seemingly a greater spectacle than its predecessor.

That success has meant adequate funding for Churchill Downs, and



Rated better than its top competitors.

9 = very best 1 = very poor

Variety	Turf Quality	Spring Color	Brown Patch Resistance	Pythium Resistance
Warren's® ADVENTURE Sod	**6.8**	**6.5**	**7.8**	**8.0**
Apache	6.7	*	6.5	5.0
Olympic	6.5	5.8	5.8	5.3
Jaguar	6.1	*	7.3	6.0
Rebel	5.9	7.4	6.5	6.0
Hound Dog	5.9	*	6.2	6.2
Falcon	5.8	5.6	6.3	7.0
Kentucky 31	3.4	4.0	6.5	6.8

*Not reported

Data from Adelphia and North Brunswick, New Jersey, 1980 thru 1983

No matter what demands you put on Warren's® new ADVENTURE Turf-type Tall Fescue — turf quality . . . color . . . density . . . texture . . . toughness . . . heat and drought tolerance . . . you can count on performance that's proven superior against leading competitors.

The finer blade of ADVENTURE provides a denser more attractive turf than the older unimproved varieties. It requires less water and fertilizer than Kentucky Bluegrass or perennial ryegrass and is suited for heavy shade conditions as well as full sun.

In comparisons to "cool season grasses" ADVENTURE survives much better in the "transition zone" of the U.S. where it is often very hot and droughty. Wear tolerance for athletic fields, especially in the transition zone, is far superior to the old tall fescues.

SPECIFICATIONS

Mowing Height	¾" to 1½" on irrigated turf, 2" on "non-irrigated" turf dependent upon rain only.	**Germination Time**	7 days is normal (at 70°F). Responds better in high soil temperatures than bluegrass.
Fertility Requirements	2-3 pounds of N per year per 1000 square feet. ADVENTURE is less prone to iron chlorosis than leading competition.	**Heat Tolerance**	Excellent. Far superior to ryegrass or bluegrass.
		Cold Tolerance	Much better than perennial ryegrass.
Seeding Rate	5-7 pounds per thousand square feet.	**Fungus Susceptibility**	Superior resistance to brown patch and red thread. No mildew seen in shade. Good crown rust resistance.
pH Tolerance	Ranges of 4.7 to 8.5.		
Shade Tolerance	Up to 80% shade at 2½" mowing height. The blade becomes narrower in the shade.	**Weed Resistance**	Denser than competitive brands. Very tolerant to herbicides particularly compared to creeping red fescue.

The superior performance and quality of Warren's® ADVENTURE has made it one of the leading brands of Turf-type Tall Fescue on the market. For more information, contact your Warren's® Turf Professional, Warren's® Seed Supplier, or call 1-800-828-TURF (8873). In California call 1-707-422-5100.

Wherever *you* put down roots, go with the PRO's.

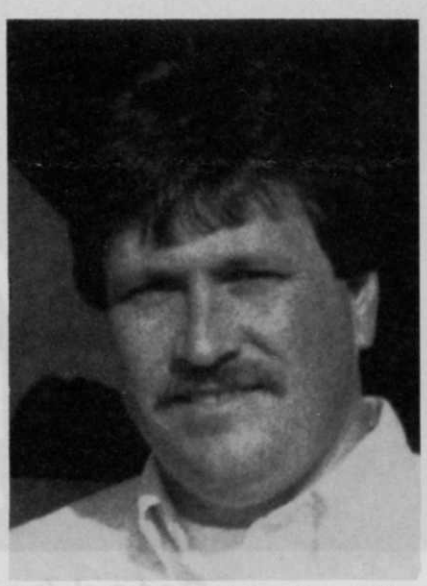
Warren's offers only professional turf products.

Direct all requests for information to:
Warren's Seed & Special Products Division
P.O. Box 459, Suisun City, CA 94585

Warren's®
Turf Professionals
7502 South Main Street, Crystal Lake, Illinois 60014

Circle No. 158 on Reader Inquiry Card

A view of Churchill Downs' famous grandstand and twin spires.



Raymond "Butch" Lehr, Churchill Downs' plant supervisor and 19-year employee.

the Board of Directors has made continued improvements over the years. The latest, a $6.5 million improvement program begun early in 1985, is spotlighted by the addition of the turf track, nestled inside the dirt track and edged by burning bush shrubs.

Other improvements: a practically new centerfield with new fountains, flower planters, and alterations around the winner's circle; a new 500-foot tunnel from the infield to the main parking lot; new dining and entertainment areas; a remodeled lounge known as The Jockey Club; and a general repainting.

Superintendent Lehr oversaw construction of the fescue track (it's actually 90 percent fescue and 10 percent Kentucky bluegrass) that will host its first race in the spring of 1987.

He assures a visitor he didn't choose the fescue turf arbitrarily. "We did tests on grasses before choosing. We also talked to a lot of turf people. It was almost unanimous—most recommended the Kentucky 31 fescues," says Lehr, another Louisville native who has work his way up the corporate totem pole since joining Churchill Downs in 1967.

Ground was broken for turf track July 5, 1985, at 10 a.m. (Evidently, Lehr keeps records to the minute). The grass was sowed on Sept. 30, mowed on Nov. 5, and again on Nov. 18. A Rain Bird irrigation system was installed near the turf track, the only area at Churchill Downs that is irrigated. The system was turned on March 10 of this year.

The baby track experienced some kill over the winter but was resowed in March, fertilized shortly thereafter, and greened-up by April 1.

RVA Omnisports, based in Ontario, Canada, designed the mortar sand-based track.

Lehr says he chose the Rain Bird irrigation system because other Rain Bird users he spoke with noted the system's low maintenance requirements.

The Breeder's Cup

It's no secret that Churchill Downs built the 7/8-mile turf track with an eye on playing host to the annual Breeder's Cup, held each November. To date, no Breeder's Cup is scheduled for Churchill Downs, but there's a good chance that will change in the future.

Walter Hagan has recently been named turf track superintendent.

For Lehr, the turf track means even more responsibility. At 37, he handles the pressure smoothly though there's no doubt he's a man with a lot on his mind.

He credits his employees for his success. "It's frustrating at times, but our people go farther than expected when the chips are down. I've got good men under me and they feel the same as me—there's something special about working here and it leads to pride in your job," says Lehr, in between answering his walkie-talkie and the telephone.

Since 1967, he's seen every Kentucky Derby with the exception of the two he missed in 1969 and 1970 when he was serving in the Army. He'll probably see a lot more.

"I guess if I had to work somewhere for the rest of my life, I'd like to work here," says the blue-eyed father of two.

His co-worker and friend Lord has seen 35 Derbies. He can rattle off the names of most Derby winners, especially those in long-past years. He has trouble with the recent winners.

That could be because of the growing pressure Lord faces preparing the track for Derby Day. The greater the spectacle, the greater the pressure. The race becomes secondary for Lord.

Still, it's a job he wouldn't trade. "I love what I do. I couldn't imagine doing anything else," he says, inhaling a Marlboro.

After the Derby, Lord and crew take the role of landscape maintenance workers—flower care, spraying, mowing, fertilizing, pruning, and the other tasks presented in a 147-acre landscape.

In preparing for the Fall Meet (the fall racing season which runs from late October to late November), Lord plants chrysanthemums and other fall bloomers. The flowers, he says, cause his biggest worries but are most rewarding.

When they're right and Churchill Downs is at its finest, then the 365 days of toil and worry are worth it for the employees. **WT&T**

the BROUWER difference

Quality...Reliability

BROUWER TRIPLEX-376 . . . designed from **"the grass up"** for the professional. Compare the high quality engineering, rugged reliable performance, and you will be convinced that in the long-run your equipment investment should include a Brouwer Triplex-376. User experience has shown that dollar for dollar there is no better triplex mower on today's market. It is the perfect mower for a wide range of applications where grass requires the best in routine maintenance. Brouwer is committed to **Quality and Value** and backs this commitment with after-sales service that is second-to-none. Contact us for your local dealer information.

OTHER IMPORTANT FEATURES

- 5.8 m.p.h. (9.4 Km/h) transport speed
- 76 in. width of cut
- Rear reel can be operated independently
- Height of cut: 1/2 in. to 3 in. (1.3 cm. to 7.6 cm.)
- Transport width only 71 in. (180 cm.)
- Low center of gravity

BROUWER
TURF EQUIPMENT LIMITED

7320 Haggerty Rd./Canton, MI. 48187 Telephone (313) 459-3700
Woodbine Avenue/Keswick, Ontario, Canada L4P 3E9 Telex 065-24161 Telephone: (416) 476-4311

86-56

Circle No. 106 on Reader Inquiry Card

TAKE-ALL PATCH: THE BENTGRASS DESTROYER

by Peter H. Dernoeden, University of Maryland

Take-all patch disease (formerly known as Ophiobolus patch) is an extremely destructive disease of bentgrass, caused by the fungus *Gaeuannomyces graminis* var. *avenae*.

Peter H. Dernoeden is associate professor of agronomy in the college of Agriculture at the University of Maryland in College Park.

Common in western Europe, Australia, and the United States, take-all patch was first reported in Holland (1931) on a bentgrass putting green.

Symptoms of the disease are most conspicuous in late April through June, and in autumn when cool, wet weather prevails. Affected bentgrass turf dies in circular patches a few inches in diameter and may progress to two or more feet in diameter.

When the disease is active, the outer perimeter of the patch assumes a bronzed appearance, eventually turning a bleached or tan color.

The small circular patches increase in size over a number of years and dead bentgrass in the center of the patch is often replaced by broadleaf weeds (especially dandelions) and occasionally *Poa annua*.

Because the fungus attacks the

Above, an untreated control plot in the 1983-85 fertility and soil acidification study. Right, a plot treated with ammonium chloride during the same study.

Bronze color of active take-all patch in creeping bentgrass. The dandelions are colonizing the interior areas of dead patches and the smaller, dollar spot disease patches.

Introducing the surest, gentlest way to get all these grass problems off your hands.

You don't have to hand-weed grasses anymore. And you don't have to worry about herbicides that can injure your ornamentals.

Because now there's Poast® herbicide for flowers, trees, shrubs and ground covers.

Poast controls virtually all annual and perennial grasses. Like bermudagrass and foxtails, crabgrass and quackgrass. Even tough-to-kill grasses like johnsongrass.

And with Poast, you don't have to bother with directed or shielded sprays. Because Poast is proven gentle to ornamentals. You can apply Poast over-the-top at all stages of ornamental growth.

Best of all, Poast saves you all the time, labor and expense of hand hoeing.

So this year, get grass problems off your hands. And save yourself a handful of time and money in the process. Use Poast® herbicide. From BASF.

Always follow label directions.

BASF Corporation, Agricultural Chemicals, 100 Cherry Hill Road, Parsippany, NJ 07054

BASF

Poast is a registered trademark of BASF AG.

Circle No. 104 on Reader Inquiry Card

TABLE 1

Evaluation of fungicides for curative control of take-all patch in a Penncross creeping bentgrass turf.

Treatment and rate/1000 ft.2	Take-all severity* May 5	May 21	June 25	Turf color** June 4	June 25
Bayleton 4.0 oz.	4.8c+	5.3b	4.8bc	8.9c	8.2b
Chipco 26019 4.0 oz.	6.8b	5.0b	6.3b	9.9a	9.0a
Banner 3.0 fl. oz.	6.8b	6.3ab	6.0b	8.8c	8.8a
Daconil 2787 8.0 fl. oz.	7.5ab	6.2ab	6.3b	10.0a	9.0a
BMAS 1.0 fl. oz.	4.7c	2.0c	2.7c	9.1bc	7.2c
Untreated Control	9.0a	8.0a	9.7a	9.5ab	9.0a

*Severity was visually determined on a 0 to 10 scale where 0 = no disease and 10 = all turf dead in affected patches.

**Color was visually determined on a 0 to 10 scale where 0 = brown turf and 10 = dark green turf.

+ Means in a column followed by the same letter are not significantly different at the 5% level according to the Bayes LSD.

root system, turf in affected areas is easily detached and is reminiscent of the type of damage caused by white grubs. Adjacent patches may coalesce resulting in large, irregular patches of dead turf.

During the spring, circular patches are generally a bronze color. However, some have reported a reddish-brown color of affected turf in Maryland.

Root damage and plant death may not become apparent until hot, drought-like conditions develop.

A microscopic examination of infected roots reveals that the fungus possesses two distinguishable hyphal froms: 1) brown or colorless hyphae that branch and produce infection structures (hyphopodia), and 2) dark brown 'runner hyphae' which may form multiple strands of five or more hyphae.

The fungus uses hyphopodia and massive infection cushions (pseudoparenchymous mats) to penetrate roots. Frequently epidermal cells appear healthy although the fungus can be observed growing along the epidermis and penetrating cells.

Vascular tissues are eventually plugged and roots turn brown and die. Runner hyphae also colonize stolons and grow upwards along sheathes and invade the crown, killing the plant.

Root infection is favored by moist soil conditions and cool soil temperatures (54-68 degrees F).

G. graminis produces needle-shaped spores borne in a flask-shaped structure (perithecium). Usually produced during the autumn and early winter, the perithecia are often difficult to find in the field.

The fungus survives the winter as spores or as resting mycellium within infected tissues.

The spores germinate on roots but not on leaves or sheaths. The germ tubes of the spores penetrate root hairs and epidermal tissues.

The soil pH factor

There is an interesting relationship between take-all patch and soil pH. The disease occurs in soils with 4.5 to 7.5 pH ranges but is most severe in the neutral to alkaline range (pH 7 and higher).

Professor J.D. Smith noted that soil pH in the upper one inch of turf was critical for disease development.

On those sites where the disease was found in Maryland, soil was a sandy loam texture and was in the 6.7 to 7.2 pH range.

Symptoms of the disease are most conspicuous in late April through June, and in autumn when cool, wet weather prevails.

Smith further noted the disease was generally more severe after an application of ground limestone.

Dr. Noel Jackson, explaining the sudden appearance of the disease in the eastern U.S., suggests the fungus has caused mild, chronic disease symptoms in eastern bentgrass turf and has been either mis-diagnosed or dismissed as a cultural problem.

However, the recent severe outbreaks of the disease may be attributed to a decline of naturally-occuring microorganisms that have antagonized and suppressed the pathogen.

This theory is strengthened by previous studies involving take-all disease of cereal crops, also caused by the *tritici* or *avenae* varieties of *G. graminis*.

Outbreaks of take-all on successively-grown cereal crops reach peak severity in two to four years and the decline. Take all is more prevalent the second year following soil fumigation and is more severe on virgin soils.

Then decline of take all has been attributed to a build-up of microorganisms suppressive to the pathogen.

Likewise, the encouragement of the disease in fumigated soils or on soils where typical soil microorganisms have not been introduced is due to the demise or absence of these antagonists.

Dr. Jackson notes that the suppressive mechanism is reduced or eliminated in turf by pesticides and/or other intensive managerial practices.

Several researchers have achieved dramatic disease reduction through the use of various fertilizers, fungicides, and chlordane.

Smith reported excellent control using 1.5 pounds of nitrogen per 1000 sq. ft. from monoammonium phosphate or ammonium sulfate, and from an organomercurial fungicide applied twice on a three-week interval.

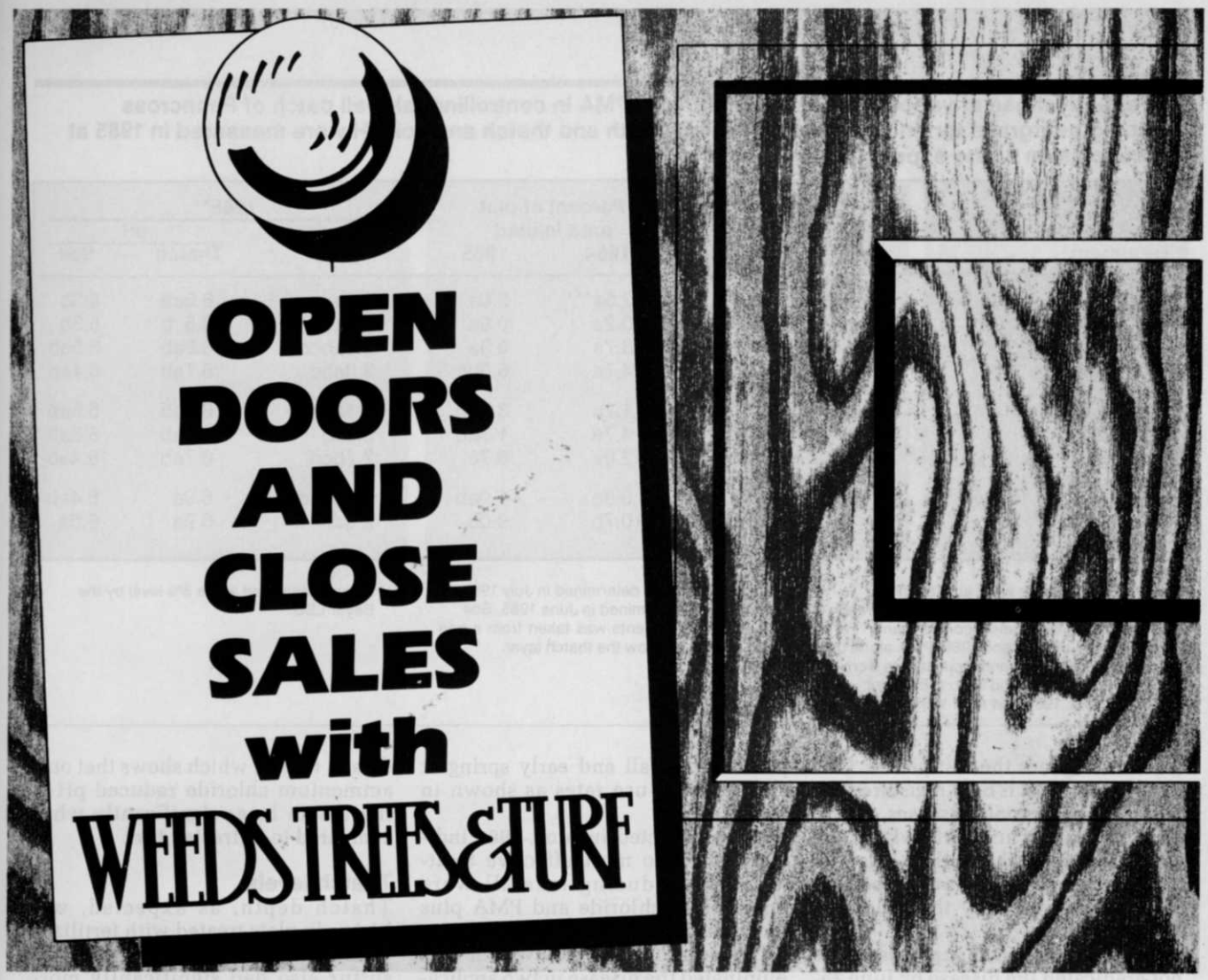
Fertilizer control is attributed to 1) growth stimulation by the nitrogen component, and 2) to acidification of the surface layer, which presumably discourages the ability of the pathogen to cause disease.

Fungicide control

Fungicides were evaluated for take-all control in Maryland in 1980 (table 1). In that study fungicides were applied on April 23, May 7, and May 23. Disease symptoms were conspicuous before application, developing around mid-April. The disease remained active until early July.

All fungicides, except Daconil 2787, significantly reduced disease intensity within two weeks of the initial application.

PMA (an organomercurial) provided excellent suppression of symp-



Attention Lawn Care Companies, Distributors, Lawn and Garden Retailers and Seed Marketers:

From your own experience, you know that when the typical homeowner looks out of a window of his 15-year-old or older home, he sees an aging, dull lawn without a single improved variety of grass in it. What he would like to see is what he's noticed on newer lawns — greener, healthier, finer-bladed grass — but he doesn't have the slighest idea of how to achieve it.

You Can Show Him How... Profitably!
The publishers of WEEDS TREES & TURF are providing you with a unique opportunity to inexpensively educate homeowners on a personal level about the availability of high-quality grass seed and the ease of application. The result is greener lawns, more satisfied customers, and higher profits for you!

This inexpensive, easy-to-read "how to" promotion can be used as a self-mailer or door hanger on those home lawns you know need reseeding. It explains:

1. **Why tired lawns don't measure up to today's standards.**
2. **How easy it is to cost-efficiently improve a lawn.**
3. **What facts to look for on the seed bag label to insure compatibility and quality.**

Order Your FREE SAMPLES Today!
See for yourself how useful this door hanger/mailer can be to your business without any obligation. Simply circle the appropriate number on the Reader Service Card bound in this issue of WEEDS TREES & TURF. We'll send you your free samples of this high-impact, customer-oriented promotion along with complete ordering information without delay.

WEEDS TREES & TURF

HBJ A HARCOURT BRACE JOVANOVICH PUBLICATION ABP BPA

Bob Earley • 7500 Old Oak Boulevard, Cleveland, OH 44130 • (216) 243-8100

Circle No. 168 on Reader Inquiry Card

TABLE 2

The effectiveness of various fertilizers, sulfur and PMA in controlling take-all patch of Penncross creeping bentgrass turf in Easton, MD. Thatch depth and thatch and soil pH were measured in 1985 at the conclusion of the experiment.

Treatment*	Application rate per 1000ft²	Percent of plot area injured 1984	Percent of plot area injured 1985	1985** Thatch depth (cm)	1985** pH Thatch	1985** pH Soil
Ammonium sulfate	0.75 lbN	2.5a***	0.0a	3.2a	6.6ab	6.3b
Ammonium chloride	0.75 lbN	0.2a	0.0a	3.0abc	6.5 b	6.3b
Urea	0.75 lbN	3.7a	0.3a	2.9abcd	6.9ab	6.5ab
Sulfur 90G	0.75 lbS	4.7a	6.0bc	3.0abc	6.7ab	6.4ab
Sulfur 90G + ammonium sulfate	0.50 lbS + 0.5 lbN	1.2a	3.0ab	3.1ab	6.7ab	6.5ab
PMA 10L	1.0 fl oz	4.7a	1.3ab	2.6cd	6.9ab	6.5ab
PMA 10L + Sulfur 90 G	1.0 fl oz + 0.75 lbS	2.0a	8.7c	2.7bcd	6.7ab	6.4ab
PMA 10L + ammonium sulfate	1.0 fl oz + 0.75 lbN	0.3a	1.0ab	2.8abcd	6.9a	6.4ab
Untreated control	—	10.7b	9.0c	2.5d	6.9a	6.6a

* Fertilizers and sulfur were applied three times on monthly intervals between Oct. and Dec. 1983 and Sept. and Dec. 1984, and again in April of 1984 and 1985. PMA alone or with either sulfur of ammonium sulfate were applied once in Oct. and Nov. 1983, April, Sept. and Oct. 1984 and April 1985.

** Thatch depth was determined in July 1985 and pH was determined in June 1985. Soil for pH measurements was taken from a one inch zone just below the thatch layer.

*** Means separated at the 5% level by the Bayer LSD.

toms throughout the test period. Unfortunately PMA is only registered for control of snow mold diseases.

However, fall and early winter applications (applied at a time legal for control of snow mold) have helped reduce take-all severity the following spring.

All fungicides had suppressed but not eradicated the disease by June 25.

Repeat applications of PMA, however, discolored turf. The high rates of Bayleton and Banner elicited an unfavorable, blue-purple color in the turf.

Acidification of soil with ammonium sulfate is the primary cultural approach to control take-all patch.

Early studies used to establish this approach, however, evaluated excessively high levels of nitrogen (8, 12, or 20 pounds of nitrogen per 1,000 sq. ft.) fertilizer to achieve successful suppression of disease symptoms.

A University of Maryland experiment, however, was initiated to determine how rapidly various acidifying agents would suppress take-all to acceptable levels with conventional-use rates and dates of application.

Because of the favorable test results achieved with PMA, it was applied preventatively with either sulfur or ammonia sulfate to see if acccelerated take-all suppression could be achieved.

It should be noted that the sulfur used in this test was formulated as a granule (90G) rather than a powder of flowable form. The materials were applied in the fall and early spring at conventional-use rates as shown in table 2.

Data collected in June, 1984 indicated the two most effective treatments in reducing take-all were ammonium chloride and PMA plus ammonium sulfate.

Ammonium sulfate, which had eliminated the disease in two applications (.78 pounds of nitrogen per 1,000 sq. ft.) in an English study did not reduce take-all severity to an acceptable level.

Once rain begins, fire ants...may be effectively controlled with mound treatments of diazinon, Dursban, Orthene, Amdro bait or MC-96.

Sulfur, PMA plus sulfur, PMA plus urea reduced disease severity but to an unacceptable level of control.

Treatments were reapplied in the fall of 1984 and spring of 1985 and by June, 1985, plots treated with ammonium chloride and ammonium sulfate were free of take-all. Urea-treated plots had only a trace of disease activity.

The date was the opposite of that anticipated and may be related to the inability of granular forms of sulfur to rapidly acidify the thatch.

The view is supported by 1985 pH data in table 1, which shows that only ammonium chloride reduced pH of the thatch layer significantly when compared to untreated turf.

Thatch levels

Thatch depth, as expected, was higher in plots treated with fertilizer.

Interestingly, plots receiving only sulfur also had significantly more thatch than untreated turf.

The importance of thatch in the severity of take-all is unknown. However, it is likely that management of the thatch micro-environment will be a key factor in control of the disease.

The pH data in table 2 provide a good indicator of how slow the acidification process is in both thatch and soil.

But thatch and soil pH data may be misleading due to the buffering capacity of soil and organic matter, and our inability to accurately assess pH in soil water adjacent to roots, where take-all fungus resides.

It is probable that the soil water adjacent to and on roots has a much lower pH than may be indicated on a routine soil test, an important fact to remember when considering that acidification is believed to be the primary factor responsible for alleviating take-all with ammonium sulfate and ammonium chloride.

Some researchers say that the chloride anion lowers the water potential of a cell sap in roots and that this physiological response reduces the ability of the take-all fungus to

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

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

SOUTHERN MILL CREEK PRODUCTS COMPANY, INC.

SMCP

SMCP proudly serves you in the Eastern U.S.

TAMPA, FLORIDA
Phone: (813) 626-2111
FLORIDA WATS: (800) 282-9115

MIAMI, FLORIDA
Phone: (305) 635-0321
FLORIDA WATS: (800) 432-8717

LAKE WORTH, FLORIDA
Phone (305) 585-6049

JACKSONVILLE, FLORIDA
Phone: (904) 398-3759

ORLANDO, FLORIDA
Phone: (305) 678-0699

ATLANTA, GEORGIA
Phone: (404) 355-6583
GEORGIA WATS:
(800) 282-1637
SOUTHEAST WATS:
(800) 241-8752

CHARLOTTE, NORTH CAROLINA
Phone: (704) 334-5926
NORTH CAROLINA WATS:
(800) 521-3859

FT. LAUDERDALE, FLORIDA
Phone: (305) 584-2819

NEW ROCHELLE, NEW YORK
Phone: (914) 235-6925 (212) 538-7300
NORTHEAST WATS: (800) 431-2418

PHILADELPHIA, PENNSYLVANIA
Phone: (215) 289-7500
NORTHEAST WATS: (800) 523-3397

Circle No. 148 on Reader Inquiry Card

HOFFCO MADE THEM FIRST

First to brand name monofilament trimmers for Weedeater, Wards, McCulloch, Lombard, Garden Way, Echo, Green Machine, etc.

WE REMAIN FIRST EVEN TODAY!

Years of experience and engineering expertise (since 1949) have developed a Hoffco line of monofilament trimmers and trimmer/cutters (bladed models) that work for everyone! From the weekend gardener to the everyday commercial user . . . Hoffco has nine models.

Our product line is geared for dealers . . . geared to attract customers and give you more profits . . .

And we're there when it counts for you . . . Mr. Dealer . . . with national advertising, liberal co-op funds, incentive programs and P.O.P. packages.

Ask for a Hoffco trimmer . . . Pick it up . . . FEEL the balance . . . the COMFORT.

Look for these NEW design features:

- Adjustable Zig-Zag Handlebar with Foam Anti-Vibration Handle Grip for Operator Comfort
- Hoffco's Shock Absorbing patented Drive Shaft System
- Carburetor with "Peep Window" for easy fuel measurement and Foolproof Starting
- Spark Plug Protector that doubles as a storage hanger.

You get ALL you need from HOFFCO . . . Backpack or Hand Held Blowers, One-Man and Two-Man Post Hole Drills.

And when you need SERVICE, our Parts and Service Department delivers . . . we fill ALL your needs.

HOFFCO

HOFFCO INC.
358 N.W. "F" St. • Richmond, IN 47374

Circle No. 124 on Reader Inquiry Card

colonize roots.

It's also theorized that acidification of the soil water either directly reduces growth of the take-all fungus or that it favors growth of other microorganisms, which effectively compete with or in some other way antagonize *G. graminis* var. *avenae*.

Ammonium chloride appears to be our most formidable weapon against take-all. The findings of our studies show ammonium sulfate does not rapidly reduce disease severity but it does work.

Combining the Maryland test results with information obtained elsewhere, one would recommend the use of ammonium chloride to combat take-all patch.

A second choice is a combination of ammonium sulfate with muriate of potash (KCL), and a phosphorus fertilizer.

The phosphorus could be eliminated where soil testing reveals existing moderate of high P levels.

PMA, where legal to apply, should be used in the fall for preventative control of snow mold disease and should provide additional benefit against take-all.

Three to four pounds nitrogen and potassium per 1,000 sq. ft. from the aforementioned fertilizers should be applied annually for at least two years.

Furthermore, the use of lime or topdressing soil with a pH above 6.0 should be avoided, and thatch should be controlled through aerification and/or verticutting.

The use of ammonium fertilizers will provide good winter color to turf but they also encourage growth (and therefore increased mowing) into early winter. **WT&T**

LITERATURE CITED

1. Christensen, N.W., R.G. Taylor, T.L. Jackson, and B.L. Mitchell. 1981 *Chloride effects on water potential and yield of winter wheat infected with take-all root rot.* Agronomy Journal 73:1053-1058.
2. Davidson, R.M., and R.L. Goss. 1972. *Effect of P, S, N, lime, chlordane, and fungicides on Ophiobolus patch disease of turf.* Plant Disease Reporter 56:565-567.
3. Dernoeden, P.H., and N.R. O'Neill. 1983. *Occurrence of Gaeumannomyces patch disease in Maryland and growth and pathogenicity of the causal agent.* Plant Disease. 67:528-532.
4. Goss, R.L., and C.J. Gould. 1967. *Some interrelationships between fertility levels and Ophiobolus patch disease in turfgrasses.* Agronomy Journal. 59:149-151.
5. Jackson, N. 1979. *More turf diseases: old dogs and new tricks.* J. Sports Turf Res. Inst. 55:163-166.
6. Smith, J.D. 1956. *Fungi and turf diseases.* J. Sports Turf Res. Inst. 9:180-202.

MARKETING AND BUDGETING • VALUING A LAWN SERVICE COMPANY
SALES TRAINING • DEVELOPING AN ADVERTISING PLAN

1986 PLCAA ProManager Seminar Series Focuses on Growth and Profitability

FACULTY

John Linkhart

Currently the owner/operator of Hart's Lawn Service as well as a senior consultant for AGMA, Linkhart was formerly the V.P. Operations for Perf-A-Lawn. He has been involved in every aspect of operations from both the standpoint of an owner as well as operating his division for a major national company.

Rudd McGary

A senior consultant with AGMA, Dr. McGary was formerly on the marketing faculty at Ohio State. He has been involved with marketing and management in the Lawn Care Industry for eight years, helping design both marketing and management systems for a wide variety of over 50 companies in the industry.

Bob Robinson

Robinson is a senior consultant with AGMA as well as running his own mulch company. Formerly Robinson was in charge of all agronomic programs for Chemlawn, which included both the selection of materials as well as assessing operating costs.

Ed Wandtke

Currently a senior consultant with AGMA, Wandtke was the Corporate Finance Manager for Chemlawn. A CPA, Wandtke works primarily in the areas of finance and accounting for AGMA with a broad-based background in all operating areas of lawn care.

The Professional Lawn Care Association of America announces the 1986 PLCAA **ProManager Seminar Series.** This new seminar series . . .

- Directly applies to your **growth**, your **profitability**.
- Is designed for the lawn care **owner/operator**.
- Is specifically tailored to **green industry needs**.
- Offers solid, detailed management guidance, professional techniques, and skills that yield **immediate results**.

The four separate seminars are:

MARKETING AND BUDGETING

- **Dallas — January 6 - 8**
- **Newark — January 9 - 11**
- **Atlanta — January 13 - 15**
- **Cincinnati — January 16 - 18**

This intensive two and one-half day seminar gives attendees a solid foundation in professional, proven methods for the ownership/management of a lawn service company. Course highlights include: • The Importance of Planning • Corporate Philosophy and Management • Marketing and Sales Planning • Sales Projections • Customer Retention • Cash Management • Budgeting Preparation • Cash Flow Statements

VALUING A LAWN SERVICE COMPANY TO BUY OR SELL

- **Chicago — January 23 - 24**
- **Atlanta — February 3 - 4**
- **Philadelphia — January 20 - 21**

Thinking of buying or selling a lawn care business? This two-day program offers professional guidance on how to get the maximum return when you sell, or the most for your money when you buy. Subjects covered include: • Planning to Buy or Sell • Evaluating a Company • Developing a Buy or Sell Strategy • How to Recognize an Opportunity • Determining a Price

SALES TRAINING FOR THE LAWN SERVICE PROFESSIONAL

- **Baltimore — February 10 - 12**
- **Chicago — February 19 - 21**
- **Detroit — February 26 - 28**
- **Sturbridge, MA — March 3 - 4**

Not a "natural born" salesman? Learn how to be something better — a professional salesman. This two and one-half day seminar supplies a solid understanding of the sales process and how to work with customers effectively. Among the subjects covered: • Marketing and Sales Preparation • Sales Psychology and Theory • Interviewing • Motivation • Closing a Sale

DEVELOPING AN ADVERTISING PLAN

- **Atlanta — January 20 - 22**
- **Chicago — January 27 - 29**

Effective advertising is crucial to success in the lawn care business. The objective of this two and one-half day seminar is to equip the owner/manager of a small lawn care company with the knowledge for making sound decisions in the advertising marketplace, including cost-effective choices and generating the highest response per dollar spent. Subjects covered include: • Choosing the Right Medium • Costs of Various Media • The Importance of Timing • Positioning Through Advertising • Projecting an Image Through Advertising • Consumer Behavior and Advertising

Advance registration: To register, mail the registration form below or call PLCAA at (404) 977-5222.

Arrangements for Attendance: Lunch is included in the registration fee for each full day of the seminar. All other meals and housing are the responsibility of each individual attending the seminar. Travel and lodging information will be provided upon receipt of registration form.

REGISTRATION FORM (Please print clearly)

Please register me in the seminars checked below:

MARKETING AND BUDGETING
Seminar fee: **$495** (**$395** if PLCAA Member).
Additional registrants **$200** each.

☐ Dallas (Jan. 6-8)
☐ Newark (Jan. 9-11)
☐ Atlanta (Jan. 13-15)
☐ Cincinnati (Jan. 16-18)

VALUING A LAWN SERVICE COMPANY
Seminar fee: **$595** (**$495** if PLCAA Member).
Additional registrants **$250** each.

☐ Chicago (Jan. 23-24)
☐ Atlanta (Feb. 3-4)
☐ Philadelphia (Jan. 20-21)

SALES TRAINING
Seminar fee: **$395** (**$295** if PLCAA Member).
Additional registrants **$150** each.

☐ Baltimore (Feb. 10-12)
☐ Chicago (Feb. 19-21)
☐ Detroit (Feb. 26-28)
☐ Sturbridge, MA (March 3-5)

DEVELOPING AN ADVERTISING PLAN
Seminar fee: **$495** (**$395** if PLCAA Member).
Additional registrants **$200** each.

☐ Atlanta (Jan. 20-22)
☐ Chicago (Jan. 27-29)

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE _____

Attach list of additional names.

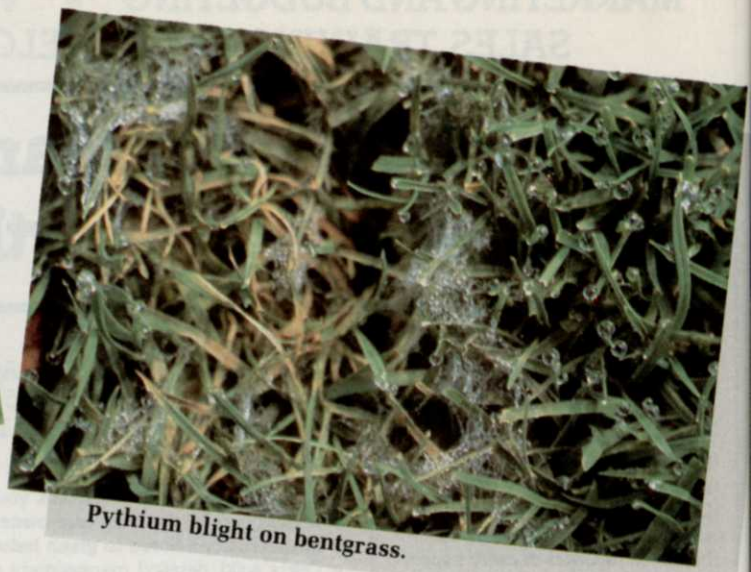
☐ Check if PLCAA member

☐ Send me information on PLCAA membership.

Mail check or money order along with registration form to:

Professional Lawn Care Association of America
1225 Johnson Ferry Road, NE
Suite B-220
Marietta, GA 30067

Sclerotium blight on bentgrass.



Pythium blight on bentgrass.

SECOND OF THREE PARTS

THE PATCH WARS

As the temperature rises, so does the number of patch disease problems. Identification is the key to control.

by Dr. Houston Couch, Virginia Polytechnic Institute and State University

Accurate diagnosis, vitally important to the development of a successful turfgrass disease control program, determines the course of action for the selection of the pesticide, the rates of application, and the details of the treatment schedule.

If diagnosis is incorrect, there cannot be an intelligent approach to implementing procedures for control.

Dr. Houston Couch is professor of plant pathology in the Dept. of Plant Pathology, Physiology, and Weed Science at the Virginia Polytechnic Institute and State University in Blacksburg, Va.

Diagnosis—not always an easy task—is complicated by the fact that the primary symptom patterns of turfgrass diseases varies with different climatic and management conditions.

For example, helminthosporium leaf spot of the cool season grasses is characterized by a well-defined leaf spot. However, the lesion develops only when air temperatures are 85 degrees F or less.

As temperatures rise above 85, the incidence of leaf spots begins to give way to a nondescript foliar blighting.

When temperatures reach the mid-90s, leaf blighting becomes the dominant symptom form. With temperatures in the 85-95 degree range, the overall symptom pattern of helminthosporium leaf spot on bentgrass putting greens will take on many of the characteristics of either pythium blight or rhizoctonia blight.

Another complicating factor in diagnosis is the similarity among some of the primary symptoms of certain diseases.

For example, although melting-out of Kentucky bluegrass and helminthosporium leaf spot of Kentucky bluegrass are incited by different species of fungi, the leaf lesions of the two diseases are almost identical.

Positive diagnosis sometimes requires a laboratory-based examination of the diseased tissue to determine which of the two organisms is present.

Many factors complicate diagnosis when identifying the patch diseases. The "patch" symptom pattern is one in which the overall appearance of the area is characterized by the death of the majority of the leaves of the plants in a section of otherwise green turf.

Of the 17 known warm- and cool-season turfgrass patch diseases, five occur during the winter, five during the spring and fall, and seven in the summer.

The summer patch diseases are fusarium blight, sclerotinia dollar spot, sclerotium blight, pythium blight, rhizoctonia blight, melanotus white patch, and the senescence syndromes (summer patch).

The following covers fusarium blight, sclerotium blight, and pythium blight, describing key diagnostic features, listing specific weather and management conditions that favor development, and giving control practices for each member of this group.

Next month we will examine rhizoctonia blight, melanotus white patch, and summer patch.

Frank J. McDonald, Director of Marketing
Cushman Division, Outboard Marine Corporation
Lincoln, Nebraska

CUSHMAN®

"Few things in life last as long and work as hard to make your job more productive and cost efficient."
Frank J. McDonald

An investment in Cushman® turf vehicles and attachments is an investment in a true turf care "working system".

Team up the Cushman Turf-Truckster™ vehicle with one or more of a half-dozen specialized turf care attachments, and you can aerate large or small areas, haul equipment and materials, dump sand, spray, seed or top dress. And, switch from one job to another quickly with the Cushman exclusive "pin-disconnect" system.

The Cushman Turf-Truckster™ vehicle offers plenty of power with the OMC-built 22-hp engine. Choice of 3-wheel or 4-wheel models. And a ground-speed governor control for uniform application over uneven terrain. The Turf-Truckster also rides over fine turf areas without damage to the turf.

No single turf vehicle lets you accomplish so much day after day, year after year.

For more information, and a free full line brochure write:

CUSHMAN
Frank McDonald, Director of Marketing, OMC Lincoln, P.O. Box 82409, 5271 Cushman, Lincoln, NE 68501 or call toll-free: **1-800-228-4444.**

"OUR REPUTATION IS BUILT TO LAST"

CUT6-7603

©Outboard Marine Corporation, 1985 All rights reserved.

Circle No. 112 on Reader Inquiry Card

Fusarium blight

Fusarium blight is a disease of Kentucky bluegrass, bentgrass, tall fescue, red fescue, and ryegrass.

The holopathology of the disease consists of two phases: a direct blighting of the leaves; and a crown and root rot. The crown and root systems of Kentucky bluegrass and bentgrass are affected by fusarium blight and direct leaf blighting is generally very graphic.

Therefore, in field diagnosis with stands of Kentucky bluegrass or bentgrasses, the possibility of fusarium blight is usually given primary consideration.

However, with fescues and ryegrasses, the initial impact of the disease is usually most pronounced on the crowns and roots. Thus, the likelihood of the disease in question being fusarium blight can be easily overlooked.

Generally, fusarium blight is first seen as scattered, light green patches of grass two-to-six inches in diameter. Under conditions favorable for disease development, the color of these patches changes in 36 to 48 hours to a dull reddish brown, then to tan, and finally to a light straw color.

Initially, the shapes of the patches are elongated streaks, crescents, or circular. The most characteristic feature is seen in the late stages of disease development, when more or less circular patches of blighted turfgrass one-to-three feet in diameter are present.

These areas are tan to straw colored, often have reddish-brown margins one-to-two inches wide, and frequently contain center tufts of apparently-unaffected green grass. This combination produces a distinctive frog-eye effect.

When optimum conditions for disease development exist for an extended period, affected areas coalesce and large areas of turfgrass may be blighted.

Leaf lesions originate both at the cut tip and at random over the entire leaf. First seen as irregularly shaped, dark-green blotches, they rapidly fade to a light green, then reddish-brown, and finally a dull tan.

Individual lesions may involve the entire width of the leaf blade and may extend up to ½-inch.

Turfgrass plants affected primarily by the root and crown rot phase of the fusarium blight are stunted, pale green in color, and do not readily recover from mowing or adverse weather conditions.

Their roots are characterized by a brown to reddish-brown dry rot and as the disease progresses, these roots become darker due to the colonization of soil saprophytes.

During periods of relatively high rainfall, the pinkish growth of the pathogens can be seen on the root and crown tissue near the soil surface.

The foliar blighting phase of fusarium blight is most severe during periods of high atmospheric humidity with daytime air temperatures of 80 to 95 degrees F and night air temperatures of 70 or above.

Fusarium blight is also more severe on turfgrass grown under high nitrogen fertilization.

When turf is on a high-nitrogen program, low soil moisture levels will cause an increase in disease severity. Conversely, under low nitrogen fertilization, development of fusarium blight is not affected by soil moisture levels.

If diagnosis is incorrect, there cannot be an intelligent approach to implementing procedures for control.

The two fusarium species that incite this disease can actively colonize thatch and thus the material can serve as a major reservoir for inoculum.

Fusarium blight is caused by *fusarium culmorum* and *fusarium poae*.

Several saprophytic, non-parasitic, species of fusarium colonize the thatch and soil in stands of turfgrass. Therefore, when laboratory diagnostic procedures are employed, one must pinpoint precisely the species of fusaria that are present.

If *fusarium culmorum* or *fusarium poae* are absent, the disease is not fusarium blight.

Management practices that can help reduce the severity of fusarium blight are: 1) maintaining the thatch layer at approximately ½-inch thickness, and 2) watering frequently enough to hold the soil moisture close to field capacity.

The sterol inhibiting fungicide Bayleton is very effective in fusarium blight control.

The benzimidazole fungicides Tersan 1991, Fungo 50, and Cleary 3336 are also labeled for control.

In areas with recurring fusarium blight, the fungicide application producing maximum control should be made immediately following the first time night temperatures do not drop below 70 degrees.

Sclerotium Blight

Sclerotium blight (Southern blight), first described on bentgrass golf greens in North Carolina in 1975, has since been identified on annual bluegrass, bentgrass, and ryegrass in California and on Kentucky bluegrass in North Carolina and Maryland.

On Kentucky bluegrass, sclerotium blight is first seen as small, circular dead areas. Usually some green, apparently unaffected grass plants remain in the centers, thereby producing a frog-eye appearance. These circular patches may enlarge up to three feet in diameter.

Some of the affected areas may develop into partial circles or arcs, rather than distinctive, circular patches.

When weather conditions are favorable for disease development, masses of coarse white mycelium may grow on debris on the soil surface and on the dying grass at the edge of the patches. Also, small, round, white to brown-colored hard structures 1/20-to-1/32-inch in diameter known as "sclerotia" can frequently be seen on the dead grass or on the soil surface.

On golf greens, sclerotium blight first appears as yellowish crescent-shaped patches or circular rings with apparently healthy-looking grass in the center. The diameter of these areas will vary from eight-to-36 inches.

While patches may continue to enlarge at a somewhat steady rate throughout the growing season, the center portions of apparently healthy grass expands but at a slower rate.

The fungus that incites sclerotium blight (*sclerotium rolfsii*) affects over 500 species of plants.

Sclerotium blight is a warm weather disease. During hot, humid weather, the thread-like elements (mycelium) that make up the sclerotia begin to grow on organic matter in and on the soil and then spread to living plants.

In the eastern U.S., sclerotium blight usually appears in mid-summer. In California, it becomes apparent in the early spring (usually the second or third week in May) and continues throughout the summer.

At present, there are no commercially used turfgrass fungicides labeled for control of sclerotium blight.

Pythium blight

Under favorable conditions, the most-destructive pythium blight can completely destroy established stands of turfgrass within 24 hours.

After a serious outbreak, it is frequently necessary to completely reestablish the desired turf.

Pythium blight is first seen as

Penneagle crowds out bluegrasses on Butler National's fairways

Triplex fairway mowing at The Butler National Golf Club, Oak Brook, IL

When Oscar Miles, CGCS, of The Butler National Golf Club, introduced Penneagle creeping bentgrass into his Poa annua infested A-20 bluegrass fairways in 1980, he took a dynamic step toward the beautiful fairways praised by the pros during the Western Open.

Utilizing a prescribed program of aggressive, deep core aerification, drop seeding and verticutting, Penneagle was expected to *aggressively compete* with the bluegrasses. With triplex mowing and clipping removal, the unwanted grasses are yielding to Penneagle.

Oscar feels that his fairways are *now* 70-90% Penneagle.

With Butler National's reputation at stake, Oscar Miles couldn't chance anything less than Penneagle for his "immaculate" fairways.

Warren Bidwell is available to talk to your superintendents' group about Butler National Golf Course and the "Penn Pals," Penncross, Penneagle and Pennway Blend, on your golf course. Call or write TEE-2-GREEN Corp. for details.

Penneagle blue tags earn cash or prizes.

Call or write us for details

Penneagle's Oregon certified blue tags qualify for cash awards to qualifying turf organizations for turf research. Call our toll-free number for details.

Marketed by **TEE-2-GREEN Corp.**, PO Box 250 Hubbard, OR 97032 1-**800-547-0255** TWX **510-590-0957**

Circle No. 150 on Reader Inquiry Card

TASK FORCE

20,000 PROMARK UNITS IN ACTION NATIONWIDE!

3 models

MODEL 16-SP (self-propelled) STUMP & ROOT GRINDER

Grinds stumps to 18" below ground. Under 30" wide.

3 models incl. P.T.O.

MODEL 310 BRUSH CHIPPER

Feeds from any direction. 360° rotation. Hydraulic feed.

6 models including trucks & trailers.

AERIAL LIFT

Install/remove in under 10 minutes. 360° continuous rotation, feathering controls.

PROMARK PRODUCTS INC.

306 9th Avenue
City of Industry, CA 91746
(818) 961-9783

THE LEADER IN INNOVATION

Circle No. 142 on Reader Inquiry Card

SUMMER PATCH *from page 84*

small, irregularly-shaped areas of diseased turf ranging from ½-to-four inches in diameter.

Initially, the leaves in these patches have a distinct dark green to purplish "water-soaked" appearance.

The leaves then shrivel and the color of the patches fades rapidly to a light brown.

As the disease progresses, the groups of affected patches frequently coalesce to envelope sections of turf from one-to-10 feet in diameter.

The shape of affected areas are often circular with uniform blighting of leaves throughout, or with center sections of green, apparently healthy plants, thus producing a distinctive frog-eye pattern.

In addition to the more or less circular pattern of development, quite commonly the patches will be either crescent-shaped or appear as serpentine streaks of blighted grass six-to-12 inches wide and two-to-three feet in length.

After a serious outbreak (of pythium blight) it is frequently necessary to completely reestablish the turf.

The leaf symptoms are first a water-soaked, dark green to greenish purple. At this point, the leaves are soft and somewhat slimy, and when disturbed by the pressure of foot traffic or mowing equipment, they may mat together. Their color soon fades to a light tan as they shrivel and become somewhat twisted.

If the growth of the pathogen is checked before the entire leaf is blighted, straw-colored lesions develop. These lesions are similar in appearance to those incited by sclerotinia dollar spot with the exception that the reddish-brown margins characteristic of the latter disease are absent.

In the early morning hours, or during periods of high humidity, the leaves of diseased plants may be covered with the white mycelium of the pathogen.

Six pythium species are known to be capable of parasitizing turfgrasses. Certain forms are primarily root inhabitors, while others are also capable of causing severe foliar blighting.

Two species, *pythium ultimum* and *pythium aphanidermatum*, are the primary foliar blighters. The pathogenicity of both of these species is highest at temperatures of 85-95 degrees F. However, *pythium ultimum* can also incite a moderate amount of blighting when the temperatures are in the low 70s.

Pythium blight is also favored by prolonged periods of high atmospheric humidity. Extended periods of leaf wetness contribute materially to heavy outbreaks of the disease.

Disease development is more severe on grass grown at high nitrogen fertility.

Turfgrass growing under conditions of low soil moisture is more susceptible to pythium blight than when the soil is near field capacity.

Pythium blight can be particularly severe on the bentgrasses, ryegrasses, and Kentucky bluegrass. It also affects red fescue, tall fescue, and bermudagrass.

At present, four fungicides are labeled for control of pythium blight: two non-systemics (chloroneb and ethazole), and two systemic materials (metalaxyl and propamocarb).

Chloroneb is sold under the trade name "Terraneb SP," and one of the product names for ethazole is "Koban." These two fungicides are effective in pythium blight control but only function to prevent infections. For maximum effectiveness, they should be used in a preventative spray program.

In areas where pythium blight is a recurring problem, a general rule for the initiation of a preventive spray program with Terraneb SP or Koban is to begin fungicide applications immediately after night air temperatures do not drop below 70.

Metalaxyl is sold for turfgrass use under the trade name "Subdue," and propamocarb is marketed as "Banol."

Both of these fungicides are very effective in the control of pythium blight. For optimum control, these materials must be used at the rates listed on their respective labels.

Field research at Virginia Tech has shown that when Subdue or Banol is used at less than their low label rates, there can be a significant reduction in their capacity to control pythium blight.

A field study at Penn State has found that there is no difference in the control of pythium blight by either Subdue or Banol used alone at half-label rate or when they are combined at half-label rates as a tank mix.

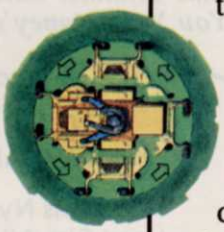
One should remember that while using Subdue and Banol for pythium blight control you should not reduce the rate from the low dosage level listed on the label. You should apply one of the materials at a time. **WT&T**

Investment Performance

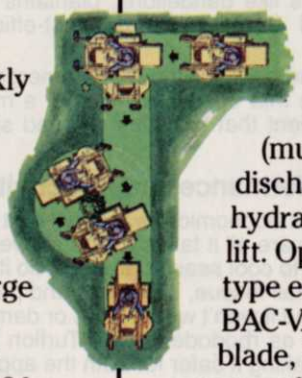
HUSTLER's new 251 and 262 deliver commercial-quality mowing for years and years.

New HUSTLER 251 and 262 make smart equipment investments. They bring efficient mowing without breaking your initial purchase budget.

Agile. Both new models have 18 hp engines and famous "HUSTLER Tough" features: dual-hydrostatic direct-drive, true zero-degree radius turning and the easy maneuverability of one-hand twin-lever steering. They can turn within their own radius, mow square corners without wasted motion and quickly trim around small obstacles without backing up for another pass!



The Model 251, with 51" rear-discharge deck, and four-wheel stance, trims from either side. An optional 8 bu. rear-mounted BAC-PAC catches grass and the deck adjusts in one easy step.



The Model 262 is an out front mower with 60" 3-way deck (mulch, side or rear discharge) and hydraulic attachment lift. Options like coulter-type edger, 16 bu. BAC-VAC™, 60" dozer blade, V-Blade, utility scoop and cab keep it working year 'round.

For an investment in mowing performance, see your HUSTLER "Select Line" Dealer or, call toll free for literature or more information.

1-800-835-3260

In Kansas 1-800-362-1049

EXCEL INDUSTRIES, INC.
Box 7000
Hesston, Kansas 67062

GS-07S-10622

Model 262

Hustler Tough And Built To Last!

EXCEL HUSTLER Turf & Grounds Equipment

Circle No. 119 on Reader Inquiry Card

TURFLON* D

It's a constant battle, defending your turf against such hardy weeds as oxalis, spurge, ground ivy and wild violets. For these perennial enemies, as well as easier foes like dandelions, plantains and clover, you need the best, most cost-efficient weapon available.

You need Turflon* D—the post emergence systemic herbicide that contains Triclopyr, a major new active ingredient that provides a broad spectrum of control.

Strategic performance and selectivity.

Turflon D is an economical weapon—just one or two applications are all it takes to control weeds. It's non-phytotoxic to cool season grasses, so it can be used safely on tall fescue, bluegrass and perennial ryegrasses. And it won't weaken turf or damage ornamentals such as rhododendrons. Turflon D is less toxic, too—making it safer for both the applicator and the environment.

Lebanon—Your headquarters for Total Turf Care.

We're a major distributor of Turflon D for The Dow Chemical Company. That means our extensive sales network can speed your order to you when you need it. And our professional, technically-trained customer service representatives will give your order the attention it deserves, to make sure you get the high quality performance **you** deserve.

If you have any questions about Turflon D, or any of our other products and services, call our **Greenline** today at **1-800-233-0628;** in Pennsylvania, call **717-273-1687.** And start getting help in your battle against broadleaf weeds . . . from the ground up.

Lebanon
TOTAL TURF CARE
A division of Lebanon Chemical Corporation
P.O. Box 180 • Lebanon, PA 17042
BETTER TURF CARE FROM THE GROUND UP.

*Trademark of The Dow Chemical Company.

Circle No. 164 on Reader Inquiry Card

EVENTS

May

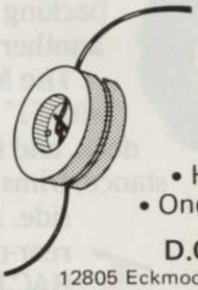
International Society of Arboriculture, Western Chapter, annual meeting and trade show, May 18-22, Hilton Riviera Hotel, Palm Springs, Calif. Contact Robert L. Meyer, PO Box 306, Cerritos, CA, 90701 for information and registration; Jim Gorham, PO Box 870, Whittier, CA, 90608 for exhibit space and information.

North Carolina Turf and Landscape Field Day, May 21, North Carolina State University Turf Field Center, Raleigh, N.C. Contact J.M. DiPaola, Box 7620, N.C. State Univ., Raleigh, NC, 27695; (919) 737-2657.

U.S. Botanic Garden One-Hour Horticulture Short Course, May 22-24 and May 29-31, U.S. Botanic Garden Conservatory, Washington, D.C. Contact U.S. Botanic Garden, First and Maryland Ave., S.W., Washington, DC, 20024; (202) 225-7099.

University of Florida IFAS Turf Update and Field Day, May 28, University of Florida, Gainesville, Fla. Contact Charles H. Peacock, Ornamental Horticulture Dept., IFAS, University of Florida, Gainesville, FL, 32611.

Is Your Line Trimmer Cutting Head Giving You Your Money's Worth?



Try The Incredible Unedible

D.O.B. HARDHEAD $39.99 *plus shipping*

- Partless Nylon Head
- Head Fits All Major Brands
- One Piece Moulded Construction

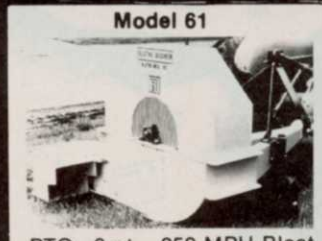
D.O.B. DISTRIBUTORS
12805 Eckmoor Road • Silver Spring, Maryland 20904
(301) 622-9397

Circle No. 114 on Reader Inquiry Card

Olathe SOLVE YOUR LEAF & DEBRIS PROBLEM

Blowers Models 61 & 67

Model 61



PTO - 3 pt. - 250 MPH Blast

Model 67

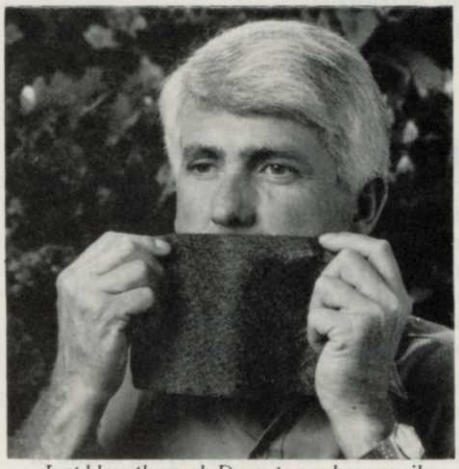
Out Front Attachment For Groundsmaster

Olathe Manufacturing, Inc. 800-255-6438
Industrial Parkway, Industrial Airport, KS 66031 913 782 4396

Circle No. 140 on Reader Inquiry Card

THIS TEST WON'T HOLD WATER —OR AIR.

Water passes easily through highly permeable Duon Weed Control Mat.



Just blow through Duon to see how easily air passes through it.

The proof is stronger, longer lasting plants with DUON® Weed Control Mat.

Both water and air pass easily through Duon Weed Control Mat, made of Phillips Fibers nonwoven polypropylene. As a landscaper, you know how important that is to a plant's root system and to the future well-being of your big landscape jobs—especially those you use as references.

When water and air can't get through, plants die. Black plastic won't work for the long-term. And woven polypropylenes are nowhere near as permeable as nonwovens. For example, the air permeability for nonwoven Duon is about 14 times greater than for woven polypropylenes and the water permeability for Duon is about 10 times greater.

Put our words to the test. Hold Duon under running water, then take another piece and breathe through it. Then try the same test with a competitive weed control mat.

When covered from sunlight, Duon is virtually permanent. It allows plants to thrive and impedes about 95% of weed growth (in most areas). It also keeps mulch from going down into the soil.

For your quality landscape jobs, order Duon. For further information, call Phillips Fibers (803) 242-6600.

MARKETED THROUGH:
Blunk's
8923 South Octavia
Bridgeview, IL 60455
(312) 430-2025

PHILLIPS 66

PHILLIPS FIBERS CORPORATION
A SUBSIDIARY OF PHILLIPS PETROLEUM COMPANY
TEXTILE NONWOVEN FABRICS MARKETING
P. O. BOX 66, GREENVILLE, SC 29602
(803) 242-6600

*Trademark Phillips Petroleum Company

Circle No. 141 on Reader Inquiry Card

PROBLEM SOLVERS

by **Balakrishna Rao**, Ph.D.

The flowers, not the fruit

Problem: *Is it true that the insecticide Sevin can prevent fruit development in crabapples? A number of our clients like the flowers but they don't like the fruits dropping on the ground. Can we use Sevin? If so, when is the best time to apply? (Wisconsin)*

Solution: Yes, it is true that the insecticide Sevin can prevent fruit development. Spraying the trees two weeks after petal drop and then performing another application one week later would result in considerable thinning of fruits.

If fruit thinning is not desired, delay the spray at least 30 days after blooming.

Aerification and seeding

Problem: *We have seeded a number of lawns after aerifying and we are not fully satisfied with the results. In many lawns, even after a full season's growth, bare areas are not filled in yet. We noticed a lot of clumps of plants in the aerification holes. What are we doing wrong? We would appreciate your comments and guidelines for better seeding procedures. (New York)*

Solution: Seeding the lawns after aerifying is one of the acceptable ways seeding can be done. This procedure works well if you are using turfgrass seed like Kentucky bluegrass with rhizomatous spreading habits. These plants with underground stems (rhizomes) can grow and spread and fill in bare areas.

If you use turfgrass seeds primarily with bunch-type growth habits, they may not fill in quickly or not at all. This would produce bunch-type growth surrounding aerification holes. After aerifying, it is often a good idea to apply some high-phosphorus fertilizer. Aerification aids in the movement of phosphorus through the root zone.

Another method of seeding is to use an Aeroseeder, which is a slice seeder. With this equipment you can expect better results because the machine slices the ground and drops the seeds in the groove, establishing seed and soil contact.

Pachysandra fungus

Problem: *In a number of situations, it was suggested that the material we applied for weed control may have caused yellowing and brown spots on leaves of pachysandra. First, we thought there may be some truth to this, but in checking other unsprayed properties we also found similar problems on the pachysandra. On some plants we found yellowish-orange colored growths on the stems. Now we feel that is is a disease. What causes these and what is the best way to deal with the problem? (Michigan)*

Solution: The problem and the symptoms on leaves you have observed appear to be a common problem on pachysandra. Volutella blight, a fungal disease caused by *Volutella pachysandricola*, first causes leaf spots with concentric rings. The disease agent gradually moves down to stems and colonizes in the tissues. Large numbers of plants can be infected if moist and humid conditions prevail. Affected areas may look yellowish-brown to black in color. Affected plant parts will have yellowish-orange colored fungal structures and spores.

This disease spreads rapidly under dense cover of susceptible plants. To manage the problem, rake and remove dead or dying winter-killed plants soon after winter and improve air circulation. Then if the area has a history of Volutella blight, apply fungicides like Ferbam, Captan, and mancozeb starting when the new growth begins.

Repeat application two or three times at 10-day intervals to protect the plants. Provide adequate moisture and fertilizer to improve the vitality of the plants.

Herbicide selection

Problem: *What criteria do you base a decision on when choosing a turf pre-emergent herbicide? Where else can you obtain this kind of information besides from the biased representatives? (California)*

Solution: Richard G. Rathjens, senior agronomist on our staff, listed some of the criteria we use in selecting a pre-emergent herbicide:

1. Species labeled for use (source of information: the specimen label);
2. Formulations available (source of information: supplier);
3. Cost (source of information: supplier);
4. Compatibility (source of information: supplier and jar test);
5. Weeds controlled (source of information: specimen label and university tests);
6. Registered uses (source of information: specimen label).

For information on the best herbicide to use on a specific weed, consult: university turf specialist who has conducted pre-emergent tests, trade magazines, and *Journal of Weed Science Society of America*.

Balakrishna Rao is Director of Lawn Care Technical Resources for The Davey Tree Co., Kent, Ohio.

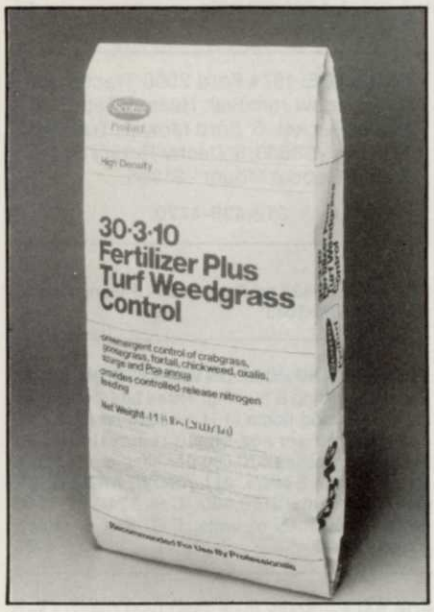
Questions should be mailed to Problem Solver, Weeds Trees & Turf, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2-3 months for an answer to appear in the magazine.

O.M. Scott has new herbicide/fertilizer combo

O.M. Scott & Sons has combined a pre-emergent weed control with a feeding of high-quality fertilizer for its newest product, 30-3010 Fertilizer Plus Turf Weedgrass Control.

Using pendimethalin as its active ingredient, this dry-applied product provides pre-emergent control of six grassy weeds—crabgrass, goosegrass, foxtail, poa annua, barnyardgrass, and fall panicum—and three broadleaf weeds—chickweed, oxalis, and prostrate spurge.

It is labelled for use on Kentucky



bluegrass, perennial ryegrass, fine fescue, tall fescue, bermudagrass, St. Augustinegrass, and bahiagrass.

Circle No. 190 on Reader Inquiry Card

Al-Ko entering commercial market

Al-Ko Kober Corp. of Elkhard, Ind. is entering the commercial lawn market with the introduction of shredders, sickler bar mowers and rotary mowers.

"We have made a commitment to the U.S. and Canadian markets," says president Herbert Kober.

The Farmer 10 sickle bar mower (shown here) for heavy grass and weeds has a 28-inch cutting width and runs on a two-cycle 3.5 hp Tecumseh gas engine. The Vario-4 rotary has a 19-inch cutting width wth a 3.5 hp Briggs & Stratton engine.

In addition, the company offers power shredders which come in five sizes with electric, gas and PTO drive models.

John Kurtze, formerly with Sensation, is Al-Ko's new vice-president of lawn and garden sales.

Circle No. 191 on Reader Inquiry Card

Make The World's Marketplace Your Marketplace!

INTERNATIONAL LAWN GARDEN & POWER EQUIPMENT EXPO 86

The lawn, garden & power equipment industry. You can see all the manufacturers you need to see at EXPO 86. And this year, even more lawn & garden exhibitors will be introducing new products in Louisville.

Outdoor product demonstrations. Other trade shows attempt to imitate Expo's demonstration capabilities but none can offer 450,000 sq. ft. of outdoor exhibit space. If you truly want to "try before you buy," come to view over 100 exhibitors in the EXPO 86 outdoor demonstration area . . . a natural extension of the 500 indoor exhibits.

Big-name entertainment. Enjoy an evening with Neil Sedaka and Marie Osmond. Willard Scott, "Today" show weatherman, highlights the seminar series. The Glenn Miller Orchestra plays for a special dealer/retailer riverboat cruise.

Register free today. 1-800-558-8767. Call toll-free for more information on Louisville's low lodging and per diem rates, special airfare rates, and the chance to **win a weekend for two** anywhere in the continental U.S.!

EXPO 86
July 28-30

Kentucky Fair & Expo Center
Louisville, Kentucky USA

The World's Marketplace!

EXPO 86
P.O. Box 70465
Louisville, KY 40270
502/582-1672

Call now for FREE registration
1-800-558-8767
9 a.m. to 5 p.m., E.S.T.

Circle No. 166 on Reader Inquiry Card

CLASSIFIEDS

RATES: $1.00 per word (minimum charge, $25). Bold face words or words in all capital letters charged at $1.25 per word. Boxed or display ads: $85 per column inch-1x (one inch minimum); $80-3x; $75-6x; $70-12x. Agency commissions will be given only when camera-ready art is provided by agency. For ads using blind box number, add $5 to total cost of ad. Send ad copy with payment to Dawn Nilsen, WEEDS TREES & TURF, 1 East First Street, Duluth, MN 55802 or call 218-723-9200.

BOX NUMBER REPLIES: Mail box number replies to: WEEDS TREES & TURF, Classified Ad Department, 1 East First St., Duluth, MN 55802. Please include box number in address.

BUSINESS OPPORTUNITIES

WANT TO BUY OR SELL a golf course? Exclusively golf course transactions and appraisals. Ask for our catalog. McKay Golf and Country Club Properties, 15485 N. East Street, Lansing, Michigan 48906. Phone (517) 484-7726. TF

Wanted: Landscape maintenance, tree maintenance, chemical lawn care accounts, equipment, etc. Boston, MA & surrounding areas. Reply to: Landscape Maint., 7 Chute Street, Reading, MA 01867. 5/86

Franchise Opportunity: Industrial Vegetation Control—Box 3187, Enid, OK 73702. Small Investment—Large Return. Kem Weed Trademark. 8/86

For Sale - beautiful 9 hole golf course, excellent condition, 12 years old, approximately 2,000 pine & evergreen trees lining fairways. All necessary equipment to maintain & plenty of shop buildings. Nice Pro-Shop. Located in S.E. Oklahoma. Contact Hassen Dow - 405-326-6130. 5/86

FOR SALE

HYDRO-SEEDER—1976 1000 GALLON BOWIE SKID MOUNTED, COMPLETELY RECONDITIONED LAST YEAR. (513) 667-1346. TF

LIGHTED PAR 3 GOLF COURSE - 15 ACTIVITY RECREATION FACILITY AND 3 COMMERCIAL BLDGS. Central Indiana, Box 205, Mt. Summit, IN 47361. 317-284-1459, 317-836-4992. 6/86

HYDRO-MULCHERS AND STRAW BLOWERS New and used. **JAMES LINCOLN CORPORATION,** 3220 S. Jupiter Rd., Garland, TX 75041. (214) 840-2440 (TX), (800) 527-2304 (except TX). TF

BOWIE HYDRO-MULCHERS AND STRAW BLOWERS. New and used. Landscape Supply, Ltd., P.O. Box 22092, Greensboro, NC 27420. (919) 292-2922. 5/86

Spyder Forklift Parts—Mobile Lift Parts has replacement parts for your Spyder. Torque hubs also available. Call or write: Mobile Lift Parts, 5402 Edgewood Rd., Crystal Lake, IL 60014. 815-455-7363. 9/86

LAWN SEED. Wholesale. Full line of top quality grasses. Improved bluegrass varieties, fine fescues and fine bladed ryegrasses. We specialize in custom mixing. Oliger Seed Company, 2705 Wingate Avenue, Akron, OH 44314. Call collect (216) 753-2259. TF

John Bean 400 gal. 35 GPM sprayer Wisc V-4 motor, new tank, complete with trailer, hose, gun $4,000. Model 100-E John Bean Mist Blower, very good $3,500 or trade for brush chipper. (207) 797-4769. 5/86

Save $3,000 New GlasCraft T3H complete with 200 ft. spray hose $10,000. Gusmer FF rebuilt, good condition complete $3,500. 216-823-3416, P.O. Box 180, Middlebranch, Ohio 44652. 5/86

50 FT. HI-RANGER Mounted on a 1973 Ford 750 Cabover with utility boxes - $15,000. 519-735-8747 after 6. 5/86

Jacobson E10 7 Gang hydraulic lift mower. Mowers are 5 blade blitzers. 2000 hours. 4 cylinder gas engine. $8,000. Witte Sod, Hutchinson, MN 612-587-8127. 5/86

BROUWER - 1985 3600 18" sod harvester, only 70 hours. Still under warranty. $29,500. Extra parts included. (405) 787-2302. 5/86


Landscape Design RUBBER STAMPS
FREE BROCHURE
Landscape Design Kits
Interior Plant Sets
Tree Stamps Books
AMERICAN STAMP CO.
12290 Rising Rd., suite 200-w
Wilton, CA 95693 (916) 687-7102

POPLAR SHADE TREES: Long life-rapid growth-full rounded shape. The perfect shade or screen tree. For prices and brochure call or write: Farley's Nursery, 6200 Gay Road, Orient, Ohio 43146. 614-877-4572. 5/86

TREE FERTILIZATION GUN tested on over a million square feet of trees and shrubs all over the U.S. Good to 500 psi, repairable, non-corrosive. Buy direct from manufacturer, $106.00 (shipping included). Arbor-Nomics, Inc., 5634-A Buford Highway, Atlanta, GA 30071. (404) 447-6037. TF

ATTENTION GOLF COURSE SUPERINTENDENTS: Great Meyer Zoysia for your Fairways and Tees. Guaranteed Bermuda free. Beauty Lawn Zoysia (Cincinnati) 1-513-424-2052. 1/87

BALL BARRIER NETTING: Made of olefin fibers. 6 1/2 feet and 25 feet high. Strong and tough. Will not rust. Easy to handle. For Driving Ranges and Golf Courses. Keep golf balls from straying off-course. J. A. Cissel Mfg. Co., P.O. Box 339, Farmingdale, N.J. 07727. 1-800-631-2234. TF

FOR SALE: 1974 Ford 2600 Tractor set up for snow removal: Heated Cab, Sno Blade, Bucket, 6' Ford Mower, Turf and AG Tires - $8500. 6' Dester Rotary Brush Ford & Bobcat Mount - $1395.

312-438-4770

FOR SALE: 1983 Toro Parkmaster 9-Gang Diesel. Call (517) 750-3043. 5/86

BUSINESS AND HOME ON VA EASTERN SHORE: Excellent fishing & hunting. Three bedroom, 2500 sq. ft. redwood home in 11 wooded acres. Landscaping-tree service-stump removal-seeding business, grosses $70,000 per year, could easily be doubled in 3 years. **ALL ABOVE AND EQUIPMENT** for only $150,000. Call 804-787-7200 **AFTER** 6:00 P.M. or write: P.O. Box 6, Onley, Virginia 23418. 5/86

FOR SALE—Spray truck 1980 1200 Gallon Lawn spray tank, PTO driven Bean Pump with 2 hose reels and mechanical agitation on 1976 Ford F600. Good condition - $6500. Pittsburgh, PA 412-366-2452. 5/86

1980 Toro HTM 175 diesel tractor, 7 Gang mower, under 5000 hours, in excellent condition, best offer. Call 312-253-0400. 5/86

BROWER—7 Gang PTO mower and new parts. Low use, good condition. $5,500. FOLEY—388 reel sharpener, like new, $1,500. (405) 771-5122. P.O. Box 424, Spencer, OK 73084. 5/86

SPECIAL NOTICE—Howard Gems 20", 24", 30" are in production again—equipped with Kohler, Wisconsin or diesel. Other rear tine tillers, 8" to 40", 5.7 hp to 24 hp, gas or diesel—from $995. Tractor Tillers and Turf Quakers, 30" to 180"—from $995. Engines, pumps, generators, accessories . . . . "Let Us Bid Your Equipment And Service Needs!" G. Gandy Equipment Services, 2031 4th Avenue, Joliet, IL 60433. 815-726-7921. 6/86

PROMARK CHIPPER. Less than 10 hrs. 25 hp Onan, electric start. Heavy duty trailer, leaf springs. Designed to take 4" material. (305) 722-4300. $4,500. 5/86

Circle No. 139 on Reader Inquiry Card

Olathe MODEL 12 P.T.O. CHIPPER

PORTABLE
DEPENDABLE
ECONOMICAL

- Less than ½ the price of equal capacity chippers
- Fits most tractors from 25 to 100 H.P.
- Mulch-type chip. 5 to 6" branch dia. capacity
- Patented safety throw-out —stops feed instantly
- Folding feed apron & chute for easy transport

Popular 3-pt Hitch Model or Pull Type Trailer Option

OLATHE MANUFACTURING, INC.
100 Industrial Parkway
Industrial Airport, KS 66031
800-255-6438
913-782-4396

The Indiana Convention Center and Hoosier Dome in Indianapolis, heart and pulse of a great state.

Grounds for Ransomes.

When you're playing host to millions of visitors each year, looking good is part of the action. And that includes maintaining your grass areas in peak condition. If the acreage is substantial, but not extensive enough to warrant a tractor, consider the M36 mid-size mower from Ransomes. The 36" cutter deck makes it easy to work around trees, shrubs and flower beds while the 11 horse engine powers you through 11 acres in an 8 hour day. And that's grounds for seeing your Ransomes Bob Cat distributor. Or, call Ransomes, Inc., One Bob Cat Lane, Johnson Creek, WI 53038. (414) 699-2000.

RANSOMES

The grass machine.

Circle No. 143 on Reader Inquiry Card

7 Gang Roseman mowers - rebuilt, painted, sharpened, $3,500. Mueller Farms, 14308 Hemmingson Road, Huntley, IL 60142. (815) 923-4368 - days or (312) 669-5021 - evenings. 6/86

Atlanta, GA. Fast growing Sunbelt. 10 year old landscape installation and maintenance company. Small, easy to manage established accounts. Reasonable. P.O. Box 724374, Atlanta, GA 30339. 5/86

For Sale: Sod Harvester—Princeton Model 1420 Tow Boy, Excellent Condition. For Further information call Dave Ludwig, (702) 689-8426. 5/86

CENTRAL VERMONT LANDSCAPING BUSINESS: Very profitable, 1985 sales $205,000. Includes 10 room New England home and 48 acres of land. Contact Don Merkle, Country Business, Inc., 105 Center St., Rutland, VT 05701. (802)775-1985. 5/86

1978 C-65 Chevrolet—excellent condition, clean, low mileage. Mounted Finn Slurry Fertilizer Applicator—model L.F.P.K. 28—1,250 gallon capacity, 6 years old, good condition. $14,000 or best offer for the unit. Call 303-936-3493. 5/86

BROUWER HARVESTER OWNERS! ELECTRIC DEPTH CONTROL. Save time and money with improved quality control. Make depth-of-cut adjustments, on the move, with one button finger tip control. Allows you to cut longer rows through varying soil conditions. $795.00. 30-day satisfaction guarantee and full-year warranty. Write or call: Shattuck Turf Equipment, 1872 N.W. 82nd, Des Moines, IA 50322, (515) 278-5255. Patent pending. 7/86

CONWED 2000 Hydro Mulch 175+ Bales of mulch left over having sold our Hydroseeder. Can deliver in Ohio. Please call 216-339-5534. 5/86

FOR SALE: MIGHTY - SPIKE AERATOR, WITH DOUBLE BIN SEEDER- $1400 - GOOD CONDITION. **WANTED TO BUY:** RYAN SPIKEAIRE - ANY CONDITION. (201) 664-1665. 5/86

Princeton Self-Propelled Sod Cutter. Excellent condition. $12,000 or best offer. 801-756-9900 or 801-756-5788. 5/86

SPYDER FORKLIFT - near new, 23 hours, Kohler gasoline engine, extended forks, $15,000. Call evenings 913-342-6722. 5/86

STUMP TEETH-$2.35 EACH DELIVERED. Sold in lots of 100 only, mix and match, rights-lefts-straights, Vermeer's-Wayne's-Rayco's. 315-454-0046 or 315-656-3489. 6/86

Myers 25-5E Sprayer Unit 23 HP Koehler 500 gal. Fiberglass tank 150 ft. 3/4" hose FMC Gun electric reel, like new, $7,500. Chillicothe, IL 309-274-2023. 5/86

1977 Skyworker 1045A mounted on 1977 Ford F600 complete with chip and tool boxes, cab protector $21,000. 1000 gallon FMC tree sprayer, newly epoxy steel tank, V65 Wisconsin engine used only 2 seasons, Hannay hose reel and motor mounted, reconditioned, ready to spray $9,000. Toledo, Ohio, (419) 865-7071. 5/86

For Sale: John Deere 401c utility tractor with 3/4 yard bucket, less than 1500 hrs., new paint, $12,000; 5.5 foot Lely Roteria with seed box, new, $1,800; also 3 one ton flat bed trucks, Ford 7000 with 15 foot bed and hoist, Cat 3208, $6,800, all in excellent condition. (815) 963-5015. 5/86

---

2 Jim Dandy Tractors - $850.00 each; 2 Lawn-A-Mat stainless steel combines - $800.00 each; 1 tractor and 1 combine for parts - $350.00 each; 2 flatbed trailers - $150.00 each. Must Sell! (203) 325-3191. TF

ATTENTION SAFETY CONSCIOUS LAWN AND TREE CARE MANAGERS/OWNERS/OPERATORS: Safety spill systems developed for individual spray units. Ability to contain large and small spills. Write or call for additional specs and information: Moyer & Son, Inc., P.O. Box 198, Souderton, PA 18964. (215) 723-6002, ask for John or Mark. 5/86

'77 GMC 2 ton spray truck, 1000 gallon tank recessed on flatbed. 1984 Hannay Reel, Meyers 2C95 pump, PTO, 100 gallon steel auxiliary tank. '76 Ford 1 ton spray truck, 750 gallon tank Hannay Reel, Meyers 2C95 pump, PTO, 50 gallon poly auxiliary tank. '78 E-Z GO truckster with Meyers boom sprayer, foam marker, PTO. Hannay Reel 29" diameter, 12 volt, recoil 1/2". Call 317-284-1429 or 317-284-0265. 5/86

FOR SALE: Low Band 2 Way Business Radio - 6 Radios, Base Station, Remote, Tower - $3000. 312-438-7440. 6/86

TURFCO EDGE-R-RITE

MULTI-PURPOSE TURF EDGER

Just like a small sod cutter, the Blade does not spin, the oscillating motion does not throw debris.

Self-propelled and push models available.

Rugged design for commercial use.

Disc Blade

Optional Blades:

◀ Disc Blade for cutting straight edge along sidewalks and driveways.

Right Angle Blade for golf course sand traps, and flower beds. ▶

Right Angle Blade

V-Blade

◀ "V" Blade for removing a strip of turf along a sidewalk.

Write or call for detailed literature

Turfco Mfg., Inc.
3456 N. Washington Ave.
Minneapolis, MN 55412-2688
Ph. 612/588-0741
Telex 5106013762

TURFCO

Circle No. 155 on Reader Inquiry Card

WELLS CARGO

A GREAT TRAILER for TURF MANAGEMENT!

There is a Capacity to Fill Your Needs from 1-Ton to 5-Ton

Steel structured for maximum life and minimum maintenance. Wells Cargo trailers are an easy, economical, efficient way to haul nursery stock, fertilizer, seed, sprayers, implements, mowers . . . everything your job requires.

We have manufacturing sales & service facilities in IN, GA, TX, & UT and a national network of dealers to serve you.

For FREE literature call TOLL FREE 1-800-348-7553 or write

Wells Cargo, Inc.
P.O. Box 728-595
Elkhart, IN 46515
(219) 264-9661

Circle No. 160 on Reader Inquiry Card

DIAMOND TREAD TRACTOR TIRE

BFGoodrich
Firestone
GOODYEAR

We carry the largest stock of tractor and specialty tires of any dealer in the world! Please inquire for sizes not listed.

Size	Ply	Price
750x16	4	70.00
9.5x16	4	100.00
13.6x16	4	175.00
18.4x16.1	6	225.00
11.2x24	4	200.00
16.9x24	6	250.00
18.4x26	6	275.00
11.2x28	6	135.00
12.4x28	4	155.00
13.6x28	4	180.00

Our 64th Year

GANS TIRE CO., INC.
730 Eastern Avenue • Malden, MA 02148
In Massachusetts: 617-321-3910
Toll Free Outside Massachusetts: 1-800-343-3276

Send 25% deposit–balance COD.
Net 10 days to very well rated accounts.

HELP WANTED

HELP WANTED - A diversified growing landscape company in the Northeast is looking for experienced people for Landscape Design, Construction and Maintenance as Supervisors and Managers. Salary to be determined by experience. Send Resume including work and salary history to: Control Env. Services, Inc., 333 Meadowland Pky., Secaucus, NJ 07094, attn: J.R.B. 5/86

INDUSTRIAL HERBICIDE APPLICATOR—Job openings for quality herbicide applicators (Southeast, Northeast). Must be motivated and be willing to travel. Mechanical ability desirable. Send resume or call Weeds, Inc., 520 W. Cobbs Creek Parkway, Yeadon, PA 19050. (215) 727-5539. 5/86

Management Trainee - ServiceMaster LawnCare—We are a multinational service company looking for people to train for management positions in our rapidly expanding franchise operation. We need people with good communication skills, customer service orientation, and willingness to relocate. We offer compensation based on ability and productivity, complete benefit package, and the opportunity to grow with the number one service company of the Fortune 500. Please respond with resume, salary history and requirements to: ServiceMaster Industries, LawnCare Division, 2300 Warrenville Road, Downers Grove, IL 60515. TF

SOD FARM MANAGER: 450 acre Northeast area operation seeks qualified manager. Involves production, irrigation and harvesting. Excellent salary and benefits. Send resume to WTT Box 387. 5/86

TREE INVENTORY SPECIALIST: Exciting new Southern California company seeks an energetic responsible person to take advantage of an excellent ground floor opportunity. Duties include sales, field data collection, consulting, and computer work relating to the large scale inventory and classification of trees for municipalities and governmental agencies. Successful applicant must have a horticultural or arboricultural background with emphasis on tree identification and condition. This position is for a well presented, articulate person with technical and sales ability in this specialized field. We are looking for an eager, aggressive self-starter willing to make a commitment to the success of this company! Send resume and salary history (mandatory) to WTT Box 388. 5/86

Supervisors (project foremen) join a nationally acclaimed firm looking to expand into its second generation Long Island area supports a high budget landscape industry. Year round employment, company benefits and continuing education available. Experienced and aggressive people send resume to: **GOLDBERG & RODLER, INC.,** 216 East Main Street, Huntington, New York 11743. 5/86

GROUNDS MAINTENANCE FOREMAN/SUPERVISOR—Horticulture Degree preferred with supervisory experience. Ground floor opportunity for an ambitious person to join our rapidly growing Johnson County company. Great potential if you are concerned about quality work and motivating people. Contact: Reg Robertson, Custom Lawn & Landscape, 300B Winchester, Olathe, KS 66062. 913-782-8315. 5/86

LANDSCAPE MAINTENANCE AND CONSTRUCTION FOREMEN: Suburban Cleveland firm is seeking experienced individuals who can work together with other people. Must be hard working, organized and capable of directing a project from beginning to end. You will report directly to the President. Salary commensurate with experience. Send resume to: P.O. Box 391002, Solon, OH 44139. 6/86

WANTED Tree Climber/Trimmers/Foreman—Experienced Only. High pay, Co. benefits. Send Resume to: Fairfax Tree Service, Inc., 3746 Chain Bridge Road, Fairfax, VA 22030 or Call 703-273-7668. 5/86

Tree and Landscape Company seek knowledgeable aggressive individuals with experience in all aspects of landscape construction also need climbers familiar with pruning and removal techniques, plant identification skills a must. Entry level position with rapid advancement possible. Must have two years experience. Send resume to Chas. F. Irish Co., 24900 Groesbeck, Warren, MI 48089. 5/86

HORTICULTURIST: Responsible for maintenance of landscape at 41 park sites. Demonstrated experience in horticultural operations desired. BS or BA degree in Horticulture preferred. AA or AS degree will be considered. Competitive salary plus fringe benefits. Contact: Tom Lippert, Skokie Park District, 4400 Grove, Skokie, IL 60067. 5/86

Tree and Shrub Care. America's fastest growing tree and shrub company seeking experienced, aggressive Horticulturist's for existing and expansion markets. Experience, degree and motivation key ingredients. Tremendous advance opportunities. Excellent salary, benefits. All inquiries will be strictly confidential. Send resume, salary history to: William Scott Carr, Tru Green Tree and Shrub Care, 8324 Shaver Road, Kalamazoo, MI 49002. Expand your potential with an industry leader. 5/86

Irrigation - Installation. Specialist for medium and large commercial work. Must have minimum 2 years experience and knowledge of design and hydraulics. Full time position with Oregon Landscape Maintenance. 16075 S.W. Upper Boones Ferry Rd., Tigard, OR 97224. 6/86

FROM TEE

ACCESSORIES FROM STANDARD GOLF INCLUDE:

- BALL RACKS
- BALL WASHERS
- BENCHES (WOOD & METAL)
- CLUB WASHER
- CHAIN
- DRAG BRUSH
- FAIRWAY MARKERS
- FLAGS
- HAZARD MARKERS
- HOLE CUTTERS
- KOOLER AID WATER CONTAINER
- LITTER CADDIES
- FLAG STICKS
- PRACTICE GREEN MARKERS
- RAKES
- SIGNS
- SPIKE KLEENERS
- TEE MARKERS
- TEE TOWELS
- TEE CONSOLES
- TURF REPAIRERS
- AND MORE

TO GREEN

Get full details in the new, 32-page full color Standard Golf Course Accessories catalog. See your Standard Distributor or contact **Standard Golf Company, Cedar Falls, Iowa 50613. Phone: (319) 266-2638.**

STANDARD GOLF Pro-Line

Circle No. 149 on Reader Inquiry Card

LEAD GROUNDSKEEPER

Challenging opportunity for a self-motivated individual to provide technical direction and coordination of the Groundskeepers for the care of turf, trees, ornamentals, other landscape elements, exterior housekeeping and maintenance of hospital motor vehicle fleet.

Requires a BS with major in **AGRONOMY, LANDSCAPING** or Horticulture and a valid herbicide and pesticide applicator license.

Parkview Memorial Hospital is a 654 bed facility that functions as a resource and referral center for a 3 state area always focusing on the needs of the patient and family.

Salary commensurate with experience. For further information, please send resume to:

Personnel Department/Employment Division

PARKVIEW

PARKVIEW MEMORIAL HOSPITAL
2200 Randallia Dr.
Ft. Wayne, IN 46805

that special touch

affirmative action/equal opportunity employer

GREENS-TURF MANAGER Ohio Golf Course seeking an experienced, motivated, personable self starter, with a thorough knowledge of turf grass maintenance, fertilization, pest control and mechanically inclined. Excellent compensation package offered. Send resume to WTT Box 382. 5/86

TEXAS AREA FACTORY REP: Doggett Corporation is seeking an individual to rep their line of professional tree and turf fertilizers. Experience with fertilizers and tree/turf care absolute necessity. Write for details: Roger Mellick, **DOGGETT CORPORATION,** Lebanon, NJ 08833. (201) 236-6336. 5/86

TREE CLIMBER/FOREMAN: Fast growing Northeast Ohio tree service is looking for individuals with 2 to 3 years experience, has ability to lead and looking to grow with company. Excellent benefit package. Salary based on abilities. Send letter/resume to: Bruce Hillier, P.O. Box 57, Grand River, OH 44045. 5/86

Landscape Construction Foreman: Degree, experience and working knowledge of commercial landscaping to $1 1/2 million range required. Knowledge of equipment, turf, plants, chemicals, and irrigation imperative. Send resume and salary requirements or apply in person at Oregon Landscape Maintenance, 16075 S.W. Upper Boones Ferry Rd., Tigard, OR 97224. 6/86

TREE AND SHRUB CARE - SALESMEN, SPRAY TECHNICIANS, MANAGEMENT TRAINING PROGRAMS: Northeast/Mid-Atlantic/South/Midwest Locations. America's fastest growing tree and shrub care division is seeking aggressive horticulturists for existing and expansion markets. Tremendous advancement opportunities. Full benefits. Send resume to: Tru Green Tree & Shrub Care, Wm. Scott Carr, P.O. Box 707, Fremont, IN 46737. **EXPAND YOUR POTENTIAL WITH AN INDUSTRY LEADER.** Tru Green Corporation, Atlanta, Georgia. 5/86

LANDSCAPE SUPERVISOR: Fast growing Northeast Ohio Landscape Company is looking for individual with 3 to 5 years experience in landscape installations. College degree preferred but will consider person with experience. Excellent benefit package. Salary based on abilities. Send letter/resume to Bruce Hillier, P.O. Box 57, Grand River, OH 44045. 5/86

USED EQUIPMENT

TREE TRIMMING EQUIPMENT—Aerial basket trucks with chip boxes and chippers (1970-1975). Priced to sell—offers accepted. Call (218) 724-7622, or write ATS, P.O. Box 3280, Duluth, MN 55803 TF

BUCKET TRUCKS, straight stick, corner mount and knuckle boom cranes. Sprayers, chippers, dumps, stakes, log loaders, crew cab chip box dumps, railroad trucks. 50 in stock. Sold as is or reconditioned. Opdyke's, Hatfield (Philadelphia area). 215-721-4444. TF

HI-RANGERS AERIAL BASKETS 65′, 57′, and 53′. Skyworkers aerial baskets 65′, 50′, 40′. Vermeer stump cutter 1560, 6. Vermeer tree spade 66, TS 44. Asplundh bucket and brush chippers, Bean sprayer, 9 ton trailer. Parkway Tree Service, 12026 W. Cherry, Wauwatosa, Wisc. 53226. (414) 257-1555. TF

NEW AND USED EQUIPMENT—Asplundh, Hi Ranger and Lift-all forestry bucket trucks, Chipmore wood chippers. Mirk, Inc., (216) 669-3567, (216) 669-3562, 7629 Chippewa Road, Orrville, Ohio 44667. TF

TURF EQUIPMENT: 1 Howard HP-180, 3 Howard 727's, 3 Toro 72's, 1 Jacobson 5-gang frame and 6 reels, Thatchers, Edgers, Weedeaters, Reel Mowers and much more. Irvine, CA (714) 857-6408. 5/86

Vermeer 44 Tree Spade mounted on a 1971 Dodge 4 × 4 truck. Good condition. $10,000.00. Hubert's Landscaping, 216-933-6222. 5/86

BROUWER 5 GANG PTO DRIVEN - REAL MOWER. (513) 683-0014. 5/86

Brillion Seeder, Model GLP64-01, 64″, in excellent condition. Set up with either standard Brillion wheels or Meredith seed miser kit, complete. Ready to go to work. Contact Charlie, (303) 247-2411. Evenings best. 5/86

WANTED TO BUY

Wanted to buy **HYDRO SEEDER.** Please send photo. Johnson Hydro Seeding Corp., 13751 Travilah Road, Rockville, Md. 20850 301/340-0805. TF

WANTED: Large Lindig and Royer Shredders. Lewis Equipment. 320 Third Street S.W., Winter Haven, FL 33880. (813) 294-5893. 4/87

Wanted—Brouwer Harvester 18″, forklift (spyder type), tandem axle truck and trailer. Send photo and description. Schulz Sod Farms, 1833-33 St., N.W., Rochester, MN 55901. 507-288-3999. 5/86

MISCELLANEOUS

KELWAY® professional **SOIL ACIDITY** and **SOLUBLE SALTS TESTERS,** available from distributors nationwide. HB-2 and SST brochures from **KEL INSTRUMENTS CO., INC.,** P.O. Box 1869, Clifton, NJ 07015. (201-471-3954). 10/86

REPLACEMENT PARTS SPECIALISTS, INC., 377A Yellowbrook Road, Freehold, New Jersey 07728. Top quality parts to fit Bobcat, Bunton, X-Mark, John-Deere, Kee's, Gravely, Pro-40 and Pro-36 commercial mowers. 20 years landscaping experience gives us the know-how to build parts that last. Gear box kit/wheel belts/spindle assemblies/wheels/caster supports and 105 other parts. "WE WILL NOT BE UNDERSOLD BY ANYONE." 201-938-5683. Canada to Virginia 1-800-526-2757. 8/86

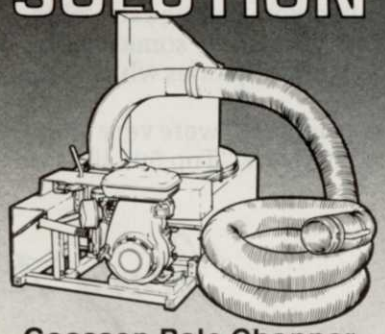
FREE PARTS CATALOG—If you own a 36″—48″—52″ walk-behind mower and you feel you're paying too much for parts, call Preco Distributors toll-free and request our parts catalog. **BELTS, BLADES, GRASS CATCHERS, WHEELS AND LOTS MORE!** Replacement parts that fit: **BOBCAT, BUNTON, KEES, EXMARK & OTHERS.** 1 day shipping coast to coast available. All parts carry a 90-day warranty. Don't wait, call 24 hours a day. **TOLL-FREE 1-800-428-8004, in Mass. 413-596-5505. PRECO DISTRIBUTORS, 2400 BOSTON ROAD, WILBRAHAM, MA 01095.** TF

Amsoil Two-Cycle oil as featured in February "Job Talk." Full line of synthetic lubricants. Dealerships available. Boyce Distributors, P.O. Box 12921, Charleston, SC 29412. (803) 762-0732. 10/86

AD INDEX

This index is provided as an additional service. The publisher does not assume any liability for error or omissions.

THE MULCHING SOLUTION



Goossen Bale Chopper

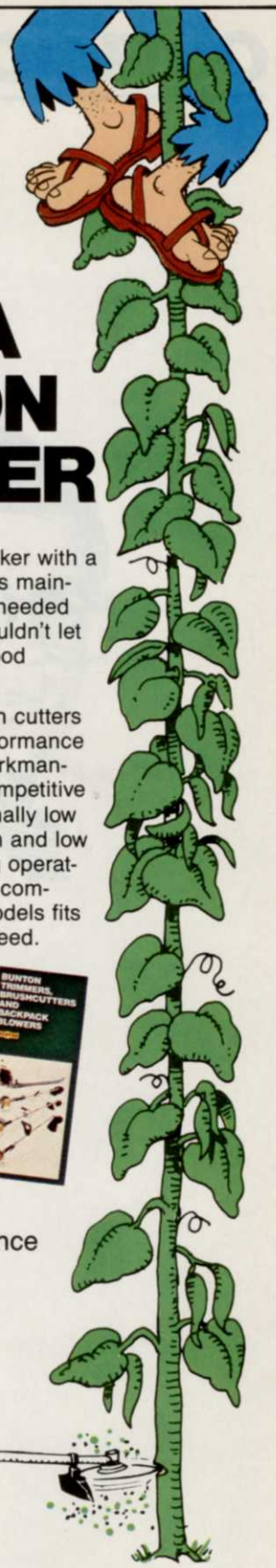
In the field since 1982, the Goossen Bale Chopper is a proven landscaping machine. One or two operators lay down an even layer of mulch on newly seeded lawns of any size (the Bale Chopper is easy to maneuver in even the smallest residential applications). The even coverage, WITHOUT tearing and spreading bales by hand, means better moisture retention, better germination.

Complete with interchangeable hose and directional spout available on both self-powered (gas engine) and tractor-mounted PTO models.

Call us right now. 800-228-6542
In Nebraska, (402) 228-4226
We can save you time and money!

Goossen INDUSTRIES
927 W. Court St., P.O. Box 705 Beatrice, NE 68310

Circle No. 162 on Reader Inquiry Card



JACK USED A BUNTON TRIMMER

Jack didn't have time to tinker with a balky trimmer. Like grounds maintenance professionals, he needed reliable equipment that wouldn't let him down when his livelihood depended on it.

Bunton trimmers and brush cutters are built to deliver the performance professionals demand. Workmanship unmatched by any competitive models results in exceptionally low maintenance. Anti-vibration and low noise design provides long operating times without operator complaints, and a choice of models fits nearly every commercial need.

Write or call today for a free brochure, specifications and the names of dealers near you.

BUNTON

Dependable performance when you need it.

BUNTON CO.

P.O. Box 33247 • Louisville, KY 40232
502-966-0550 • Telex 204-340

Circle No. 108 on Reader Inquiry Card

The haunting

Ruppert Landscape Company, Doerler Landscapes, The Bruce Company, Four Seasons Industries, Chapel Valley, Ground Control, Milford, American Landscape, Van Herricks, Imperial Landscape, Mulder Brothers, Great House Landscape, Western Landscape, Valley Crest Landscape, Torre & Bruglio Landscaping, Clarence Davids & Sons, Varsity Sodding Service, Oyler Brothers, Taylor Made Landscaping, Boyco Landscape Maintenance and Allen Keesen Landscape.

Those are just *some* of the companies that, for various reasons, were inadvertently not included in our February story on the nation's top 50 landscape companies.

That article, entitled "Landscaping's Elite," has been haunting the WT&T editorial offices ever since the magazine was mailed. Response to it has been generally...well...overwhelming. Perhaps never before have readers responded in such volume. When the tag line "if we inadvertently left you off the list, please write us" was composed, never did we think that the article would generate so much response.

Besides not including a great many of the companies that should have been, the article contained a glaring error: Environmental Industries—not The Brickman Group, as the article says—is clearly the nation's largest landscape company with revenues over $100 million per year.

Burton Sperber, a member of Environmental Industries' front office, phoned to talk at length about what it's like to be the biggest. He also had some interesting observations relative to the article.

"Environmental Industries doesn't get involved in competition," he said. "To truly become number one, you must constantly strive to surpass yourself—not the competition."

Sperber also noted that "I don't think you can equate 'elite' with dollar volume," since the quality of the work performed by some smaller landscaping companies could easily be superior to that of companies which emphasize more, bigger accounts.

All of the callers and letter-writers, incidentally, were very understanding. As a result, we promised them to make next year's "Top 50" list more complete. And we'll keep that promise.

Promise.

Jerry Roche

Jerry Roche, editor

WT&T Editorial Advisory Board

Doug Chapman
Horticulturist
Dow Gardens
Midland, MI

J.R. Hall
Extension Agronomist
VPI & SU
Blacksburg, VA

Kent Kurtz
Professor
Horticulture
Cal Poly-Pomona

Harry Niemczyk
Professor
Ohio State University
Wooster, OH

A. Marty Petrovic
Asst. Professor
Cornell University
Ithaca, NY

Robert Shearman
Assoc. Professor
University of Nebraska
Lincoln, NE

Bayleton.
Because beauty this fragile needs protection this powerful.

Every flower is unique. As unique as a snowflake, and just as fragile. Easy prey for the spoilers—powdery mildew and other fungus diseases.

To protect your precious plants, there is powerful ®BAYLETON 25 Turf and Ornamental fungicide. Nothing else works better or lasts longer.

BAYLETON works so well because it works systemically, inside the plant. And that means control is not only effective, but lasting—up to 30 days and longer.

To prevent or cure such diseases as powdery mildew, flower blight, leaf blight, and rust in both nursery stock and greenhouse plants, get BAYLETON. Powerful protection for fragile beauty. Always read the label before use.

BAYLETON.
IT STOPS
THE SPOILERS.

Mobay Chemical Corporation
Specialty Products Group
Box 4913, Kansas City, Mo. 64120

BAYLETON is a Reg. TM of the Parent Company of Farbenfabriken Bayer GmbH, Leverkusen.

Circle No. 132 on Reader Inquiry Card

Rebel

Turf Type Tall Fescue

Performs in the Shade

Rebel turf-type tall fescue . . . up to 30% finer and 188% denser than Kentucky 31. Now university testing is showing Rebel tall fescue performs exceptionally well in shaded conditions.

This is what two of the leading turf specialists are saying about the shade performance of tall fescues:

Dr. Beard, world-famous turf agronomist at Texas A&M University: "After five years of testing the performance of tall fescue at College Station, Texas, results show that more consideration should be given to its use in shaded areas - particularly in the South where bermudagrass does not persist in the shade."

Dr. Funk, world-renowned turf breeder at Rutgers University: "In four years of testing at North Brunswick, NJ, Rebel has shown promise of significantly improved shade performance."

If you want a finer, denser tall fescue that will perform well in the sun or shade . . . try Rebel.

LOFTS

Lofts Inc.
World's largest marketer of turfgrass seed
Bound Brook, NJ 08805
(201) 356-8700 or (800) 526-3890

Lofts/New England
Arlington, MA 02174
(617) 648-7550

Lofts/Great Western
Albany, OR 97321
(503) 928-3100 or
(800) 547-4063

Sunbelt Seeds, Inc.
Norcross, GA 30071
(404) 448-9932 or
(800) 522-7333

Lofts/Maryland
Beltsville, MD 20705
(800) 732-3332
(800) 732-7773 (MD)

Lofts/New York
Brewster, NY 10509
(914) 278-2710

Oseco Inc.
Brampton, Ontario
Canada L6V-2L2
(416) 846-5080

To locate the Lofts' distributor nearest you, call:
(800) 526-3890 (Eastern US) / (800) 547-4063 (Western US)

Circle No. 217 on Reader Inquiry Card