

## 2,4-D under fire from Toronto groups

A Toronto group of parents has stirred up a news media campaign against use of the herbicide 2,4-D, causing school boards and the Toronto Parks Department to cut back on their spraying programs and putting a dent in the lawn spray industry in that area.

The name of the parents group is Parents Against Senseless Spray (PASS). In a recent pamphlet, the group said:

"We have good reason to suspect 2,4-D can cause cancer, birth defects, deformities. We know it can cause headaches, fever, nausea, skin rashes, etc. We also know it does not break down as rapidly as we are led to believe and can remain in both the food chain as well as the body. When cancer has increased by 240 percent since 1910 and is the number one disease killer of children, can we afford to allow the continued use and overuse of this chemical?"

In the lead editorial in a recent issue of the *Toronto Globe and Mail*, entitled "Name Your Poison," the newspaper starts out by saying:

"One of the significant characteristics of our time is said to be mistrust of government, but maybe it is broader than that. There is, we suspect, a growing mistrust of all who claim to speak with authority, and this includes scientists and technologists as well as politicians and bureaucrats. Having come closer to a nuclear station meltdown than we had been led to believe was possible, we are less easily convinced by official assurances about our health and safety than we once were."

The editorial went on to explain that the herbicides 2,4,5-T and 2,4,5-TP had been banned by Canadian Environment Minister Harry Parrott because of "great public concern over the use of these two products."

In place of those herbicides, the government is allowing use of 2,4-D and other phenoxy herbicides. The editorial continues:

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# Notify customer 48 hours before application? In writing? Ohio bill would make it mandatory

A bill presently in committee in the Ohio House of Representatives would require that lawn care companies in that state notify customers 48 hours in advance of a lawn care application of pesticides.

The notification would have to be a written statement explaining the date and time of application, the chemical composition of pesticides to be applied and pertinent information on the effects

of the pesticides on persons and the environment.

The bill would also require that no pesticides could be applied without written permission from the owner of a property.

Actual wording of the Ohio House Bill Number 952, proposed by Rep. Maddux earlier this year includes:

"To amend section 921.99 and to enact section 921.251 of the Revised Code to prohibit the ap-

plication of pesticides on property without the written permission of the occupants of the property. . . .

"No person shall apply, cause to be applied, or engage a person to apply a pesticide on property unless he:

"At least 48 hours before application of the pesticide, supplies to the owner of the property a printed or legibly written statement of the pesticide or pesticides to be applied, the date and time of such application, the chemical composition of such pesticides, and any pertinent information on the effects of such pesticides on persons and the environment, including possible residues and health hazards;

"Obtains written permission from the owner of the property before applying the pesticide."

Penalties called for in the legislation vary from third-degree to first-degree misdemeanors. The bill is presently in the House's Agricultural and Natural Resource Committee, chaired by Rep. Locker. A hearing date has not yet been scheduled.

# LAWN CARE INDUSTRY

Serving lawn maintenance and chemical lawn care professionals.

MARCH 1980 • VOL. 4, No. 3 • A Harvest Publication

## GARDEN EDITORS

### 'How to select a lawn care company' release is mailed by PLCAA

A release to garden editors at suburban and metropolitan newspapers across the country explaining how a homeowner should select a lawn care company has been mailed by the Professional Lawn Care Association of America.

The release explains things the homeowner should look for from a chemical lawn care company in areas such as materials, person-

nel, spectrum of services, service policies and a code of ethics. The release points out that all members of PLCAA subscribe to a stringent code of ethics, and gives the address of PLCAA if a homeowner wants to find out if a particular company belongs to PLCAA.

The release reads:

"Professional lawn care companies have enjoyed wide acceptance by homeowners as an alternative to the 'do-it-yourself' approach to lawn care. However, like any other service, quality and scope of these services vary. Since few homeowners are agronomists, certain pertinent questions may help to identify the services which best suit individual needs:

"Materials. What kind of fertilizer does the company use? What is the nitrogen source? Dry versus liquid types of application are not inherently superior to

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## BUSINESS

### Barefoot buys back Nebraska franchises

Barefoot Grass Lawn Service, Inc., a subsidiary of The Toro Co., has purchased for an undisclosed amount of cash its Barefoot Grass franchises in Omaha and Lincoln, Neb.

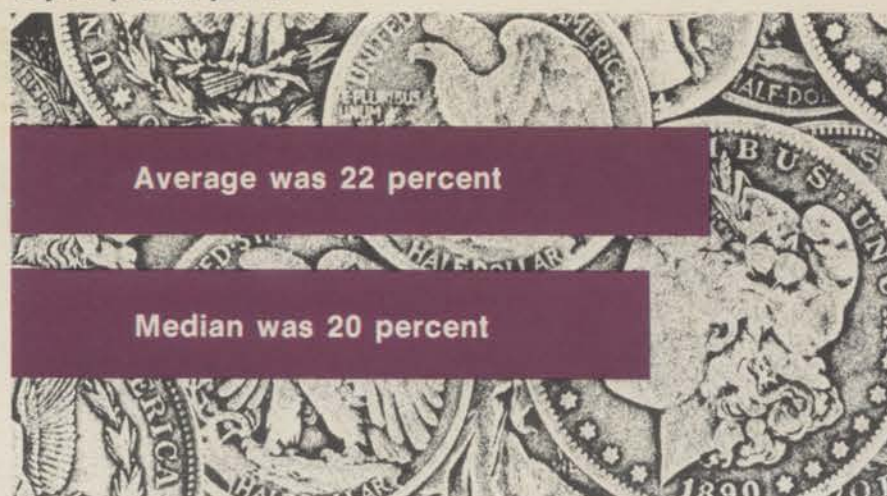
They were acquired from Donald Geis, Lincoln, who has operated the two Barefoot Grass franchises for three years.

Barefoot Grass, based in Columbus, Ohio, has named Michael Miller, manager, and Mark Storey, assistant manager, of the Lincoln and Omaha operations. Both men were previously based in Columbus. Both markets are scheduled for aggressive promotion and expanded customer service under the new management, company officials reported.

## QUICK STARTS

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### What percentage of gross receipts is your pre-tax profit?



Source: 1979 LCI survey

FL 33162  
NORTH MIAMI  
1934 NE 151ST ST  
TURF CARE PRODUCTS  
TOM MASCARO  
EDIT-879-  
TURM4337875-NS-  
85

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HE INDUSTRY,  
looks at business,  
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## FRANCHISING

**Lawn Doctor to take 'Century 21' approach**

Lawn Doctor, Inc., Matawan, N.J. is stepping up its plans to sign up existing lawn care businessmen on its franchise program for the lawn care industry. About half of the franchisees the company hopes to add this year will be of this nature, the company told **LAWN CARE INDUSTRY**.

Company president Tony Giordano said:

"In the last five years, Lawn Doctor has watched closely the success of the national real estate franchisor Century 21 in organizing under one banner and logo existing professionals in the real estate market. The reason for this interest was that the management of our company was convinced that if so many people who had no previous experience could become successful under the Lawn Doctor system, people who were already professionals could be even more successful."

Giordano said the biggest problem that had to be overcome with people who were already independent businessmen was to be able to answer the question: "What can Lawn Doctor do for us that is worth the 10 percent franchise fee?"

Lawn Doctor's answer to the question was to point to the fact that the resale value of a Lawn Doctor franchise far exceeds the resale value of most independent lawn businesses, Giordano said.

"Secondly, the low cost both to get into the system and of the equipment that makes the application of granular materials accurate and easy," he said. "Thirdly, everyone we talked to was impressed with the Lawn Doctor marketing system."

Since 1977, Lawn Doctor has put on nine dealers who were either already certified applicators working for another company, or independent businessmen who were already in the lawn care business.

These Lawn Doctor dealers are: Al Spampinato, Lawn Doctor of Bay Shore-Brightwaters, New York; Chuck Krick, Lawn Doctor of Levittown-North Seaford-Wantagh, New York; Joe Broyles, Lawn Doctor of East Meadow, New York; and James McCann, Lawn Doctor of Roslyn-Albertson, New York.

Also: Doug Petkos, Lawn Doctor of Wayne, New Jersey; Richard Moore, Lawn Doctor of Scottsbluff-Gering, Nebraska; Winston May, Lawn Doctor of Hurst, Texas; Joe Turchi, Lawn Doctor of Plymouth-Whitemarsh & East Norriton, Pennsylvania; and Bob Ferrell, Lawn Doctor of Pennsauken, New Jersey.

# LAWN CARE INDUSTRY

Editor/Associate Publisher: **ROBERT EARLEY**

Technical Editor: **RON MORRIS**

Assistant Editor: **DAN MORELAND**

Graphic Director: **RAYMOND GIBSON**

Publishing Director: **RICHARD J. W. FOSTER**

Research Services: **CLARENCE ARNOLD**

Advertising Production: **CHRIS SIMKO**

Editorial Secretary: **JEANNIE SUTTON**

**MARKETING/SALES**

Circulation & List Rental: **SHARON JONES** (216) 651-5500

Marketing & Merchandising Services: **FRAN FRANZAK** (216) 651-5500

New York Office: **BRIAN HARRIS** (212) 421-1350

757 Third Avenue, New York, N.Y. 10017

Midwest Office: **JOE GUARISE, JEFF DREAZEN** (312) 236-9425

333 N. Michigan Ave., Chicago, Illinois 60601

Southern Office: **DICK GORE** (404) 233-1817

3091 Maple Dr., Atlanta, Ga. 30305

Northwest Office: **BOB MIEROW** (206) 363-2864

1333 N.W. Norcross, Seattle, WA 98177

Classified: **DOROTHY LOWE** (216) 651-5500

9800 Detroit Ave., Cleveland, Ohio 44102

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## MEMOS

**Golf superintendents, watch out:** The Ohio Turfgrass Foundation recently released attendance figures for its recent record-breaking Ohio Turfgrass Conference held in December in Cincinnati. The results are of interest to both lawn care businessmen and manufacturers trying to reach them.

The total attendance was 1,635. Almost 31 percent of the attendees (502) were from lawn care companies. This is three percent higher than the 464 golf course superintendents who attended the conference. Other categories included suppliers, educators, landscapers, nurserymen, parks and recreation persons, sod producers and others. Registrants were from 28 states and Canada.

The next Ohio Turfgrass Conference is set for December 9-11 in Dayton. This is a week later than it was originally set for. It also was originally set for Columbus, but conflicts with American Society of Agronomy meetings and some question as to whether the new Columbus convention facility would be ready in time forced the change. One problem with this is that another of the successful regional turf conferences — New Jersey's Turfgrass Expo '80 — is set for the same dates. Keep posted with **LAWN CARE INDUSTRY** to find out if any of these dates change.

**How much do you pay?** The average weekly pay of factory workers in November rose to \$275.37 from a revised \$274.85 the preceding month, the Labor Department reported recently. This totals more than \$14,300 a year in wages.

**A little more zip:** Your five-digit zip code that is part of all lawn care direct mailings is about to get zapped by the U.S. Postal Service. The Service will replace it with a new code that includes nine numbers — the present five-digit code, a dash and then four new numbers. The last four digits may designate one side of the block, a building, a floor in a building, a lock box or somebody who gets more than 10 pieces of mail a day. The Postal Service expects the new system to be in operation in the spring of 1981 — right in time for next year's spring lawn care mailings.

**In good company:** The International Franchise Association's year-end report recently listed **LAWN CARE INDUSTRY** as one of more than 60 publications which featured stories about franchising in 1979. Other publications included the *Washington Post, Inc.*, *Barron's*, *Money*, *International Business*, and the *Wall Street Journal*. "Lawn Care Franchising: A Sometimes Stormy Past; The McDonald's of the Future?" appeared in the August issue of **LAWN CARE INDUSTRY**. It was written by assistant editor Dan Moreland.

**The value of lawns:** Dr. John W. King, associate professor in the agronomy department at the University of Arkansas, passes along this essay written by one of his turf students on the value of lawns to Americans. He assigned the topic to his turfgrass culture class last fall. Mike Milligan turned in the following essay:

"On the beneficence of grass, John James Ingalls writes, 'Grass softens the rude outline of the world. Its tenacious fibers hold the earth in its place. It invades the solitude of deserts, climbs the inaccessible slopes and forbidding pinnacles of mountains, modifies climates, and determines the history, character, and destiny of nations.'

"On the beneficence of lawns, Sunset Books reports, 'Nothing else feels so good on your bare feet.'

"Well, they're both right. As grass is such a wonderful plant, you can't go too far wrong with thousands of them on either side of your house. The lawn is valuable to all people, it's just that Americans are among the few with money and space enough to install them. But that's no gripe, it's just something for the rest of the world to look forward to.

"Why? Because a lawn is Mom and Pop's own little soil bank. It keeps the soil put, the mud off our shoes and the dust out of our noses. It is soft. It is hundreds of thousands of tiny green cooling towers that skim away the worst of the August sun and convert it to soil improvement. A lawn is one less spot off of which noise will bounce, a ready and resilient playground for the younger set and a nice thing for neighbors to live with.

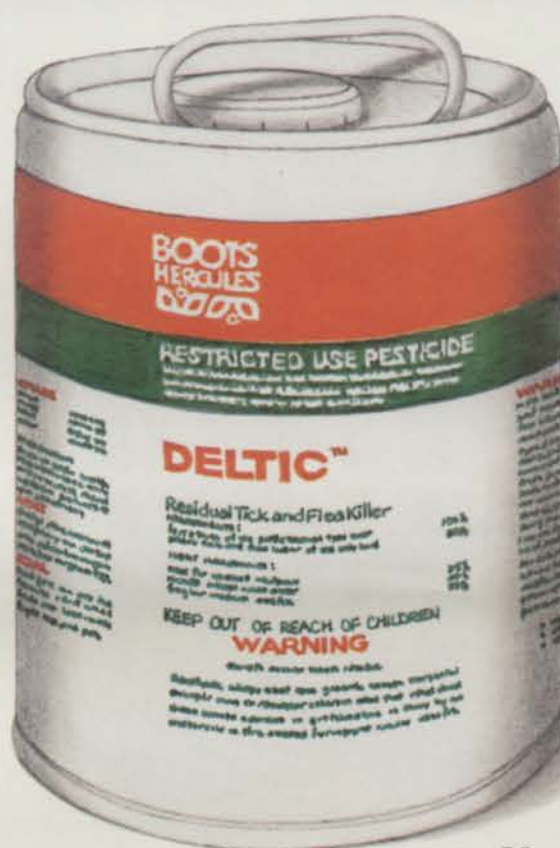
"And, who knows, if times got tougher, Mom and Pop may decide to plow up part of this home oxygenation station and put it to vegetables. If and when they did they would find improved soil texture and a dandy crop of beans and corn.

"If, like Ingalls says, grass 'determines the history, character and destiny of nations,' surely lawns do the same for neighborhoods. And, besides, nothing else feels so good on your bare feet."

Incidentally, Mike and his wife operate a small lawn care business in Fayetteville.



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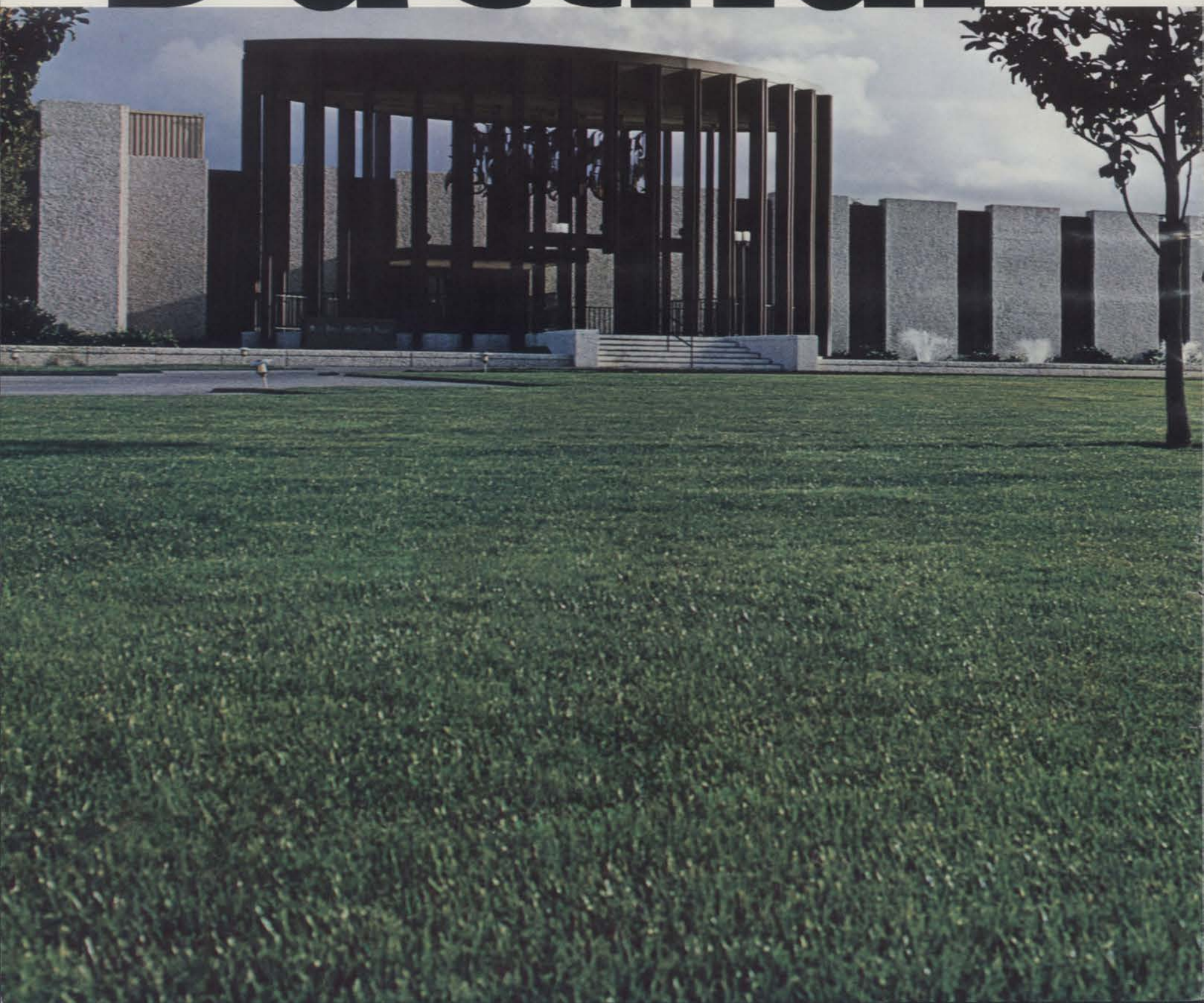


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# Dacthal





# MEETING DATES

**Midwest Turf Conference**, Stewart Center, Purdue University, West Lafayette, Ind., March 3-5. Contact: Dr. William Daniel, Department of Agronomy, Purdue University, 2-443 Lilly Hall, West Lafayette, Ind. 47907, 317-749-2891.

**Northeastern Pennsylvania Turf School**, Master Host Motel, Wilkes-Barre, Pa., March 4-5. Contact: Cy Chadwick, Court House Annex, 5 Water Street, Wilkes-Barre, PA 18702.

**12th Annual Professional Turf and Plant Conference**, Salisbury Restaurant, Eisenhower Park, East Meadow, Long Island, N.Y., March 4. Contact: Waldemar Solovieff, 63 Central Avenue, Amityville, N.Y. 11701.

**National Lawn Care Business Conference and Trade Show** Red Carpet Hotel, Milwaukee, Wis., March 16-19. Contact: Lawn Care Conference, Box 1936, Appleton, WI 54913, 141-733-2301.

**Northcentral Pennsylvania Turfgrass School**, Smethport Country Club, Smeth-

port, Pa., March 18. Contact: C. E. Craver, McKean County Extension Office, 814-887-5571.

**California Landscape Contractors Association 1980 Landscape Industry Show**, Long Beach Convention Center, Long Beach, Calif., April 3-4. Contact: Michael E. Leeson, CLCA Landscape Industry Show, 3617 W. MacArthur Blvd., Suite 500, Santa Ana, Calif. 92704, 714-979-2522.

**Southern California Turf & Landscape Institute**, Anaheim Convention Center, Anaheim, Calif., April 8-9. Contact: Ed McNeill, Southern California Turfgrass Council, 1000 Concha Street, Altadena, Calif. 91001, 213-798-1715.

**International Franchise Association 13th Annual Legal Symposium**, Capital Hilton Hotel, Washington, D.C., May 6-7. Contact: IFA, 1025 Connecticut Avenue N.W., Suite 1005, Washington, D.C. 20036, 202-659-0790.

**6th Annual Garden Industry of America Conference & Trade Show**, Convention Center, Baltimore, Md., Sept. 12-14, 1980.

Contact: GIA Conference & Trade Show, Box 1092, Minneapolis, Minn. 55440, 612-374-5200.

**National Lawn & Garden Distributors Association Annual Convention**, Century Plaza Hotel, Los Angeles, Calif., Sept. 16-19. Contact: Nancy S. Irving, executive director NLGDA, 1900 Arch St., Philadelphia, Pa. 19103.

**International Franchise Association Tax Seminar**, Hyatt Regency O'Hare, Chicago, Ill., Sept. 22-24. Contact: IFA, 1025 Connecticut Avenue, N.W., Suite 1005, Washington, D.C. 20036, 202-659-0790.

**Franchise Management Workshop**, Beverly Hills Hotel, Beverly Hills, Calif., Oct. 8-9. Contact: International Franchise Association, 1025 Connecticut Avenue, N.W., Suite 1005, Washington, D.C. 20036, 202-659-0790.

**Symposium on Turfgrass Insects**, Holiday Inn, Columbus, Ohio, October 14-15. Contact: Dr. B.G. Joyner, Plant Diagnostic Labs, ChemLawn Corp., 6969 Worthington-Galena Road, Suite L, Worthington, Ohio 43085, 614-885-9588.

**Franchise Management Workshop**, Continental Plaza, Chicago, Ill., Oct. 22-23. Contact: International Franchise Association, 1025 Connecticut Avenue, N.W.,

Suite 1005, Washington, D.C. 20036, 202-659-0790.

**Franchise Management Workshop**, Old Town Holiday Inn, Alexandria, Va., Nov. 5-6. Contact: International Franchise Association, 1025 Connecticut Avenue, N.W., Suite 1005, Washington, D.C. 20036, 202-659-0790.

**First Professional Lawn Care Association of America Convention**, "Lawn Care Business Management in the 1980's," Nov. 12-14, Commonwealth Convention Center, Louisville, Ky. Contact: Glenn Bostrom, PLCAA, Suite 1717, 435 N. Michigan Avenue, Chicago, Ill. 60611, 312-644-0828.

**Ohio Turfgrass Conference**, Dayton Convention & Exposition Center, Dayton, Ohio, Dec. 9-11. Contact: Dr. John Street, 1827 Neil Avenue, Columbus, Ohio 43210, 614-422-2592.

**1981 Nebraska Turf Conference**, Holiday Inn, Omaha, Jan. 12-14. Contact: Dr. Robert C. Shearman, 377 Plant Science Building, University of Nebraska, Lincoln, Neb. 68503, 402-472-1145.

**52nd International Turfgrass Conference & Show**, sponsored by Golf Course Superintendent Association of America, Anaheim Convention Center, Anaheim, Calif., Jan. 25-30, 1981. Contact: GCSAA Headquarters, 1617 St. Andrews Drive, Lawrence, Kan. 66044, 913-841-2240.

## HORTICULTURE

### Special trees adapted for use on wet sites

Many lawn care professionals believe that trees grow well under wet conditions. However, this is very often not the case, according to Dr. T. Davis Sydnor, head of the Ohio Shade Tree Project for the Ohio Agricultural Research and Development Center, Columbus, Ohio. The truth is that any site which has standing water on the soil surface for more than a few hours requires specially adapted trees.

Reasons for planting trees in a wet sited area are as varied as the reasons for planting in any other site. Because of increased land costs, all available space must be utilized and many times these spaces are going to be poorly drained. Under these circumstances, proper tree selection will go a long way towards reducing maintenance problems.

Before tree planting, it would be a good idea to see if poor drainage conditions can be corrected. If drainage can be improved, a much larger variety of trees can be planted.

In some situations, either existing topsoil or additional topsoil can be regraded or shaped to eliminate poor drainage problems. This can be a relatively expensive way to correct a drainage problem. However, Sydnor warns that anytime new topsoil is introduced you should have some idea of the natural material's history to avoid problems such as herbicide damage to the newly planted trees.

If a poor drainage situation cannot be corrected, only trees which can tolerate the wet environment should be planted. The following trees under evaluation at the shade tree plots in Wooster, Ohio will grow relatively well under excessively moist conditions: Autumn Blaze Maple, Red Maple, Silver Maple, River Birch, American Sweetgum and its cultivars, Black Gum, and Pin Oak and its cultivars.

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\*Hydrostatic steering to be phased-in on the 360-C.

\*\*Prices based on Long Mfg. N.C. Inc.'s current suggested list price, for standard equipped tractors with tires as specified, F.O.B. point of manufacture; and are subject to change without notice.



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## NEWSMAKERS

Les Guedel is a new salesman for **Lakeshore Equipment & Supply Co.**, Elyria, Ohio, for the northern Ohio area. Also, Nick Costello has rejoined the company to supervise costing and submission of bids and to oversee chemical formulation.

Robert L. Hergert has been named vice president of marketing for **Teledyne Wisconsin Motor**, Milwaukee, Wis. In his new position, he will be responsible for all of the company's domestic and international sales and marketing activities.

J.J. O'Donnell is turf specialist for **Struyk Turf Maintenance**, Omaha, Neb. The company offers chemical application, mowing/maintenance, aeration and drill seeding.

J.F. (Red) Skelding is manager of **Black Diamond Lawn Service**, Toledo, Ohio. The company offers chemical lawn care, and is

Jerry Bright is owner of **Nationwide Lawn Care**, Louisville, Ky. The company offers chemical application.

Steven T. Kavanagh is Philadelphia district manager for **Davey Lawnscape**, Kent, Ohio. His office is in Conshohocken, Pa.

Charles Stephenson is owner of **Emerald Lawn Care & Pest Control**, Bloomington, Ind. The company offers chemical lawn care, mowing/maintenance and pest control.

Scott R. Allen is turf specialist for **Easy Lawn Corp.**, North Royalton, Ohio. The home office of this chemical lawn care company is in Piqua, Ohio.

John L. Kolb is president of **Turf Supply Co.**, St. Paul, Minn. The company is a supplier of seed, fertilizer and chemicals to the lawn care industry.

Timothy A. Ehinger is branch manager for **Tru-Green Corp.**, Golden Valley, Minn. The home office of this chemical lawn care company is in East Lansing, Mich.

Stephan Watkins is manager for **ChemLawn Corp.**, New Albany, Ind. The home office of this chemical lawn care company is in Columbus, Ohio.

Brian O'Neill is vice president of operations for **Weeds, Inc.**, Yeadon, Pa. The company is involved in both chemical lawn care and chemical sales.

Lindy Pearson is owner of **Can-Do Enterprises**, Oklahoma City, Okla. The company offers mowing/maintenance.

Lloyd R. Kuhn is general manager of **Blakley Fertilizer Co.**, Springfield, Ill. The company offers chemical lawn care and is also a manufacturer of spray equipment for the lawn care industry.

**Speedex Tractor Co.**'s general manager, Bill Beckett, has announced the recent appointment of **Power-Edge Corp.**, as dis-



*Loft's Pedigreed Seed has chosen golf pro Arnold Palmer (center) to promote their line of seed and turf care products in 1980. (Above) Company Chairman Peter Loft and Research Director Rich Hurley (right) share a relaxed moment with Palmer between TV shootings at his La Trobe, Pennsylvania golf course. Palmer is considered by many to be the best known pro golfer in the world.*

tributor of tractors in Texas, Louisiana, Oklahoma and Arkansas. **Power-Edge** has warehouse and office facilities in Malvern, Ark. and Dallas. **Speedex** is based in Pittsford, N.Y.

Bill Japp is owner of **Big Bear Equipment, Inc.**, Omaha, Neb. The company is a supplier to the lawn care industry.

Vincent Cirasole is owner of **All Seasons Groundskeeping**, Glenwood Landing, N.Y. The company offers chemical lawn care and mowing/maintenance.

Mark Sligar is a sales representative for **Seaboard Seed Co.**, Bristol, Ill., a seed supplier to the lawn care industry.

B.D. Pugh is owner of **Custom Service Co.**, Fairfax, Va. The company offers landscaping, lawn maintenance, chemical spraying and mulch hauling.

Allan J. Cumps is regional manager for the **ProTurf Division, O.M. Scott & Sons**, based in Amherst, Mass. The parent company is based in Marysville, Ohio.

William M. Adams is president of **Lawn-a-Mat of Metropolitan**

**Hartford**, Manchester, Conn. The home office of this lawn care franchise is in Westbury, N.Y.

Charles Hopkins is president of **Apex Lawn & Garden**, Wilmington, Del. The company offers mowing/maintenance.

Terry Hughes is president of **The Whole Bloomin' Yard, Inc.**, Birmingham, Ala.

Russ Roero is owner of **A-1 Pride Exterminating, Inc.**, Pembroke Pines, Fla.

Chemical lawn care franchisor **Spring-Green Lawn Care Corp.**, has moved into new corporate facilities in Plainfield, Ill., president Bill Fischer announced. The new shipping address is: 11927 Spaulding School Dr., Plainfield, 60544.

Dave Hofacre has been promoted from manager to field supervisor for **Spray-A-Lawn Co.** of Pittsburgh. Dale E. Miller has been promoted to manager.

Sylvan Addink is owner of **ASC Spraying and Consulting**, Iowa City, Iowa.

**Porter Brothers, Inc.**, Shelby, N.C.-based distributor of turf care equipment and supplies, has been named 1979 "Distributor of the Year" by **Weed Eater, Inc.**, Houston, Texas.

K.E. Edwards is owner of **Plant-It-Earth Lawn Specialists**, Sacramento, Calif.

H.H. Jack is general manager of **Emerald Landscape Co.**, Atlanta, Ga.

Dane Vick is owner of **Action Lawn Service**, Pasadena, Texas.

Paul Bahmiller is manager of **Perf-A-Lawn Corp.**, Treasure Island, Fla. The parent company offices of this lawn care chain are located in New Carlisle, Ohio.

R.A. Gensheimer is manager of **Green-Lawn, Inc.**, Tulsa, Okla.

Gerard Bourgeois is president of **Estate Landscaping**, Ocean City, N.J.

J.R. Zack is owner of **Professional Maintenance Systems**, Geneseo, Ill.

In a reorganization of marketing responsibilities, C. James Brown, vice president of marketing for **Homelite Div. of Textron, Inc.**, Charlotte, N.C., has announced appointments of James P. Dunne, marketing manager, gasoline chain saws



Caudle



Malizia

also a nursery and garden center.

Jimmy D. Caudle has been named president of **McDonough Power Equipment, Inc.**, McDonough, Ga. A.A. "Tony" Malizia becomes chairman and chief executive officer.

John C. Prusa is area manager for **Lawnmark Associates**, Rochester, N.Y. The parent company is based in Peninsula, Ohio.

Edgar J. Boudreau is owner of **Lawn-a-Mat of Melrose**, Saugus, Mass. The company is a franchise for the home office, based in Westbury, N.Y.



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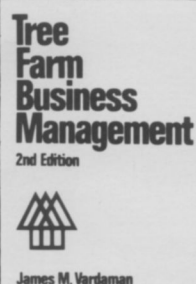
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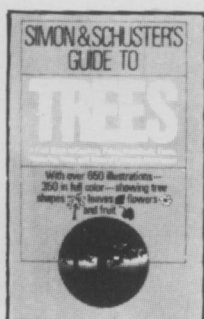
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by James Vardaman  
Discusses all major problems confronting for large and small farms and how to meet them.  
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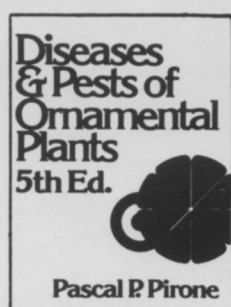
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by Terry Tattar  
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by James Watkins  
Guidebook for designers, architects, and contractors. Text for turf and landscape irrigation. \$19.50



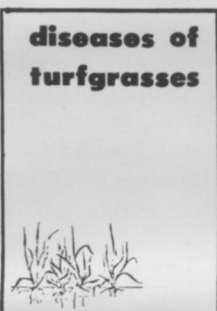
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Simon & Schuster  
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by Pascal Pirone  
The standard in reference for diagnosis and treatment of diseases of ornamental plants.  
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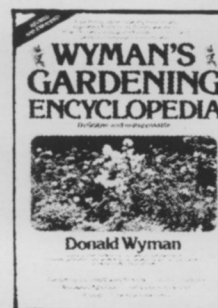
**Manual of Woody Landscape Plants**  
by Michael Dirr  
A teaching text and reference on ornamental deciduous trees, shrubs, ground covers and vines.  
\$19.00



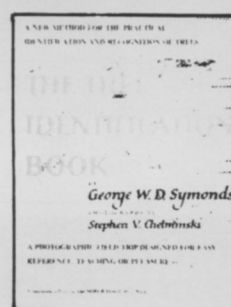
**Diseases of Turfgrasses**  
by Houston Couch  
Reference for identification and control of fungus and nematode-incited diseases.  
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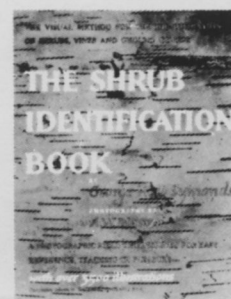
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# NEWSMAKERS from page 6

and products; Philip C. Blount III, marketing manager, accessories and professional products; Rick W. Osborn, marketing manager, string trimmers, electric chain saws, with emphasis on the consumer market, and Stephen D. Doolittle, marketing manager, construction equipment.

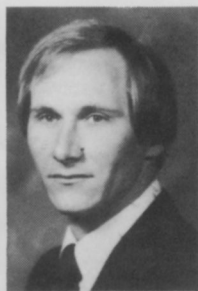
David R. Pinkus, vice president of **North Gardens, Inc.**, Dallas, Texas, was one of 1,500 delegates to the White House Conference on Small Business held earlier this year. The company runs four retail garden centers and a landscape division.

Rod Mills recently moved his **Kelly Green Professional Lawn Care, Inc.** to 3333 N. El Paso St., Colorado Springs, Colo. 80907.

**ICI Americas** has named G.C. Bryars national sales manager of its Agricultural Chemicals Division.

Steven Weed is owner of **Lawn Master**, St. Joseph, Mo.

Anthony Giordano, Jr., president of **Lawn Doctor, Inc.**, Matawan, N.J. has been appointed to the ethics committee of the International Franchise Association. Lawn Doctor has been an active member of the IFA since 1968.



Eckert



Giordano

David D. Eckert has been named director of marketing for the **Outdoor Power Equipment Div. of FMC Corp.** Port Washington, Wis.

**Bay Irrigation and Turf Supply, Inc.**, Concord, Calif., has been named distributor of the year by **Weather-matic Div. of Telsco Industries**, Dallas, Texas. At the company's annual sales

conference held recently, Golden Circle distributor awards were given to: **Advance Irrigation Supply**, Robbinsdale, Minn.; **Barenbrug Beregening B.V.**, Arnhem, Holland; **The Clapper Co.**, West Newton, Mass.; **Cogefrance**, Paris, France; **Cross B Co.**, San Antonio, Texas; **Denver Brass & Copper Co.**, Denver, Colo.; **Irrigation Engineering Co.**, Brookfield, Ill.; **Neumark Co., Inc.**, Albuquerque, N.M.; **Shemin Nurseries, Inc.**, Greenwich, Conn.; **Turf Irrigation & Supply Ltd.**, Lethbridge, Alberta, Canada; **United Pipe & Supply Co.**, Portland, Ore.; and **Watermation, Ltd.**, Surrey England.

Ric Moore is operations manager for **Hydro Lawn Spray**, Salem, Va.

**Barefoot Grass Lawn Service, Inc.**, Worthington, Ohio, a subsidiary of **The Toro Co.**, has announced the following promotions: Wally Himelstein has been named general manager of the company's Columbus branch; Rick Schwartz has been named assistant manager of the Columbus branch; and Steve Hushower has been named general manager of the company's Chicago branch.

Gene Carioti has been named regional sales manager for **Weather-matic Div. of Telsco Industries, Inc.**, Dallas. Kenneth Vandagriff has been named assistant national customer services manager.

John E. Fischbach is owner of **Fischbach Tree-lawn Service**, Lincoln, Neb.

Paul A. Kocher is owner of **Outdoor Service Co.**, West Jefferson, Ohio.

Gary R. Holland is owner of **Lawn Doctor of Port Washington**, Coram, N.Y. The home office of the lawn care franchise is in Matawan, N.J.

Earl L. Stripling, Jr. has been named vice president of **Chevron Chemical Co.**, a subsidiary of Standard Oil Co., and general manager of its Ortho Agricultural Chemicals Div.



The oldest useable Jacobsen walk-behind mower in Southern California? According to Californialand-Jacobsen, it's a 1947 "Estate" model owned by Lynn Frazier, of Downey Mower & Saw, a Jacobsen dealer located in Downey, California. Frazier was one of nearly 50 individuals who responded to Californialand's promotion and received a new Jacobsen mower as first prize. Shown during presentation ceremonies at the dealer's shop are, left to right, Californialand sales representative, Jim Mitsuoka, Frazier, manager of the Textron Division's distributorship, Fran Sanders, and Bill Edwards, also of Downey Mower & Saw.

David V. Walker is president of **Four Seasons Landscaping & Maintenance, Inc.**, Las Vegas, Nev. The company offers both granular chemical lawn care and mowing/maintenance.

James R. Sackett is president of **Ever-Green Lawn Care, Inc.**, Troy, Ohio. The company offers both liquid and granular chemical lawn care.

Pete Wytish is general manager of **The Svengers Co. Lawn Care**, Philadelphia.

Vincent Cirrito is president of **Lawn-A-Mat of Bohemia**, N.Y. The home office of this lawn care franchise is in Westbury N.Y.

Golden Circle dealer awards went to: **Bath Landscape & Sprinkler Co.**, Fort Collins, Colo.; **Gorbet Lawn Sprinkler Service**, Austin, Texas; **Irri-Tech Corp.**, Dallas, Texas; **Houston Weather-matic**, Houston, Texas; **King Lawn Sprinkler Co.**, Dallas, Texas; **Lifetime Lawn Sprinkler Co.**, Midland, Texas; **Muellermist Irrigation Co.**, Broadview, Ill.; **Pretty's Lawn Sprinkler, Inc.**, Tyler, Texas; **Robertson Lawn Sprinkler Co.**, Colorado Springs, Colo.; and **Wingfield Sprinkler**, Dallas, Texas.

**International Harvester's** Agricultural Equipment Group has announced three major appointments in its newly structured outdoor power organization. Thomas H. Solomon has been appointed manager, outdoor power manufacturing operations; Thomas P. Jaros was named manager, product and financial planning; and Ronald F. Zitko was appointed manager, engineering. All three positions reflect IH's increased commitment to the outdoor power products market. IH's lawn and garden tractor line consists of five Cub Cadet models ranging from 11 to 19.9 horsepower and three Cadet models from eight to 11 horsepower.

**S.V. Moffett Co., Inc.**, with head offices in West Henrietta, N.Y., has been named a **Gravely** commercial dealer servicing the turf maintenance business in upstate New York. Gravely is based in Clemmons, N.C.

Willard D. Boettcher is owner of **Mow-Em-Down Lawn Service**, Maple Grove, Minn.

Rollin Hicks is owner of **Green Thumb Lawn & Garden**, Cedarville, Mich. The company

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## NEWSMAKERS from page 8

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Leon N. Miller is regional sales manager for **Excel Industries, Inc.**, based in Hesston, Kans.

Thomas Metcalf is superintendent for **Ross Trucking, Inc.**, a mowing/maintenance operation in Clay, N.Y.

James Z. Gnitecki has been named plant manager of the new assembly plant being constructed by **The Toro Co.** in Mason City, Iowa. The plant will produce lawn mowers and two-stage snowthrowers. Also, the company has named Dennis Kegler its energy coordinator; Robert Pierce has been named director of quality assurance for the company's Irrigation Group; Ron Maw has been named manager of distributor services for the Irrigation Group; Joseph Lyons has been named director of human resources for the Irrigation Group.

**Boots Hercules Agrochemicals Co.**, Wilmington, Del., has promoted C. Robert Staib to product



Staib

Gnitecki

manager for turf and horticulture. He joined the company at Riverside, Calif. in 1959 as a nitrogen products technical sales representative. He later became a turf specialist for the company and most recently served as account supervisor for agricultural chemicals in Des Moines, Iowa. Staib is a graduate of **Washington State University** where he majored in agronomy and holds a masters degree in soil chemistry from the **University of Idaho**. He has served as president of the **Northern California Turfgrass Council** and as board member of

## the Midwest Agricultural Chemicals Association.

Ralph E. Buhrmester, Jr. is manager of **Chem-Trol Lawn Care**, Jonesboro, Ark. The company offers both liquid and granular chemical lawn care.

Richard A. Rogers is division manager of **Clark & Morrell Landscaping, Inc.**, Lithonia, Ga. George Morrell is vice president and Terry Walton is operations manager.

Daniel C. Oefinger is president of **Texas Green Turf, Inc.**, San Antonio, Texas.

Duane Samsel is owner of **Samsel Landscape Spray Service**, Peoria, Ill.

William K. Moore is president of **Green-Lawn of Georgia, Inc.**, Doraville, Ga. The company offers both liquid and granular chemical lawn care.

Jim FitzGibbon, president of **Lakeshore Equipment & Supply Co.**, Elyria, Ohio, has announced the appointments of Gene Probasco as vice president of LESCO Products Div. and Ron Giffen as vice president of national sales.

Chris Welsh has joined the communications department at **The Toro Co.**, Minneapolis.

Charles D. McKee has been named assistant manager of warehouses for **Porter Brothers, Inc.**, Shelby, N.C.-based distributor of turf care equipment and supplies.

Bill J. Maxwell, a sales representative for **TUCO Div. of Upjohn Co.**, Kalamazoo, Mich., has moved offices from Boca Raton, Fla. to Greensboro, N.C. his new address is: 303 Willoughby Blvd., Greensboro, NC 27408.

Bob Schartz and Tom Yuell are owners of **Tom's Lawn Service**, Chicago, Ill. Gary Mitchell was recently named turf manager.

Jerome A. Glorino is owner of **Turf Tenders Landscape**, Lima, Ohio. The company offers mowing/maintenance services.

Randy L. Byrd is president of **Byrd Industries Corp.**, Longview, Wash.

Lewis Barre is president of **Meadowbrook Plantation &**



## Gilson announces construction plans

**Gilson Brothers Company** has announced plans for the construction of a new manufacturing plant in Lexington, Tennessee. Gilson officials were warmly welcomed to Lexington with more than 100 people representing the local community in attendance for the ground breaking ceremonies.

Pictured from left to right standing are: R.E. Blohm, president, **Paragon Industries**, Gilson personnel, Jerry Stumras, vice-president of marketing, John Stiefel, plant engineer, Jud Brown, vice-president of manufacturing, and Ed Fleming, vice-president. Seated on the tractor is Mayor Ed Bailey of Lexington, Tennessee.

The first stage in the construction plans call for a 183,000 square foot facility with future additions to bring the total plant size to more than 400,000 square feet. Initially, the plant will specialize in lawn and garden tractor production.

According to company officials, the new facilities were required because of a significant growth in sales and national distribution. Gilson reported a 40 percent sales increase in 1978-79.

**Landscaping, Inc.**, Middlebury, Conn.

Roger Albrecht is owner of **Nitro-Green Professional Lawn & Tree Care**, Bismarck, N.D., with several offices in Colorado and Montana.

Dick Schaeffer has been named a district manager for the eastern turf sales division of the **Rain Bird Sprinkler Mfg. Corp.**, Glendora, Calif. He will handle the area comprised of Michigan, Ohio, Indiana, northern Illinois and Kentucky.

Karl F. Amalia is president of **Amalia Tree Surgeons, Inc.**, Manchester, Mass. The company offers chemical lawn care and mowing/maintenance services.

Ralph S. Hull is vice president of **Turf & Landscape Care, Inc.**, Scottsdale, Ariz. The company offers mowing/maintenance services.

David J. Samuelson is owner of **Town & Country Tree & Landscape**, Webster, N.Y. The company offers landscape contracting and mowing/maintenance services.

Reed Clifton is president of **Landscape Enterprises, Inc.**, Oklahoma City Okla. The company offers mowing/maintenance services.

Steven L. Fielder is owner of **Condor Maintenance**, Littleton, Colo. The company offers chemical lawn care and mowing/maintenance services.

Dick Kneip has been named a district manager for the eastern turf sales division of the **Rain Bird Sprinkler Mfg. Corp.**, Glendora, Calif. He will be handling an area covering Oklahoma, Kansas, Arkansas, Missouri and southern Illinois.

Charles Harter is owner of **C & H Spraying Co.**, Drayton Plains, Mich.

W.E. "Doc" Foster is owner of **Chem-Grow, Inc.**, Montgomery City, Mo.

Bill Harrigan is president of **Green Life, Inc.**, Myersville, Md. The company offers both chemical lawn care and tree care.

Richard Sniderman is treasurer of **Lawn-A-Mat of Canada**, Hamilton, Ontario. William Zaduk is president, and Joe Contini is manager.

Patrick St. Germain is owner of **Liqui-Lizer Lawn Spray Specialists**, Southgate, Mich. Bruce Leidholdt is manager.

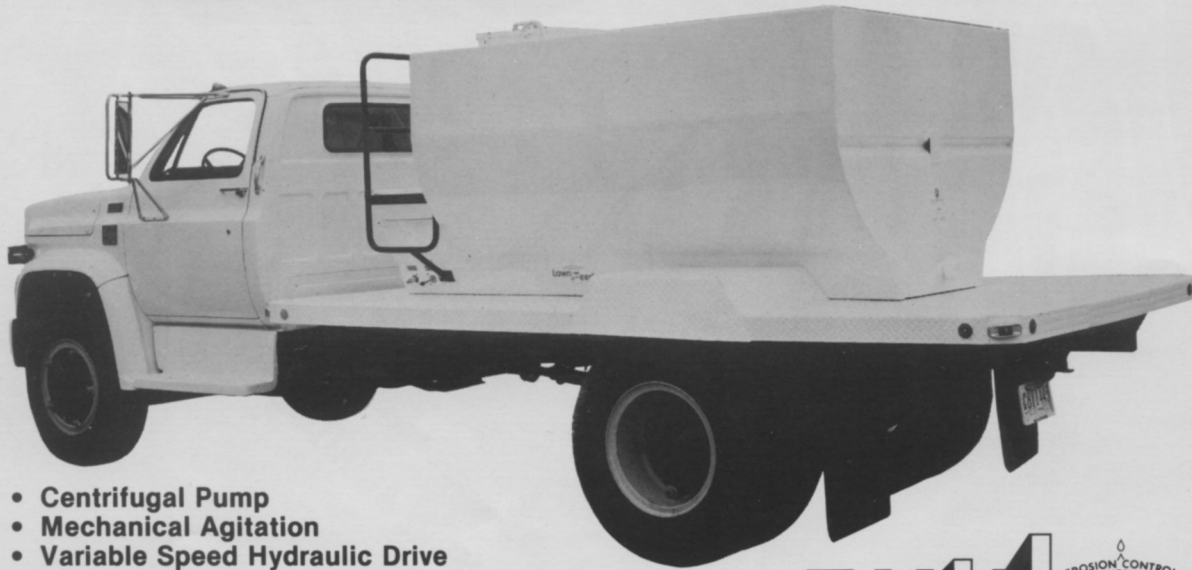
Allen J. Foster is regional manager, lawn and garden, for **USS Agri-Chemicals**, based in Memphis, Tenn.

A. Martin Petrovic is assistant professor of extension turfgrass management at **Cornell University**, Ithaca, N.Y.

P.J. Lenihan is area manager for **Lawn Medic, Inc.**, Winston-Salem, N.C. The lawn care franchise is based in Bergen, N.Y.

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## Beard addresses 450 at Virginia turf show

The lawn care industry and the turfgrass industry as a whole will face many problems and challenges during the 1980's, but they will be no more serious than those being faced by society as a whole, according to James B. Beard, professor of turfgrass physiology at Texas A&M University, College Station, Texas.

Beard told nearly 450 persons attending the 20th annual Virginia Turfgrass Conference that they will have six areas of concern during the decade: energy, water, pesticides, nutrients, equipment, and manpower.

In speaking of energy, Beard noted that the problem is not unsolvable although it will be greatly modified by politics. He predicted the country will have to go with various energy sources. Despite the shortage of oil, the United States will remain an oil-based society during the coming decade.

However, Beard added that research and science will continue to find ways to get previously untapped oil supplies out of the ground as well as develop new sources of energy. Those in the turf industry will be affected, he said. They will have to do more selective mowing and let grass grow to higher levels. Greater selectivity will be used with nitrogen and fertilizers and methods will have to be developed to make irrigation more efficient.

Water will be the biggest problem for the turf industry, he said, particular for those in business in the Southwest and Far West. Too many people in the turf industry use too much water which, in turn, leads to a host of other disease and weed problems, he said. More selective irrigation and the use of affluent water are musts for the coming decade.

Regarding pesticides, Beard predicted there would be no new turf pesticides developed in the 1980's. High costs and government regulations will prohibit them. Further, the costs of pesticides have risen more rapidly than inflation. The rising costs will lead to more selective use of pesticides and a greater awareness among employees as to the use of them.

The picture will be about the same for nutrients as for pesticides during the coming decade, Beard said. There will be less nitrogen used and more controlled short growth. There will also be a trend toward developing grasses that do not grow as high or at a slower rate than current grasses on the market.

Regarding equipment, the Texas A&M professor predicted greater use of mulching mowers, a trend towards the use of diesel machinery, longer-lasting equipment, and continued increases in equipment prices. Thus, these five factors will contribute sig-

nificantly to the need for better trained manpower and more efficient management practices.

In other conference news, Archie Goode, the pro-superintendent at Brookside Golf Course, Roanoke, Va., was elected president of the Virginia Turfgrass Council, succeeding Gus C. Constantino of Richmond, Va., president of Wilson Feed and Seed Company. O. Jack Henry of the Country Club of Virginia in Richmond was elected vice-president.

Earl H. Odell of Turf and Garden in Chesapeake, Va., and Rex H. Harris of the Eagle Haven Golf Course at the naval air base at Little Creek, Va., were also re-elected secretary-treasurer and assistant secretary-treasurer, respectively.

New directors include Henry, Gil W. Barber of Richmond, manager for seed procurement at Southern States Cooperative, and Robert P. Ruff, Jr. of the Wintergreen Golf Club in Wintergreen, Va.

Further, Goode received the council's R.D. Cake Memorial Award for outstanding service to the Virginia turf industry for 20 years. He also received a silver tray from Constantino in appreciation for his involvement in the association.

Kyle J. Miller, a junior majoring in agronomy at Virginia Tech, received the \$500 Upjohn Scholarship Award from Stanley W. Glover, area sales representative for Tuco Agricultural Chemicals in Roanoke Rapids, N.C. David R. Conover of Blacksburg, a Virginia Tech senior majoring in agronomy, received the \$500 Golf Course Superintendents' Association of America scholarship from David C. Harmon of the Golden Horseshoe Golf Club in Williamsburg, Va.

Also at the proceedings, John F. Shoulders, Virginia Tech Extension turf specialist, and Roy E. Blaser, Virginia Tech University distinguished professor in agronomy, were presented with plaques and gifts from the association in recognition of their contributions to the Virginia turf industry. The two men will retire this year from the university. The conference is sponsored annually by the Virginia Cooperative Extension Service and the Virginia Turfgrass Council.

In all, about a dozen speakers presented speeches at the Virginia Turfgrass Conference. Topics included chinchbug control, pesticide safety, lawn care economics, and basic industry advertising principles.

Speakers included Jerry Faulring, president of the Professional Lawn Care Association of America and Virginia Tech extension specialists Dr. Jack Hall and Dr. James Bell. Look for coverage of these and other conference sessions in future issues of **LAWN CARE INDUSTRY**.



Archie Goode (left), newly elected president of the Virginia Turfgrass Council from Roanoke, and O. Jack Henry, of the Country Club of Virginia in Richmond, vice-president, chat shortly after their election to office at the 20th annual Virginia Turfgrass Conference in Williamsburg.



Dr. James Beard, of Texas A&M University, College Station, was the keynote speaker at the conference. He discussed the "Challenges of the 80's."



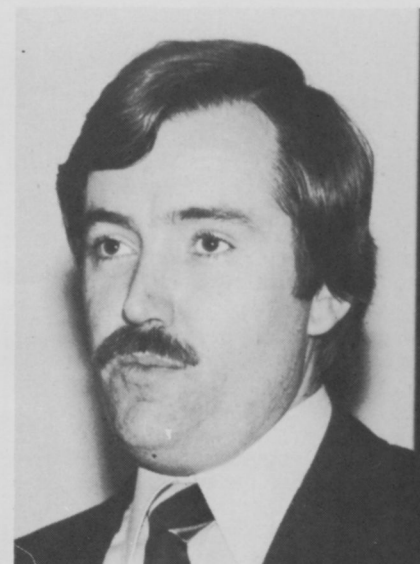
Dr. Jack Hall, extension specialist at Virginia Tech, helped coordinate the annual show. He also spoke on the topic, "Integrating Agronomic Principles with Economic Reality."



Gus C. Constantino, (center), outgoing president of the Virginia Turfgrass Council, expresses thanks to John F. Shoulders (left), Virginia Tech extension specialist, and Roy E. Blaser, Virginia Tech professor of agronomy, for their years of assistance to the Virginia turf industry. The council gave Shoulders and Blaser, who will retire later this year, plaques and other gifts in appreciation of their efforts, which included starting the council 20 years ago.



Dr. Roger H. Ratcliffe, research entomologist at the USDA/SEA/AR Turfgrass Laboratory, Beltsville, Md., discussed, "Selecting for Chinchbug Resistance in Cool Season Grasses."



Dr. Chuck Darrah III, of Chemlawn, Columbus, Ohio, spoke about, "Separating Facts from Fiction with Regard to Pesticide Safety."



## New York company into irrigation market with computerized system

Using microprocessor technology and electro-magnetic circuit protection, a Long Island-based firm has designed and is marketing a computerized turf sprinkler.

"Our turf sprinkler," says George Klein, chief design engineer for Turf Sprinkler Corp., Hauppauge, N.Y. "is really a computerized servant. It can be programmed to water up to 50 acres of lawn at any time of day or night. It can also be programmed to function only on given days.

"For instance, if rain is predicted for, let's say, a three-day period, the sprinkler can be programmed to water only on the fourth day. Or, if rain is expected the first and third days of the week, the sprinkler can be pro-

and thus require more water. Overall, the system is capable of watering up to 12 individual zones, either all at once or separately."

If, as many experts in the lawn care industry predict, sprinkler systems will become more widely used in other parts of the country besides the West and Southwest in the 1980's, lawn care businessmen involved in installation and maintenance of residential and commercial/industrial irrigation systems have another unit to choose from.

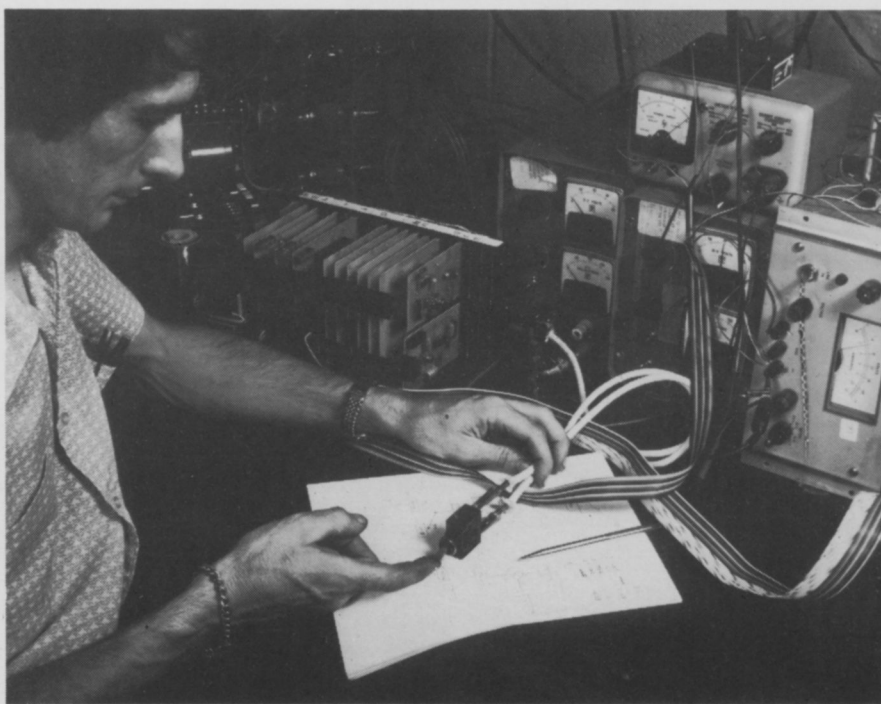
The system consists of four major elements: a manifold that is connected to a master water supply valve; a series of solenoids designed to open and close selected ports in the manifold; plastic hose lengths with sprinkler heads attached to the ends; and the control unit — which houses the electronic circuitry and microprocessor.

The control unit contains more than 10,000 transistors which provide the circuitry for the F-8 Fairchild microprocessor. The microprocessor is a single-chip, eight-byte micro-computer that has a one-kilo byte programmable memory. The chip also has a 64-byte random access memory and four-eight bit input/output ports.

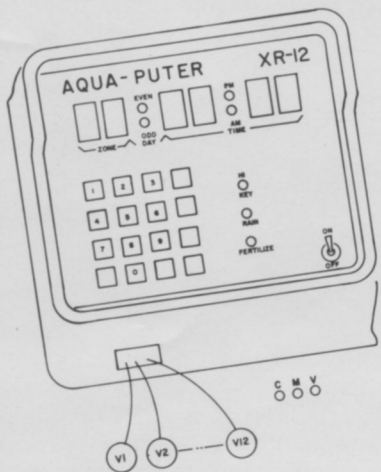
All circuitry is housed in a plastic molded cabinet that has a display panel and a 15-unit keyboard. Circuitry protection is provided by an Airpax T-11 circuit breaker, which also doubles as an on/off power switch.

The entire Turf Sprinkler Corp. system sells for less than \$200.

The T-11 is the first snap-action magnetic circuit protector that combines overcurrent protection and off/on power switching into a single unit, the company said. The patented device, developed by Airpax, Cambridge Div., Cambridge,



The T-11 is the first snap-action magnetic circuit protector that combines overcurrent protection and on/off power switching in a single unit. The patented device was developed by Airpax, Cambridge, Maryland.



Aqua-puter controls up to 12 individual valves for sectioned lawn sprinkling. All circuitry is housed in a plastic molded cabinet that has a display panel and a 15-unit keyboard.

grammed to water on the second, fourth, fifth, sixth and seventh days only.

"If drainage in one area is less effective than in another, the zone sprinkling feature can be programmed to water more frequently only those zones that have more effective drainage,

Md., actually eliminates three conventional components. It also contains the necessary wiring to complete the circuit.

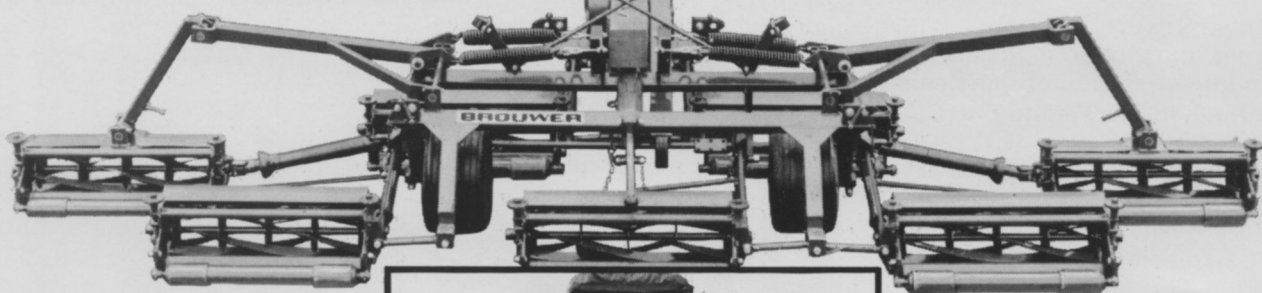
When the T-11 is operated as a switch, an over-center spring arrangement snaps power contacts open and closed in response to paddle handle manipulation. In the event of overcurrent in the circuit, a built-in magnetic circuit protector takes over to open the same contacts.

To function as both a fast-make, fast-break power switch and overcurrent circuit protector, the paddle handle positions a carrier to initiate both the opening and closing of the switch contacts through linkage. In either case, carrier position causes an over-center spring to control a movable contact blade. To open the contacts manually, the paddle handle position causes rotation of the carrier until the over-center spring passes through the horizontal line of the contact blade. Instantaneously, the spring opens the contacts with a snapping action. Positioning the paddle handle in the "on" position reverses the contact snap action.

"The dual function of the T-11," says Klein, "has helped us trim manufacturing costs of the control unit by 15 percent compared with single function units. But most importantly, it affords us high reliability in designing circuit protection for the microprocessor." Lawn care businessmen interested in the Turf Sprinkler Corp. unit may contact the company at: 1324 Motor Parkway, Hauppauge, NY 11787, 516-582-9400.

Other sprinkler system component manufacturers include: Champion Brass Mfg. Co., Los Angeles, Calif.; Greenlawn Sprinkler Co., Denver, Colo.; Johns-Manville, Fresno, Calif.; Lumenite Electronic Co., Franklin Park, Ill.; Rain Jet Corp., Burbank, Calif.; Rainbird Sprinkler Mfg. Corp., Glendora, Calif.; Weather-matic Div., Telsco Industries, Inc., Dallas, Texas; Toro Co., Irrigation Division, Riverside, Calif.; Safe-T-Lawn, Inc., Miami, Fla.; Royal Coach Sprinklers, Inc., Fresno, Calif.; Richdel, Inc., Arleta, Calif.; Rain-O-Mat Sprinklers, Inc., Whittier, Calif.; L.R. Nelson Corp., Peoria, Ill.; and Microdot Products, Broadview, Ill.

## How can you cut more grass per gallon? Get yourself a Brouwer.



Run a 7 gang unit, cut up to 7 acres per hour with a 30 HP tractor.

Brouwer's unique Positive P.T.O. Drive requires less horsepower than conventional wheel drives, increases fuel economy, and successfully operates in varying grass conditions. The lightweight, high-stress steel frame combined with the simple, "no-wheel and gear" mowers minimize flattening and avoid wheel tracks.

Brouwer 3, 5, and 7 gang mowers are simple, easily transportable, remarkably maneuverable and exceptionally economical and versatile.



THE NEW BROUWER HYDRAULIC LIFT MOWERS ADD ANOTHER TIME SAVING INNOVATION AT A VERY LOW COST.

For complete details on the Brouwer line of mowers, write for our free brochure.



# BROUWER

The Turf Equipment People

Brouwer Turf Equipment Limited, Woodbine Ave., Keswick, Ontario, Canada L4P 3E9 Tel: (416) 476-4311

Circle 103 on free information card

### COMPANIES

#### Contact/systemic fungicide introduced

Duosan, a broad-spectrum turf fungicide which combines both systemic and contact control, is being introduced by the Specialty Agricultural Products Division of Mallinckrodt, Inc., St. Louis, Mo.

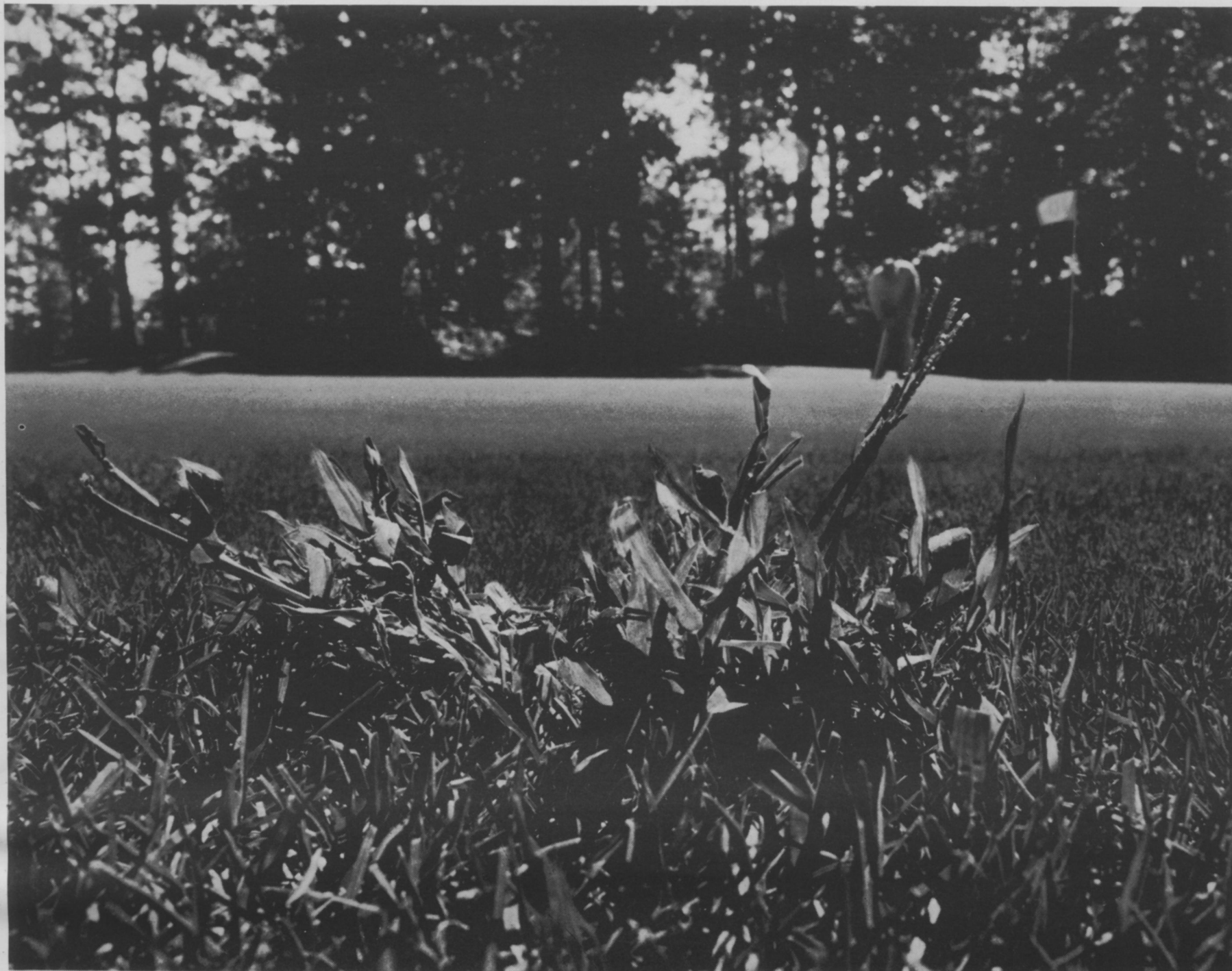
The scientifically formulated combination results in a synergistic effect with the two ingredients complementing and magnifying each other, according to the manufacturer. The contact provides immediate action, while the systemic ingredient offers long lasting control.

Duosan controls most major spring and summer diseases except Pythium.

Major fungi controlled by Duosan are Dollar Spot, Brown Patch, Copper Spot, Red Thread, Leaf Spots, Fusarium Patch, and Rust.



# If you use Chipco® Ronstar® G in April, this won't happen in August.



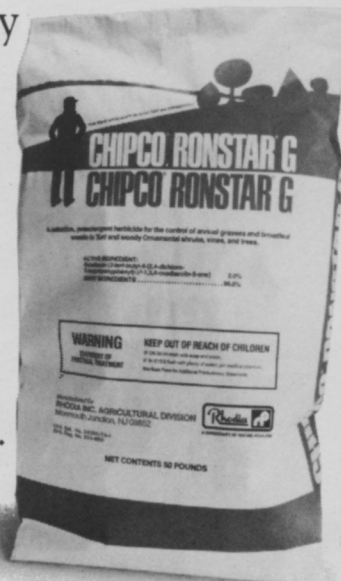
Crabgrass. It can come back to haunt you! A number of golf courses found out during an unusually wet summer last year. After 60 to 90 days, smack in the middle of the golfing season, they found themselves with a horrendous crabgrass problem all over again. Even though they were using a leading herbicide.

It wouldn't have happened with preemergent Chipco Ronstar G herbicide. It's that simple. One application of Chipco Ronstar G in early spring controls crabgrass in perennial bluegrass, bermudagrass, perennial ryegrass and St. Augustine grass turf for up to 120 days. And it controls goosegrass, annual bluegrass and five other nuisance weeds at the same time. So, while Chipco Ronstar G may cost a little more, the 120 day control is worth every penny, and more.

For more information, see your Chipco distributor or Rhône-Poulenc representative. Rhône-Poulenc Chemical Co. Agrochemical Division, Monmouth Junction, New Jersey 08852.



RHÔNE-POULENC CHEMICAL COMPANY  
AGROCHEMICAL DIVISION





## Montana town blames 2,4-D for miscarriages

In a recent move to discredit the widely used herbicide 2,4-D, residents in a small Montana town are claiming the reason nine of 10 pregnant women suffered miscarriages was because of annual spraying of the herbicide.

In a recent Associated Press news story, Lake County health officer Dr. Ralph Campbell said that Condon, Montana's only successful birth during the 12-month period ending last fall was by a woman who had been attending school out-of-state and returned to Condon to have her baby.

Residents of the 10-mile stretch along Montana state route 83 just north of Missoula County say they are increasingly frustrated by the "ho-hum attitude of the bureaucracy" toward the situation.

"They just don't seem concerned, and they don't like the questions that are being asked," said Virginia Polsen, whose miscarriage in the fall of 1978 was the first.

Lake County Commissioner Bill Burley said the Swan Valley residents had not contacted the commission directly, but that Campbell had reported their concerns.

Campbell said that it had been almost impossible to find out who has been spraying in the area, and with what chemicals.

The state Highway Department contracts with counties to spray noxious weeds along roadsides, and the department specifies 2,4-D, said Bill Hebert, field maintenance chief in the Kalispell, Mont. office. The herbicide is not restricted.

Campbell said he is convinced 2,4-D is the culprit, "but it's like all these cumulative poisons — how do you prove it?"

Campbell used questionnaires to interview the families after he and Virginia Reber, county health nurse, met with them last spring.

Also, *Farm Chemicals* magazine reported in its January issue that another effort to discredit pesticides — 2,4-D and 2,4,5-T specifically — has come in the form of a "Toxics Primer," a joint effort by the League of Women Voters and the federal Environmental Protection Agency.

The lead statement suggested that the spraying of 2,4-D and 2,4,5-T resulted in a baby's birth defect. The magazine said that EPA said the document was reviewed by the agency and mailed out at taxpayer's expense to editors of publications in many fields, public agencies and other influential people. The mailing totaled 30,000.

## COMPANIES

### Toro reports record first quarter sales

The Toro Company recently reported record first quarter sales of \$101,596,000 for the period ending October 31, an increase of 52.8 percent over the same quarter last year.

Net earnings rose 34.8 percent to \$5,606,000 and earnings per share from continuing operations were up 29 percent from 77 cents to 99 cents.

Toro Chairman David T. McLaughlin said a 59.6 percent increase in sales of snow removal equipment was a major factor in the record first quarter performance. Sales of snow removal equipment in the first quarter accounted for 64 percent of total sales; consumer lawn equipment accounted for 18 percent of the total; professional turf equipment for nine percent; and irrigation equipment for eight percent.

McLaughlin noted that profit margins, while down from the first quarter of last year, showed improvement over the final quarter of fiscal 1979. Further, he said he expects sales for the year to exceed \$400 million, up from last year's record of \$358 million.

Ah-h-h "barefoot grass"...



**NOW...in Cleveland...homeowners can enjoy "barefoot grass."**

We build thick "barefoot grass" lawns, using only dry, granular materials. The same materials used on championship golf courses. Our specialists who treat your lawn are thoroughly versed in identifying and treating all manner of lawn problems. The best materials—the best people. It's an unbeatable combination. And it can give your family a lawn of "barefoot grass" this year. Call us now for a FREE lawn inspection and price quote. Our number is **464-6950**



...growing with **TORO**

**Barefoot Grass**  
LAWN SERVICE

24000 Mercantile Road, Beachwood, Ohio 44122

### Barefoot Grass advertises regionally

Barefoot Grass Lawn Service, Worthington, Ohio, recently ran this regional advertisement in editions of *Time* and *Business Week* magazines. The full-page, four-color ad featured a small child relaxing on a lush green lawn. The ad stated, "We build thick 'barefoot grass' lawns, using only dry, granular materials. The same materials used on championship golf courses. Our specialists who treat your lawn are thoroughly versed in identifying and treating all manner of lawn problems. The best materials/the best people. It's an unbeatable combination."

Regional ads in national publications are attractive to lawn care businessmen because the ads cover a large market area, promote a professional image, and are less expensive than ads that appear nationally. Further, lawn care companies benefit from the prestigious image which often accompanies national publications.

## Self-Propelled Turf Sprayer

**4 Wheels**  
Smoother ride.  
More stability.



**High Flotation**  
Twice as much as a  
utility truck and sprayer.

**NEW!**

**Hahn Spray-Pro**

Precision application. Fast efficient spraying.  
Centrifugal pump. 100 p.s.i. max. 55 g.p.m.  
High pressure piston pump and hand gun optional.  
16 h.p. cast iron engine. 3-speed transmission  
160 gal. polytank with agitator.

**33 years experience building  
self-propelled sprayers.**

**Wide Coverage**

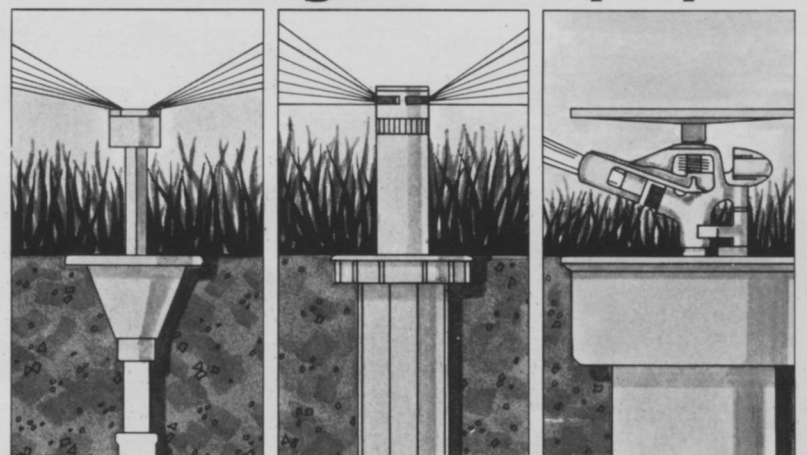
16 ft. folding spray boom.  
Use 3 sections or individually.

**DEALERS WANTED**  
(812) 428-2025

**Hahn** TURF  
DIVISION

1625 N. Garvin St. Evansville, IN 47711

## The taller the grass ...the higher we pop!



From residential to light commercial turf installations, Champion has a pop-up to do the job! When you compare the cost, precision construction and performance, you'll buy Champion. The 18HP (2" pop-up), the P180 (2½" pop-up) and the 6178 Impulse pop-up are just three of over one-hundred fifty sprinklers,

valves, controllers and accessories featured in the new Champion, full-color catalog. Ask for your free copy.

**CHAMPION**  
SPRINKLER EQUIPMENT

1460 N. Naud St.  
Los Angeles, CA 90012  
(213) 221-2108/(213) 223-1545





**Lescosan, the name you remember for crabgrass control.  
LESCO Sulfur-Coated Fertilizer,  
the name to remember for greener turf**

*Ron Giffen, Vice President of National Sales*

I've told you about our Lescosan (Betasan\*), the best selling pre-emergence crabgrass control on the market. You've proven its effectiveness. I'm here to tell you now that Lakeshore Equipment & Supply produces an equally effective line of sulfur-coated fertilizers.

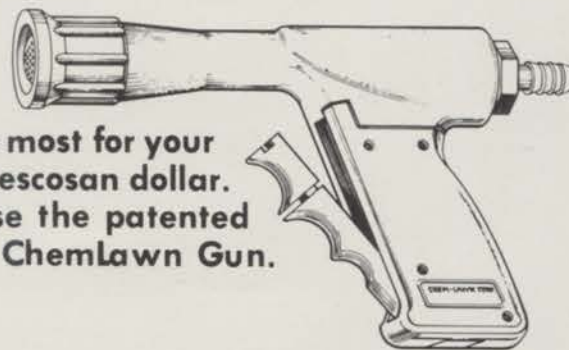
LESCO Sulfur-Coated Urea and 100% Sulfur-Coated Fertilizers provide the perfect ingredients for denser, greener turf. The sulfur coating, applied to the fertilizer components, provides controlled release of nutrients for prompt and sustained feeding for safe, efficient and economical fertilization of turf in all areas of the country.

As supplier of the most effective full-season crabgrass control on the market — Lescosan (Betasan\*) — and of the latest in controlled-release (sulfur-coated) fertilizers, manufactured by our subsidiary, Ag Industries Manufacturing, we have a special interest in the turf care market. Lakeshore carries a complete line of turfgrass supplies made and distributed with you in mind. The full family of fine LESCO Products mean quality at affordable prices.

Call Lakeshore today and ask about Lescosan, Sulfur-Coated Fertilizers and our other turfgrass supplies. Ask for Barb — she'll have one of our turf specialists give you the full story and work out a complete program tailored to meet your specific needs.

Ask about our Lescopex (MCP) and LESCO 2,4-D.

\*(Betasan—registered TM of the Stauffer Chemical Company.)



**Get the most for your  
Lescosan dollar.  
Use the patented  
ChemLawn Gun.**

**LESCO PRODUCTS**

Division of Lakeshore Equipment & Supply Co.  
300 South Abbe Road, Elyria, Ohio 44035  
(216) 323-7544

**1-800-321-5325—Nationwide**

**1-800-362-7413—In Ohio**

**1-216-323-7544—Call Collect**

**A Family of Fine Products:** Lescosan 12.5G—Lescorene—Lesco 4—Lescobor—Lescopar—Lescopex—Lesco Non-Selective Herbicide—Lesco MSMA—Lesco Thiram 75W—Lescozyme—Lakeshore Chinch Bug & Sod Webworm Control.

Circle 137 on free information card



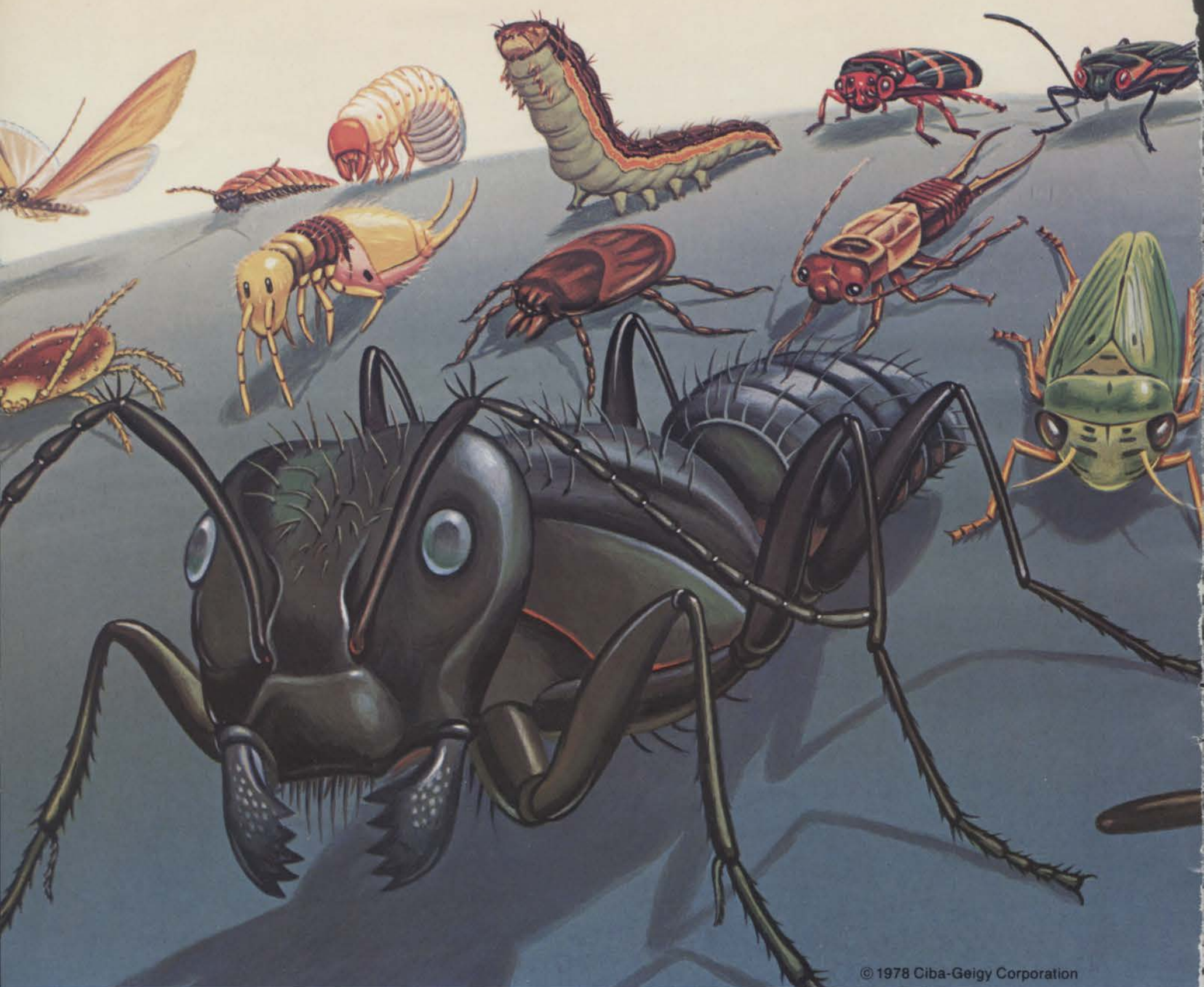
# Diazinon is labeled for How many will you

Diazinon® not only controls,  
but is labeled for more turf insects  
than any other turf insecticide.

Just take a look, it's the biggest

label in the business.

You'll count 24 turf insects in  
all. Including white grubs, sod  
webworms, cutworms, chinch bugs,



© 1978 Ciba-Geigy Corporation



# every insect on this page. face this season?

armyworms and ants.

This season, be sure to ask your  
local supplier for Diazinon.

And put the biggest label in the

business to work for you.

Ciba-Geigy, Ag. Div., Box  
11422, Greensboro, NC 27409

**Diazinon by CIBA-GEIGY**  
The biggest label in the business.



## CIBA-GEIGY



# Solid ad, promo campaign opens up Oregon chemical lawn care market

When Prograss Liquidcare Lawn Service started its lawn service operation in Hubbard, Ore. — a relatively virgin territory for the chemical lawn care market — owner Tom DeArmond called in an established midwestern lawn care businessman to look over the company's direct mail and other literature. They were looking for some pointers.

What they got from the established lawn care businessman was a whole lot of "oohs" and "ahs," and a pronouncement that "you guys don't need me, you've already got some of the best chemical lawn care advertising in the country."

LAWN CARE INDUSTRY went to Prograss manager Paul Bizon, asked him for some samples of his company's work, and for some of his comments on how the company went about putting its ad program together. He said:

• Even though the chemical lawn care business was a natural extension of the company's sod

Willamette Valley by raising superior turf for home and industrial use, and for its concern for the turf's healthy appearance after the sale. Even though a guide to preparation, care and feeding of one of our sod lawns was included with the delivery, numerous phone calls about fertilization and coping with diseases and broadleaf weeds prompted consideration of a fertilization and weed control program as a service to our turf customers.

"We found this thinking sound, because many of our customers were active couples with families who bought sod for convenience, and felt they had more

important things to do with their free time. By buying and delivering fertilizer on a volume basis, we felt we could provide a service to our customers at a price comparable to doing it themselves, without the bother of buying fertilizer and rarely used equipment.

"With all of the business details behind us, we began our promotional program. We decided to make it a distinctly separate business, with a new name and manager. A firm name had not been chosen at the time we approached a graphic artist and photographer who had worked on several previous projects for us.

"Promotional work had begun. In the early phases, all thoughts were laid on the counter; we found brainstorming was the most effective way of sorting out unusable information and ideas. 'Prograss' was chosen for a name because it has a positive professional sound, while 'grass' tells what the business is about. Its resemblance to 'progress' is not accidental. Prograss is a progressive company.

"Promotional material was next on the agenda. Announcing the new service to existing and potential customers was next. At this point, the trucks that would deliver our program were ordered, but not completed or painted. An interim brochure was used for mailing. It used conceptual drawings instead of photographs. Printed in one color on green paper, it was an economical solution to an expensive problem.

"We picked one of our top Oregon Turf Farms lawns, and



Prograss has developed some of the most sophisticated lawn care ads in the Northwest. This is just one example of Prograss' fine four-color, direct mail ads.

business, they decided to keep the two distinctly separate.

• Even before they picked out a company name, they called in a graphic artist and photographer to aid them right from the start.

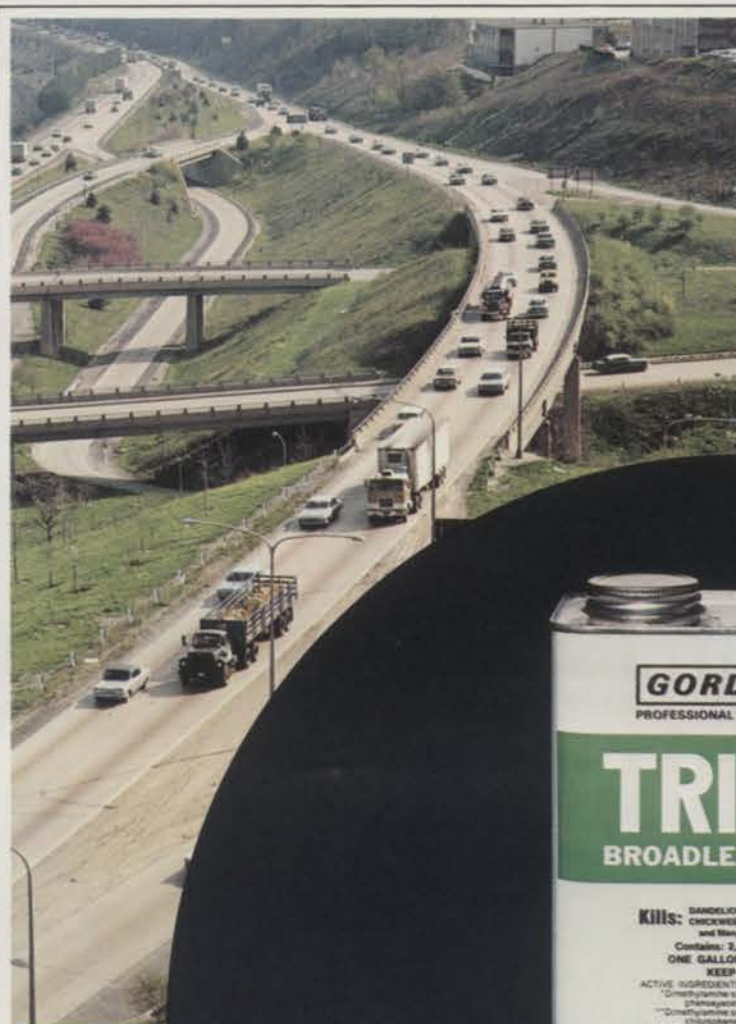
• A sound advertising campaign can give your company a professional image — even before you handle your first lawn.

• You are competing with junk mail and slick promotional mailings, thus you have to shout your message loud and clear on the outside — you can get into the details inside.

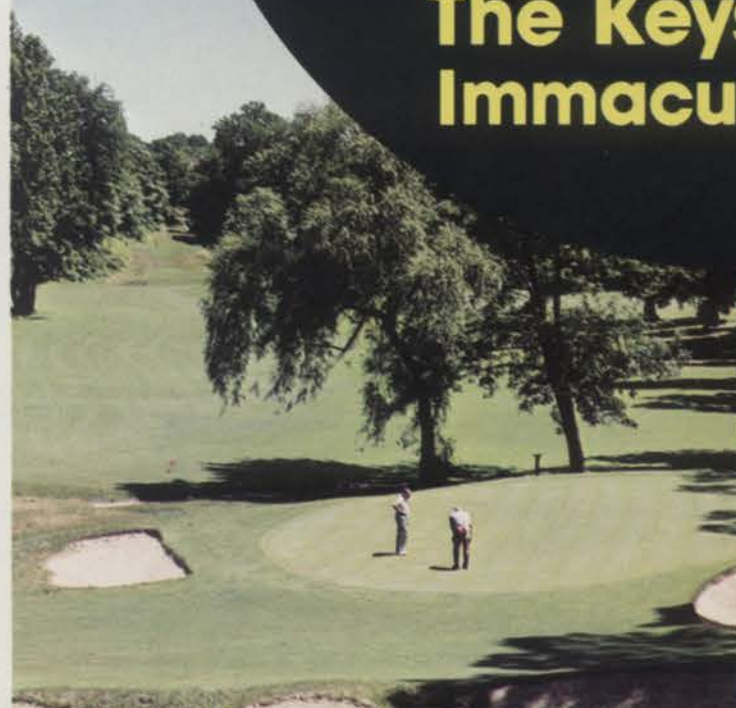
• A systematic door hanging campaign in neighborhoods where you already have customers answers the questions neighbors might have about "what that truck is doing in the neighborhood."

Let Bizon talk:

"Oregon Turf Farms established itself as a quality sod producer in Oregon's fertile



## The Keystone of Immaculate Turf







"A sound advertising campaign can give your company a professional image even before you handle your first customer," according to Prograss manager Paul Bizon.

the photographer was on the spot at 9:30 in the morning to catch the best of light, people and equipment. He then turned out a new promotional mailer with a return postcard and a large fold-out lawn care brochure for newly contracted customers. The first printing of 5,000 copies went fast.

"Two years after our start, we now have 1,000 customers. In starting this type of business, several aspects are important. First, project a professional image. Every day, homeowners receive 'junk' mail. Although some of it is well-done, the chances of it reaching the person

who contracts to do the job are often minimal. It must be at least competitive with the best, and attract the attention of someone who has buying power. That means a wife who will contract a job, or pass it along to her husband; or a secretary who will not 'can it.'

"For promotional material, we have found that several rules apply. First, promotion is costly, but important. Retain a reputable artist or agency — image is important. A 'clean' image means well-designed printed material as well as freshly painted trucks, washed daily, consistent performance and uniformed applicators.

"We recognized it was important for our mass-mailed promotional piece to shout our message loud-and-clear on the outside of the material. Many mail pieces make you look inside to find the surprise. We didn't design ours that way.

"Inside, we told our complete story. If the homeowner was interested, a tear-off post card was designed in on the third flat for return mail convenience. A seasoned professional graphic artist was helpful here, because he was able to keep current with postal regulations concerning size and paper weight of return replay cards. Because of new government automated mail-sorting equipment, the minimum thickness a card can be is .007 of an inch or 'seven point.'

"When a new aspect of the fertilization business developed, a 5-1/2 x 8-1/2 full-color (one side) post card was sent to existing customers. It announced our Prograss Liquidcare Lawn and Tree Service. The slight name change required updating existing promotional materials, but careful planning of quantities of printed pieces minimized waste. Again, in the tree care photograph, careful attention was given to tell as much of a complete story as we could in one picture.

"The truck was dominant in the picture. The Prograss employee in the picture was demonstrating the fertilizer injection system, and the back side of the card explained the specifics. We don't leave the prospective customer guessing about anything.

"Other promotional devices used by Prograss include door hangers, newsletters and statement inserts. Door hangers are used on doors of customer's neighbors. Word-of-mouth is our best advertising, but a hanger explaining what our truck is doing in the neighborhood can't hurt."

# Immaculate weed-free turf is the key to profit for the Lawn Care Operator

## Read how Trimec® Turf Herbicide can help you improve the bottom line

As a lawn care operator, you live in a glass house, and this has a direct bearing on your profits. Some businesses can hide their mistakes, or shift the blame, or postpone the consequences, thus buying time to make corrections later when they're not so busy.

But not you!

If a few ugly weeds appear out of nowhere in one of your lawns, or if some trees and ornamentals show signs of damage, the finger points to you; you've got to do something right now or you may lose a customer as well as your chances for new customers in the block.

Fortunately, there's another side to the coin. If one of your lawns is as immaculate as a country club fairway, everyone in the block sees it and becomes a prospect for you.

The point is, you've got to do the job right the first time. You absolutely can't tolerate the emergence of stray weeds or damaged ornamentals:

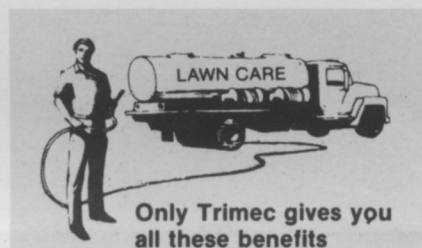
**STRAY WEEDS:** The weeds that plague lawn care operators are not dandelions or chickweed or other common sensitive weeds. To the contrary, they invariably are a hard-to-kill variety usually thought to be rare — until they showed up in your customer's lawn!

Where did they come from? They're the natural consequence of using a narrow-spectrum herbicide in an area being fertilized and watered.

The hardy weeds (those not controlled by the narrow-spectrum herbicide) are nourished by the fertilizer and water, and fight with the grass to fill the vacancy left by the demise of the sensitive weeds. Some of them win, and weeds that once were obscure become prominent.

There's really only one efficient way to cope with the problem, and that is the Trimec way.

Trimec is the one turf herbicide with a broad enough spectrum to get those hard-to-kill weeds along with



- Controls the widest range of broadleaf weeds
- Gets hard-to-kill species with one treatment.
- Wide safety margin for lawn grasses
- Minimum hazard from root absorption
- No vapor action after application
- Effective weed control in a wide temperature range
- Unique formula overcomes water hardness problems
- Treated areas may be reseeded within two weeks
- Non-flammable and non-corrosive in use
- Product stable several years above 32° F.
- Biodegradable; friendly to the environment
- Bentgrass formula is also available

the common, sensitive ones. How many broadleaf weed species will Trimec control? We're still looking for the troublesome broadleaf weed that Trimec will not control when applied at the right times and rate. If we do find such a weed, we'll be very much surprised. No other selective herbicide matches the broad spectrum of Trimec.

**ORNAMENTAL DAMAGE:** Any broadleaf herbicide can damage trees and ornamentals if used indiscriminately. But, for Trimec to cause such damage as a result of translocation, it would have to be applied at more than ten times the label recommendation. We estimate that more than 2 million lawns were sprayed with Trimec in 1979; there is not a single report of damage to trees or ornamentals.

The reason why Trimec is so friendly to the environment, yet so powerful, is because no ingredient in Trimec is at a phytotoxic level.

**CUSTOMER RELATIONS:** Because most customer complaints and resulting service call-backs are caused by a genuine lack of information, we have designed an instructive Trimec door-hanger in response to the problem. It explains Trimec's slow, thorough action and the time required to kill a weed, root and all, using the world's most efficient herbicide.

Experience has shown this door-hanger to be highly effective in reducing the number of complaints and call-backs because it tells customers what to expect — in advance.

A generous supply of Trimec door-hangers is available with your Trimec purchase.

**THE BOTTOM LINE:** You can buy a narrow-spectrum herbicide that costs less per gallon than Trimec. But, on the bottom line, Trimec costs less than its less-effective contemporaries. That's because it requires less chemical per acre for maximum weed control; and because it saves labor by doing the job right the first time.

No matter how large or small your business, your Trimec distributor wants to help you. See him, today.

TRIMEC is a registered trademark of PBI/GORDON Corporation, U.S. patent No. 3,284,186.



**GORDON'S**

PROFESSIONAL TURF PRODUCTS



**PBI/GORDON CORPORATION**

300 SOUTH THIRD STREET  
P.O. BOX 2276  
KANSAS CITY, KANSAS 66110  
913-342-8780

Circle 149 on free information card

## BOOKS

### Lawn care training manual available

*How to Have a Beautiful Lawn* by Dr. James B. Beard of Texas A & M University, is being used by a number of major lawn care companies as a basic training manual, and is available to the lawn industry as a whole.

The 114-page book with 12 pages of full color gives a simplified, yet complete coverage of turfgrass maintenance and establishment practices.

It is also being widely used in introductory college courses as well as in community colleges. Many companies are also recommending it to their field and sales personnel as both a training aid and reference guide. Dr. Beard told LAWN CARE INDUSTRY.

The chapters in the book are: Know Your Turfgrasses, How to Establish a Lawn, Caring for the Lawn, Solving Lawn Disease and Pest Problems, Solving Soil Problems, Solving Environmental Stress Problems, Solving Other Occasional Problems, Improving a Problem Lawn, and What to Expect from a Lawn Care Service.

Inquiries concerning purchase of the book can be made to: H.J. Beard, Beard Books, 1812 Shadowood Dr., College Station, TX 77840. Single-copy purchase price is \$5.95 plus postage. A discount is available with a purchase of five or more books.



## Lawn maintenance operator excels at turf renovation

You've heard of waiting in line to see Hollywood's latest release or biding your time before teeing off on the front nine, but waiting for a professional lawn maintenance service might seem a little out of the ordinary. That is, unless you live in Bloomfield, N.J. and want Richard Conrad to maintain your lawn.

Conrad's Lawn Maintenance Service receives at least three calls each week from local residents hoping to entrust their lawns to him. Most people would jump at a business opportunity of this nature, but Conrad turns them down.

"I won't take a lawn on unless I feel that I can control it," he said. "You can overload yourself and

cut continuously, until you have to cut 12 hours a day, six days a week. That leaves you no time for insect control, fungus control, equipment maintenance or personnel training. And if you can't do those four things, you had better backtrack and cut your business back to a manageable level.

Conrad charges a consulting fee to visit a lawn and give the owner an estimate on the needed maintenance. "First I will go to the property and talk to the owner," he said. "Then I will measure the property and do a visual check of the turf area. If a lawn is totally infested with weeds and undesirable grasses, I know it will have to be totally



Conrad's shop contains a micro-fiche viewer which contains cards with catalogues and manuals for every piece of equipment he owns.

renovated. The homeowner then has two options; he can choose seed or sod, the renovation is the same for either choice, price is the only criteria.

"Once someone agrees to go for complete maintenance, all maintenance decisions have to be left up to me," he added. "I have to be at liberty to apply any needed chemical during the season. I can't wait to get approval for putting down an insecticide. I have to be able to apply it when the insects are active."

In the case of a lawn with about 65 percent quality turf mixed with crabgrass and other undesirables, Conrad will wait until August and follow a carefully planned partial renovation program. "The first step is to power-rake the lawn," he said. "This step combs out the lawn, removing 90 percent of the crabgrass and broadleaf weeds and

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"Once someone agrees to go for complete maintenance, all maintenance decisions have to be left up to me,"

Richard Conrad, Conrad's Lawn Maintenance, Bloomfield, N.J.

leaving the desired stand of grass." Secondly, he determines an appropriate seed mixture. "We'll overseed a decent lawn with about two pounds of bluegrass per 1,000 square feet for this kind of renovation, adding another two pounds of a perennial ryegrass for bald spots," he said. Conrad uses the rye for its fast growing quality.

If there are a lot of bald spots, Conrad utilizes a power slicing machine to slice the lawn in two directions right after the raking, setting up cuts that are one-half-inch deep. At this point the seed is spread with much of it falling into the slots.

His next step is to fertilize, usually with a formula similar to 10-20-10, with a slightly higher phosphorous content. "I go for more phosphorous because I am not as concerned about the existing grass as I am about the new grass we are seeding," Conrad said.

At this point, a strict watering program is initiated. Conrad requires daily watering at a rate of 45 minutes per 1,000 square feet for the first seven to ten days. "It is important to keep moisture on those bare spots," he said. "It is

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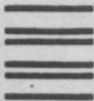
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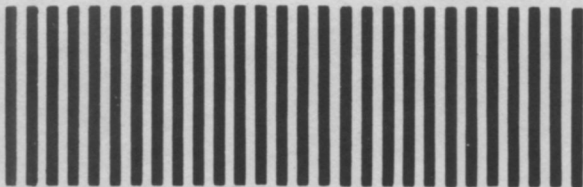
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## LAWN CARE INDUSTRY

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also a good idea to cover them with peat moss or clear polyethylene to create a greenhouse effect." After that initial ten day period, he recommends watering twice a week until temperatures drop into the 50's in the evening when a once a week schedule will suffice.

Within 30 days of overseeding, Conrad utilizes one-half pound of a soluble nitrogen fertilizer in granular form, followed by two pounds of a mixed soluble and slow-release fertilizer on or about November 15. This treatment is designed to foster root growth prior to soil freeze-up, while also giving the grass a good head start in the spring.

Regarding lawns requiring total renovation, the owners only option is to choose between sod or seed. The cost of a complete renovation and seeding is about \$200 per 1,000 square feet, as opposed to \$750 for sod. Conrad said most people go for sod because they want an "instant lawn."

The first step in Conrad's total renovation procedure is to spray the entire lawn with Roundup herbicide, a non-selective, "translocating" herbicide to kill virtually all above- and below-ground growth on the lawn. About ten days after the initial application, Conrad re-examines the lawn and re-sprays areas he inadvertently skipped.

His next step is to scrape away the remaining organic matter and go through the soil with a power rake in two directions. The rotary flails are set about 1/16th of an inch below the surface of the soil to bring the dead, matted-down top growth to the surface. Then he goes over the lawn with a vacuum to lift all the remaining matter, particularly weed seeds.

If the lawn has very little top soil or clay within the top two or three inches Conrad will put on soil amendments such as peat moss or gypsum, both of which can be applied with a rotary spreader. He applies peat moss at a rate of six cubic feet for every 200 square feet of lawn.

Roto-tilling to blend everything together is the next step on the agenda. At this point, the lawn has a six-inch layer of homogeneous soil onto which the sod can be laid. In the case of a seeded lawn, grooves must now be cut into the surface one-quarter to three-eighths of an inch deep. Conrad then makes two passes with a cyclone spreader, applying seed both times. Finally, the soil is rolled and covered with hay which the homeowner is instructed to keep from drying. One month after seeding or sodding, he will apply one-half pound of soluble nitrogen to each 1,000 square feet and come back in the spring with a 50/50 soluble/non-soluble formulation at twice the rate.

At this point, he will also apply a pre-emergent herbicide for crabgrass control, usually Betasan. "After that I just watch for competing weeds which I spot out with Trimec, which is effective on broadleaf weeds such as dandelions or plantains," he said.

## BUSINESS

# Partnership, corporation or sole proprietorship?

One of the classic concerns of the small businessman is the decision he faces at one time or another in his business to incorporate or not.

Which option is more appropriate? Which organization can best suit the needs of his business?

The three major divisions — sole proprietorship, partnership (company) and the corporation — parallel the ratio of their respective gross incomes. Obviously, one company might find greater financial satisfaction remaining a company, for reasons of its profit margin. A fellow competitor might feel differently.

In a recent survey conducted

by LAWN CARE INDUSTRY, 47 percent of the firms responding said their company was a sole proprietorship; 37 percent said their company was an independent corporation; and 11 percent said their company was a partnership. In addition, four percent of LAWN CARE INDUSTRY readers said they were a franchise, and one percent said they were company-owned chains.

**The company advantage.** The advantages of a company rest in abilities for efficient organization. The personal interests of each partner combine for a joining of managerial skills and judgment. The legal status of a company is definitely unique in

nature. Each person contributes property, labor and money. And of course they expect to share in the profits and losses.

The partnership itself is not subject to income tax. Each partner reports his distributive share, instead of individual company drawing, on the income tax return. All agreements must be thoroughly understood and approved of by both parties. This relationship can be touchy at times, so solutions must be objectively resolved and methodically arrived at (as one lawn care businessman told this magazine recently "partnerships just don't work unless you have the right partner, and that is a hard thing to do").

**The company disadvantage.** There exists an unlimited liability for the company. Example: A laborer injures himself while on the job. It could be because of faulty machinery or

to page 22

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the worker's own negligence — it does not matter according to the law. The injured employee could sue the company for damages far exceeding any reasonable settlement.

This could mean more than a company loss. The rule also applies to any company debts incurred. The partners are held responsible for their full payment. Not only the loss of company assets, it could be personal ones as well.

A corporation involves itself with a different legal outlook altogether.

A corporation is an association of persons viewed by law as a single unit, having rights, duties, and a separate life apart from the corporate identity. This identity is basically unaffected by individual changes in membership. Although a corporation may be dissolved or pass out of existence with the expiration of its charter, it is endowed by law with perpetual life. For many reasons, this is an attractive prospect for the small lawn care businessman.

A limited liability is shared by stockholders. Any transfer of ownership is relatively easy to accomplish. So is the raising of capital.

A Subchapter S corporation is a corporation electing not to be subject to income tax. Rather, the income would be taxed to the shareholders. Capital gains in excess of \$45,000 are subject to a capital gains tax and the minimum tax.

**The corporate advantage.** The advantages to a lawn care businessmen of incorporating are:

- (1) Greater amounts of capital can be gathered together. Both small and large investors find stock ownership a means of convenient ownership participation.
- (2) Limited liability. Creditors of a corporation possess a claim against the corporate assets and not the personal property of owners. They can never lose more than the amounts of their investment.

(3) Shares of stock are easily transferable.

(4) Continuous existence.

(5) Centralized authority. The president has the power to make all kinds of operating decisions, retaining the final authority. However, he often delegates limited authority to others for various phases of the operation.

(6) Professional management.

**The corporate disadvantage.** To a lawn care businessman thinking of incorporating, here are some disadvantages:

(1) Heavy taxation. The corporation must pay high rates of income tax. If part of the net income is distributed to owners as dividends, the dividends are considered personal income to stockholders and subsequently subject to income tax.

(2) Double taxation. The corporation is taxed with corporate income as the stockholders are taxed for dividends.

(3) Greater regulation. State laws regulate corporate activities more so than the other organizations.

(4) Separation of ownership and control. The functions of management as separate from ownership.

*A corporation is an association of persons viewed by law as a single unit, having rights, duties, and a separate life apart from the corporate identity. This identity is basically unaffected by individual changes in membership.*

(5) Organization cost. Costs include attorney fees for doing charter (articles of incorporation), state incorporation fee, and payment to promoters. These items can be charged to an asset account called organization costs.

Small corporations can sell stock on a subscription plan. Investors agree to pay subscription price at a future date or in a series of installments.

**Common stock subscribed** would then be debited and **common stock** would be credited. Example: 10,000 shares of

\$10 par value stock subscribed at \$15 subscribed for 6,000 shares are collected in full. Payment in part is received on remaining 4,000 shares. **Subscription receivable** is a current asset, that which can be collected in a short time.

**Current assets** include securities, cash, marketable securities, inventories and prepaid expenses. The only qualification is that an asset must be able to be converted back to cash within a short period of time.

An **operating cycle** signifies the limits of asset classification.

The average time period between the purchase of merchandise and its conversion to money.

For the lawn care businessman grossing, say, between \$100,000 and \$250,000 a year, the corporation is an attractive alternative. Although the taxes are higher, one enjoys more legal advantages than most organizational structures.

The first step would be arranging a conference with an attorney. State your long-range objectives and already accomplished goals. Literature from the federal Internal Revenue Service can be helpful in this matter.

The decision to incorporate should rest on the evaluation of your business. Ask yourself the question: Would the profits be greater or the same? Do I have a few uncoordinated workers who might plow through a customer's fence? If so, perhaps the legal advantages of limited liability outweigh other considerations.

— by Tim Perry



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# MARKETING IDEA FILE

## Open a bank account, receive lawn care

Dale Dunn, owner of Green Lawn, Memphis, Tenn. is working with a local bank on a somewhat novel form of promotion for his chemical lawn care business.

When customers at this particular Memphis savings and loan company open up an account for a certain amount of money, instead of receiving a toaster or a camera they will receive — you guessed it — a free chemical lawn care servicing by Dunn's firm.

Although all of the details have not yet been worked out, Dunn feels this will be a good way for him to get introduced to a whole lot of potential customers. Not to mention all of valuable promotion he will get with customers of the savings and loan who might not open an account, but will be made aware of Green Lawn.

## MOWING/MAINTENANCE

### How to select and develop new markets

A complete study of an area's climactic conditions to see how they fit into your existing program is an important step in selecting a new market, according to T. Irvin Dickson, of ChemLawn Corp., Chicago, Ill.

Dickson, speaking at an ALCA Maintenance Symposium in Milwaukee, Wis., said a number of climactic conditions should be thoroughly studied including:

- Rainfall, timing and amounts.
- Temperatures, the highs and lows.
- Frost date.

Weed types, major pest problems, and diseases in a particular area are also factors in the adaptability of your program to a new market. If your program does not readily adapt to these factors, Dickson said, you may have to start a research and develop-

ment program to study the problems.

Dickson added that there are a number of sources for uncovering both climactic and market information including:

- Chamber of Commerce: "The first thing we (ChemLawn) do is check with the Chamber of Commerce. It's amazing what they can tell you. They will have annual rainfall, types of grasses, ornamentals, and frost date."
- Extension specialists and turfgrass professors at state universities.
- Local residents: "Stop by and talk to people on the streets. Get their opinions of how they maintain their lawns."
- Representatives of chemical companies.
- Local, state, and county agents.

Dickson said the key to success in entering a new market is to select an area that has a particular lawn care need to be filled. "Either it has a problem that you think you can solve and address your program to, or it's an area that spends a lot of money on the maintenance of its facilities," he said.

After selecting a market, how can your company gain recognition in that area? "In the commercial division we go in and join the apartment association within a city," Dickson said.

The association will provide you with a list of its members, along with their addresses, telephone numbers, and the resident manager's name. "We advertise in their association newsletter and we also do blanket mailings to the association members," he said. "And I haven't had a situation yet that we didn't get at least some work out of a blanket mailing."

Dickson also recommends attending apartment association meetings. "The greatest benefit I've found in going to the meetings is you see your customers and better yet, they see you. So when it comes time for them to select a contractor to bid on their work, your face and name pops into their mind."

## BUSINESS

### Shipments of lawn equipment increase

Manufacturers' shipments of walk-behind power lawn-mowers, lawn tractors/riding mowers, garden tractors, and rotary tillers increased 9.3 percent in the model year ending August 31, 1979, according to Outdoor Power Equipment Institute estimates.

Riding garden tractors led the overall increase, surging 16 percent, to an estimated 254,000 units. Estimated shipments of lawn tractors/riding mowers totalled 858,000 units in the 1979 model year, a 14.4 percent increase over 1978's 750,000 units.

Further, walk-behind power mower shipments increased 9.3 percent, to an estimated 5.9 million units. However, estimated shipments of rotary tillers appear to have bottomed out after three years of decline.

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SPRAY

# Nozzles: Patterns, uses selection and maintenance

The selection of the proper spray nozzle, and care of it, are two very important factors when a complete lawn care spray system is considered.

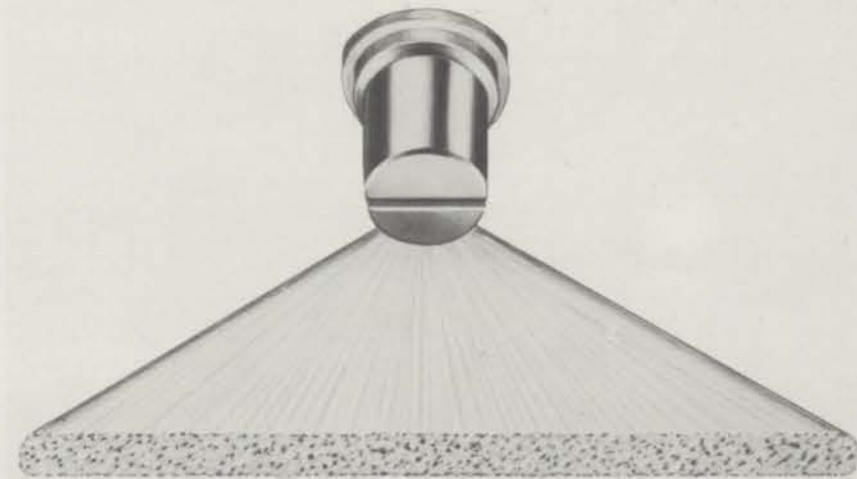
After all, the nozzle itself is the metering device which emits the proper amount of liquid as a result of liquid pressure. Nozzles are commonly identified in categories according to the characteristic pattern or shape of the spray, says John A. Vrtiak of the sales engineering department for Spraying Systems Co., Wheaton, Ill. The company is a major supplier of spray nozzles to the lawn care industry.

The basic classifications, according to Vrtiak, include full cone, hollow cone, and flat spray. All cone nozzles spin the

liquid to form the spray pattern. This is done either with internal vanes or grooves, or by turning a right angle inside the nozzle. Because the liquid is spinning when it leaves the orifice, centrifugal force throws it outwards into a cone shape.

Full cone patterns are used principally in industrial applications; although a few lawn care businessmen have utilized them in place of hollow cones for insecticide spraying.

**Hollow cone.** Hollow cone nozzles with internal grooves are traditionally used in lawn care insecticide applications. The hollow cone spray is specifically designed to handle wettable powders at high pressure with a minimum of wear and clogging.



A floodjet spray nozzle has a very wide spray angle. It has a round orifice instead of an elliptical one like the teejet spray nozzle.

Along with its strong points, the hollow cone nozzle does have spray weaknesses. This type of spray does not produce an even distribution when used on a boom.

When two cone nozzles are put next to each other, they will

spray into each other's pattern. Where the spray hits, a heavy liquid distribution will be created which results in a strip of over-application. The cone type spray is usually recommended for most insecticide and fungicide applications to foliates.

This leads us to the third type of pattern — the flat spray. It is selected as the norm for field sprayers because when this type of spray is used in a series along a boom, it can achieve a good, even distribution of liquid with the use of proper overlapping techniques. This type of spray distributes the liquid in a flat form or sheet. The straight through elliptical orifice nozzle produces a flat, atomized spray pattern with tapered edges.

The flat spray is good for pre-emergence weed control and soil insect control, Vrtiak says. In a

*Hollow cone nozzles with internal grooves are traditionally used in lawn care insecticide applications. The hollow cone spray is specifically designed to handle wettable powders.*

commercial or industrial situation where boom spraying is used, a proper overlap can be achieved which will make for even distribution of liquid with the nozzles slightly canted so that one nozzle sprays behind the other.

The flat spray nozzle has three other distinctive types: even spray, floodjet and off-center tip. With the even spray teejet tip, the distribution of the spray remains uniform across the spray width.

Not generally used in lawn care applications, the off-center type is used in its smaller sizes as a boom end nozzle. It can extend the width of a boom another four to five feet in both directions, if there is not too much wind. The larger sizes are used for so-called boomless spraying and roadside spraying. A single, large off-center nozzle could cover in excess of 30 feet.

The last type is the floodjet tip. This pattern is formed when the liquid travels out of the orifice and across a ramp or slide area. A floodjet has a very wide spray angle. We could also place this type of nozzle lower to the



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ground, which allows for larger orifices which reduce plugging. Also, a floodjet has a round orifice instead of an elliptical one like the teejet. A round orifice will usually have a slower rate of wear than an equivalent type of elliptical orifice.

**Pattern distortion.** While floodjets are accurately made, the manner in which the spray is formed makes them vulnerable. A slight nick in the slide can distort the pattern. The thickness of the liquid, or the pressure used, can also change the direction of the chemical flow across the slide which will change the distribution. Floodjet type nozzles are widely used in the application of fertilizer.

Once a particular type of nozzle is determined, the material of construction should then be considered. Some common materials from which nozzles are manufactured include brass, aluminum and stainless steel.

Briefly, brass should not be used for corrosive type liquids such as liquid emulsifiable herbicides and insecticides. Aluminum nozzles may be used with nitrogen, although this material is relatively soft and can be

Some common materials from which nozzles are manufactured include brass, aluminum, and stainless steel. Brass should not be used for corrosive type liquids and aluminum can also be easily damaged. Stainless steel is by far the most useful material with excellent resistance to chemicals and corrosion. Unfortunately, it costs more than other materials.

dealers usually make an effort to determine how their equipment can best be used with different chemicals.

Once a specific nozzle is selected, it should obviously be maintained, he says. The number one rule is to not clean a brass tip with a metal object. A toothpick or a splinter of wood is preferred.

Next, the proper size strainer for each tip should be used to

prevent clogging. Using the proper strainer will save you downtime. The strainer should be sized along with the nozzle so as to minimize the build-up of foreign substances within the spray nozzle. Strainers are offered in many materials as well as connections to more easily match piping systems.

**Nozzle wear.** Even more important is nozzle wear. The simple fact is that nozzle tips do not

last the life of the sprayer. Pressure affects wear life as do clean-up techniques. Again, the point is that tips will wear out, and that you must recalibrate or replace them at times.

Vrtiak pointed out the wear characteristics of different materials. Using brass as a base, aluminum will be about the same. Stainless steel will wear three to five times longer. It also costs three times as much. However, it is a much more durable material and nozzles made of stainless steel usually do not have to be changed as often. Plastic material is still another choice.

As far as erosion, it will last only about 50 percent as long as brass. As far as chemicals are concerned, plastic is resistant to many substances. The popularity of the patented ChemLawn spray gun, which is manufactured of plastic, is due in part to this reason.



A Teejet spray nozzle from Spraying Systems Company, Wheaton, Illinois. The nozzle serves as a metering device which emits the proper amount of liquid.

easily damaged. Stainless steel is by far the most useful material with excellent resistance to chemicals and corrosion. Unfortunately, it costs more than other materials.

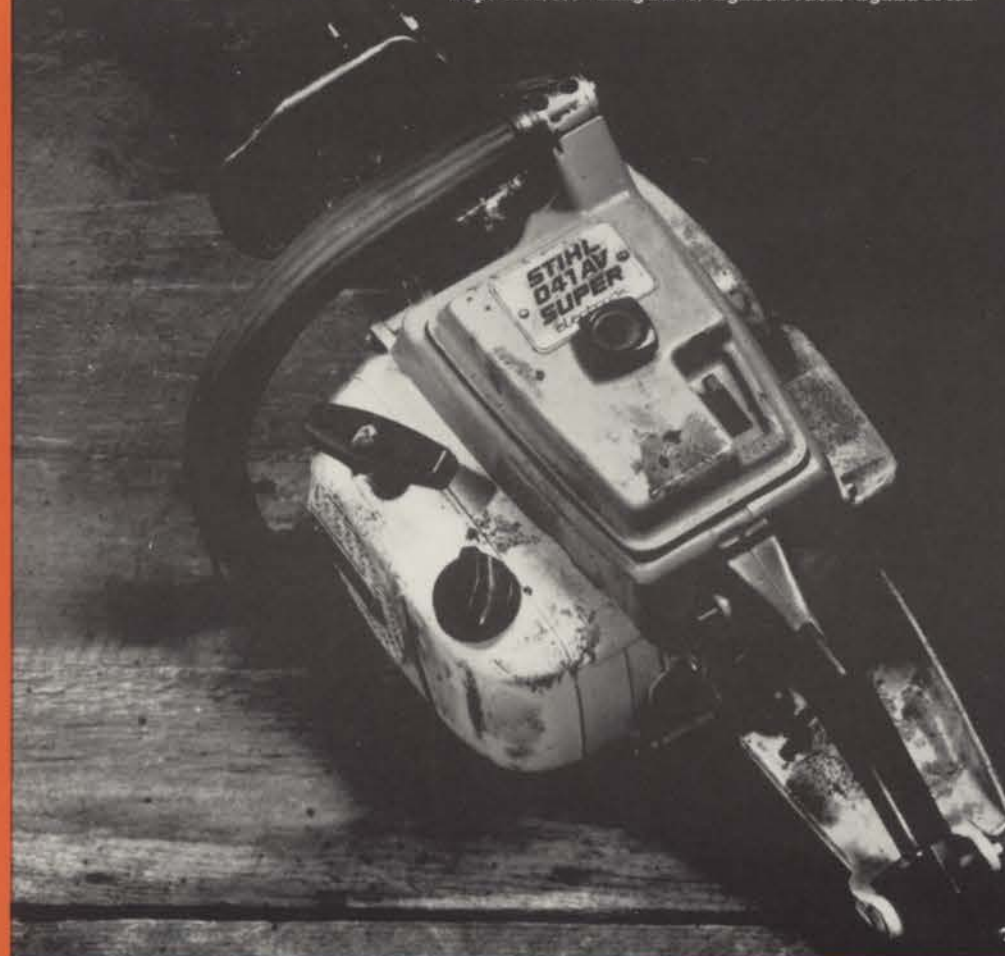
According to Vrtiak, Spraying Systems Co. manufactures many different types of nozzles. He stresses that the point to understand is that there are many experts to help you select nozzles. Chemical companies are one source of information. Some chemical labels will specify a certain tip size to be used with a particular material. In any event, a chemical company often knows what application equipment has successfully applied its product in the past.

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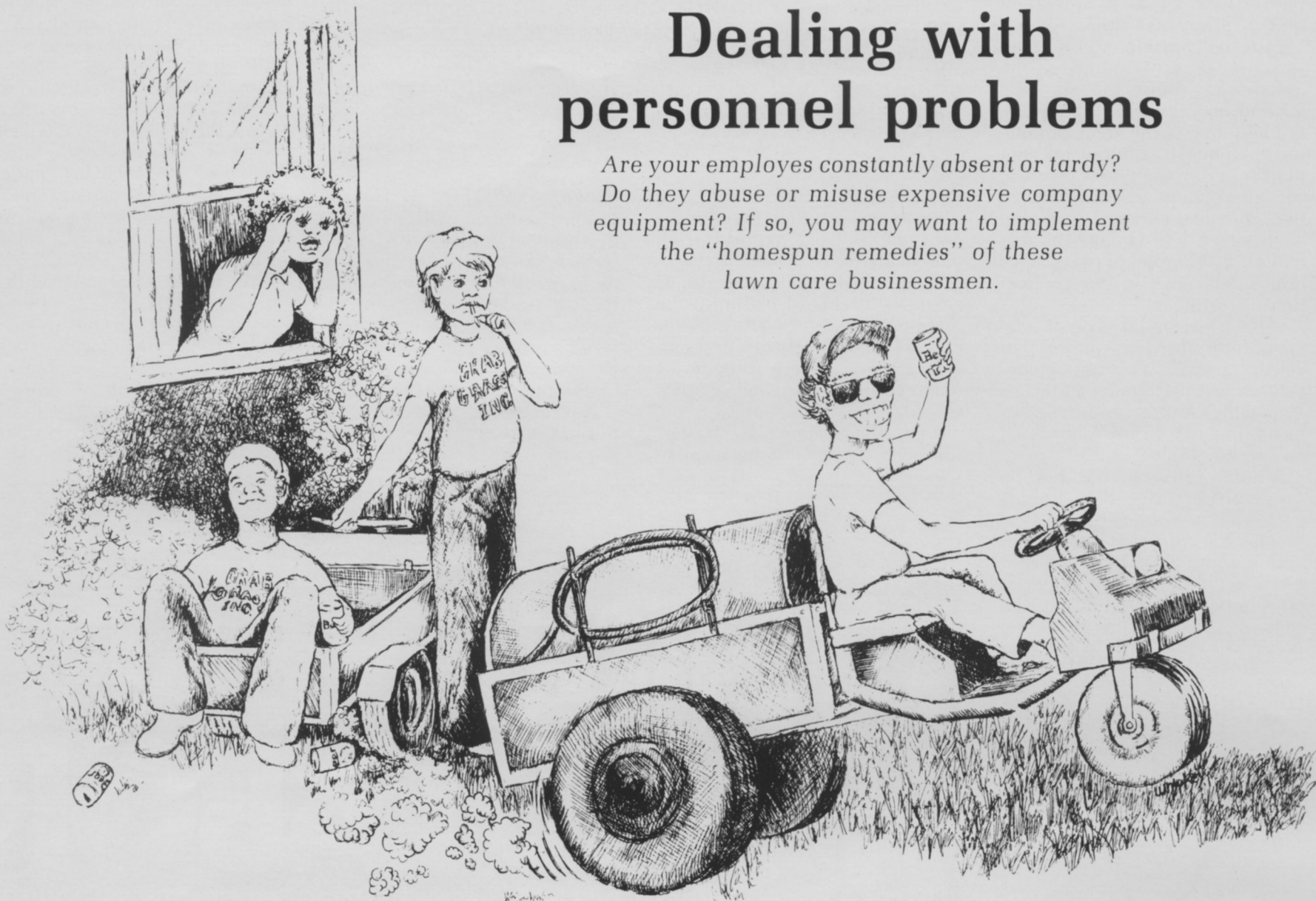
# STIHL®



by Dan Moreland  
Assistant Editor

## Dealing with personnel problems

Are your employees constantly absent or tardy? Do they abuse or misuse expensive company equipment? If so, you may want to implement the "homespun remedies" of these lawn care businessmen.



George is a top-notch lawn technician who is popular with both customers and co-workers. His lawns are flawless, his personality is outgoing, and his attitude is good. He would be considered a model employee except for one major flaw. He is constantly tardy.

Yet another employee, Harry, is the top producer in your company. He is one of those rare employees who combines a broad-based knowledge of turf with an energetic demeanor which spells success every time in the lawn care industry. Well, almost every time. Unfortunately, Harry is inclined to stop and have a beer at a local bar during the "dog days" of July and August. Sometimes he will even have two, or three, or four, or . . .

In both cases, this is the type of behavior that should be discouraged. But what course of action should be taken? Should George and Harry be fired? Suspended? Hung by their necks until dead? Before taking any action, you may want to try the "homespun remedies" of several lawn care businessmen recently contacted by LAWN CARE INDUSTRY.

### EQUIPMENT ABUSE

Equipment damage because of abuse or misuse is a universal problem throughout the lawn care industry. At the end of each season repair shops are filled to near overflowing with the lingering evidence of a busy lawn care season: worn-out commercial mowers, damaged weed eaters, and broken-down pick-up trucks. As a result, lawn care operators spend much of each off-season attempting to correct the "mechanical damage" wrought by untrained, overzealous, or just plain careless employees.

What can be done to curtail the ever-increasing incidence of equipment abuse and thereby reduce new equipment purchases at the beginning of each new season? Most of those contacted by LAWN CARE INDUSTRY suggest greater employee accountability.

Drew Kenney, of Turf Doctor, Framingham, Mass., said his company has been the victim of equipment abuse largely as a result of a rotating work schedule. "In the past, we used a rotating schedule where

*Because the technicians were not directly responsible for their equipment the system lacked accountability and as a result equipment abuse increased.*

a technician worked six days and was off three days," he said, "so they had different pieces of equipment every day."

Because the technicians were not directly responsible for their equipment the system lacked accountability and as a result equipment abuse increased. However, all that has changed now. Turf Doctor recently implemented a new, more accountable system whereby each employee is issued his own personal equipment which has been systematically numbered and logged at the home office.

In an attempt to further reduce the occurrence of equipment abuse or misuse, Turf Doctor has implemented a combination piecework/hourly wage payment policy for its field technicians. John Ken-

ney, owner of the company and brother of Drew, explains: "If an employee's equipment is in good shape, he is more likely to get his piecework done," he said, "but if his equipment is broken down, he will be unable to get his work done."

"Therefore, if the equipment gets abused, it's the abuser who ends up bearing the brunt of having equipment that doesn't work." And "bearing the brunt" of broken-down equipment means decreased production and, in the end, smaller paychecks.

Turf Doctor has also initiated a "Technician-of-the-Month" award to help further reduce equipment abuse. Each technician receives a grade point for his daily work, taking into account production, promptness, cleanliness of equipment, and a number of other factors. At the end of the month, the daily grade points are tabulated and the technician with the highest grade point average receives a plaque and dinner-for-two at a restaurant of his choice. "Naturally, if the technician's equipment is in bad shape his grade point per day is going to be quite low," John Kenney said. The result, a further reduction in the incidence of equipment abuse.

Kenney said his three-fold assault on equipment abuse is effective because it successfully combines both positive and negative reinforcement. "The technician will fail to receive the approval of his supervisor and he will make less money if the equipment is abused," he said, "but if he takes care of it, he has the opportunity to earn a plaque and a monetary reward at the end of the month."

Perhaps this "double-barrelled" attack can work for you. The only thing you have to lose is a shop full of broken-down equipment.



# INSIDE THE INDUSTRY

Most businessmen contacted by LAWN CARE INDUSTRY attribute equipment abuse to a lack of knowledge by employees regarding how to properly operate a piece of equipment, rather than on conscious negligence.

Ed Engledow, of Engledow Tree/Landscape Service, Indianapolis, Ind., said most equipment abuse results from improper training. "In some cases we have put new people on certain pieces of equipment before they were ready," he said. "You just have to make sure that you have highly trained employees on the expensive equipment."

Surprisingly, Engledow said he has never come across a situation where an employee has purposely damaged a piece of equipment. "We hire a lot of college students who I'm sure don't have a fantastic allegiance to our company," he said, "but they still appreciate the work and are not out to destroy us."

"Where we get into trouble is with people who are just not conscientious," he added. It appears that little can be done to prevent equipment abuse among those who really don't care about you or your company. Therefore, the best course of action with unconscientious workers may be to merely let them go before they cost you a significant amount of money in equipment damage.

## DRUG ABUSE

Although often ignored, drug abuse is a growing problem in all sectors of business. And because the vast majority of lawn care technicians are of college age or younger, marijuana use is a particularly troublesome problem for the lawn care industry.

However, the simple fact that the industry is chock-full of youthful employees has not made it any more tolerant of marijuana use while on the job. Erv Denig, president of Lawn & Turf Landscaping, Inc., Fort Wayne, Ind., simply states, "If I catch any of my employees smoking marijuana while on the job they're fired. In fact, one time I came onto a job site and one of my employees was smoking a joint and I fired him on the spot."

Engledow has also been forced to fire two employees for smoking marijuana. "Our company manual states that the use of drugs or alcohol on the job are grounds for expulsion," he said. "It just absolutely cannot be tolerated."

More serious drug abuse is generally not a problem for most lawn care operators, although you may have trouble convincing Doug Nakamura, of Northwest Landscape Maintenance Co., San Jose, Calif., of that. "We had a man on a mowing crew who drove from San Jose to Campbell (about 15 miles) under the influence of one drug or another," he said. When he got there he collapsed and nobody knew what was wrong with him.

"The danger was not only to the equipment and the truck he was driving, but to the other people working with him as well. So we barred him immediately."

## ALCOHOL ABUSE

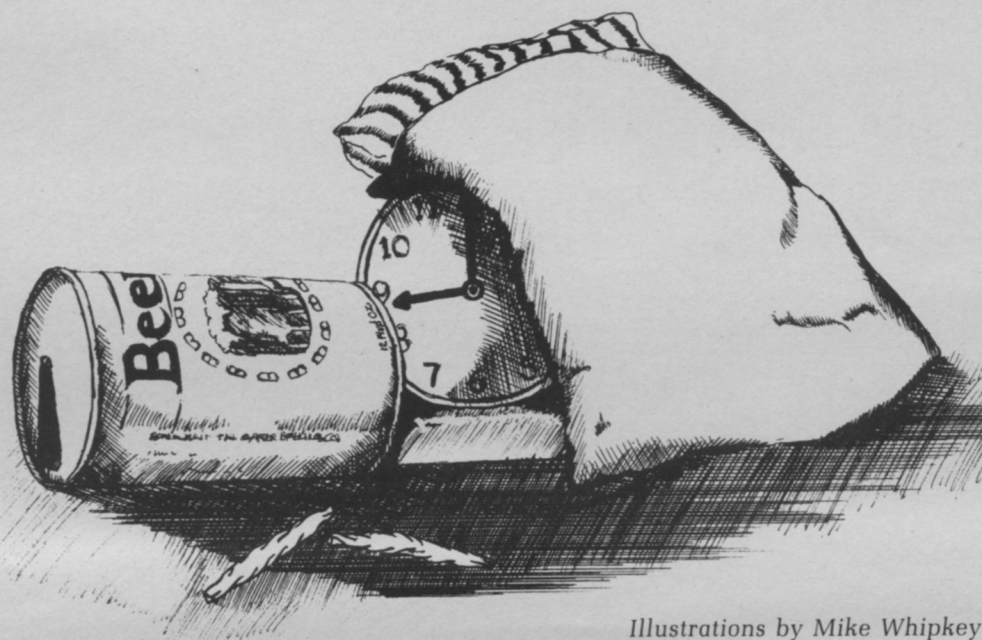
The consumption of alcohol while on the job, like drug use, is simply not tolerated by the vast majority of lawn care operators.

However, because technicians spend much of their work day in the field, it's difficult

for the lawn care businessman to consistently monitor their behavior. Therefore, a certain percentage of technicians undoubtedly consume alcoholic beverages while on the job, but it does not appear to be a serious industry problem. Tom Brune, owner of Atwood Lawn Spray, Inc., Sterling Heights, Mich., attributes the absence of alcohol-related problems at his company to strict policies which forbid employees from purchasing or consuming alcoholic beverages while on the job. "I don't even want them taking their lunch at any kind of establishment that has a liquor license," he said.

Brune also forbids his employees from accepting even a "friendly" beer from customers. "Mr. Brown might offer you a beer," he said, "and you might take it, but Mr. Jones across the street might not have the same good feelings about beer that Mr. Brown does."

"So you might be doing something that is considered perfectly innocent by one person, but is viewed entirely differently by another."



Illustrations by Mike Whipkey

Work-related alcohol abuse not only can have an adverse affect on customer relations, but the relationship between co-workers can also become strained. Nakamura recalls a case where a very competent gardener started consistently showing up late for work.

"A pattern started to develop and finally it got to the point where he was actually caught drinking at lunch and coming to work still under the influence of alcohol from the night before. He was taken aside and warned that if he got caught again he would be fired. Eventually it happened again and he was fired."

Nakamura said fellow workers were particularly aggravated by the gardener's behavior. "A lot of people were angry because they had to pull his workload while he slept off his hangovers in the truck," he said. "Others felt if he (the gardener) could get away with it, they could too. It's a serious situation that has to be dealt with quickly and firmly."

## TARDINESS

The age bracket of technicians working in the field is considered a major cause for the increased incidence of tardiness and absenteeism in the lawn care industry. "The people you get as technicians are usually in their early twenties," Drew Kenney said, "so they are usually a little bit less responsible than our sales people who are usually in their mid-twenties and older."

Kenney also sees a relationship between a disproportionately large pay check one

week and increased absenteeism the following week. This is another characteristic of youthful employees who tend to live from paycheck to paycheck and don't require the stability of a consistent salary.

To help combat this problem Turf Doctor has developed an incentive program whereby technicians are awarded bonuses for completing various aspects of the lawn service program by pre-determined deadlines.

"If a technician runs over our deadlines he might not necessarily be eligible for a bonus," John Kenney said. Therefore, it follows that if a technician is consistently tardy or absent it is highly unlikely he will be able to meet Lawn Doctor's deadlines and his bonus will be threatened. The result, decreased absenteeism and tardiness.

Engledow has also decreased the incidence of tardiness by having his foremen come to work about 30 minutes before his field personnel.

"We used to have all our employees start at 7:30 a.m.," he said, "but we were having trouble getting all of our trucks out on the road at the start of the day. So we switched to having the foremen come in early to get everything organized and ready to go so when the crews came in they could get on the road quickly."

Engledow said he also believes in a strict company policy regarding tardiness. "It is specifically spelled out in our policy that tardiness is reason for dismissal," he said. "Up front, you've got to have a fairly strict policy because if it (tardiness and absenteeism) gets started, you've got a problem."

## CUSTOMER ABUSE

Although most lawn care businessmen live by the axiom that the customer is right no matter what the circumstances, it's often difficult for them to convince their technicians to live by that philosophy.

Company policies attempt to prevent conflicts, but the truth is confrontations between customers and technicians are going to periodically occur no matter how strict the company policy regarding customer abuse.

John Kenney said although conflict between customers and technicians is not a serious problem for his company, he does recall at least one instance where a technician used abusive language with a dissatisfied customer. "The customer got on the phone with me and told me what the technician said and I apologized. I then talked to the technician about it and he apologized 16 ways from the Lord to me. My own private conclusion was that the customer probably deserved it."

Kenney said the simplest, most direct way of dealing with the problem is to prominently display company policies regarding customer/client conflicts. "We have a set of guidelines posted on the bulletin board which defines the company policies and they specifically preclude an awful lot of abusive behavior. Anyone who defies those policies finds an opportunity to get in the unemployment line."

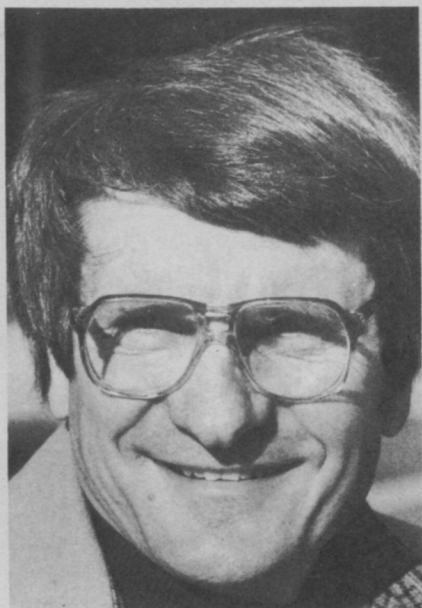
Although the use of abusive language by technicians is a somewhat common complaint lodged by customers, it is not the only complaint.

Nakamura said he received numerous complaints from customers angered by a





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**Tom Brune, Atwood Lawn Spray, Inc., Sterling Heights, Mich.**



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**Erv Denig, Lawn & Turf Landscaping, Inc., Fort Wayne, Ind.**

gardener who borrowed money from them and failed to pay the loans back.

"He (the gardener) had been assigned to a particular complex for a couple of years so he got to know a lot of people there pretty well," he said. "All of a sudden he started borrowing money from customers and he was forgetting to pay them back. It wasn't much. Maybe \$2 for lunch, but it started adding up. It got to be a real hassle so now we try to rotate our manpower and put them under closer supervision."

#### JEALOUSY

Jealousy among technicians, particularly with regard to routing, is a growing problem in the lawn care industry. Most lawn care operators seem to think that the better routes should go to the technicians with the most seniority, but that practice may be changing.

"We had the feeling in the past that good routes were the reward for longevity," Brune said, "but we have had some dissatisfaction with that system and I believe truthfully that we have lost some very, very fine employees as a result."

Brune has become so dissatisfied with the seniority system with regard to routing that he changed the system this year. "We suffered with a bad system for many years before it really became terribly clear to us that it needed to be changed," he said. "So we've altered it in an attempt to make the routes as equitable as possible for all our technicians."

John Kenney has also attempted to make his routing system more equitable. "Each year we try to make our routes as equal as possible, but we've never achieved perfection."

"Our technicians know that we struggle to try and reach some sense of parity in our routing," he added, "so they seem to have a

bit more tolerant view of us and our routing system."

The "civil service" method of rewarding the best routes to technicians with the most seniority appears to be on the wane. Those lawn care operators that fail to notice this trend towards more equitable routing may discover yet another grievance added to their ever-growing list of personnel-related problems.

#### CONCLUSION

The key to successfully dealing with personnel problems appears to be prevention, nipping the behavior in the bud before it becomes a serious problem. The most widely accepted method of preventing personnel problems, according to those contacted by LAWN CARE INDUSTRY, is to prepare a list of enforceable company guidelines. These guidelines should be posted in a very visible location so employees can readily view them. Then, if any of the guidelines are abused, the abuser should be quickly and fairly disciplined for his or her behavior. It's important that employees know that you mean business and understand that you will enforce your company policies if necessary.

Nakamura agrees that visible company guidelines are an important factor in preventing personnel related problems. But he also views them as something more; a tool to effectively communicate with employees.

"Posting our standard procedures gives our employees a ready reference of what is expected of them," he said. "When an employee knows what his job is and knows what is expected of him, he will address himself towards the job better and you will have a better employee as a result."

Nakamura's solution for coping with personnel problems appears to be very simplistic, but the bottom line is it has been very successful.

*The April installment of Inside the Industry will feature a story about state and federal laws affecting the lawn care industry. Other features in next month's issue include stories about turf basics, disease identification, and condominium mowing maintenance.*

#### Grass: Some cut it and others smoke it, but if you're a lawn care technician, don't kill it



It's not surprising that marijuana use by technicians occurs in the lawn care industry. It would be unrealistic to assume that the industry is immune to a problem that exists throughout the United States. What is surprising is marijuana use by technicians is not the only marijuana-related problem in the industry.

One lawn care businessman contacted by LAWN CARE INDUSTRY said, "We have had more of a problem with customers complaining that our technicians have killed their marijuana

plants with weed killer than we have had with our technicians smoking marijuana while on the job."

Now that's a problem! But, how do you cope with it? Should identification of marijuana be part of your training program. Perhaps an exhibit to accompany your turfgrass specimens: bermudagrass, bluegrass, cannabis. But be careful, your local lawn enforcement agency might not understand the educational significance of your little exhibit.



## Pacific Green Lawn Care officially opens doors

The development of the chemical lawn care industry in the southern California market moved a step further along late last year when Pacific Green Lawn Care was unveiled at the Southern California Turfgrass Exposition.

The company is the newest division of Pacific Green Corp., said general sales manager John F. Culbertson in his company's most recent newsletter. He also said:

"Pacific Green Lawn Care is a sister organization which was established to provide chemical lawn care services in west Los Angeles, Santa Monica and San Fernando Valley areas. However, as our prototype company grows and expands, we even-

tually hope to service customers as far north as Ventura County and as far south as Orange County.

"Initially, Pacific Green Lawn Care is focusing its marketing effort on residential lawn owners, with subcontracting services being offered to landscape contractors, groundskeepers and professional gardeners who would prefer not to become involved in this kind of work."

In general, Culbertson said, the company provides complete scientific, programmed services involving residential and commercial lawn fertilization, weed and insect control, lawn disease control and lawn coloring.

"We can provide six-times-a-year programmed service, or we

will be happy to bid on specific services for landscape installations involving insecticides, herbicides, fungicides and other chemical applications," he said. "We have not only the latest and most scientific equipment to provide these services, but are also staffed by some of the best trained, most qualified people in this field."

John Rector is sales director. He is a graduate of CalPoly, San Luis Obispo, with a B.S. in ornamental horticulture. He has a broad background in landscape maintenance, and together with operations manager Brian Johnson was instrumental in developing the equipment and chemical application methods used by the company.

Johnson also is a graduate of CalPoly, with a B.S. in ornamental horticulture. He holds licenses as a pest control operator and pest control advisor. He previously was employed by the San Joaquin



Brian Johnson was instrumental in developing the equipment and chemical application methods used by Pacific Green Lawn Care. He has a bachelor's degree in ornamental horticulture.

County Department of Agriculture, where he worked as an agricultural inspector.

Company address and phone are: 1637 18th St., Santa Monica, CA 90404, 213-828-5667.

### GOVERNMENT PROGRAMS

#### Hire targeted workers and receive tax credits

Lawn care operators can receive tax credits from the federal government by hiring disabled persons, ex-felons, and those without proven abilities, under the Targeted Jobs Tax Credit (TJTC) program.

The program provides tax credits to private employers for hiring job-ready workers in certain targeted groups. The credit can mean a tax savings totaling as much as 50 percent of wages up to \$6,000 for each eligible employee in the first year of employment. In the second year the tax credits amount to 25 percent of that amount.

Mike Jones, owner of Grow It Green, Tacoma, Wash., said, "For several years I have given bonus incentives and provided training for new workers at my own expense. This year with the help of Targeted Jobs Tax Credit savings I will be able to offer an employee benefits package for the first time."

For further program information contact your state Employment Security Department or the local office of the Internal Revenue Service.

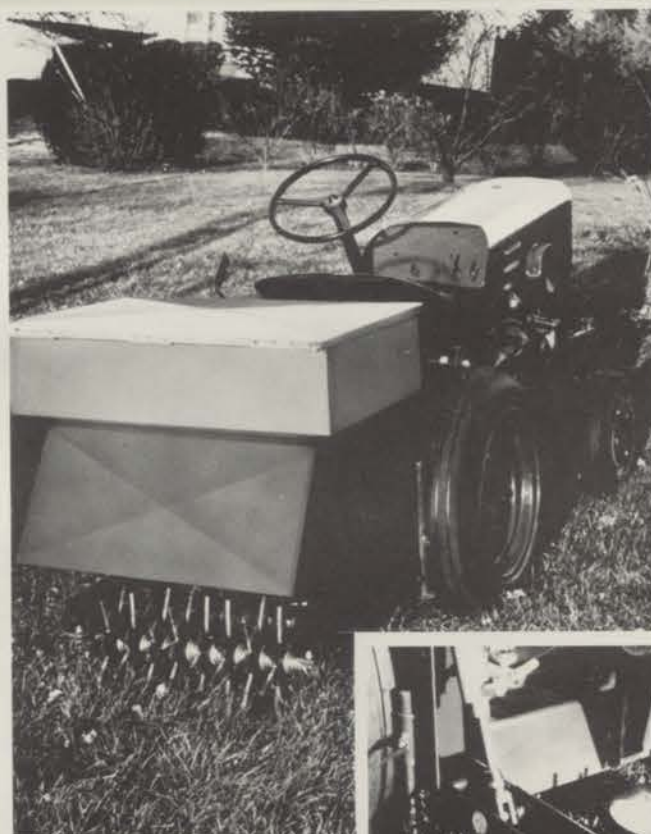
### TURF

#### Study show effects of cold on bermudagrass

A study done by two agronomists at Virginia Polytechnic Institute in Blacksburg, Va., indicates that below-freezing temperatures and prolonged dormancy may hinder the survival of bermudagrass.

Prolonging dormancy after exposure to low temperatures reduced the viability of both stolon and rhizome node buds, according to D.R. Chalmers and R.E. Schmidt. This suggests that continuation of the dormant condition on into spring could be an important contributing factor to the decrease in winter survival of both bermudagrass rhizome and stolon buds.

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## Lawn care pros continue to criticize sod growers group

Criticism from lawn care operators continues to be levelled at the Sod Growers Association of Mid America, which recently blanketed about 150 newspaper garden editors with a news release questioning the professionalism of some lawn care businessmen.

The *Landscape Contractor* magazine recently published rebuttals from two lawn care operators angered by the release, which appeared in article form in the September issue of the magazine.

Sidney N. Black, of Doctor Goodlawn, Evanston, Ill., described the article as "slandrous" and "libelous." Among other things the article stated:

- Sod growers in various parts of the country have noticed that occasionally fine sodded lawns deteriorated more quickly when the services of certain lawn care specialists were engaged.

- Many lawn care businessmen use showmanship and "pretty white trucks" to impress customers and potential customers.

- Homeowners cannot be sure that a lawn care businessman using liquid applications is not simply putting down water on a lawn.

Black said few lawn care operators are "stupid enough not to realize that if you don't provide visible benefits you will not keep customers," adding that

"lawn care specialists almost universally stand behind" their applications.

Further, Black had some questions of his own concerning the sod installed by sod growers including:

- "Why do I find Fusarium in sod lawns, laid less than a year previously, when I am called to provide an estimate to improve a diseased lawn?"

- Why do I find sod lawns in 30 to 60 percent shade situations deteriorating within a year, two or three after they are put in, when the landscape contractor insists he has bought and laid a shade sod and the land-owner insists he has followed fertilization and watering and other cultivation instructions?

- What would the member of the Sod Growers Association of Mid-America tell the man who has invested two or three thousand dollars in a lawn only to have it go to pot in a very short time, before he has called in the

lawn care specialist, and after his landscaper and the sod grower have left him holding 'a garbage filled bag?'

- How many sod growers have had a Fusarium infestation and harvested around the lesions and then reseeded the same field without treatment?"

"Whether from sharp practice, stupidity or accident the sod-grower who has sold Fusarium with his sod has hurt the lawn-owner with a much greater financial damage than the dishonest applicator (if there are any I have not met him) who is stupid enough to apply 0-0-0 or anything more or less than the optimum amounts of N-P-K and trace elements to the lawns he services," he added.

In conclusion, Black said he is "hopeful" that the "vast majority" of sod producers are honest, but he advises them to look "within themselves" for the causes of fast deteriorating sod lawns.

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### SEVEN PERCENT

#### U.S. fertilizer production is up

U.S. fertilizer producers registered a 14 percent increase in domestic disappearance for the first six months of the 1979-80 year compared to July-December 1978, according to a report released last month by The Fertilizer Institute.

During the same period, U.S. fertilizer production averaged seven percent above the last six months of 1978.

"Much of the domestic disappearance from the producer likely occurred as shipments to retailer inventory, as dealers built stocks for early spring sales," explained Edwin M. Wheeler, president of The Fertilizer Institute.

"Among the basic fertilizer materials, only phosphoric acid had producer inventories equal to or above last year's levels," according to the Fertilizer Institute.

"In December 1979, fertilizer disappearance from producers was 24 percent above December 1978, with the increase applying broadly to nearly every nitrogen, phosphate and potash product listed in the Institute's fertilizer index," he said.

"Meanwhile, producer-held fertilizer inventories at the end of December dropped 24 percent below December 1978 to record low levels," he said. Several key products have stock equivalent to only about three weeks of production, significantly below typical working levels of at least a month's production. "Among the basic fertilizer materials," added Wheeler, "only phosphoric acid had producer inventories equal to or above last year's levels."





## Chemlawn Corp. moves into lawn products market

An innovative "package-which-is-product" concept has been designed by Richardson/Smith, Inc., of Worthington, Ohio to launch ChemLawn Corp., Columbus, Ohio into the consumer products market.

Representing an extension of its customized lawn care service, this do-it-yourself liquid application system has been developed to meet rigid marketing criteria including: manufacturing economy; non-corrosive material; lightweight maneuverability; male and female acceptance; ease of assembly and maintenance; integrated packaging system; clear product information; seasonal product identification; and distinct corporate visibility.

The spray applicator is constructed of molded white polyethylene foam which holds a four-gallon color-coded polypropylene bottle containing pre-measured dry fertilizer. The four color-coded fertilizer containers serve as an integral part of the spray unit, thereby representing part of the product as well as part of the packaging system. Another element of the package-product system is an additive for weed control available in metal cans designed to complement the seasonal theme.

Customers of this ChemLawn product receive specified quantities tailored to their lawn's care requirements by the ChemLawn specialist. They add water and if



Chemlawn Corporation's new liquid application system, designed by Richardson/Smith, Inc., Worthington, Ohio, is currently being test marketed in Fort Wayne, Indiana. An extension of Chemlawn's custom lawn care service, the new system will enable the do-it-yourselfer to use Chemlawn's chemical products seasonally. The innovative packaging system is also part of the application product. Customers of the product receive specified quantities tailored to their lawn's by the Chemlawn specialist.

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prescribed an additive to the fertilizer container and the liquid chemical mixture is propelled onto the lawn by simply pushing the applicator. The self-contained pump was designed to be operated by the turning of the unit's wheels.

Ralph Lund, ChemLawn's vice president of marketing, said: "Based on market research conducted in Fort Wayne, Ind., our test consultants have described as high a customer satisfaction level with this applicator and packaging system as ever before recorded for a new product."

ChemLawn plans to market the liquid applicator system nationally. The new product will not compete head-on with the shelved dry lawn care chemicals marketed by nurseries and retail stores; rather, it will be marketed directly by ChemLawn lawn specialists. The personalized expertise is an important feature of ChemLawn's new product strategy.

### SOD GROWERS from page 30

In a second rebuttal, Charlie McGinty, of McGinty Brothers, Inc., Long Grove, Ill., said the release makes "one or two good points," but its editorial approach is so negative that it defeats its own purpose.

"The heart of the article may be the Mid America Sod Growers Association sensitivity to the fact that liquid fertilizer sales from tank truck operators are not required to guarantee content," he said.

"The Association feels tank truck services should be regulated just like manufacturers, distributors, and retailers. I feel that would be taking things much too far.

McGinty added that the release hit the lawn care operator "below the belt. I guess to sum it up," he said, "the article may have been written with good intentions but its execution created such a sarcastic viewpoint it may have alienated lawn care and related tradesmen to what might have been a common goal-professional establishment and maintenance of sodded lawns."



# Alternatives to silvex for broadleaf weed control

Most broadleaved weeds which were controlled by silvex can be controlled by either 2,4-D, dicamba, MCPP, or a combination of two or all of these materials, according to extension turf specialist Dr. Thomas R. Turner.

Turner stated in a news release that the weeds for which silvex was formerly recommended include white clover, the chickweeds, black medic, henbit, ground ivy, oxalis, wild strawberry, and violets. Use of 2,4-D will not control these weeds. MCPP will control white clover and the chickweeds, but higher rates and repeated applications are needed for what

may be marginal control of black medic, henbit, and ground ivy.

However, MCPP will not control oxalis, violets, or wild strawberry, which presents a special problem when growing under trees or near shrubs. Although dicamba will control oxalis and wild strawberry, it will not control violets and should not be used under the drip line of trees or near shrubs since it moves readily in the soil and is absorbed by plant roots. Thus, although oxalis, wild strawberry, and Violets could formerly be controlled to some degree by silvex, these weeds are now considered nearly uncontrollable by home lawn care companies,

Alternatives to silvex for chemical control of broadleaved weeds in bluegrass and fescue turf.

## Weeds controlled by silvex

black medic  
buttercup (creeping)  
carpetweed  
chickweeds  
chicory  
cinquefoil  
clover(white)  
daisy (oxeye)  
dandelion  
dogfennel  
ground ivy  
henbit  
knawel  
mallow (common)  
ocalis (yellow woodsorrel)  
pineappleweed  
purslane  
violets  
wild carrot  
wild strawberry

## Alternative means of chemical control

dicamba  
2,4-D, dicamba  
2,4-D, dicamba, MCPP  
dicamba, MCPP  
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dicamba  
dicamba, MCPP  
2,4-D, dicamba  
grass over weeds.  
2,4-D, dicamba, MCPP  
dicamba

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which cannot afford to take the risk of applying dicamba near trees or shrubs.

One possible hope for chemical control of oxalis in shady areas is Ronstar (oxadiazon), which is labeled for pre-emergence control of the weed. Also, some alternatives to silvex for these difficult to control weeds may be found in current research which is being conducted to further study the effectiveness of various combinations of 2,4-D, dicamba, MCPP, and

A weed problem which is solved temporarily by herbicides is certain to return if bad management continues. Good management will not eliminate the need for herbicide applications, but it will greatly reduce the seriousness of weed problems that could eventually occur.

other less commonly used materials such as 2,4-DP. However, due to the difficulty that has been encountered in chemically controlling many broadleaved weeds, which has been compounded by the restrictions placed on silvex use, new emphasis is needed to be placed on non-chemical methods of control, especially management practices.

Many steps can be taken to reduce the dependence on the use of herbicides for broadleaved weed control. The most effective means of control of any weed is to prevent the weed from becoming established in the first place. Thus, proper turfgrass establishment is important in preventing future weed problems. Steps that can be taken include:

- Buy good quality products: Poor seed, containing varieties not adapted to an area will ultimately result in a poor turfgrass stand which will enhance the chances of weeds becoming es-



established. Buy certified seed of varieties adapted to a region.

- Seed at the proper time.
- Fertilize seedbed according to recommendations: Too little or too much lime and fertilizer will result in poorer turfgrass establishment and thus more weeds.

Any other management practice, such as proper mulching and watering, which encourages vigorous seedling growth and thus increases competition against weeds should be used.

Many of these same principles apply to established bluegrass and fescue. Management practices which encourage a vigorous and dense turfgrass stand will help reduce the chances of weed encroachment. Proper mowing, watering, and fertilization are critical. Grass mowed too close or not frequently enough results in a poorer root system and less competitive turf. Frequent, light watering can result in a shallow root system and more disease susceptible turf and thus a less

competitive turf. Also, a continually moist soil surface encourages weed seed germination and provides a more favorable environment for weeds.

Applying fertilizer in the proper amounts and at the correct time is a must for obtaining a vigorous stand of grass and discouraging weed encroachment. Good soil drainage and minimizing soil compaction are also important in favoring your grass over weeds.

These basic principles of good management to reduce weed encroachment are not new, but need to be re-emphasized. Too much dependence has been placed on using herbicides to cover up what may be the result of bad management. When a chemical such as silvex is lost, we can be faced with a weed problem which may only be solved by complete renovation of the area. Also, a weed problem which is solved temporarily by herbicides is certain to return if

## MONEYWISE

### Avoiding rubber checks, sort of

Bad checks create a lot of misery for both chemical lawn care companies and mowing/maintenance lawn care operations, and many firms have established tight procedures for acceptance of checks.

One trick is to note the series number on personal checks. One businessman, based on informal but extensive observation, insists that 80 percent of rubber checks coming through his accounts receivable have series numbers below 500. This indicates the customers who move frequently, or keep changing banks, notes the National Landscape Association in a recent newsletter.

bad management continues. Good management will certainly not eliminate the need for herbicide applications, but it will gre-

atly reduce the seriousness of weed problems that could eventually occur.

## PRODUCTS

### Interest in fluid lime still growing

During the past year there has been considerable interest in various parts of the country in the use of fluid lime. Fluid lime is a suspension of limestone particles in a liquid, generally water. To suspend these particles, limestone must be ground to a fineness of about 200 mesh or finer (40,000 particles per square inch). Also, a clay material is used to help keep the limestone particles in suspension.

Just how effective are fluid limes and what are the advantages and disadvantages of its use? The effectiveness of any limestone in neutralizing soil acidity is controlled by its purity and fineness. Purity is determined by the carbonate content. The greater the content, the more acids the limestone will neutralize. Fineness controls the speed of reaction. Limestones coarser than 20 mesh are very slow to react and have limited agricultural value. Limestones finer than 100 mesh react within several weeks after application. Thus, fluid limes react very quickly upon application. But dry limestones of the same fineness will react at the same rate.

How much fluid limestone is needed? The same amount as of dry limestone of equal purity. Generally a fluid limestone mix will contain about 50 to 55 percent limestone. So 2,000 pounds of fluid lime contain about 1,000 pounds of dry limestone. Therefore, a ton of fluid limestone would be equal to about 1,000 pounds of dry limestone. Fluid limestone has two advantages over the use of dry limestone. It can be spread more evenly and there is no dust loss problem.

The biggest disadvantage is the volume of material handled. For example, to satisfy a 2,000 limestone requirement will require about 4,000 pounds of fluid lime. Remember, in evaluating any limestone, consider both its carbonate content and fineness. This is the measure of its effectiveness.



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# Insects and their control

by Dr. Harry D. Niemczyk

Dr. Niemczyk is professor of entomology at the Ohio Agricultural Research and Development Center, Wooster. He has worked closely with lawn care businessmen in Ohio and many other parts of the country on research geared for the needs of the lawn care industry.

He begins this piece with a discussion of some of his recent work which has shown spring applications of insecticides can control billbug and chinchbug throughout the lawn care season.

In the second section, entitled "Basics", Dr. Niemczyk gets into insect identification and control. Much of this material initially appeared in the March 1979 issue of *LAWN CARE INDUSTRY*. The article produced substantial reader interest and therefore we have decided to run it again.

Reprints are available from Bob Earley, 9800 Detroit Ave., Cleveland, OH 44102, at a cost of \$2 each.

## Spring treatment for billbugs and chinchbugs

The period from July to early August is the single most critical time for turf to be damaged by chinchbug and bluegrass billbug. At this time the turf is frequently under moisture stress while the feeding activity of these two destructive pests is highest. The combined effects from these two stress factors occurring simultaneously is believed to be responsible for a major portion of insect-related damage to northern home lawns.

**Damage and pests often hidden.** High numbers of early stage chinchbug nymphs and billbug larvae can go undetected during June because they are small and symptoms of damage are usually not severe enough to be seen. Often the symptoms of semi-

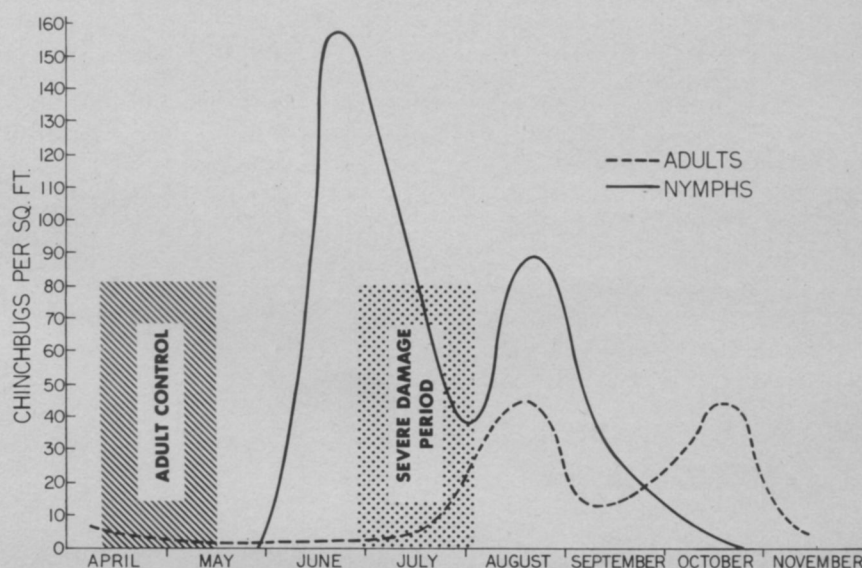
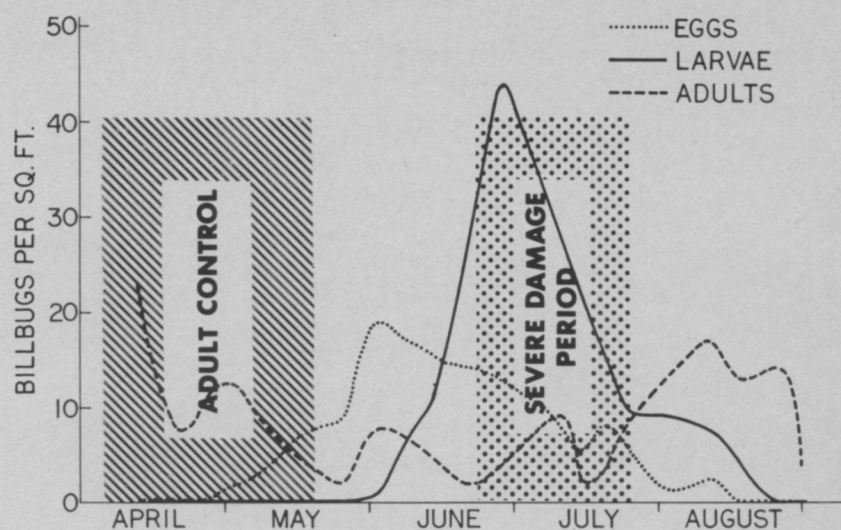
dormancy from lack of moisture in July mask the symptoms of chinchbug damage. Frequently this damage does not become apparent until late summer rains begin and the damaged areas already severely damaged fail to recover.

**The standard program.** Many, if not most, northern lawn care programs include an insecticide during June and July. Treatments made in June are effective in preventing damage from chinchbug and sod webworm. However, because of the number of customers that must be serviced, some lawns do not receive treatment until mid-July or later. By this time many of these lawns may have already sustained significant damage from the growing chinchbug population.

Generally, June application of diazinon or chlorpyrifos provides some measure of control of billbug larvae. However, when the larvae move to the root zone during July, applications made then often result in poor control because of poor insecticide penetration through the thatch.

**Early treatment approach.** Research conducted in 1978 on 20 Wooster, Ohio home lawns (204,583 square feet), in cooperation with the ChemLawn Corp., showed that an April-May application of diazinon at 2.5 pounds active ingredient per acre or chlorpyrifos (Dursban) at one to two pounds active ingredient per acre aimed at overwintered chinchbugs and bluegrass billbugs as soon as they become active, can prevent the development of damaging populations the following June and July.

This method of control is based on the Target Principle detailed later on in the "Basic" section. The principle focuses control on a particularly vulnerable period



The above graphs outline the life history and seasonal occurrence of bluegrass billbug and chinchbug in Ohio. Insecticide applications directed at overwintered adults, as soon as they resume activity in the spring but before they lay eggs, prevents the development of damaging populations during June, July, and August.

in the life cycle of the pest. Knowing life cycle and incidence of chinchbug and bluegrass billbug damage in a certain market area is basic to determining the applicability of the early treatment approach to that area.

The approach to controlling these two destructive pests is that insecticide treatment applied as soon as overwintered adults become active, but before many eggs are laid, removes the potential for development of damaging numbers in July and early August. The method is ap-

plicable to areas where either or both pests are present.

In market areas where billbug damage frequently occurs and the chinchbug has one generation each year, the early application should provide season-long control of both pests. Once the billbug adults (the source of the damaging larval stage) have been removed, the cycle has been broken.

In areas with two generations of chinchbug, the need for a second treatment to control this pest depends first upon the

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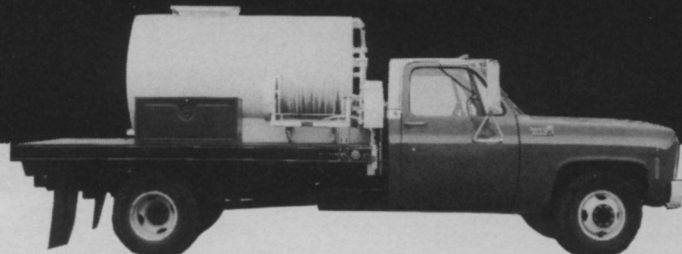
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abundance of rainfall or irrigation during development of the second generation, and second, whether adjacent lawns were treated for chinchbug.

**Moisture and the chinchbug.** When moisture for good turf growth is adequate during late August and September, a fungus disease *Beauveria* infects and kills many chinchbugs. In many if not most cases, the population can be reduced to the point where a second insecticide application is unnecessary. The fact that most northern lawn care programs include a fertilizer application at this time also helps the turf withstand feeding from the second generation.

If August and September are dry (a condition under which chinchbugs thrive), reinfestation limited to the border can be caused by chinchbugs migrating in from adjacent untreated turf. Some border damage from first and second generation migrants is possible under such circumstances. If the adjacent turf has been treated or has a low level of infestation, reinfestation is very unlikely since the source of reinfestation is not there. In this case, the spring treatment could take care of the chinchbug problem for the year.

**Chinchbug life cycle.** Adult chinchbugs insert eggs in the lower leaf sheaths of grasses. The number of eggs laid is known to range from 23 to 289 per female. The development of eggs and subsequent stages is directly dependent upon temperature, therefore, the number of generations occurring in a given area depends upon its latitude. There is one generation each year along the latitude of Rochester, N.Y., Toronto and Milwaukee, and two in Ohio, Pennsylvania and Indiana, for example.

In southern regions, chinchbugs remain active during the winter months, but in northern areas they become inactive and go into a resting state (diapause). These adults become active again as early as late March in Ohio and begin laying eggs in

*Classification of pests according to the segment of the turf habitat which they occupy helps focus attention on the fact that whatever control measures are applied they must reach the target in that habitat. This concept is the target principle of pest control.*

May. The eggs hatch in May and June, producing damaging populations of nymphs and adults in July and August. Adults from this generation lay eggs that produce a second generation in September. In October, most of these adults move from the turf to nearby sheltered areas for overwintering. Although adult chinchbugs are capable of flight, crawling is their primary means of mobility.

Cinchbugs are susceptible to a fungus disease caused by *Beauveria* sp.. The fungus is most infectious when the turf has moisture adequate for good growth. When these conditions occur during the second generation, populations can be reduced drastically by the fungus.

**Billbug life cycle.** In the northern states, bluegrass billbugs pass the winter as adults in lawns and sheltered areas nearby. In spring they begin to move about and are often observed wandering around on driveways and sidewalks in May. During May and June, adults lay eggs in cells cut near the crown in the grass stems. These eggs hatch in about two weeks. The larvae feed within the grass stems for a time and then burrow down the stem to feed on the crown. Later, they move to the root zone feeding on roots and rhizomes.

Larvae are abundant from July to early August. After completing development, they pupate in small cells in the soil and soon emerge as new adults. New adults are common during late September and October and are often seen in considerable numbers on driveways and

sidewalks. As winter approaches, the new adults seek shelter in turf, hedgerows, and other protected areas where they remain until spring.

#### BASICS

The insects pests of turfgrass can be placed conveniently into two categories:

- Leaf stem and thatch inhabitants — those that live and feed above the soil, such as aphids, mites, chinch bugs, adult billbugs, cutworms, armyworms and sod webworms.
- Soil inhabitants — those that live and feed in the soil such as grubs, billbug larvae, ground pearls and mole crickets.

#### The target principle

Classification of pests according to the segment of the turf habitat which they occupy helps focus attention on the fact that whatever control measures are applied they must reach the target in that habitat. This concept may be called the **target principle** of pest control.

The target principle is applicable to any pest — insect, fungus or weed. It does, however, require that those applying it be well-grounded in the identification, life cycle and damage symptomology of the pest in the area of its occurrence. This article is presented by LAWN CARE INDUSTRY to provide such basic information on pests most frequently encountered in the lawn care business.

#### Soil-inhabiting insects

**Grubs.** Grubs are the larvae of many species of beetles,

mainly belonging to one family. The adults differ in their color markings, habits and life cycles, but grubs are generally similar in appearance. Fully grown larvae are  $\frac{3}{4}$  to  $\frac{1}{2}$  inch long, white to grayish, with brown heads and six distinct legs. They are characterized by the C-shaped position they usually assume in the soil. Severe infestations feeding on turf roots can cause the sod to turn brown and die. Moles, birds and skunks actively feed on grubs and in the process tear up the turf as they search for them.

**Life cycle.** The life cycles of grubs can be classified according to the time required for completion of the cycle from egg to adult, namely, less than one year; one year; and two years or more. Among those with three-year cycles are some species of May beetles or "June bugs," often seen around lights on warm nights. These beetles are generally large, hard-shelled, and vary in color from tan to brown to black. Some species feed on the foliage of trees and shrubs, others do not feed at all. Feeding, flight, mating and egg-laying are done at night.

Masked chafers, European chafers and one species of a Texas June beetle are examples of beetles which complete their life cycle in one year. The common Japanese beetle is perhaps the best example of this group. Grubs of the Japanese beetle are about one-inch long when fully grown and have the same general appearance as other grubs. The adults are  $\frac{1}{2}$  inch long with hard, metallic, blackish-green bodies. They have coppery brown wing covers and small tufts of white hairs along the sides and back of the body. The adults are commonly seen during July feeding on the leaves of many species of trees and shrubs. When egg-laying begins, clusters of the adults are frequently seen on the turf.

The black turfgrass atenienus is occasionally found on home lawns. This species completes

to page 36

Mean no. insects/ft<sup>2</sup> in 3 untreated turf areas\* —  
Wooster, Ohio — 1978 — Dr. H. D. Niemczyk.

Sample Date	Chinchbug Stages					Adult Billbug
	1st	2nd	3rd & 4th	5th	Adults	
April 9	0	0	0	0	7	1
May 14	0	0	0	0	3	1
June 4	19	0	0	0	2	1
July 2	64	55	11	1	1	<1
August 6	5	1	5	15	27	3
Sept. 10	12	13	18	34	12	5
Oct. 1	2	1	0	5	24	9
Nov. 5	0	0	0	<1	4	8

\* Based on average of 12 samples taken weekly from 3 turf areas (15,900 ft<sup>2</sup>).

Mean no. insects/ft<sup>2</sup> in 7 home lawns treated April 14 with Dursban® 4EC 1 lb AI/A\*. Wooster, Ohio — 1978 — Dr. H. D. Niemczyk.

Sample Date	Days after treatment	Chinchbug Stages					Adult Billbug
		1st	2nd	3rd & 4th	5th	Adults	
April 9	0	0	0	0	0	12	3
May 7	25	0	0	0	0	<1	<1
June 18	67	0	0	0	0	0	<1
July 16	93	0	<1	0	0	0	<1
Sept. 3	140	11	21	14	14	5	1

\* Based on average of 12 samples taken weekly from 7 home lawns (81,198 ft<sup>2</sup>).

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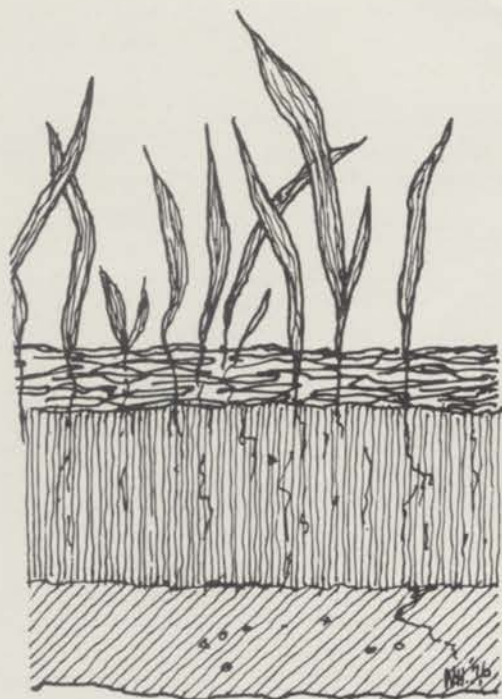


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Grubs  
Billbug Larvae  
Mole Crickets  
Ground Pearls

Grub Showing Location of Raster



Bottom Side of Last Segment Bears the Raster



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Black Turfgrass Ataenius



May Beetle



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**Above left:** Classification of pests according to the segment of the turf zone they occupy helps emphasize that controls should be aimed at specific targets in that zone. This concept is called The Target Principle.

**Above right:** Identification is a necessary step in achieving control of grubs. Examination of the raster with a 10-power hand lens will identify the common species.

#### INSECTS from page 33

two cycles each year in some locations and one in others. Adults fly and lay eggs during the daytime. Grubs are similar in general appearance to those of other species except they are smaller. Unlike most species in this group of pests which overwinter as larvae, the ataenius beetle overwinters as an adult.

There are many species of grubs, and identification is based primarily on the pattern of spines found on the underside of the tip of the abdomen. This area is called the raster.

**Identification.** There are many species of grubs, and identification is based primarily on the pattern of spines found on the underside of the tip of the abdomen. This area is called the raster and the configuration of the spines the raster pattern. A 10-power hand lense is adequate for examining the raster pattern of most grubs, unless they are very small, in which case a microscope is needed.

**Diagnosis.** Evidence of grub damage includes patches of wilted, dead or dying turf visible during spring (April and May) and fall (October and November). Presence of grubs in the fall is also made evident by the feeding activity of skunks and other mammals which tear up the turf in search of grubs. In the spring, large flocks of various



blackbirds feed on grubs in heavily infested areas. Ground mole activity is also a good indicator of grub problems. The only sure way to detect grubs is to cut into the turf in four or five locations, examining the root zone and first three inches of soil carefully.

**Billbugs.** Several species of billbug seriously damage in the United States. Among these are hunting billbug on zoysiagrass, the Phoenix billbug on bermudagrass, and the bluegrass billbug on perennial bluegrass.

Larvae are legless, white soil inhabitants,  $\frac{3}{8}$ -inch long and have a yellow to brown head. They are fat with the tail end of the larvae somewhat larger than the head end. Larvae feed on turfgrass roots and stems, often cutting the stems off at the crown so they are easily pulled.

**Life cycle.** In the northern states, bluegrass billbugs pass the winter as adults in the lawn



The typical target — grubs feeding on turfgrass roots under a layer of thatch.

and sheltered areas nearby. In spring they begin to move about and are commonly observed wandering around on driveways and sidewalks.

During May and June, adults lay eggs in cells cut near the crown in the grass stems. These eggs hatch in about two weeks. The larvae feed within the grass stem for a time and then burrow down the stem to feed on the crown. Later they move to the



Bluegrass billbug larvae feed at crown of bluegrass and later move to the soil to feed on plant roots.

root zone, feeding on roots and rhizomes.

Larvae are abundant during mid-July to mid-August. After completing development, they pupate in small cells in the soil and soon emerge as new adults. New adults are abundant during late September and October when they are frequently found in considerable numbers on driveways and sidewalks. As winter approaches, the adults



Bluegrass injured by bluegrass billbug larvae breaks off easily at the crown when pulled. Evidence of tunneling in the stems identifies this pest as the causal agent.

seek shelter in turf, hedgerows and other protected areas.

**Diagnosis.** The wandering nature of bluegrass billbug adults during May and June and again during September and October is a good indicator of a potential problem in nearby turf. Careful observation for adults on sidewalks, driveways and along gutters during these times should provide warning of a possible infestation of larvae in July and August.



Mole crickets feed on turfgrass roots and use their spade-like front feet to tunnel in the soil.

If small patches of turf appear to be dying from June to September, the best way to determine if billbugs were responsible is by carefully examining the damaged turf. Look for evidence of larvae feeding at the base of the stem and use a knife to probe among the roots to look for larvae.

Turf damaged by larvae is easily pulled out by hand with the stems breaking off at the crown. A good indicator is the



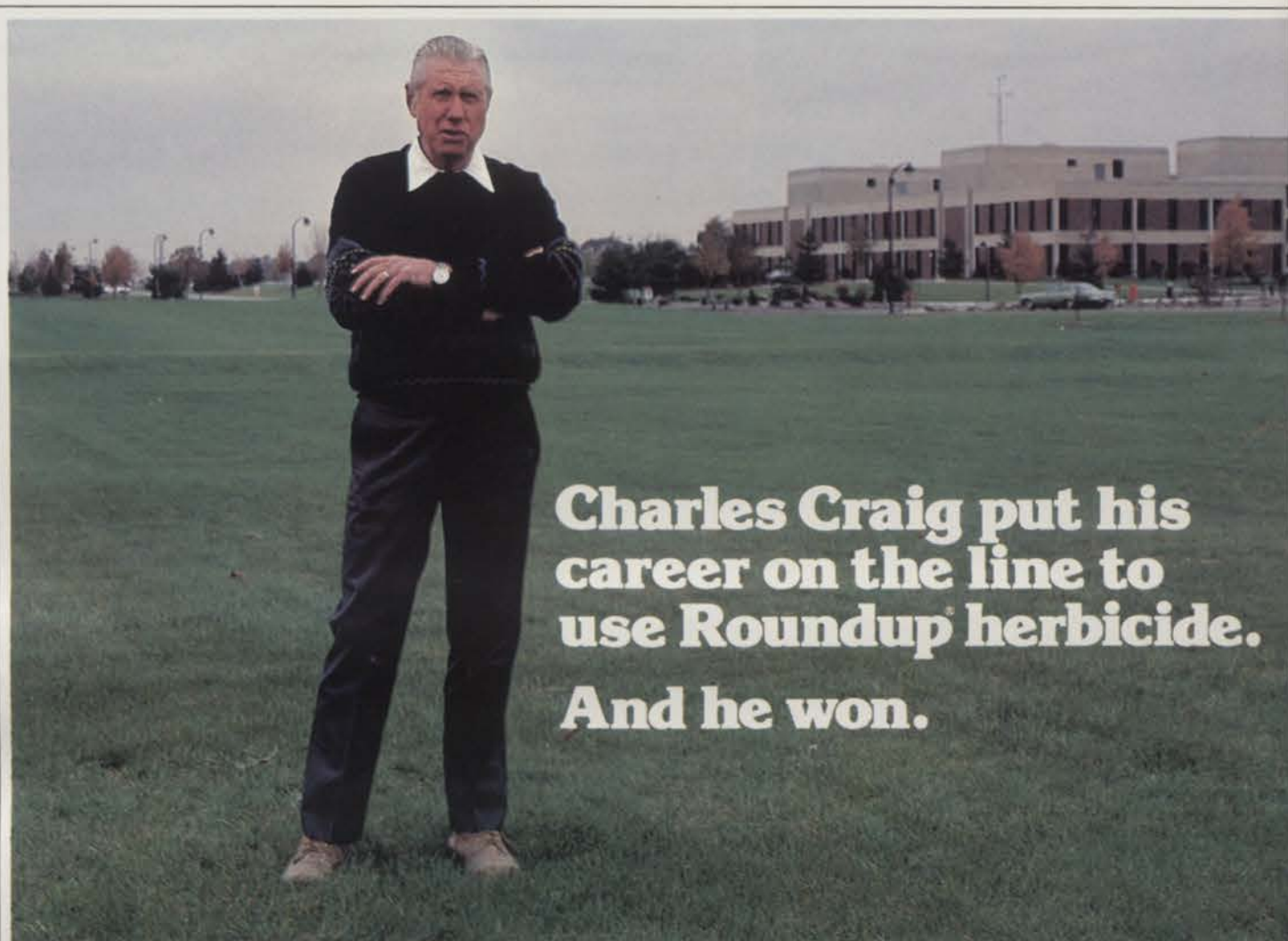
Ground pearls live deep in the soil and feed on turf roots. Centipedegrass is commonly attacked.

(Photo courtesy Dr. J. A. Reiner).

presence of fine, white, sawdust-like material left by larvae feeding in the root zone.

**Mole crickets.** Mole crickets are pests of major importance on most turfgrasses grown in the southeastern United States. The Puerto Rican and southern species are responsible for most of the damage. Adults are about  $1\frac{1}{2}$ -inches long, gray to light brown, and have short spade-like front legs well adapted for

to page 38



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But, fortunately, Charles didn't have to go into hiding because just 7 days after he applied Roundup he was able to reseed right into the dying grasses.

"Yes, I put my career on the line, but I felt all along that Roundup was going to work," Charles says. "There was no doubt in my mind."

As horticulturist for Mercer County Community College in Trenton, New Jersey, Charles Craig depended on Roundup

for the broad spectrum control he needed for tough grasses like quackgrass, orchardgrass, tall fescue and others. And since Roundup has no residual soil activity, he was able to reseed in a matter of days.

"Seed germination was terrific, especially with the weather we had," Charles told us. "Everyone always says it looks nice."

Charles still uses Roundup for touch up jobs around cracks in the pavement, parking lots, buildings, tree bases and flower beds. Taking precautions against spray drift, Charles has no fear of harming surrounding vegetation with Roundup.

Charles Craig is convinced that Roundup works, and he

has 35 acres of beautiful turf to prove it.

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Bronzed cutworm moth

INSECTS from page 37

tunneling. All stages feed on grass roots and burrow in loose soil, causing the turf to dry out. Burrows are 1/2 to one inch in diameter and easy to see. Damage can be especially severe in newly planted turf.

**Life cycle.** In spring, adults burrow into the soil to deposit eggs well below the surface. Eggs hatch in two weeks, producing nymphs in May that look like adults except they are smaller and have short wings. One year is required for nymphs to become mature and there is one generation each year. Except for adult mating flights which occur in the spring, mole crickets remain in the soil most of their life.



Bronzed cutworm larva

**Ground pearls.** Ground pearls are important soil-inhabiting insect pests throughout most of the southern United States. Actually, they are the immature stages of a scale insect that completes its development inside the protective pearl-like shell (cyst) which it secretes.

The shells are yellow-purple and vary in size from a grain of sand to 3/16 inch in diameter. Most warm-season grasses are susceptible to injury, but centipedegrass is most commonly infested.



Black cutworm moth

**Life cycle.** Relatively little is known about the life history of these insects. Mature females (crawlers) leave their protective shells, move a short distance and lay eggs in the soil. Newly hatched nymphs attach themselves to roots by their piercing mouth parts and form a shell about them. The life cycle from egg to adult requires at least one and possibly two or three years.

Removal of plant fluids by the nymphs causes turf to turn yellow, then brown, in irregular patches. Examination of the entire root zone for presence of the cysts is recommended for detection.



Black cutworm larva

Control: Application of the target principle

Control of turf damage by soil-inhabiting pests involves practical application of the target principle. Such effort requires concentration on getting a specific control material to a specific target; in this case, the target lives beneath a layer of thatch.

**Grub control.** Since cancellation of chlordane and other chlorinated cyclodiene insecti-



Sod webworm larvae live in silk-lined tunnels in thatch during the day and come to the surface at night to feed on grass blades.



Pellets of green excrement (frass) in the thatch indicate sod webworms or cutworms have fed on the turf.

cides, the organophosphates remain as chemical tools for grub control. Among the biological methods available is the use of milky spore disease. Both chemical and biological approaches are, to a degree, effective; however, both have their limitations.

**Organophosphates.** Several organophosphate insecticides are variously labeled for grub

control, however, among them are products that are either not effective, too toxic for use on home lawns or too expensive to be economically feasible. Among those that are safe, relatively economical, and fairly effective are diazinon and trichlorfon (Dylox or Proxol). Both are used extensively by the lawn care industry for grub control.

Like most organophosphates, the effectiveness of these two in-





secticides is limited by their short residual activity in soil (14 days or less) and the fact that they are subject to fairly rapid breakdown by environmental factors like light and heat. These characteristics emphasize the importance of uniformly distributing the proper rate at a time when the pest is most vulnerable. Again, the life cycle, not the calendar, determines the vulnerable period.

For proper distribution, liquid materials should be applied as coarse sprays, finer sprays are subject to drift and tend to volatilize the insecticide more rapidly once the spray reaches the turf. A minimum volume of four gallons per 1,000 square feet should be used when treating northern turfgrasses. However, with the deeper thatch of southern turfgrasses, 20 to 40 gallons per 1,000 square feet is needed.

Both diazinon and trichlorfon have other limiting factors worth



Growth stages of the hairy chinchbug from egg to adult.



Armyworm larvae

knowing about. Diazinon has a moderately strong affinity for organic matter. Because of this, some of the material applied to turf binds to the thatch before reaching the target. Some lawn care firms claim the addition of certain wetting agents apparently lessens binding and gives better grub control.

Trichlorfon, on the other hand, does not bind to thatch but breaks down rapidly when the pH of the tank mix is high. Some reports indicate a half-life of 63

minutes at a pH of 8; 6.4 hours at a pH of 7; and 3.7 days at a pH of 6. The pH of water is used to prepare tank mixes varies with the time of year and location, thus lawn care firms would be well-advised to have their water supply tested for pH and buffering capacity. Products are available to adjust pH levels downward. Low pH is usually not a problem.

While the performance of organophosphate insecticides is reduced by thatch, timely use of

irrigation by the customer can help achieve maximum control from treatments. Liquid insecticides should not be applied to dry thatch. Under such circumstances the spray is likely to evaporate before penetrating the thatch. If not moist from previous rain or irrigation, the customer should be advised to irrigate the turf the day before treatment is scheduled.

Instruction should also be left to apply an additional ½ inch of water immediately after treatment. Post-treatment irrigation or rain is essential to moving the insecticide off the grass blades, through the thatch and to the target. Delays in watering-in the treatment significantly reduce the probability of successful control.

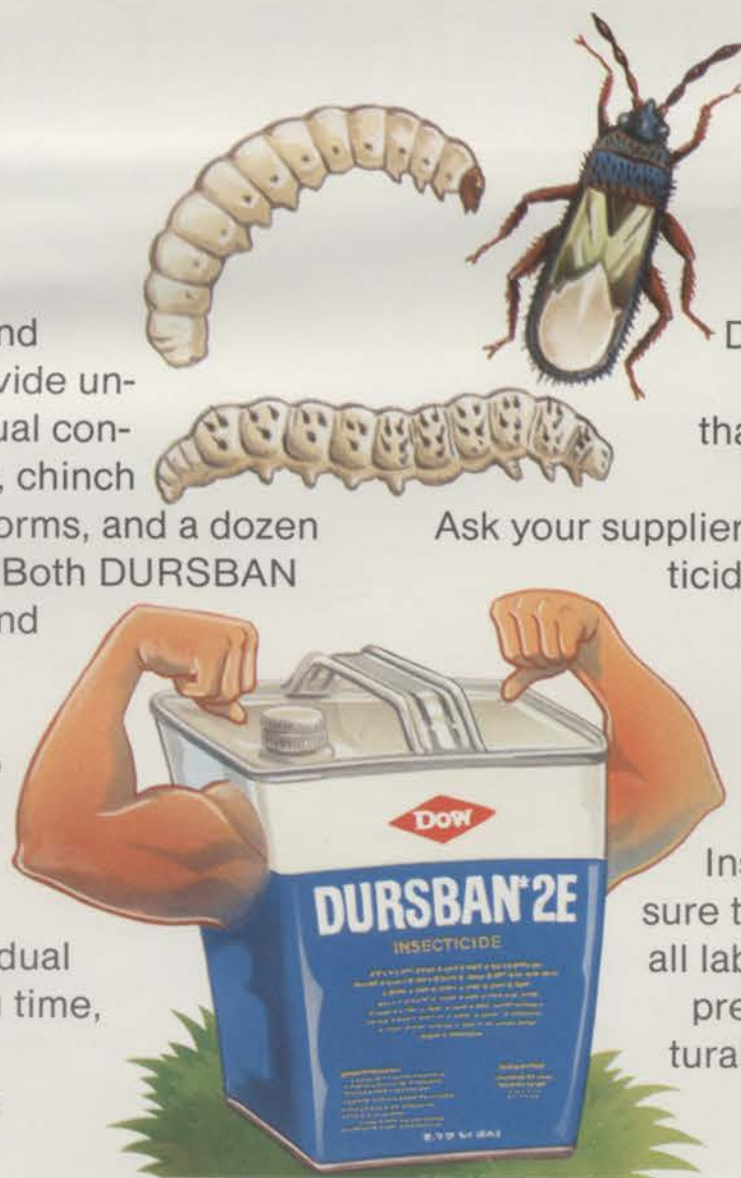
When granular formulations are used, the grass blades should be dry at the time application is made so the insecticide particles bounce off the blades and sift as deeply as possible into the thatch. This brings a concentrated particle close to the target and also provides protection from breakdown by light and other factors. While the urgency to irrigate following granular application is not as great as for liquid application, it should be done as soon as possible. At least ½ inch should be applied.



Beauveria sp., a naturally occurring fungus disease, destroys many chinchbugs (left) in the fall when the turf is moist.

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Customers and lawn care operators often expect to see dead grubs a few days after treatment. Actually, it may take 10 to 14 days before significant numbers of grubs ingest enough insecticide to cause obvious mortality. Customers should be advised of this delayed action.

**Milky spore disease.** While insecticides are the principle means of controlling grubs, milky spore disease provides an effective alternative for control of the Japanese beetle. The bacterial causal agent — *Bacillus popilliae* — is only effective against Japanese beetle larvae.

Infection takes place when resting spores of the bacterium are ingested by the grub along with food and soil particles. The spore germinates inside the grub, producing bacteria which multiply and produce millions of spores that eventually fill the entire body of the insect. Infected grubs may live for months but eventually are killed, distributing spores at a new location. Yearly infection and death of grubs plus birds and mammals feeding on them further helps distribute spores over the turf area.

In addition to the natural occurrence in the soil, dust contain-





The adult stage of the bluegrass billbug is a thatch inhabitant often seen walking across sidewalks and driveways in spring and fall.

#### INSECTS from page 39

ing the resting spores can be purchased and artificially distributed. The cost of artificial distribution ranges from \$60 to \$80 per acre depending on the concentration of spores in the product and rate applied.

Dust may be applied any time the ground is not frozen. A common method is to apply one teaspoonful (about 200 million spores) of dust in spots at intervals of four feet in rows four feet apart. This is about 12 pounds of dust per acre.

In northern states, several years may elapse before spores are well-distributed throughout



Invisible to the naked eye, bermudagrass mite feeding causes growth distortions in the form of tufts.

(Photo courtesy Dr. J. A. Reinert).

the soil. During this time, grub infestations must be tolerated to permit infection and death of grubs. Once distribution is accomplished, the treatment will provide control of Japanese beetle grubs for many years.



Turf damaged by the greenbug has a yellow to orange cast. Injury is frequently seen under trees but also occurs in open areas.

**Billbug larvae.** Control of damage from the billbug is a situation where application of the target principle determines the approach to control. To prevent the development of the damaging larval stage, insecticide may be applied early in spring (April for the bluegrass billbug) to eliminate adults before they lay eggs. At this time the insect is inhabiting the surface and thatch and irrigation following treatment is not advisable because the objective is to keep the material in the thatch



Rhodesgrass scales are covered with cottony material secreted by the insect.

(Photo courtesy Dr. J. A. Reinert).



Bermudagrass scales are covered by a shell-like covering and are found on grass stems. Infested turf appears "moldy".

(Photo courtesy Dr. J. A. Reinert).



Greenbugs line the upper surface of bluegrass blades to suck out plant fluids and inject salivary fluids that kill tissue around the feeding area.

where the pest is located. However, once a larval infestation develops, the pest becomes a soil inhabitant, and irrigation following with an insecticide treatment is advisable to move the material to the target.

**Mole crickets.** In areas where damage from mole crickets has occurred previously, further injury can be prevented by applying sprays of insecticides during

June while the nymphs are still small and relatively easier to control. Such sprays may also be applied later in the summer when damage appears. Thorough and deep irrigation before and after spray applications is necessary to reach the target.

Various baits containing low percentages ( $\frac{1}{2}$  to two percent) of several insecticides have been effective when uniformly ap-

plied over the turf in late June. Here the objective is to bring the target — a young mole cricket nymph — to the surface to feed on the bait. Applying the target principle in this case means no irrigation should be applied.

**Ground pearls.** Ground pearls can occur 10 inches or deeper in turfgrass soils. This fact, coupled with the difficulties of achieving penetration of insecticides, has

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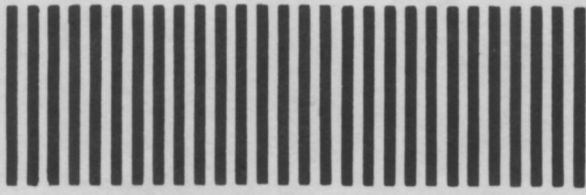








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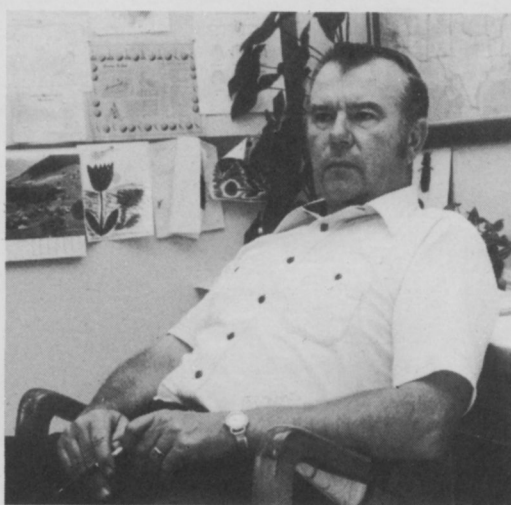
lead to the conclusion that there is no practical, effective means of controlling this pest. Management practices, particularly irrigation and fertilization which keep the turf growing vigorously, temporarily helps grass to overcome injury.

#### Leaf, stem and thatch-inhabiting insects and their control in turfgrass

**Sod webworms.** Sod webworms include a complex of species such as the tropical sod webworm, vagabond clemens, bluegrass sod webworm and many others. The extent of injury from this group of thatch-inhabitants varies with the species and location of occurrence. Usually only a few species are responsible for most of the damage in a given area.

Sod webworm adults are small, grayish-white to beige moths with a wingspread of ¾ inch frequently seen flying over

Dr. Harry D. Niemczyk is professor of entomology at the Ohio Agricultural Research and Development Center in Wooster, Ohio. He has worked closely with lawn care businessmen in Ohio and many other states on research geared for the needs of the lawn care industry.



lawns at dusk or just after dark. When at rest the wings are folded closer to the body. The head has a snout-like projection in front, thus they are also called snout-moths. If disturbed during the day, the moths fly erratically for a short distance, then come to rest on the turf. The moths do not

damage turf.

The larvae are caterpillars varying in color from greenish to beige, brown or gray, depending upon the species. When mature, they are ¾ inch long and most have characteristic dark circular spots scattered over the body length. As the larvae mature,

they construct tunnels or burrows through the thatch, sometimes extending into the soil.

The name sod webworm is derived from their habit of lining these tunnels with webs of silk-like material they produce. The larvae do not place webbing on the turf surface. Feeding and consequent damage is done only at night. Some species chew off grass blades close to the plant crown and pull them into the tunnels where they are eaten. The tropical sod webworm chews notches along the sides of the grass blade. If feeding is extensive during dry weather, the plants may be killed.

**Life cycle.** Female moths drop their eggs on the turf as they fly over the turf at dusk. Eggs hatch in a week to 10 days. At an average temperature of 78°F., about six weeks is required for development from egg to adult. The most common species on northern turfgrass — bluegrass webworm and larger sod webworm — have two generations each year and overwinter as larvae in silken webs (hibernacula) within the thatch. In southern climates, species such as the tropical sod webworm have several overlapping generations each year. In south Florida, generations continue through the year.

**Diagnosis.** Flocks of birds that frequently return to a turf area usually mean that sod webworms or other larvae are present. Further evidence of bird activity is probe holes left by birds searching for larvae. Close examination of the turf in such areas either reveals larvae, or the green pellets of excrement (frass) left by them.

An effective method of detection is to mix one tablespoon of one to two percent pyrethrins (a common garden insecticide) in one gallon of water and apply the solution uniformly over one square yard of turf. The solution irritates the larvae which soon come to the surface. A fairly effective substitute for pyrethrins is ¼ cup of powdered household detergent.

**Cutworms.** Cutworms are the larvae of nightflying moths: two to three times larger than sod webworm moths. The two species most common in turfgrasses are the black cutworm and bronzed cutworm. The larvae feed at night on grass blades which they chew off close to the base of the plant.

The black cutworm is pale gray to olive black without distinct stripes or marking. It does have one narrow pale stripe on the upper surface. The bronzed cutworm is dark brown black above, pale on the underside and has a distinct bronze sheen. The upper surface of the body has three narrow yellow stripes and a broad pale white-yellow stripe on each side. When mature, the larva are 1½ inches to two inches long and have a dark brown to brownish-gray head. The adults of these cutworms are robust, hairy moths, brownish tan to grayish in color with wing spread of 1½ inches. The front wings are darker than the hind pair and

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## TOOLS, TIPS & TECHNIQUES

### Components of preventative maintenance

A preventative maintenance program makes it possible for lawn care operators to more accurately estimate their costs, according to Ron Turley, of Ron Turley Associates, Glendale, Ariz.

Turley, who spoke at a recent ALCA Maintenance Symposium in Milwaukee, Wis., said, "The purpose of preventative maintenance is to keep a vehicle in satisfactory operating condition at the lowest possible cost."

The components of a successful preventative maintenance system, according to Turley, are:

- It must be designed around the specific vehicles it is supposed to maintain.
- It must fit the conditions that these vehicles operate in.
- It must change when vehicles and conditions do.

He added that preventative maintenance inspections must

be performed on a regular basis to be effective. Regarding record keeping, Turley said, "The PM record of an individual vehicle must be examined before any service work is done to avoid repetitive maintenance, to uncover related problems, and to recheck previous adjustments and repairs."

Therefore, according to Turley, a good maintenance system should:

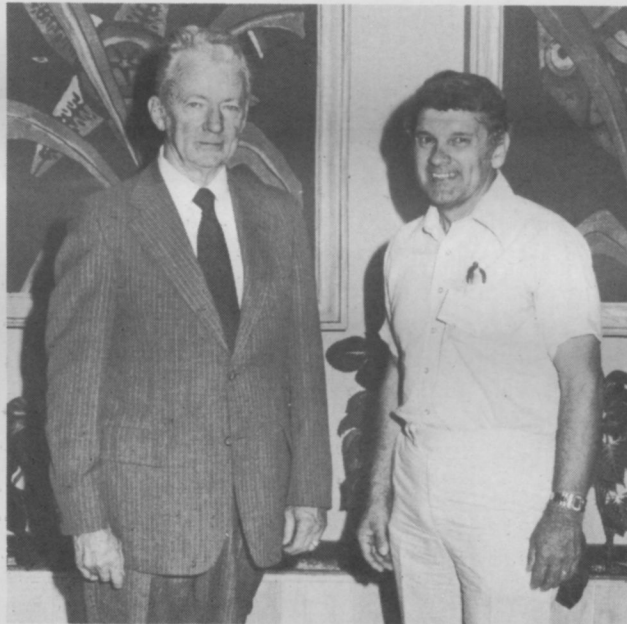
- Report problems: "Maintenance problems should stand out so that appropriate action can be taken rapidly."
- Simplify solution: "Problem analysis should be easier because repetitive or major repairs should be spotlighted by continuous vehicle history recording."
- Control costs: "A good system will show you immediately where something is getting out of hand and when costs are likely to go up unless action is taken at once."
- Organize maintenance: "By highlighting high cost areas, poor utilization, inconvenience or delay, a good record system points out where you need maintenance strength."
- Reduce labor: "Good records pinpoint repetitive maintenance and unscheduled shop visits."
- Decide specifications: "With a complete vehicle history it's easier to determine component strengths/weaknesses."
- Save dollars: "This is the ultimate goal of any good maintenance record system. It helps you retain more of your present income as profit."

### MEETINGS

#### Atlantic Seedsmen group elects new president

Charles Kindsvater was recently elected president of the Atlantic Seedsmen's Association at their 27th Annual Meeting in Warwick, Bermuda.

Kindsvater is a graduate of the University of Pennsylvania Wharton School. He started in the seed business in 1946 and in May of 1980 he will complete 34 years in the trade. Thirty-two of those



Immediate Past President John Morrissey (left) and Dale Kern, of Seed Technology, attended the 27th Annual Atlantic Seedsmen's Association in Warwick, Bermuda.

years were spent with the W. Atlee Burpee Company, Warminster, Pennsylvania.

Since then he has been operating the Otis S. Twilley Seed Company in Trevoise, Pennsylvania, a mail-order vegetable and flower seed company.

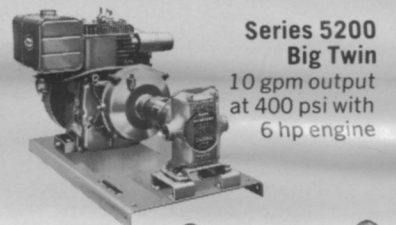
Other officers elected at the meeting were: first vicepresident, D.L. Gruenbaum, O.M. Scott Company, Marysville, Ohio; second vice-president, Robert Wetsel, Wetsel, Seed Company, Harrisonburg, Virginia; secretary, Randall Pope, John Zuelzer & Son, Manhasset, New York; and treasurer, John Glattly, Whitney-Dickinson Seeds, Incorporated, Buffalo, New York.

In addition to the Immediate Past President John Morrissey, Loft-Pedigreed Seed, Incorporated, Bound Brook, New Jersey, two members of the executive committee were also elected: William Feury, Jr., Terre Company of New Jersey, Saddle Brook, New Jersey, and G. William Hill, George W. Hill Company, Florence, Kentucky.

## Hyprow sprayer pumps

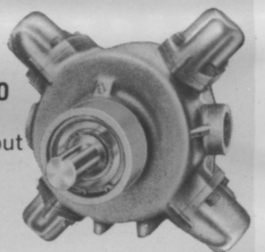
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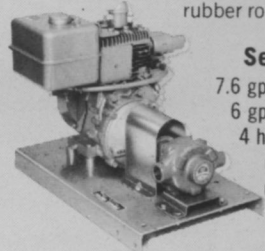
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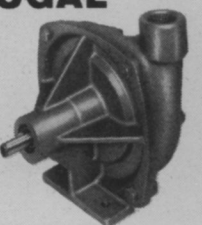
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usually have various light and dark markings.

**Life cycle.** Adult moths lay their eggs at night on the turf-grass surface. The larvae feed at night, hiding in the thatch and soil during the day. The number of generations each year varies with the location. In the northern states, the black cutworm probably overwinters as a pupa in the soil and has three generations. The bronzed cutworm overwinters as an egg that hatches in late February. Small larvae are often the first found, usually in April. There is one generation each year.

**Diagnosis.** Birds, particularly starlings, have a keen ability to locate cutworms and other caterpillars in turf. When these birds return frequently to a given area, leaving probe holes, larvae are usually present. Examination of the feeding area usually reveals cutworms or green excrement pellets left by the feeding larvae. These fecal pellets are often three times larger than those of the sod webworm larvae. Solutions of pyrethrins or detergent brings larvae to the surface.

**Armyworms.** Like cutworms, armyworms are the larval stage of night-flying moths three times larger than those of the sod webworm. There are two important species. The true armyworm is an occasional pest in northern states but commonly a serious pest of southern turfgrasses. The larvae vary in color from gray to yellowish green and are clearly marked with light stripes.

When mature, they are 1½ to two inches long and have gray to yellowish heads. The fall armyworm has a characteristic white inverted "Y" marking on the front and head capsule. The larvae frequently feed in one area, then migrate, in mass, to another during the night, thus the name "armyworm."

**Life cycle.** Adult moths of armyworms deposit eggs in masses on grasses and other plants. The larvae feed at night, and hide in the thatch during the day. In areas like southern Florida where no freezing occurs, all stages may be present during the year.

The fall armyworm is a serious southern pest that migrates. Occasionally, larvae from eggs laid by adults that migrate to northern states cause severe damage to northern turfgrass. In 1977 this occurred as far north as Minneapolis. None of the life stages overwinter in the north.

The armyworm occurs throughout the United States. In northern climates, larvae overwinter in soil or debris. Adults lay eggs on turf in May. There are three generations each year.

**Diagnosis.** The methods described for sod webworm and cutworms are also effective in detecting armyworm infestations.

**Chinchbugs.** Two species of chinchbugs are considered important pests of turf. The hairy chinchbug, a pest of northern turfgrasses, causes severe damage to bluegrasses, fine fescues and bentgrass. The southern chinchbug feeds on

*Chinchbugs generally occur in scattered patches rather than being evenly distributed over the turf. Sunny areas are most heavily infested with populations often reaching 200 to 300 per square foot.*

bermudagrass and zoysiagrass, but is primarily a serious pest of St. Augustinegrass.

Chinchbugs generally occur in scattered patches rather than being evenly distributed over the turf. Sunny areas are most heavily infested with populations often reaching 200-300 per square foot. Plant injury occurs as a result of the insect sucking fluids from the plant and at the same time injecting salivary fluids into the plant. The presence of the salivary fluid disrupts the water-conducting system of the plant, causing it to

wilt, then turn yellow and brown. Injury is particularly severe when heavy infestations occur in turf that is dormant from moisture stress. Such dry conditions are particularly conducive to chinchbug growth and population development.

Adult chinchbugs are 1/5 inch long, black with white wings folded over the back. The wings of some extend to the tip of the abdomen, but others extend only halfway to the tip. The nymphs (immature states) range from 1/20 inch long, soon after hatching, to nearly the size of an

adult. Upon hatching, nymphs are bright red with a distinct white band on the abdomen. This color changes first to orange, then orange-brown, then black as the nymph goes through five growth stages. Each of these stages inflicts injury on the turf.

**Life cycle.** Adult chinchbugs insert eggs in the lower leaf sheaths of grasses. The number of eggs laid is known to range from 233 to 289 per female.

The development of eggs and stages thereafter is directly dependent upon temperature — and therefore location — in the United States. One generation may take six weeks at 83°F, and 17 weeks at 70°F. In south Florida and Louisiana, generations may be continuous with up to seven generations each year; three to four generations in north Florida; two generations in Ohio; and one in an area such as Rochester, N.Y.

In southern regions,  
to page 44

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chinchbugs remain active during the winter months, but in northern areas they become inactive and go into a resting stage (diapause). In Ohio, these adults become active again in March and early April, laying eggs in May that develop into damaging populations in July and August. They produce another generation in September which develops into adults that move from the turf to nearby sheltered areas for overwintering. While adult chinchbugs are capable of flight, crawling is their primary means of mobility.

**Diagnosis.** Infestations of chinchbug are often masked by the general drouthy appearance of turfgrass when under moisture stress. If adults are present, they are often seen wandering across sidewalks or driveways on warm afternoons. Close examination of the turfgrass, particularly thatch, usually exposes the insects.

Chinchbugs are susceptible to infection by a fungus disease *Beauveria* sp. The fungus is most infectious when the turf has moisture adequate for good growth. When moist conditions occur during the second generation in Ohio, for example, populations can be reduced drastically by the fungus.

*Chinchbugs are susceptible to infection by a fungus disease Beauveria sp. The fungus is most infectious when the turf has moisture adequate for good growth.*

Another effective method of detection is to remove both ends of an empty coffee can, cut the rim off one end and push the sharp edge two to three inches into the turf in an area where chinchbugs are suspected. Fill the can with water and wait a few minutes. If chinchbugs are present, they will float to the surface. The tiny red nymphs may be difficult to see.

**Adult billbugs.** Adults of most billbugs are gray to black weevils with a distinct snout that has chewing mouth parts at the tip. All of their adult life is spent in thatch except in northern areas where some adults move to sheltered areas to overwinter. Though the adults feed on grass stems, occasionally chewing transverse holes through them, the damage inflicted is usually minor compared to that from the larvae. Some lay eggs in feeding holes and others chew slits in the stems, just above the crown, and deposit eggs in them.

Effective chemical control programs can focus on removing adults before eggs are laid. Such efforts can be complicated in warm climates where generations may be continuous or overlapping.

**Scale insects.** In addition to the soil-inhabiting ground pearl, two other species of scale insects are important pests of southern

*In southern regions, chinchbugs remain active during the winter months, but in northern areas they become inactive. In Ohio, these adults become active again in March and early April, laying eggs in May that develop into damaging populations in July and August.*

turfgrasses — the rhodesgrass scale and bermudagrass scale. The body of the rhodesgrass scale is more or less spherical, dark and covered with a cottony material secreted by the insect. These masses are  $\frac{1}{16}$  inch in diameter and usually found in clusters or colonies on the crown of the rhodesgrass plants. These clusters usually have hair-like structures (excretory filaments) extending from them. The insects suck plant fluids from the grass for food.

The bermudagrass scale has an oval, white paper-like

covering  $\frac{1}{15}$  inch in diameter covering the insect. These scales are usually clustered at the nodes of grass stems, where they suck juices from the plant.

**Life cycle.** Adult females lay eggs within the secreted covering. The young (crawlers) spread throughout the turf, begin feeding and secreting a cover over themselves. As the covering develops, the scale loses its legs and antennae. Males of these species are usually smaller and are winged. Generations of both species are generally continuous.

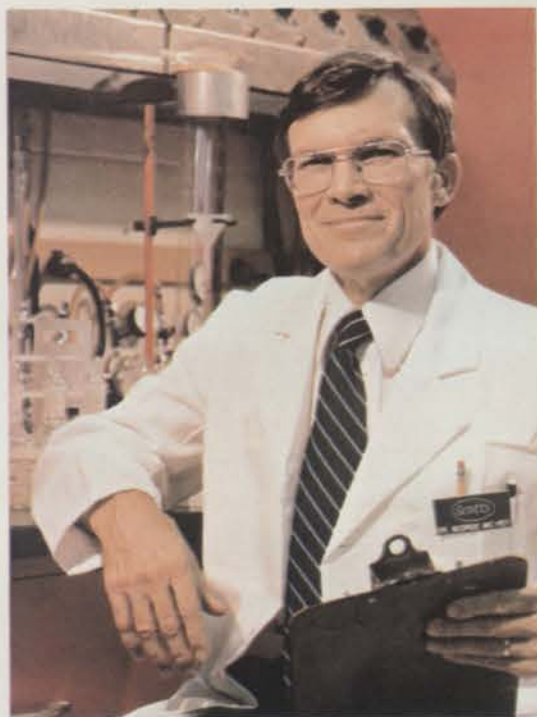
**Diagnosis.** Damage symptoms

are weakened, yellowish turf which often turns brown as though short of moisture. Damaged stems usually show little new growth. Infested grass appears covered with mold.

**Mites.** Mites are not insects; all have eight legs and are closely related to spiders. Though the winter grain mite has been known to cause some injury, serious damage from this is apparently uncommon on northern turfgrasses. In the South, the bermudagrass mite is a serious pest. This mite is extremely small, the largest being only  $\frac{1}{125}$  inch long. They are not visible to the naked eye and are often carried by other insects frequenting turf. Only bermudagrass is affected by this mite.

**Life cycle.** The life cycle of this mite requires about one week for completion. Eggs, laid under the leaf sheath, hatch quickly in warm weather. The mites feed in this area by the hundreds, sucking fluids from

# "Here are the 5 most important things your fertilizer bag won't tell you..."



**Dr. George R. McVey**  
Senior Scotts Researcher



the plant. Infested stems turn yellow, then brown and die.

**Diagnosis.** Mite feeding causes shortening of the stem internodes, causing tufts or rosettes to appear at these locations. Examination of leaf sheaths with a high-magnification (10 power or more) hand lens reveals the creamy white, worm-like mites.

**Greenbug.** The greenbug is an aphid, well recognized as a pest of small grains and sorghum in the central and southwestern states. Although scattered references to this aphid on perennial bluegrass date back to 1912, it was not considered a serious pest until the early 1970's, when noticeable damage was reported in Illinois and in Dayton, Ohio. Since then, severe injury has increased sharply in these states and damage has been reported in Indiana and Wisconsin.

Some lawn care firms in



Dr. Niemczyk is widely respected for the variety of research he conducts at the Ohio Agricultural Research and Development Center in Wooster, Ohio.

southern Ohio report that an average of two to three repeat applications of insecticide was required to keep damage under control last year. In cases where infestations were not controlled,

damage was so severe that part or all of the lawn had to be replaced.

The greenbug is a soft-bodied insect, 1/16 inch long, light green with a darker green stripe down

the back. The legs are green except for the tips, which are black. Two short tubes extend out behind the aphid. Feeding is accomplished by insertion of the piercing mouthpart into the grass blade to suck out plant fluids. Salivary fluids are also injected into the plant, causing the tissue around the probe point to die.

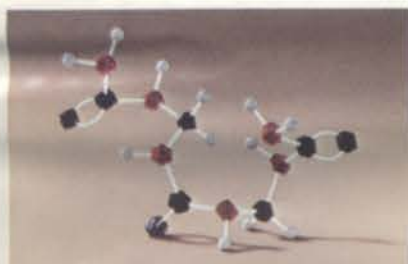
**Life cycle.** The life cycle of the greenbug on bluegrass has never been studied, therefore, information on the overwintering stage, if any, is not known. Lawn care firms report populations begin to appear in late June and may continue to November if the fall is extended.

Greenbugs give birth to live young, most of which are female. Optimum temperature for development is 75°F. A newly born aphid can begin producing young after 7 to 10 days. Mating is not necessary for reproduction. Winged forms are produced in the fall.

**Diagnosis.** Although damage is frequently first noted in the shaded areas under trees in the yard (however, it is not a tree

## 1 "Nitrogen chemistry is complex."

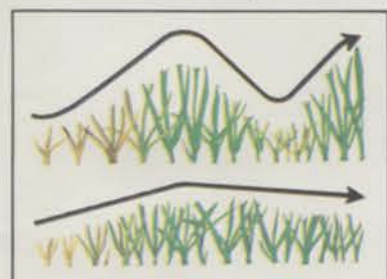
"Nitrogen's important because it's the nutrient a grass plant utilizes in the largest amounts. Since soluble nitrogen sources can only feed the turf for a short period of time, the challenge is to combine the sources that best contribute to quick green-up, long-lasting residual and turf safety. The analysis on your fertilizer bag is giving you *minimum* nitrogen content...it's not telling you how, or how *well*, your turf will be fed. For that kind of information, you have to consider the chemistry of the fertilizer molecule."



Nitrogen release from Methylene Urea can be controlled by altering the chemical structure of the molecule.

## 2 "Nitrogen should be releasing when your grass plant needs it the most."

"Of all the ways nitrogen can be released to your grass plant, one of the most efficient is through microbial degradation of a complex nitrogen-containing molecule. As temperature stimulates plant growth, it also stimulates the microbes which break down the nitrogen and make it available to your turf."



A good controlled-release fertilizer solves the feast or famine problem.

Methylene Urea fertilizers work this way—they're feeding your turf *what* it needs, *when* it needs it. You get healthy, good-looking turf...and you may not have to fertilize as often."

## 3 "The lower the Salt Index, the lower the burn potential."

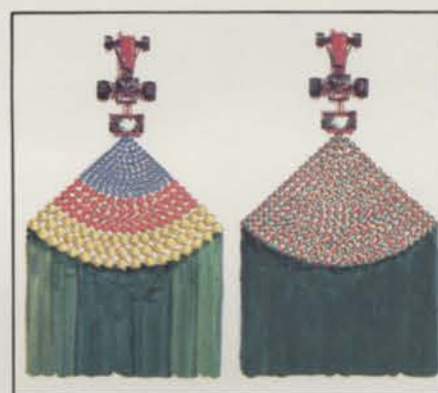
"If you burn your grass, at *best* it has to start growing all over again. Knowing your fertilizer's Salt Index can minimize the risk. The lower it is, the safer you are. The Salt Index is directly related to the manufacturer's choice of nutrients and the production process...and there are substantial differences among the Salt Indexes of different products. Unfortunately, it's something you'll never find on a bag label."



A fertilizer can literally draw water from within the grass blade, causing it to collapse and burn.

## 4 "To be truly efficient, a fertilizer must spread properly."

"Improved production processes are replacing mechanical mixes, and use of the term 'homogeneous' is becoming common—maybe *too* common. Remember, a truly homogeneous product contains individual granules of uniform *density*, *size range* and *nutrient composition*. Once you're assured they won't gum up in high humidity or blow away in the wind, you can be really confident that *all* your nutrients are being spread evenly."



Controlling the fertilizer density, particle size range and nutrient composition makes even distribution possible.

## 5 "If your fertilizer can't supply what your turf needs, you're wasting the fertilizer, time and money."

"You can achieve *maximum* performance from your turf when all essential nutrients in the soil are available and in proper balance. Excesses and deficiencies can interrupt the uptake of fertilizer nutrients, reducing turf density and quality. A comprehensive soil test, accurately interpreted, is one sure way to determine *all* your nutrient needs...and eliminate the guesswork."

A comprehensive soil test, accurately interpreted, is one sure way to determine *all* your nutrient needs...and eliminate the guesswork."

Scotts research and experience can help keep you in control of your lawn care program. For more information, contact your Scotts Tech Rep or call Scotts ProTurf at 513-644-0011.



Irrigation following application of granular insecticides is essential to move the insecticide off the granules and into the thatch, therefore, only a light irrigation is needed.

aphid), it also often occurs in open, sunny areas of the lawn. Probing and injection of salivary fluids by the aphid causes dead leaf tissue to turn yellow to light orange, then darker orange, and finally to brown as the plant dies. Examination of infested turf reveals 20 to 30 or more aphids on the grass blade. Population of 2,000 to 3,000 aphids per square foot are common on infested lawns. Lady beetles, orange with black spots on the back, are often seen feeding on the aphids in such lawns.

## Control: Application of the target principle

Control of leaf-, stem- and thatch-inhabiting pests is less difficult to achieve than control of those inhabiting the soil. The principle of controlling this group of pests is the direct opposite of that for soil pests.

In this case, the objective is to leave the insecticide on the leaves, stems and thatch. Control of the target pest is accomplished in the following ways: (1) *Initial contact* of the insecticide with the insect; (2) *Future contact* of the insect with insecticide residue left on the thatch, by the insect feeding on treated foliage, or a combination of both.

**Initial contact.** Liquid applications have the greatest impact on the insect population within the first 24 to 48 hours after application. Insects are either killed by initial contact with the insecticide the day application is



INSECTS from page 45

made or the night following treatment by contact with residual and consumption of treated foliage. The latter is particularly important for chewing insects such as cutworms, sod webworms, armyworms, etc.

The initial impact of granular treatment is less than that from liquids because the insecticide is applied dry. Contact begins only when the granule absorbs moisture, and releases the insecticide. For this reason, granular formulations are not effective against pests such as aphids or mites unless the insecticide is systemic.

**Future contact.** The residual activity of liquids and granules have their respective advantages and limitations in terms of control beyond the first 24 to 48 hours after application.

In addition to providing initial control of leaf and stem pests, liquids leaves residues that remain in the thatch, providing control of thatch inhabitants for some time. The length of this residual activity is, however, generally shorter than that for granules. The reasons for the longer residual with granules is: They are deposited in the thatch where, unlike liquids on the foliage, they are protected from light which rapidly breaks down the insecticide; also, insecticide is leached off granules over a period of time which usually exceeds the length of residual activity from liquids.

Generally, the length of residual varies considerably with the insecticide and environmental conditions under which it is used. For most insecticides, data expressing residual as parts per million (ppm) over time have been obtained. However, the practical meaning of these data, in terms of actual impact on insect populations in a lawn, is not

understood, particularly where the influence of diminishing residues on insects that survive the initial impact of the treatment is concerned. Recent data taken from 17 Ohio home lawns treated by a lawn care firm shows these diminishing residues were important in removing chinchbug that survived the treatment and those that hatched 10 to 14 days after treatment.

**Application objectives.** The objective of liquid application is to deposit insecticide on the foliage and thatch to the depth frequented by the target pest. The volume of liquid applied must be adequate for complete and uniform coverage. Coarse

should be used.

The initial objective of granular application is to get the material as deeply into the thatch as possible. To do so, the foliage should be dry so the granules fall off easily.

**Post-treatment irrigation.** The advisability of irrigation following liquid application depends upon the target pest. If the insect is one which lives on the foliage and stems (bermudagrass mite, greenbug) or one that consumes the foliage (cutworms, armyworms, sod webworms) irrigation and mowing should be delayed for at least 24 to 48 hours after application. This allows time for contact activity and con-

sumption of treated foliage.

sumption of treated foliage. If the primary target is a thatch inhabitant (chinchbug, adult billbug) and the volume applied is four gallons per 1,000 square feet, a light irrigation is sometimes helpful if done before the spray dries. When large volumes of spray are applied, post-treatment irrigation is not necessary. Rainfall or irrigation a week or so after treatment can briefly reactivate the insecticide residue in the thatch.

Irrigation following application of granular insecticides is essential to move the insecticide off the granules and into the thatch, therefore, only a light irrigation (1/8 inch or so) is needed. Excess irrigation only reduces the residual in the zone occupied by the target pest.

**Insecticide selection.** The initial decision whether or not to include an insecticide in the treatment program of a lawn care business, or to discontinue or change insecticides, is an important one. The basis for such a decision must be the occurrence of insect pests in the market area covered and the extent to which they are responsible for turf damage. In other words, will it really make a difference?

If the answer is "yes," the next step is to select an insecticide which is safe and effective against the target pests and yet is within the realm of economic feasibility. The question is which insecticide meets these criteria and is labeled for that purpose? Much preliminary information can be gained on this point from discussions with other lawn care firms, and pesticide sales persons in the area. However, once such local information is obtained, it should be discussed, preferably in person, with an entomologist familiar with turfgrass insects of the area and the principles of insecticides and their activity in turf. Such a consultation should provide the businessman with sufficient knowledge to form the basis for a decision on which material to use.

Insecticides and other means of insect control will change with new research findings and as use and label limitations permit. However, the principles underlying achievement of successful control will not change. Current information and lists of recommended materials are available from the state extension services. For this reason, reference or recommendation of specific insecticides was generally avoided in this article.

*The advisability of irrigation following liquid application depends upon the target pest. If the insect is one which lives on the foliage and stems or one that consumes the foliage, irrigation and mowing should be delayed for at least 24 to 48 hours after application. This allows time for contact activity and consumption of treated foliage.*

sprays are best because they produce minimal drift. When the thatch or surface soil is very dry, irrigation the day before treatment helps facilitate movement of the liquid into the thatch.

The volume needed is also dependent upon the nature and density of the thatch. Thatch in southern turfgrasses such as St. Augustinegrass is dense and deeper than those of northern turfgrasses. In order to penetrate the deeper thatch, a volume of 20 to 40 gallons per 1,000 square feet is essential. Volumes less than that are simply inadequate. On northern turfgrasses, thatch is usually one inch or less. Under these conditions, three to four gallons per 1,000 square feet



(left to right) Overwintered bluegrass billbug adults (A) resume activity in early April. Beginning in May the females insert eggs singly into stems one to three mm above the crown. The eggs produce larvae that first feed

on the stem, then move to the crown frequently killing the plant (B). Dead grass plants give the lawn a "pocked" appearance (C). Spring and fall infestations by Beauvaria sp. provides some natural control (D).



(left to right) Populations of red-orange chinchbug nymphs (A) increase rapidly during June. Damage from the first generation can be masked by summer drought (B) and become apparent only after late summer rains begin (C). Moist turf during development of the second generation increases infectivity of the fungus Beauvaria sp., which destroys many chinchbugs (D) reducing their damage potential during September.



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In Fall, application of Sof'n-Soil gypsum works like health insurance to protect against the harmful effects of winter de-icing salt. Sodium chloride is toxic to most plants, causes heavy clay soils to tighten, keeps water from leaching out the salt. The available calcium in Sof'n-Soil gypsum replaces toxic sodium attached to the clay soil particles, permits new seed or sod to grow normally. Look into the multi-profit opportunities of adding Sof'n-Soil gypsum benefits to your services. Remind ecologically-conscious prospects that Sof'n-Soil gypsum is non-toxic, noncaustic, harmless to plants, pets and people. ■ For specifics, write to us at 101 S.

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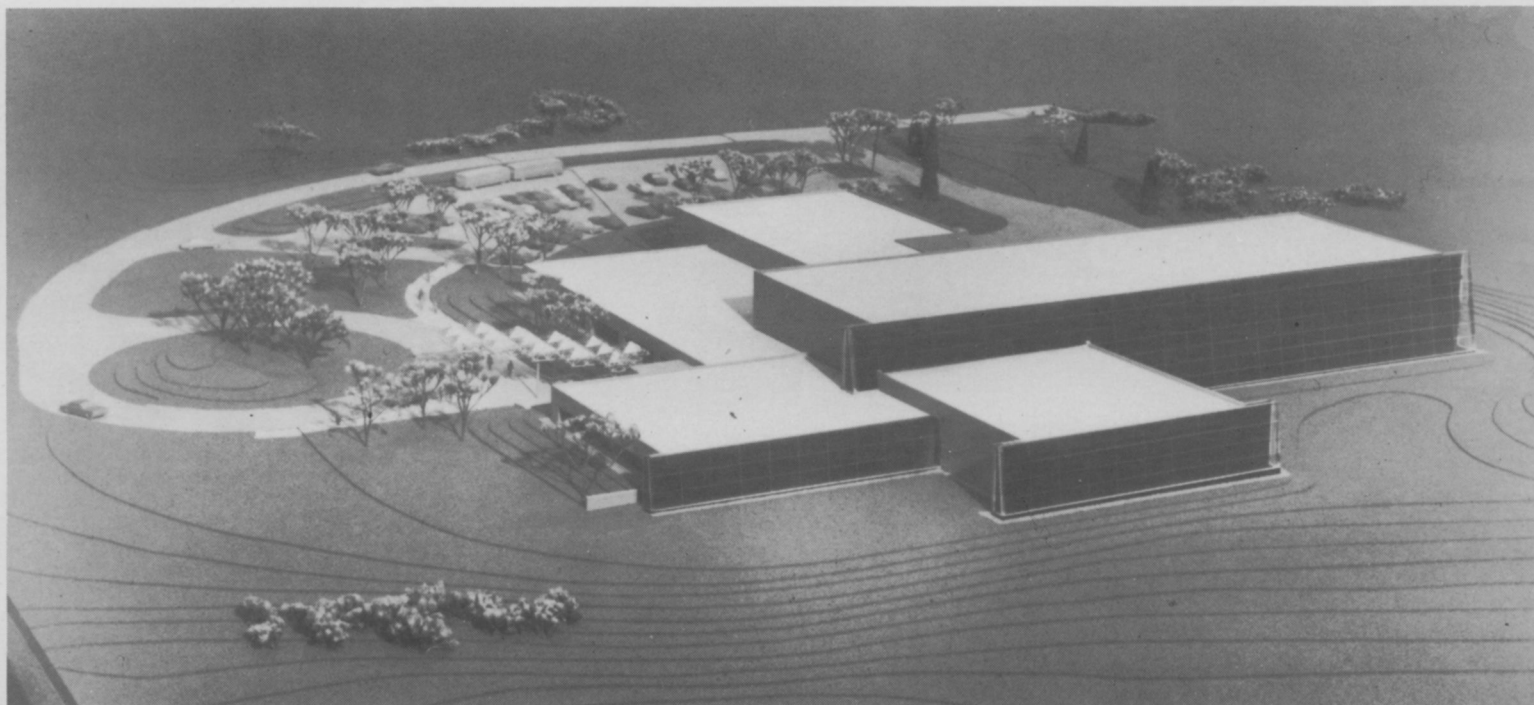
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# Industry Photo Review



An architect's model shows the view of John Deere's new worldwide industrial training center facility in Davenport, Iowa. The 55,000-square-foot building will use solar energy to reduce

annual heating bills by as much as 40 percent, according to Deere engineers. Completion is scheduled for December of 1980.



Peter Loft, of Lofts Pedigreed Seed, Inc., Bound Brook, New Jersey, takes time out to become a friend of the ovine model used for the introduction of RAM I Kentucky bluegrass. Lofts Pedigreed Seed and Jacklin Seed Company recently launched an advertising campaign publicizing RAM I.



Don and Duane Jacklin, of Jacklin Seed Company, Post Falls, Idaho, examine the plans for the giant expansion of the company's warehouse. The new warehouse will be one of northern Idaho's biggest buildings. The building is slated to house Jacklin's largest anticipated crop in history.



Those participating in ground breaking ceremonies for Michigan State University's new Hancock Turf Field include: (left to right) Dr. Dale Harpstead, department chairman, Crop and Soil Sciences; Dr. John Kaufman, assistant professor, Crops and Soil Sciences; and Dr. Joe Vargas, associate professor, Botany and Plant Pathology.



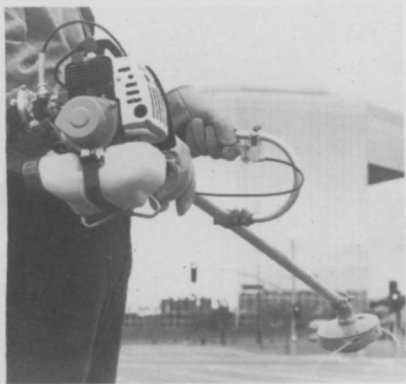
The Charles Machine Works, Inc. has opened a new engineering center in the latest expansion of its headquarters and manufacturing plant in Perry, Oklahoma. The company makes Ditch Witch underground construction equipment.

The engineering center is housed in two buildings: a two-level office facility and a development and testing building. Total area is about 50,000 square feet. The office houses all engineering and support personnel, including design, drafting, technical data sup-

port, product proving and testing, research and development, product safety, and specialty engineering. The development and testing facility has the capability of in-house prototype fabrication. An outdoor test area has a testing pad and two test pits equipped with tie-downs, external fuel, and hydraulic outlets. Testing can be controlled and monitored from the indoor control room.



## PRODUCTS



### String trimmer with solid-state ignition

The Model 3000 SS string trimmer, from The Green Machine, features solid-state ignition and a two-cycle, 1.2-horsepower engine. A variety of quick-change metal blades are available. The unit is also a high-production tree pruner and brush cutter.

Circle 208 on free information card

### Gas-powered blower

The Green Machine Model 2600 gas-powered blower features a well-padded harness



system and a 22.5cc engine which produces air jet speeds of 120 miles per hour. The blower weighs 14.3 pounds.

Circle 201 on free information card

### Portable sprayer for follow-ups, call backs

Porta-Spray, a chemically inert pump-spray system which dispenses a wide variety of fluids, is well suited for spot spraying and follow-ups, services typically offered by lawn care businessmen. Fluids can be dispensed in a fine particulate mist or a jet spray pattern. Further, Porta-Spray holds 3 1/2 pints of straight or blended fluids calibrated on 0.5 pint increments.

Circle 206 on free information card

### Long-life flail mower cuts close to walls

A British-made, heavy-duty flail mower has two unique features: floating links enabling 12-inch oscillation and a facility for cutting close to barriers. The 72 HD Turbomower, from Turner International Limited, has been designed for long, trouble-free

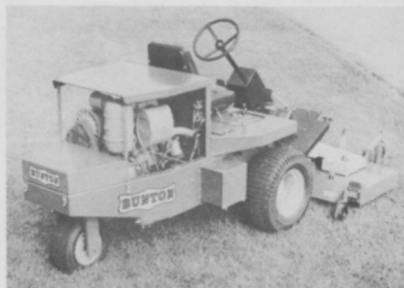
service for cutting grass and scrub in rough conditions.

Turbomaster's floating link suspension allows it to follow the contours of undulating ground, thereby reducing wear on linkage points. Further, the machine's five-and-one-half-inch diameter steel rotor has a three-eighths-inch thick wall. It is also dynamically balanced and fitted with spring steel cutters attached by spring steel shackles. Drive is through a heavy-duty bevel gearbox and a cross shaft with double universal coupling to four final drive belts with self-adjusting tensioning. The mower also works well behind a tractor because its 72-inch width is approximately tractor-size. For maximum safety, the machine has 12 independent front steel flaps in one-eighth-inch mild steel plate and a full width guard of reinforced rubber is fitted at the rear.

Circle 215 on free information card

### Front-mounted mowers for diesel tractors

Bunton Co. offers the first diesel tractor for front-mounted rotary mowers. The 30-horsepower diesel tractor reduces fuel consumption and increases engine life. Front-



mounted mulching or side-discharge rotary mower attachments in 61-inch and 71-inch cutting widths are also available from Bunton.

Circle 201 on free information card



### Echo gasoline trimmer

Echo, Inc. has introduced a powerful, precision-balanced gasoline trimmer, the SRM-200, for commercial grass trimming and brush cutting. The SRM-200 is designed with a quality two-stroke, single-cycle, air-cooled gasoline engine. The cutter also features a .080-inch dual line monofilament head and it comes equipped with a guard.

Circle 216 on free information card

to page 51



### 18-horsepower tractor

An 18-horsepower tractor featuring a twin-cylinder Briggs & Stratton engine has been introduced by Gilson Brothers Co. For fine lawn grooming, a 42-inch, threeblade rear discharge mower is available. The mower discharges grass clippings through a chute located between the rear wheels for pickup by a standard pull-behind sweeper. Because there is no side chute, trimming along fences and shrubs can be done from either side to save time maneuvering. A side discharge, three-blade mower is also available in 42- and 48-inch widths.

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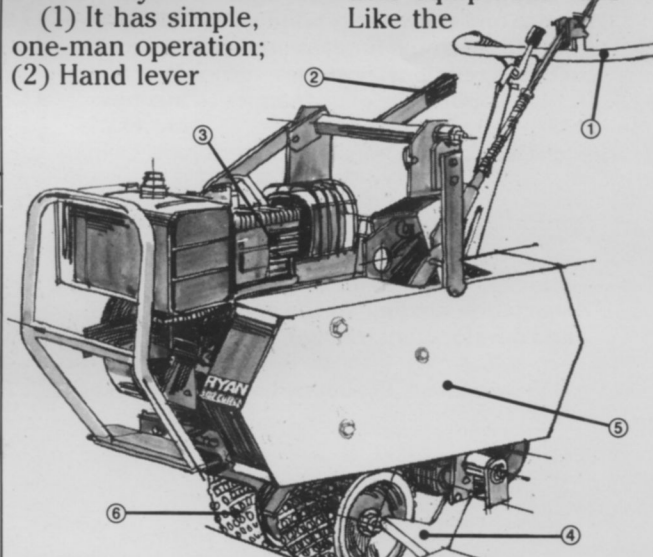
## There just isn't another sod cutter built like Ryan's.

This is the Ryan® Jr. Sod Cutter. The latest in a line that started 24 years ago. Naturally, we've made quite a few improvements since then, but today's Jr. Sod Cutter delivers the same, everyday dependability and reliable performance that made our first model so popular. Here's why.

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controls set the cutting depth up to 2 1/2"; (3) A rugged 7-hp engine delivers plenty of power; (4) You can choose 12" or 18" width models; (5) Its

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# Eight good reasons to join the Professional Lawn Care Association of America.

1.

**"An annual national lawn care convention for the professional exchange of new ideas and operating know-how, and a chance to meet with suppliers."**

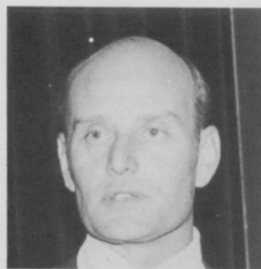
Rick White, Village Green Lawn Spraying, West Chicago, Ill.



2.

**"Consumer education . . . informing potential customers of the advantages of lawn care and the importance of putting the proper care of lawns into the hands of dedicated, trained, skilled professionals."**

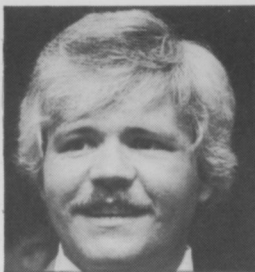
Tom Brune, Atwood Lawn Spray, Sterling Heights, Mich.



3.

**"Conferences, clinics and workshops aimed at continuing management education for today's business climate and conditions relating to the lawn care industry."**

Jim Kelly, Keystone Lawn Spray, Wayne, Pa.



4.

**"Government relations . . . PLCAA, as a spokesman for the entire industry, can present our interests with greater force and effectiveness than can an individual company. Government legislation is going to affect our industry more and more, and we have to make our needs known."**

Ronnie Zwiebel, Chem-Care Lawn Service, Birmingham, Ala.



5.

**"Specially designed training programs for sales, service and supervisory employees of member firms to teach the fundamentals of business, customer relations, lawn care technology and the importance of economics to business success."**

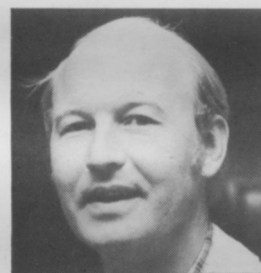
Gordon Ober, Davey Lawnscape Service, Kent, Ohio



6.

**"Establishment of acceptable technical, ethical and safety standards to guide existing lawn care businesses and newcomers to the industry."**

Dr. Paul Schnare, Atkins Lawn Care, Columbia, Mo.



7.

**"Association funding for the specific research and development we need for the lawn care industry."**

Frank Stevens, Pro-Lawn-Plus, Baltimore, Md.



8.

**"Surveys to enable each PLCAA member company to compare its performance against the average performance of all member companies and to compare business performance factors, such as sales volume, profit, investment and growth."**

Marty Erbaugh, Lawnmark Associates, Peninsula, Ohio



These are only some of the things the lawn care industry as a whole can accomplish through the Professional Lawn Care Association of America. Ours is a young industry, we need to be recognized as professionals and the experts we are. We need to get the word out about the lawn care industry to potential

customers, suppliers to the industry and to government at the local, state and federal level. We can't do it alone. We need the support of the entire lawn care industry if we are to realize our goals.



## Tell me more.

The Professional Lawn Care Association is off and running. Together we can make things happen. Grow with PLCAA. Complete this application for further information and mail it today.

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# PRODUCTS

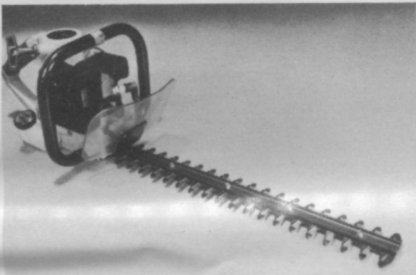


## Modular combine spreads materials

A new modular combine, from Trac'n Combo, Inc., can seed, fertilize, dispense insecticides and herbicides, and aerate all at once. The combine is designed to increase productivity and reduce costs by accomplishing several tasks in one pass.

A patented drive system allows the unit to dispense and aerate in either forward or reverse. Other exclusive features include retractable aerator and spinner plate for travel over rough terrain or curbs. The unit will also aerate up to two inches deep and dispense over a five to 12-foot area. Materials dispensed are metered to minimize waste. The unit mounts directly onto any tractor and its modular design allows remarkable maneuverability, particularly in confined areas.

Circle 217 on free information card



## Gas hedge trimmer

A new gasoline hedge trimmer, the HC-140, introduced by Echo, Inc., features lightweight, 10-pound construction with a 17-inch single-blade cutting action on a two-sided blade. The trimmer is powered by the Echo air-cooled, 14cc single-cycle gasoline engine.

Circle 218 on free information card

## Compact diesel tractor

Beaver III, an optimum-efficiency compact diesel tractor, is available from Satoh Agricultural Machine Manufacturing Co. The tractor is powered by a



three-cylinder, 47.4 cubic inch diesel engine, delivering 16.5 horsepower at 2,700 rpm's. Available in four-wheel drive with agricultural or estate tires, Beaver III offers such standard features as dual-range eight-speed selective sliding gear transmission, a Category I three-

point linkage, three-step PTO, full instrumentation, foot and hand throttles, an over-running clutch, and sealed independent wheel brakes.

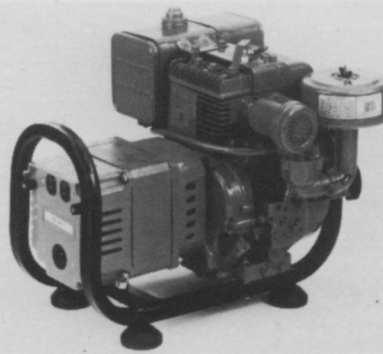
Circle 231 on free information card

## Carrying cradle for portable generators

Ag-Tronic has introduced a new carrying cradle to their 53 Series portable generator line. The carrying cradle is made of one-inch steel tubing with four neoprene feet to provide sturdier footing and better protection for the generator head. The introduction of this new cradle also marks the first time Ag-Tronic has offered a low-priced 53 Series unit with idle control. Idle control automatically reduces engine speed to idle when no power is being drawn, thereby extending engine life and reducing fuel consumption. Eleven

models are available from 1,250 to 4,500 watts. All models are available with Briggs & Stratton engines, rotary field design, fused circuits to protect against power overloads, and 120 volt duplex receptacle.

Circle 219 on free information card



## Bolens diesel tractor with hydrostatic drive

Bolens' new HT20 tractor offers the power and economy of a

twin-cylinder 19.9-horsepower cast iron diesel engine, along with the added control and ease of operation with Bolens hydrostatic drive with patented treadle pedal foot control. A two-spool power-lift hydraulic attachment lift allows the operator to perform two operations at once off a shaft driven PTO for front, center, and rear mount attachments.

Circle 220 on free information card

## Rear tine tiller

An eight-horsepower rear tine rotary tiller with key electric start is offered by Yard-Man Co. The Model 21409 comes complete with a 12-volt battery and three-step chain drive. Further, it features five working speeds and reverse.

Circle 226 on free information card

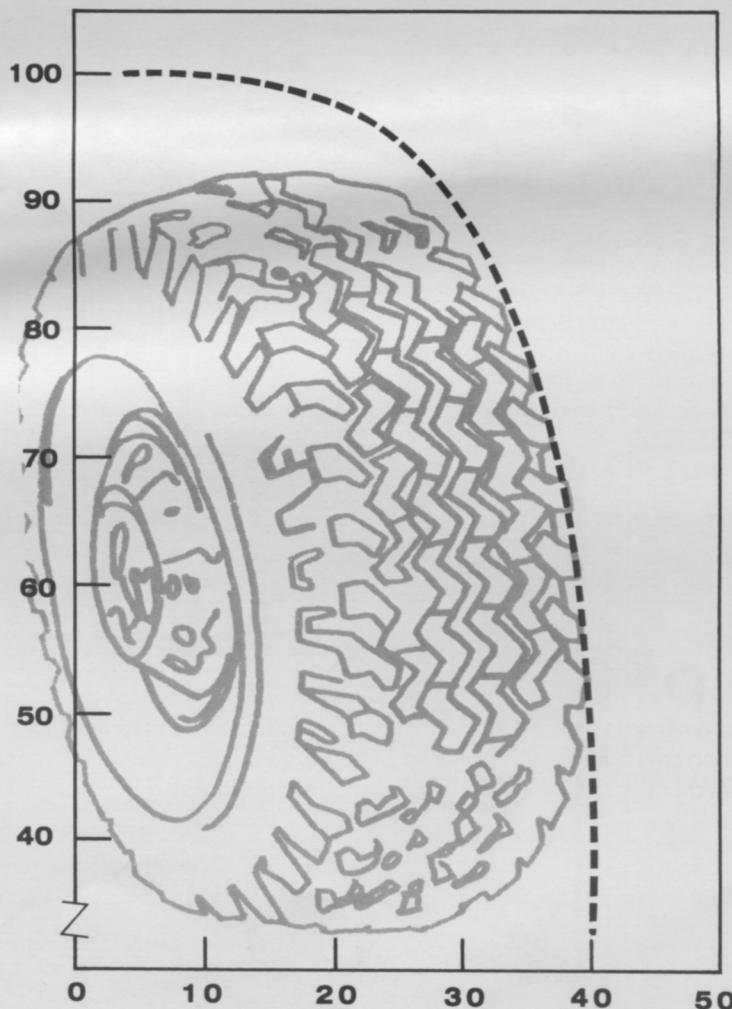
to page 52

# COST CUTTINGS

## Suggestions for controlling tire expenses

Lawn care operators could be leaving a significant percentage of their profits on America's highways if their tires are not being purchased and cared for properly. Therefore, according to Ron Turley, of Ron Turley Associates, Glendale, Ariz., the following guidelines should be followed:

- Purchase tires with greater carrying capacity than is needed.
- Purchase tires with the fewest known flats.
- Purchase tires with the greatest recapability.
- Purchase tires with the least rolling resistance.



Tire wear chart: Running the tire just 10% underinflated (left) can rob the tire user of 7% of its tire life (bottom).

Turley, who spoke at the popular ALCA Maintenance Symposium in Milwaukee, Wis. this past November, said steel belted radials have "far fewer" flats than conventional tires. "They resist punctures more readily and have greater carrying capacities," he said.

Turley also had some interesting observations about tire wear. "Running a tire just ten percent underinflated can rob the tire user of seven percent of its tire life," he said.

# "Marketing Radar"

Arthur C. Nielsen, Jr.

This is how the Chairman of the Board of one of the country's largest marketing research firms describes the value of the Census to the nation's business community.

If you own or manage a business, you are a marketer. But you can't market successfully unless you know to whom you are selling. You must understand your consumer. To do this, you need accurate information about the population, and lots of it.

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# PRODUCTS

New For 1980!

**BUNTON Diesel-POWERED**  
 36" and 52" ROTARY MOWERS  
SIDE DISCHARGE OR MULCHING TYPE


## Walk-behind mowers

Bunton Co. offers walk-behind mowers in 36- and 52-inch models. The eight horsepower diesel engine is a four stroke Acme with remote control governor and rope start.

Circle 211 on free information card

## Electric start rotary mowers

Two new key electric start rear-discharge rotary mowers, Models 12346 and 12306, with 22-inch and 20-inch cut respectively, are available from The



Yard-Man Company. Each unit is rear drive, self-propelled, and powered by a four-horsepower engine for extra power.

Circle 221 on free information card

## Engine-driven wing mower from Gravelly

An engine-driven wing mower which increases mowing capacity by 40 inches is available from Gravelly. The unit, which attaches quickly and easily to Gravelly commercial grounds maintenance tractors, has the additional features of mowing a zero degree uncut circle and trimming within one inch of obstacles. It is powered by an 11-horsepower engine.

The wing mower mounts on



the left side of the tractor, giving good operator visibility and providing a trimming capability that will, according to the manufacturer, eliminate the use of auxiliary trimming equipment in many applications. The rugged deck is mounted on its own carrying frame and floats independently from the tractor to follow ground contour. When used with the new 60-inch, center-mount mower, the combined cutting width totals 100 inches.

Circle 222 on free information card

## Polystyrene pallets

Lewisystems, an operating unit of Menasha Corporation, offer Convoy I polystyrene pallets for the lawn care industry. Unlike wooden pallets, Convoy pallets have no nails to puncture bags of fertilizer, seed, or peat. The



## Lawn tractors feature hydrostatic drive

John Deere & Company's line of 300 series lawn and garden tractors feature hydrostatic drive and hydraulic equipment lift. The Model 314 is powered by a 14-horsepower cast iron engine that is isolated to reduce vibration. Drum-type brakes on each rear wheel are activated by a single pedal.

The Model 317 is powered by a twin cylinder engine and features a dual-function hydraulic lift system which provides fingertip control of front-, mid-, and rear-mounted equipment. Both the 314 and 317 feature hydrostatic drive with one-lever control of direction and speed.

A number of attachments are also available including a thatcher, cultivator, landscape rake, lawn vac, broadcast spreader, and sprayer. A dump cart, lawn sweeper, rear blade with scarifier, and tow-behind sweeper are also offered.

Circle 225 on free information card

pallets are safe, with no splinters to cut ankles, lightweight (31 pounds, and waterproof. And



they save space. Empty pallets can be nested together. A stack of 32 is only 51 inches high.

Circle 223 on free information card

## Pressure regulators

A new pressure regulator designed to provide settable output pressure from a valve regardless of higher input pressures was recently introduced by the Rain Bird Manufacturing Corporation. The regulator is available with a Schrader Valve and is designated Model PRS.

The regulator can withstand line pressure surges and will ease surge pressure effects on the system, providing over-pressure protection to downstream devices. Additionally, the regulator does not affect solenoid operation or opening and closing speeds of the valve.

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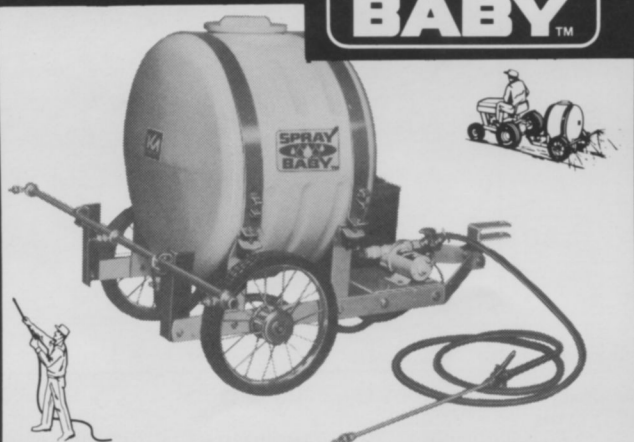
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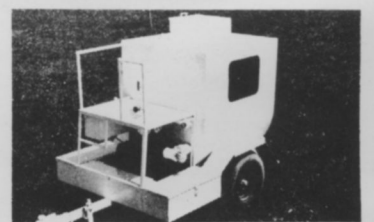
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### PROFIT WITH LESS MANPOWER

1 machine, 2 men in 29 working days grossed \$44,000. Net Profit: \$32,000

MODEL 350 \$3995

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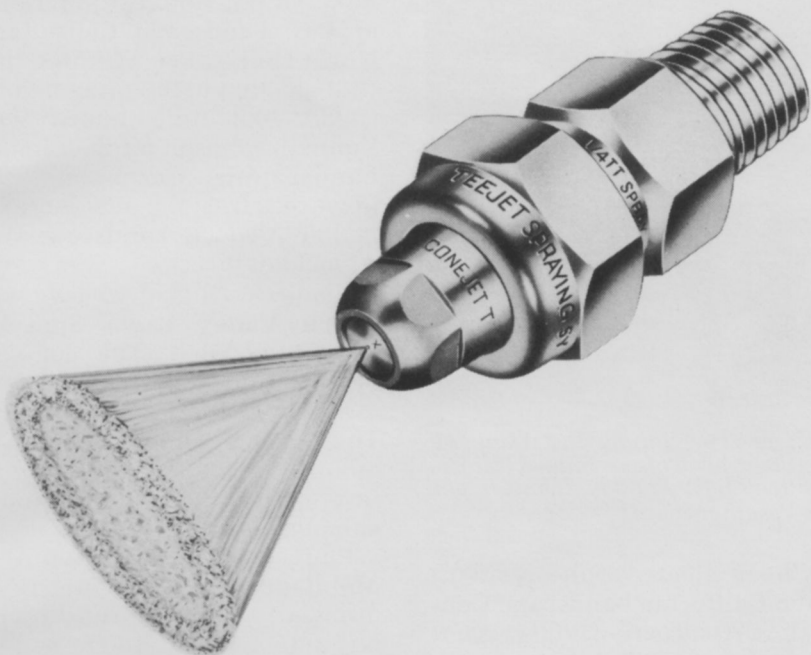
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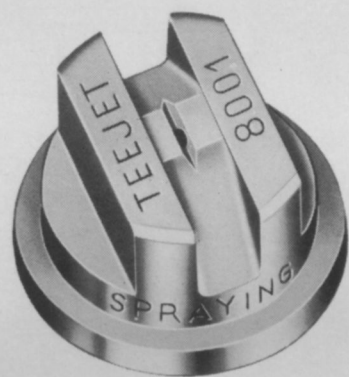




A one-quarter TT TeeJet with ConeJet spray tip from Spraying Systems Company. Hollow cone nozzles with internal grooves are traditionally used in lawn care insecticide applications. The hollow cone spray is specifically designed for wettable powders at high pressure with a minimum of clogging. However, one disadvantage with hollow cone nozzles is the spray does not produce an even distribution when used on a boom.



A one-quarter TeeJet with flat spray tip. A flat spray pattern is used in a series along a boom to achieve a good, even distribution of liquid.



A Teejet flat spray tip. The flat spray is good for pre-emergence weed control and soil insect control. In a commercial or industrial situation where boom spraying is used, a proper overlap can be achieved which will make for even distribution of liquid with the nozzles slightly canted so that one nozzle sprays behind the other.

## MEMOS

**Two-dollar gasoline?** Earlier this year, the editors of LAWN CARE INDUSTRY spoke with a number of lawn care businessmen, some who said they had budgeted for \$1.80 gas for their lawn care trucks by the end of the year. We thought maybe they were being a little alarmist, and they themselves said that was the built-in cushion they had built into their budget for the lawn care season.

But recent reports have energy officials worrying about further price rises on imported oil, while last December's OPEC increases have not yet entirely reached the gas pump. Last month's increases by Persian Gulf nations besides Saudi Arabia took the federal Energy Department by surprise. Almost all analysts expect \$1.50-a-gallon gasoline, at the least, by summer. Prices could go as high as \$2-a-gallon by the end of the year, the experts say. It might be time right now to take a look at how concentrated your route lists are.

**Oops:** Kurt Kluznik, president of Yardmaster, Inc., Painesville, Ohio writes to say that although his company does more than \$1 million dollars worth of business a year, he should not be included in LAWN CARE INDUSTRY's "Million-Dollar Lawn Care Companies" list published in January. He says he has 3,000 chemical lawn care companies and does \$350,000 worth of business in chemical lawn care. The rest of his business is in landscape maintenance and contracting.

### EDUCATION

#### PGMS certification applications available

Applications for the Professional Grounds Management Society's certification program are available from Allan Shulder, executive director, PGMS, 19 Hawthorne Avenue, Pikesville, MD 21208, 301-653-2742.

### COMPANIES

#### Toro Co. to build new headquarters

The Toro Co. has purchased a 50-acre site in Minnetonka, a Minneapolis suburb, where it is planning to construct a 250,000-square-foot building to house

company headquarters and central offices.

Toro chairman David T. McLaughlin said there are many details still to be worked out but it is hoped the building will be ready for occupancy by late 1981.

### HERBICIDES

#### Devrinol registered for use on ornamentals

Devrinol, a surface-applied herbicide from Stauffer Chemical Co., Westport, Conn., has been federally registered for weed control in ornamentals, field-grown nursery stock, liner stock, ground covers, and dichondra.

Devrinol is labeled to control eight annual grasses including barnyardgrass, bristly foxtail, and large crabgrass.

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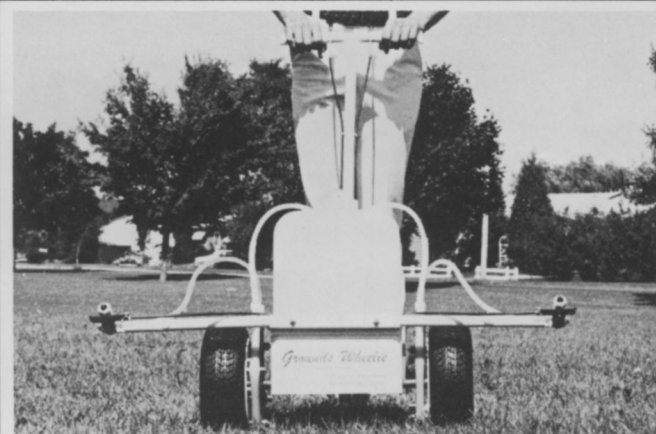
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The pumping system and the (6) gallon container are made of corrosive resistant materials. The spray comes from (2) nozzles in the form of tiny droplets providing a steady, uniform application which greatly reduces costly chemical drifting. The frame is fabricated of heavy gauge steel with fold-up booms. The shut-off controls are located on the handle grips. (Other models and sizes available.)

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NEWSMAKERS *from page 10*

Larry E. "Casey" Jones has been promoted to associate product manager for **TUCO Agricultural Chemicals, Div.** of the Upjohn Co., Kalamazoo, Mich. In his new assignment, Jones assumes management responsibilities for TUCO's expanding line of herbicides, insecticides and fungicides. He will report to Owen B. Lewis, marketing manager.

**Crown Chemicals**, St. Louis, has changed its name to **Crown Industries**, and moved to larger offices, according to general manager Ernie Smits.

Carmen J. McFarlane is owner of **Lawn King of Missoula**, Montana. The home office of this lawn care franchise is in Fairfield, N.J.

Hank Tornell is owner of **Lawn Doctor of Warren/Passaic**, Warren, N.J. The company offers chemical lawn care, contracting and mowing/maintenance. The



Tom Blosl, (right) president of Bay Irrigation and Turf Supply, Inc., Concord, California, was named distributor of the year by Telsco Industries. He receives congratulations from Telsco President L.O. Snoddy (center) and Charles S. Putnam, vice-president/sales for Weather-matic.

home office of this lawn care franchise is in Matawan, N.J.

David Fuller is owner of **Full Care Chemical Lawn Service**, Sellersburg, Ind.

Don Napolitano of **Associate Industries**, Montebello, Calif.

has been elected 29th president of the **California Landscape Contractors Association** at its recent annual convention. Vice presidents elected include Mickey Strauss, **American Landscape**, Canoga Park; Martin Rippens,

**Hydro-Dig, Inc.**, Anaheim; Tim Nord of **T.F. Nord & Associates**, Bakersfield; and Efraim Donitz of **L.C. Landscape Consultants**, North Hollywood. Winning their first election to the nine-member CLCA executive board were Kenneth Johnson, of **Sacramento Landscaping**, Carmichael, the new treasurer; the new secretary is Jon Alsdorf, **Landscape-West Associates**, Fresno.

Blane K. Rickel is owner of **Green Valley Lawn Spraying**, Westland, Mich. The company offers liquid chemical lawn care.

Edwin D. McGuire is owner of **The Lawn Company**, South Yarmouth, Mass. The company offers both liquid and granular chemical lawn care.

Paul C. Woltze, owner of **Mobilandscapes**, announces the company has moved from Nipomo, Calif. to San Luis Obispo, Calif.

Mark S. Forge is owner of **Green Carpet Lawn Service**, Worcester, Mass.

Gary Boatright is owner of **Dendron, Inc.**, Novato, Calif. The company offers mowing/maintenance services.

Ann Brooks Runley has been named an area specifications manager for the **Rain Bird Sprinkler Mfg. Corp.**, Glendora, Calif. She will handle the northern California region.

William J. Troy has been named field sales manager of **Jacobsen Div. of Textron, Inc.**, Racine, Wis., according to Richard J. Dittoe, vice president of marketing. Also, Philip A. Taylor has been named general



Troy



Taylor

manager of service for the company.

Chris Forth, former research station manager at the **ChemLawn Chemical R & D** facility in Milford Center, Ohio has been named regional agronomist for ChemLawn's new Philadelphia region. Forth, who had been at Milford Center since October 1975, began his career with ChemLawn as a lawn specialist in the Washington, D.C. McLean branch in 1975. Following graduation from **Pennsylvania State University** with a B.S. in zoology in 1973, he began studies and completed requirements for a B.S. in agronomy then pursued graduate study in turfgrass science.

Russell H. Tiller has been promoted to agricultural chemical sales representative for **TUCO, Division of the Upjohn Co.**, Kalamazoo, Mich. He will serve Michigan and Indiana, and will report to Donald J. Maske, north central district manager. The announcement was made by Owen B. Lewis, agricultural chemical marketing manager.

Robert C. Banse and Phil J. Marlotty have been named purchasing agents for turf products for the **Jacobsen Div. of Textron, Inc.**, Racine, Wis.

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# Michigan Turf Conference

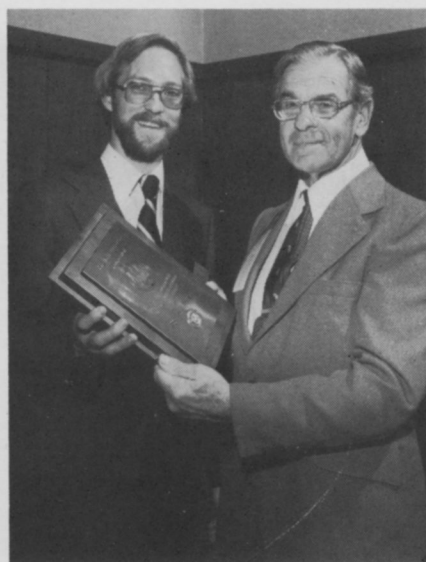
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LAWN CARE INDUSTRY

MAR 1980



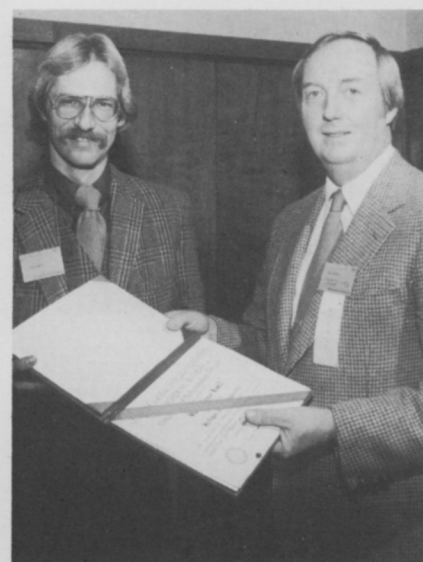
Leonard M. Debusk (right), a four-year turfgrass management student at Michigan State University, is presented with the Burton C. Bradshaw Outstanding Student Award. Presenting the award is Gordon La Fontaine, of Lawn Equipment Corporation.



Patrick J. Berger (left), a two-year turfgrass management student at Michigan State University, is presented with the Michigan Turfgrass Foundation's Outstanding Student Award. Presenting the award is "Tuck" Tate, president of the Michigan Turfgrass Foundation.



Michael J. Newell (left), a two-year turfgrass management student at Michigan State University, is presented with the Michigan Turfgrass Foundation's Norman W. Kramer Outstanding Scholar Award. James Timmerman presents the award.



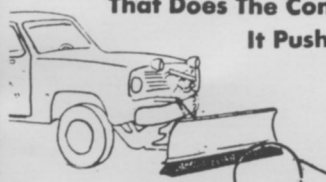
Michael J. Newell was also presented with a Golf Course Superintendents Association of America scholarship by Ted Woehrle, past president of the Golf Course Superintendents Association of America.



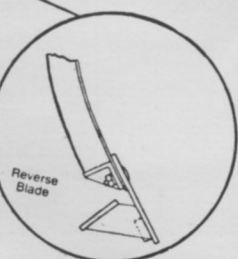
Dennis B. Myers (left), a two-year turfgrass management student at Michigan State University, and Jeffrey A. Crean (right), a four-year turfgrass management student, are presented with the Upjohn Company Scholarship Awards by Russ Tiller, area sales representative for the Upjohn Company, Kalamazoo, Michigan.

## Something **NEW** For Snow Plowing!!!

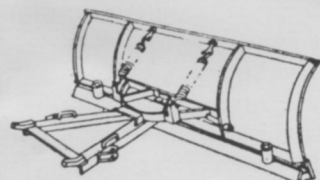
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- It lets one plow do the work of two.
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  - It saves you time and money.



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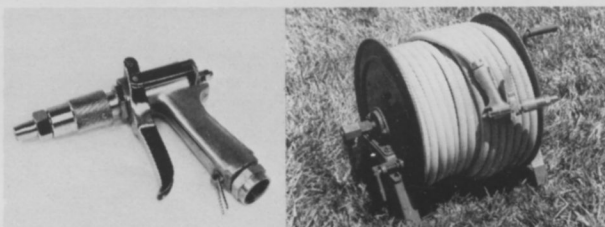
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"... an account of parents who are angry at the Northumberland and Newcastle Board of Education for allowing the use of 2,4-D as a weed killer on school grounds. They have formed a group known as Parents Against Senseless Spray (PASS), but the board is not impressed enough to cancel spraying plans. It was guided by the advice of one of Dr. Parrott's officials who said he was sure it would be found safe."

After some further questions, the editorial concludes by saying:

"Whether the alarm of the parents in the Cobourg-Campbellford area is well-founded or not, it must at least be conceded that a schoolyard would be one of the last places on earth that one would take the smallest of risks."

Commenting on PASS and its actions, Des Rice, president of Weed Man, Ltd. — one of

**"The bill is extremely restrictive. The part the lawn care industry would have the most difficulty complying with is the requirement that the owner of the property be notified of the date and time of application. It is almost impossible for a lawn care company to schedule work precisely enough to arrive at a lawn at a specific date and time," Robert Miller, Chemlawn Corp., Columbus, Ohio**

Toronto's largest weed and fertilizer sprayers, told LAWN CARE INDUSTRY:

"There was also extensive television coverage to play up the story. The usual stuff, an irate housewife promising that her children would not be allowed to attend school if further spraying was permitted."

As a result, Rice said, "a lot of school boards dropped the second application of weed control and are rewriting their con-

tracts this year. Also, the Toronto Parks Department has dropped its total spray program for the future. This has put strain on the industry as a whole."

The PASS actions and public and government response to them have brought about 35 lawn sprayers in the Toronto area together to form an association. One of the group's functions is to counter any adverse propaganda that arises from time to time, Rice said.

# Finally, An Aid For Teaching Turfgrass

Superintendents, Contractors, Lawn Care Managers, New, On-the-Job Reference. The Turf Managers' Handbook is a comprehensive, organized approach to turfgrass science and care. It has been designed and written by leading turf specialists from Purdue, Dr. William Daniel and Dr. Ray Freeborg, for on-the-job reference and as a text for students.

The book contains 150 illustrations and 96 color photographs. Data includes 240 tables and forms. Included are specifications for rootzones, employment, calculations for

chemical applications, and extensive metric-imperial conversion. Business

and technical aspects of turfgrass management are

covered in this 424-page book.

Planning, purchasing, hiring,

construction, and plant

selection are put together for

easy on-the-job reference.

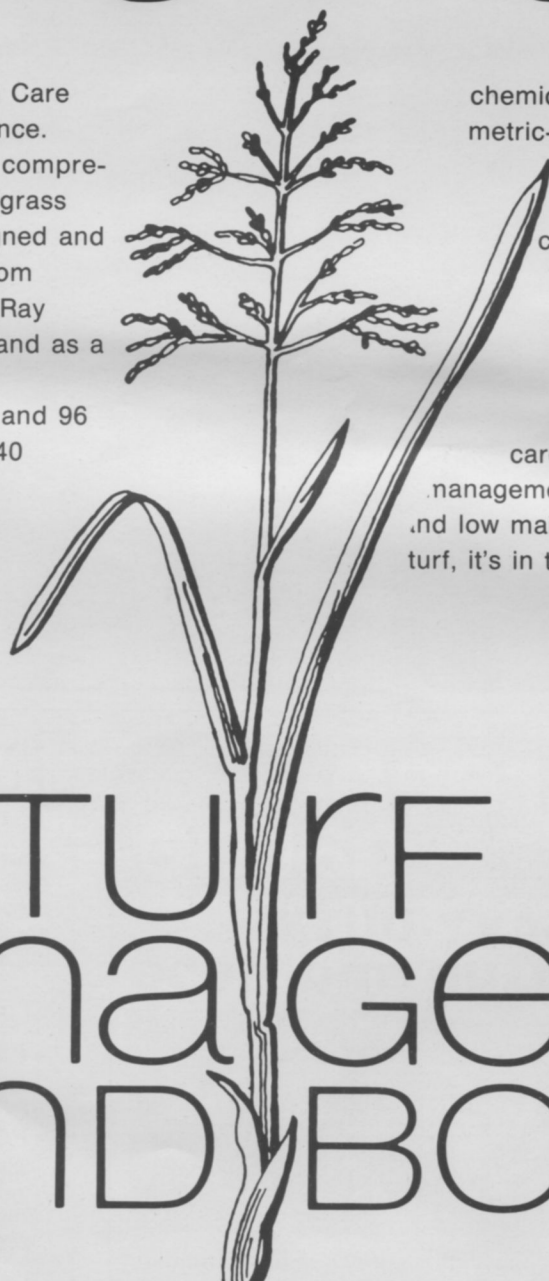
Markets covered include lawn

care, sod production, golf course

management, cemeteries, athletic fields,

and low maintenance areas. If it concerns

turf, it's in the Turf Managers' Handbook.



## Turf Managers' Handbook

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In a letter to the Professional Lawn Care Association of America, Dr. Robert Miller, group vice president of ChemLawn Corp., Columbus, Ohio says:

"The bill is extremely restrictive. The part the lawn care industry would have the most difficulty complying with is the requirement that the owner of the property be notified of the date and time of application. It is almost impossible for a lawn care company to schedule work precisely enough to arrive at a lawn at a specific date and time."

The PLCAA is presently planning a strategy to fight the bill. For further information about this, contact: Glenn Bostrom, PLCAA, Suite 1717, 435 N. Michigan Ave., Chicago, IL 60611, 312-644-0828.

The Professional Lawn Care Association of America was formed in the summer of 1979. Jerry Faulring, of Hydro Lawn, is the organization's president.

### FUNGICIDES

#### Agencies agree on answers to benomyl

While a final statement on benomyl fungicide has not been issued, unanimous agreement to continue the registration of benomyl has now been expressed by the federal Environmental Protection Agency (EPA), the U.S. Department of Agriculture (USDA) and advisory groups to these agencies, according to a statement by Dr. Warren K. Lowen, director of research for Du Pont Co., Wilmington, Del.

A trade name for benomyl is Tersan 1991, widely used in the lawn care industry for disease control.

"Benomyl has been thoroughly reviewed under the government's RPAR (Rebuttable Presumption Against Registration) procedure," reported Dr. Lowen. "More than two years have been required for this review, with new studies by scores of scientists and careful evaluation and reporting on the benefits of this fungicide by hundreds of users. There have been no scientific surprises in these studies and reports. They have confirmed earlier knowledge of the safety and efficacy of this product."

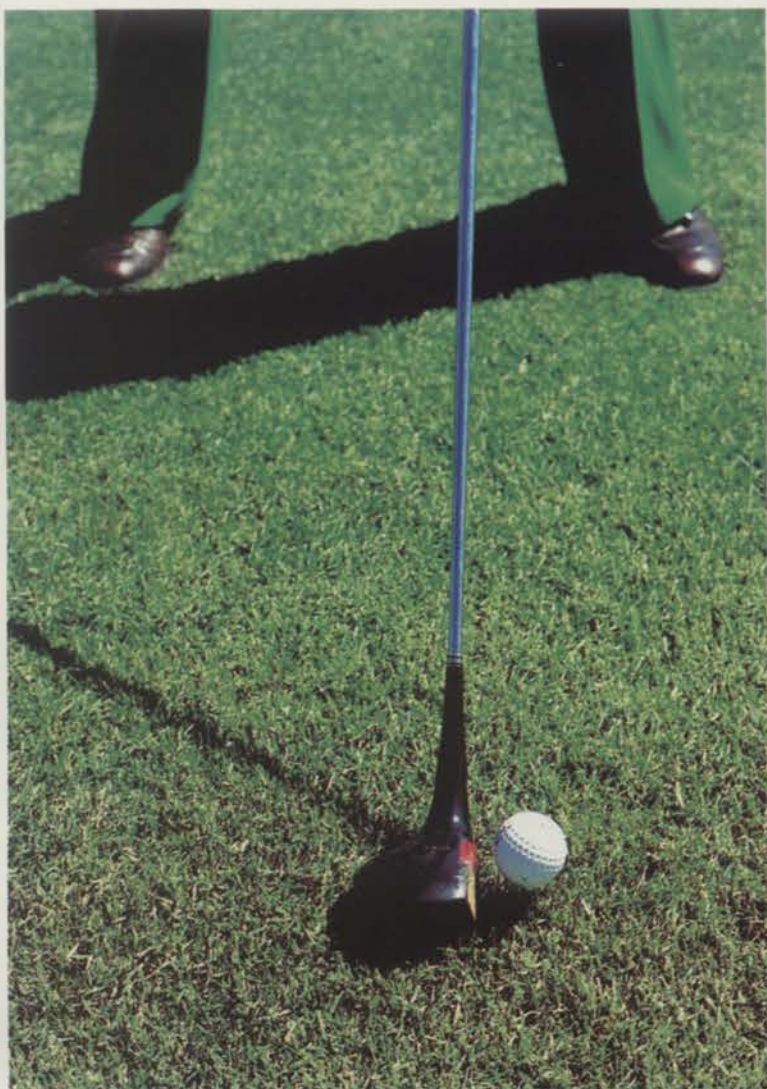
EPA's final statement on benomyl may be issued soon.

Meanwhile Dr. Lowen cited specific recommendations from the EPA's Scientific Advisory Panel, the joint EPA-USDA Benefit Assessment Team, and Secretary Bob Bergland of USDA as indicators that use of benomyl does not constitute a hazard to users in the field or to the public.

EPA's Scientific Advisory Panel (SAP) has unanimously concurred with the regulatory agency's preliminary position that benomyl should continue to be registered for all uses.

"With the favorable action already taken by responsible panels and agencies, we are anxiously awaiting the final benomyl ruling by EPA, so plant pathologists may continue needed product development activity," Dr. Lowen said.



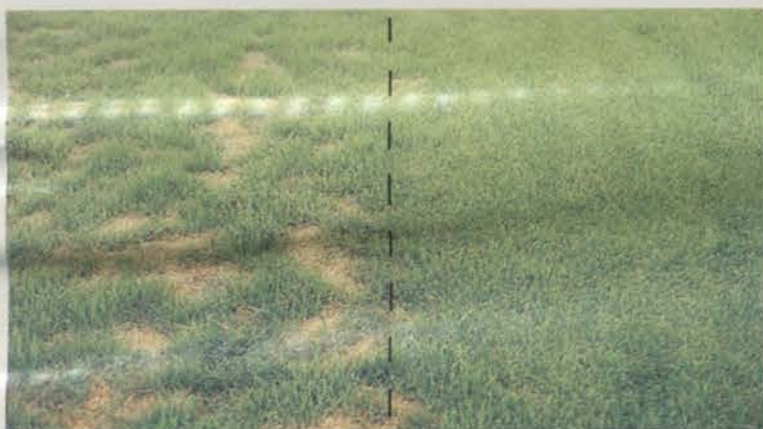


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### RESEARCH

#### New bermudagrass survives severe winters

Test plots of a new bermudagrass strain called VPI C-1 have exhibited surprising winter hardiness and may be of possible value for use on general turf areas, according to L.H. Taylor and R.E. Schmidt, of Virginia Tech, Blacksburg, Va.

Test plots of the new bermudagrass strain have been established at the Southern Piedmont Research and Continuing Education Center near Blackstone, Va. In these trials, VPI C-1 is being compared with Midiron, Tufcote, and Tifway bermudagrass for spread and rate of establishment from sod, plugs, and sprigs. The plots will also be evaluated for turf quality and later will be used to evaluate the performance of the strains with several management variables.

Further, VPI C-1 is included in an observational trial of 12 vegetatively established or seeded bermudagrass strains. Large plots of VPI C-1 and Midiron have also been established for use in studies of overseeding with temperate grass for winter turf.

According to Schmidt and Taylor, VPI C-1's characteristics include outstanding vigor, attractive medium-green color, and winter hardiness. It also forms a tight sod that tends to remain weed free and appears to tolerate traffic well.



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4. Diplomat	6.3	10. Birdie	5.6	16. NK-100	2.7
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