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ALSO IN THIS ISSUE

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TURF GROWS ON YOU

FINE AND TALL



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Soluble Potash (K_2O)	8.0%



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ALA

AUGUST 1985
VOLUME 6 NUMBER 8

TABLE OF CONTENTS

BUSINESS FEATURES

Cutting Comparisons

Mowing maintenance businessmen have some strong opinions about the positive and negative aspects of the mowers they operate. 26

Sharp Ideas

John Deere and Toro have supplied us with some helpful tips for keeping your mowers in tip-top shape. 30

Turf Grows on You

Chicago artist Bill Harding works with an artistic medium we are all familiar with — grass! 33

Surveying the Industry

We mailed surveys to 480 mowing maintenance operators to create a profile of the "typical" mowing maintenance businessman. 36

How to Ring Up Sales

Telemarketing may be a somewhat controversial topic, but many lawn care businessmen are using it to turn big profits. 46

TECHNICAL FEATURES

Fine and Tall

John Dunn fills us in on the characteristics of the new fine-leaved tall fescues. . . . 37

Patchy Problem

Austin Hagan informs us of brown patch problems on warm-season turfgrasses. . 40

Toxicity and You

Patricia Vittum talks about toxicity and answers the question, "What are LD₅₀s and why should you care?" 43

DEPARTMENTS

Advertiser's Index 60
Calendar 8
Classifieds 60
Inside Story 10
News in Brief 13

People 24
PLCAA Update 23
Products 50
Views Across The Industry 8



COVER

The good people at Modern Tool and Die (MTD) in Cleveland let us borrow the two push mowers on our cover this month. Model Michael Kraft is in a quandary over which mower to buy, as were some of the businessmen we interviewed for our cover story. Photographer: Barney Taxell

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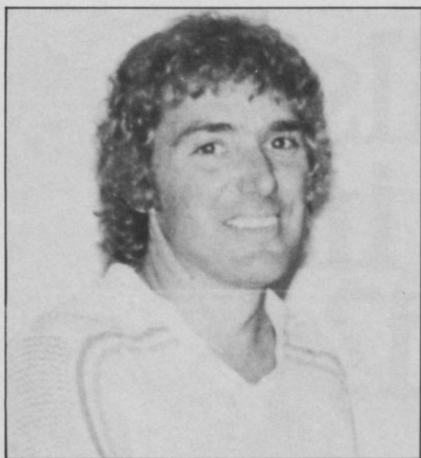


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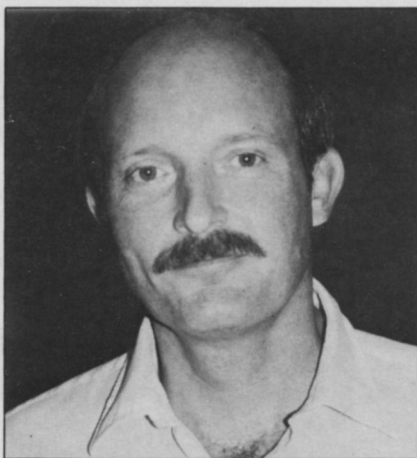
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VIEWS ACROSS THE LAWN CARE INDUSTRY

IS GROUNDWATER CONTAMINATION A REAL THREAT?



"I don't know if it's a threat. I have not heard any research that tells me that it is. I am not familiar with research that has convinced me that it's a problem. I have heard a lot of panicked people. But I haven't seen anybody come up with concrete evidence which tells me that it is a problem. So I would have to say at this point in time, I don't see that it is a problem."—**Tim Combs, President, Combs Landscaping, Westlake, Ohio.**



"I don't think there's any evidence, any reason, or any data which indicates that lawn chemicals are contributing to groundwater problems. Data tells us that virtually all of the chemicals used by the lawn care industry are bound tightly in the upper soil profile. They are degraded right there. They don't move much below that level."—**Gary Chamberlain, Regional Agronomist, ChemLawn Corporation, Mansfield, Ohio.**



"My opinion, from the information I have received, is that it's not a problem at all. Most, if not all, of the material we are using and the way we are using them do not go much more than 6, 7, or 8 inches into the ground. The pesticides are short-lived and become biodegradable. The fertilizers, for the most part, are used by the plants and the runoff factor is negligible."—**Don Burton, President, Lawn Medic, Inc., Bergen, New York.**

CALENDAR

Sept. 3-5

Midwest Agricultural Chemicals Association (MACA) 27th Annual Meeting, Americana, Lake Geneva, Wisconsin. Contact: 712/277-7380.

Sept. 3-5

Rocky Mountain Plant Food Association Fall Meeting, Estes Park, Colorado. Contact: 303/753-9067.

Sept. 5-6

Alabama Turfgrass Conference, Auburn Conference Center, Auburn, Alabama. Contact: Dr. Coleman Y. Ward, 205/826-4985.

Sept. 11

1985 Oklahoma Turf Research Field Day, Oklahoma Turfgrass Research Center, Stillwater, Oklahoma. Contact: Turf Extension Specialist, Oklahoma State University, Department of Horticulture and Landscape Architecture, 360 Ag Hall, Stillwater, Oklahoma 74078.

August 26

1985 Turf Research Benefit Golf Tourna-

ment, Oak Tree Country Club golf course, Edmond, Oklahoma. Contact: Turf Extension Specialist, Oklahoma State University, Department of Horticulture and Landscape Architecture, 360 Ag Hall, Stillwater, Oklahoma 74078.

Sept. 10

Cornell University Turfgrass Field Day, Turfgrass Research Station, Ithaca, New York. Contact: Dr. Norman Hummel, Cornell University, 20 Plant Science Building, Ithaca, New York 14853; 607/256-3134.

Sept. 11

1985 Oklahoma Turf Research Field Day, Oklahoma Turfgrass Research Center, Stillwater, Oklahoma. Contact: Turf Extension Specialist, Oklahoma State University, Department of Horticulture and Landscape Architecture, 360 Ag Hall, Stillwater, Oklahoma 74078.

Sept. 29-Oct. 2

1985 Florida Turfgrass Association Annual Conference and Show, Curtis Hixon Convention Center and Hyatt Regency, Tampa, Florida. Contact: Bill Nass, Florida Turfg-

ress Association, 302 South Graham Avenue, Orlando, Florida 32803-6332; 305/898-6721.

Nov. 3-7

15th Educational Conference of the National Institute on Park and Grounds Management, Holiday Inn World's Fair and Convention Center, Knoxville, Tennessee. Contact: National Institute, Box 1936, Appleton, Wisconsin 54913; 414/733-2301.

Nov. 13-15

1985 Oklahoma Turfgrass Conference and Trade Show, Lincoln Plaza, Oklahoma City, Oklahoma. Contact: Turf Extension Specialist, Oklahoma State University, Department of Horticulture and Landscape Architecture, 360 Ag Hall, Stillwater, Oklahoma 74078.

Jan. 28-29

1986 Horticulture Industries Show, Tulsa Convention Center, Tulsa, Oklahoma. Contact: Turf Extension Specialist, Oklahoma State University, Department of Horticulture and Landscape Architecture, 360 Ag Hall, Stillwater, Oklahoma 74078



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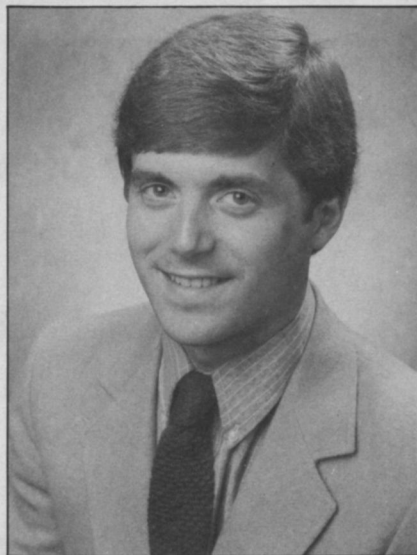
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INSIDE STORY

This month we take another look at the mowing maintenance industry. For our cover story, "Cutting Comparisons," we interviewed a dozen mowing maintenance operators to find out what they like and dislike about the mowers they are currently using. We got some pretty definitive answers which make positive and negative statements about certain mower lines.

The businessmen we contacted had expressed an interest in being interviewed when asked on a recent mowing maintenance mail survey. The results of the survey also accompany the cover story. Just to keep you sharp, we have also tossed in a feature on mowing and mower tips from the people at John Deere.

Assistant Editor Vivian Fotos gives us the low-down on telemarketing in her article, "How To Ring Up Sales." Telemarketing is a somewhat controversial advertising medium since many of us resent being contacted by an advertiser over the phone at home. Nuis-



ance or not, telemarketing can be an effective tool for making your company's presence known.

On the lighter side, we have an article by Editorial Intern Lisa Furiga about a

Chicago artist who creates mobile, living sculptures by glueing grass seeds to clothes and cars. It may sound like a joke, and artist Bill Harding certainly accepts laughter as an honest reaction to his creations, but he is dead serious about the status of his turf objects as art. Come to think of it, a grass-covered suit jacket might make a great marketing tool for your sales people!

As usual, we have an informative selection of technical features this month: "Fine and Tall," by John Dunn, University of Missouri-Columbia; "Patchy Problem," by Austin Hagan, Auburn University; and "Toxicity and You," by Patricia Vittum, University of Massachusetts. Read on!

Tim Weidner



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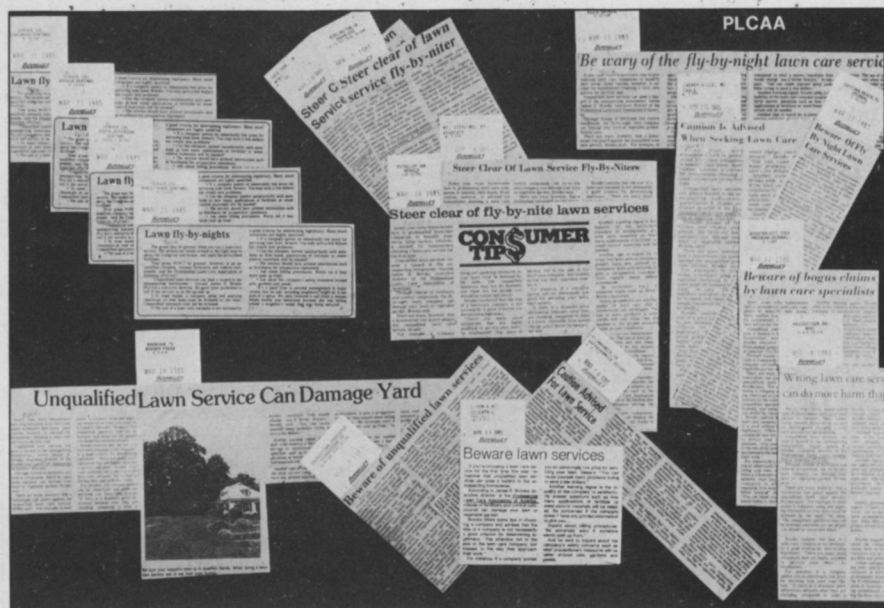
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NEWS IN BRIEF



The Stauffer/PLCAA publicity kit contains articles promoting the industry from a variety of angles.

STAUFFER/PLCAA PROMO GETS POSITIVE RESULTS

Stauffer Chemical Company's publicity program designed to promote professional lawn care is currently in full swing and getting positive results for the industry in many parts of the country. The publicity effort, which is designed to educate the public on services offered by the lawn care industry, is being funded by Stauffer and co-sponsored by the Professional Lawn Care Association of America (PLCAA). The program was announced to PLCAA members at last November's annual convention in Tampa.

Since the program was launched earlier this year, hundreds of articles promoting professional lawn care have been published in newspapers across the country. The PLCAA is favorably positioned in each of the published articles.

"Stauffer has also received several hundred phone calls and letters from lawn care operators regarding the program," says Greg Bushman, Marketing Manager for the company's Specialty Products group. "Response to the campaign has been very positive." The main tool in the publicity campaign is an attractive press kit titled, "The Case For Professional Lawn Care." The kit contains seven different articles promoting the industry from a variety of angles.

Copies of the kit were distributed to Association members during the convention, and instructions were provided to lawn care operators on how to use the kit for local publicity. The seven articles deal with such topics as weed and insect problems, benefits of a well-kept lawn, dangers of unlicensed lawn care companies, and fall lawn care. Prominent turf experts, the PLCAA, and lawn care operators are quoted as sources.

Stauffer is submitting the articles at various intervals throughout 1985 to over 1,100 daily and weekly newspapers, syndicated home and garden columnists, and university extension information offices in states where PLCAA members operate. There are still some press kits available and you can get a copy from Frank Lukasik, Agricultural Chemical Division, Stauffer Chemical Company, Westport, Connecticut, 203/222-3254.

CHEMLAWN TO POST SIGNS IN MARYLAND

An appeasement, token gesture, or a brilliant marketing strategy? ChemLawn Corporation, based in Columbus, Ohio, recently began a voluntary posting program by placing yellow warning flags on customers' property in Montgomery County, Maryland.

Montgomery City Council ordered

the posting of flags on public lands, such as schools and parks, three months ago. In the face of possible further actions regulating commercial firms, ChemLawn submitted a proposal for sign posting, and guidelines for the disclosure of chemical ingredients and notification of neighbors before application, according to a recent report in the *Cleveland Plain Dealer*.

Jack Van Fossen, ChemLawn's Chief Executive Officer, says the county, with 20,000 ChemLawn clients, is a testing ground for the flags which read "Lawn care application. Keep off until dry." The company, he says, is waiting to see how its customers and the community receive it. Van Fossen told *ALA* the flags may become "a universal symbol that a lawn application has been made. They are not difficult to install or to take down."

He says the reaction from the press has been very positive. Ester Gelman, the Councilwoman who proposed sign posting on public land and a ChemLawn customer for nearly 10 years, commended the company for its actions. "I have never seen a finer example of a private industry pitching in on a public issue," she says.

Environmentalists concede that they support the company's initiative, but feel it is a token effort that doesn't go



far enough. "This posting program, basically, is a way to avoid dealing with the issue in the long run," says Eric Janson, Director of the Washington-based Institute Against the Misuse of Pesticides.

Some may accuse ChemLawn of allowing environmentalists to get their foot inside the door, but Van Fossen responds, "anybody who has followed this thing (the lawn chemical controversy) is kidding themselves if they think these people (environmentalists) don't already have their foot in the door."

Joseph W. Stout, III, President of Complete Lawn Service, Inc., Arlington, Virginia, says "I think it's inevita-

ble, everybody will have to do it anyway." Stout plans to start posting next year, and hopes that this will keep the "do-gooders" who want strict regulations at bay.

Roy Good, President of Hav-A-Lawn, Frederick, Maryland, looks at the controversy as a marketing opportunity rather than a hindrance. Good, who has service accounts in Montgomery, feels that ChemLawn handled the situation correctly. "They took the ball and ran with it," he says.

Good has signs on order, and will post them as soon as they come in. There will be neighborhoods with his signs "up and down the street," he explains. He feels the signs are saying, "Hey, we are confident, so a flag is no big deal." If you are that upset about putting your name on the work you do, he adds, then maybe you shouldn't be in the business.

Good says, "I think in the long run the sensitivity about our products will make us sharper business people, and help to clean up the fly-by-nighters."

Van Fossen disagrees with accusations in the press which infer that ChemLawn's support of the 3PF lawsuit in Wauconda, Illinois, conflicts with the company's posting program in Maryland. He says in Wauconda the in-

dustry is contesting the right of local legislatures to pass pesticide regulations. Van Fossen argues that the sign posting program diminishes or eliminates the need for local legislation. The company's position, he says, states that any legislation should be enacted on a state-wide basis. "We are not bothered that they want legislation and regulation, but it needs to be done on a uniform basis." — Lisa Furiga

REGULATORY ACTIONS ACROSS THE BOARD

Despite the fact lawn care companies comprise approximately 33 percent of the Ohio Department of Agriculture's licensees and generate only 11 percent

continues to grow.

On the national front, the House Agriculture Committee granted a one year extension to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), according to a report in the Pesticide Public Policy Foundation's (3PF) newsletter. The extension, granted to meet budget deadlines, authorizes funding of nearly \$69 million for Environmental Protection Agency operations. Reps. Roberts (R-Kansas), ranking minority member, and Bedell (D-Iowa), Subcommittee Chairman of the House Agriculture Committee's subcommittee on Department Operations, Research, and Foreign Agriculture, recently introduced HR 2482, the EPA's proposed amendments to FIFRA. The bill deals with consistency, quick responses and credibility in pesti-



The Alliance For Environmental Concerns

of all complaints filed with the ODA, according to a report in *The Cincinnati Enquirer*, the regulation momentum

cide registration, and special review and tolerance setting systems.

(continued on page 16)

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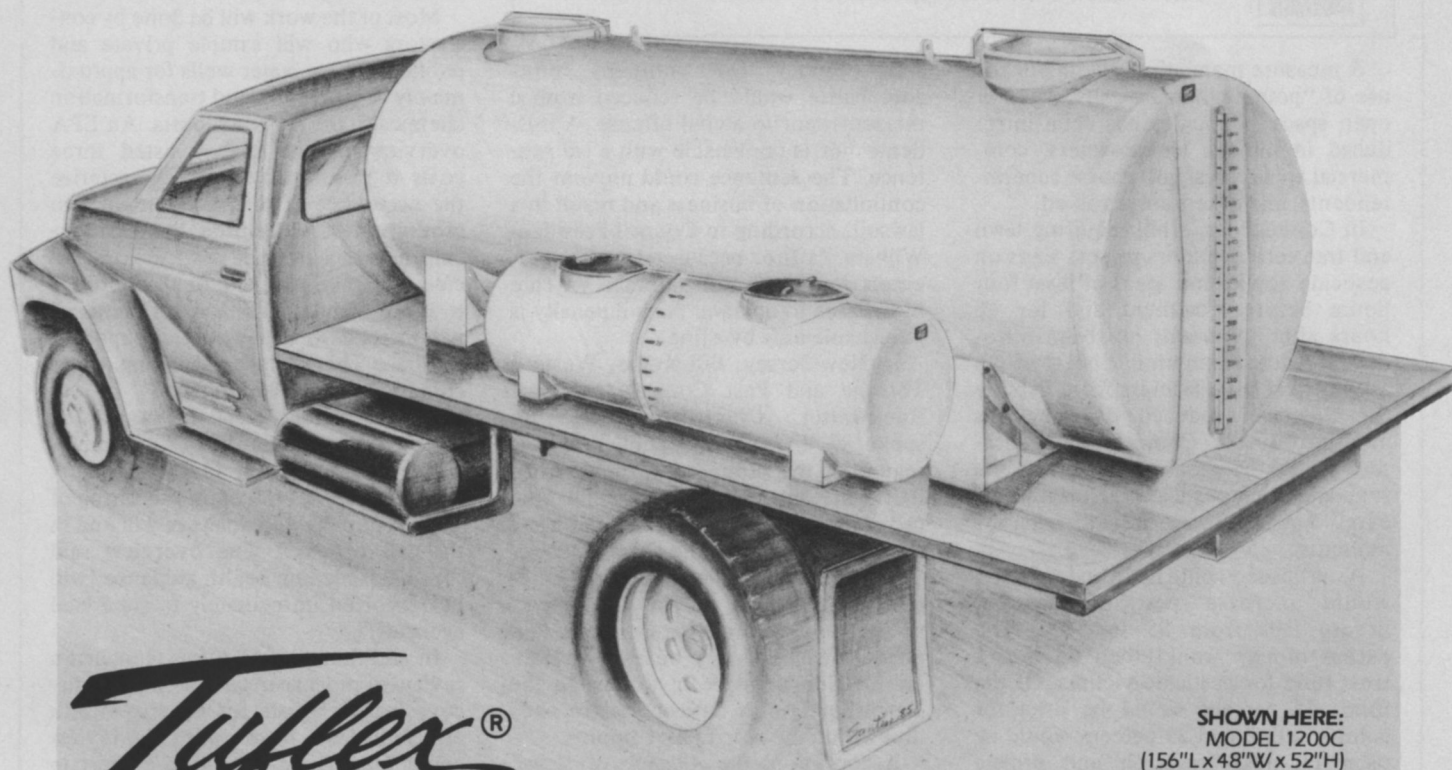
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NEWS

(continued from page 14)

On the state level, the newsletter of the International Pesticide Applicators Association, reports that Maine lawmakers have just passed a statute imposing a mandatory deposit fee on all of its non-reusable, restricted-use chemical containers, whether plastic or metal. Required deposits are \$5.00 for 30 gallon containers and \$10.00 for 30 to 50 gallon containers. Dealers may charge as high a fee as they want on larger, refillable mini-bulk containers. Only original purchasers of containers can return them to avoid fund raising by groups. Applicators must triple rinse containers and sign an affidavit stating that the container was properly disposed of. It is believed California will follow with similar legislation.

In Oregon, a bill to mandate a deposit-return system on pesticide containers and a bill which requires pesticide labels to list potential harmful effects for humans and or the environment when the label has been violated have been introduced.

look dim, according to a report in the *Sun Messenger*. Mayor Leonard Creary vetoed the ordinance because he feels such legislation should come from the state or federal level and not from individual city governments.

One of the strongest local proponents, City Councilman Martin Puin, still feels that such legislation should be passed, but concedes such a proposal would probably be defeated or vetoed. "We went through nine months of hard work, deliberation, and writing an ordinance from the ground up," says Puin. "To take that up again is very hard, very disheartening just to have it shot down again."

Although lawn care operators can breathe a sigh of relief in Lyndhurst, operators in Richmond Heights, a neighboring community, may soon encounter regulation pressures. Richmond Heights City Council is considering chemical lawn care regulations which would require companies to notify residents when chemical spraying occurs, according to the *Sun Messenger*.

The proposed ordinance would differ from the Lakewood ordinance in that

places a burden on the business community.

The first pesticide "Disposal Day" in New Jersey was a success. The DEP's Bureau of Pesticide Control coordinated the disposal day for collecting homeowner, farmer, and small quantity generator pesticide containers. There were 114 participants who surrendered 161 gallons and 1,340 pounds of pesticides including some chlordane and DDT products.

Finally, in Wauconda, Illinois, the expected decision on June 21 to determine if state and federal law can be preempted by local pesticide ordinances has been delayed due to the ill health of the federal judge hearing the case. There may be up to a 120-day delay.

EPA INITIATES NATIONAL STUDY

While funding for the Environmental Protection Agency's national survey of pesticides in groundwater remains uncertain for 1986, the costs are projected to reach \$5 million to \$6 million. The survey sampling is scheduled to begin in April 1986, by which time health advisory levels will be in place, an EPA official reported recently in *Pesticide and Toxic Chemical News*.

Most of the work will be done by contractors who will sample private and public drinking water wells for approximately 48 pesticides and transformation chemicals, the agency reports. An EPA overview of the survey listed three goals it plans to attain: "Characterize the occurrence of selected pesticides in groundwater; determine the relationship between uses of pesticides, pesticide characteristics, and field conditions to ground and drinking water contamination; and estimate human exposure to these chemicals by drinking water contamination by normal use."

Approximately 1,500 wells will be sampled in all counties. All samples will be analyzed for all pesticides. A final report will be filed in the spring of 1988. Sampling and analyses will end in the fall of 1987. The overview said "levels exceeding health guidance (will be) reported immediately to state lead agencies."

In addition, the EPA has launched a review of most lawn chemicals after discovering that tests for adverse health effects had not been done. The review could lead to the banning of certain chemicals or the restricted use of others, according to a report in *The Star-Ledger*.

Most of the chemicals used by lawn care operators including Dicamba,

(continued on page 18)



I.P.A.A. PEST CONTROL PROGRESS

International Pesticide Applicators Association Newsletter

A measure mandating posting for the use of "potentially hazardous" lawn or open space herbicides has been introduced in Illinois. Homeowners, commercial applicators, golf course superintendents, and others are involved.

In Connecticut, a bill requiring lawn and tree care operators to post signs on pesticide application areas at least four hours before treatment and for 48 hours after treatment has been introduced. At the same time, a bill to set up a fund to relieve farmers from liability for chemically-induced damages was also introduced. Commercial applicators would be assessed \$500 for the fund and other pesticide/fertilizer interests would be assessed various amounts.

A proposed bill in Rhode Island would increase pesticide operator license fees from \$5 to \$100. The excess money would then go into a trust fund for pesticide victims. Of the fund, 75 percent would be used for compensation and 25 percent would be used for IMP research and project efforts.

On the local front, prospects for a reintroduction of a proposal to regulate lawn care companies in Lyndhurst, Ohio; where such a proposal was introduced, passed, and vetoed last year;

the penalty for company non-compliance would be reduced from a misdemeanor to a civil offense. A misdemeanor is punishable with a jail sentence. The sentence could prevent the continuation of business and result in a lawsuit, according to Council President William Zaffiro, because state law preempts local law and allows lawn care businesses to operate. A civil penalty is punishable only by a fine.

In New Jersey, Bill Kolbe, Western Termite and Pest Control, and Ray Buckwalter, ChemLawn, recently spoke at the second public hearing regarding the proposed pesticide ordinance in Cedar Grove Township. The ordinance, which was passed and must now be approved by the Department of Environmental Protection (DEP), requires landlords to give a 48-hour prenotification before pesticides are applied outside of any apartment unit. Notification must be in writing to the Township Health Officer and to each unit within the apartment complex.

According to the *Alliance Newsletter*, from The Alliance for Environmental Concerns, Kolbe stated that the ordinance amounts to a restraint of trade because individual tenants could apply pesticides without prenotification. Buckwalter added that the ordinance

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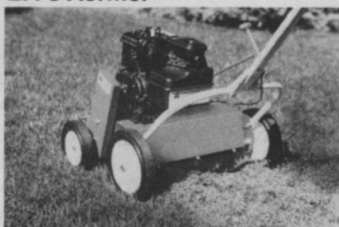
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NEWS

(continued from page 16)

MCPP, 2,4-D, Dursban, Diazinon, Benomyl, Zineb, Thiran, Balan, Dacthal, and Tupersan were approved for use in the late 1940s and 1950s before stricter testing was required for long-term, adverse health effects. These commonly used products have not been tested to determine if the products cause cancer, reproductive damage, or birth defects.

For example, the EPA has required that the herbicide 2,4-D undergo a new study for reproductive effects in rats and a two year study in which the chemical is fed to other animals. For Zineb, a fungicide, the agency has requested studies to be conducted to determine the chemical's effect with relation to dietary exposure, birth defects, metabolism, skin exposure, and other factors.

A special review was announced for alachlor, the largest herbicide by volume used in the U.S. Alachlor is produced by Monsanto Company under the trade name Lasso. It has been found to cause tumors in laboratory animals. The EPA says about 90 million pounds are used annually, mostly to control weeds in fields of

corn, soybeans, and peanuts.

Pending the outcome of the EPA study, handling of TPTH is being restricted. TPTH, which has been linked to birth defects in laboratory animals, is produced by M&T Chemicals Inc.

Captafol, which will also be reviewed by the agency, is reported to cause tumors in laboratory animals and to be toxic to fish. It is produced by Chevron Chemical Company.

Rohm & Haas Company voluntarily suspended the sale and distribution of its product, Dinocap, pending the outcome of the agency's test. Dinocap is sold under the trade name Karathane.

BILLBUG DEVELOPMENT AHEAD OF LAST YEAR

It was reported the bluegrass billbug's development is ahead of last year's development by several weeks, Dr. Richard Miller, Ohio State University Extension Entomologist reported recently in *Bug Dope*. The bluegrass billbug is in grass crowns, Miller says. Some have already changed to the pupa stage, and adults have been found walking around on sidewalks and other hard surfaces.

Miller does not advise controlling



Dr. Richard Miller

the insect with insecticides at the present time because, when in the pupa stage, it is not affected by insecticides.

In order to find the insect, look on the underside of a flap of sod. If you see

(continued on page 20)

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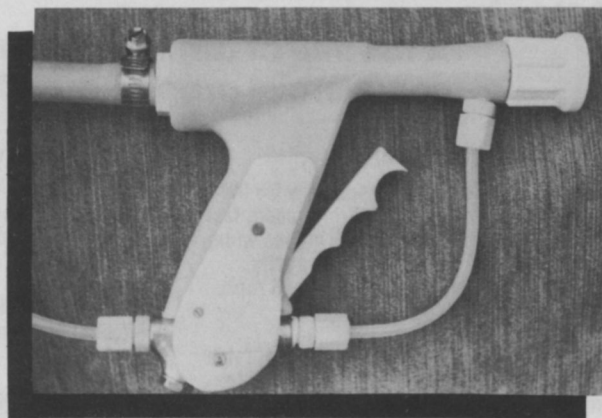
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NEWS

(continued from page 20)

the warning-letter-bill process.

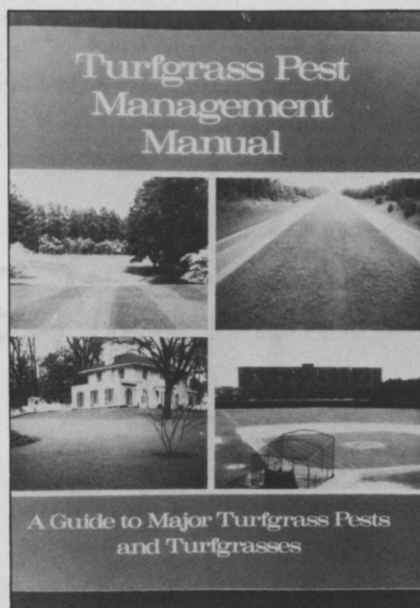
Dale Grabfelder, a building inspector in Lyndhurst, says his department handles about 100 complaints dealing with uncared-for grass every summer. Some calls report on the same people, he says, and inspectors have learned to patrol those lawns. On occasion the city has even taken property owners to court.

The worst calls, the inspector says, come from lawn fanatics reporting their neighbors. "We'll go out and find the grass next door is a little longer than theirs, but it's nowhere near illegal and we have to explain that to them," says Grabfelder.

Enforcement of grass ordinances has eased since 1964 when Brunswick police arrested a woman on Thanksgiving night for failure to pay \$12 of a \$32 fine levied for not mowing her lawn the summer before!

PEST MANUAL PUBLISHED

The North Carolina Agricultural Extension Service at North Carolina State



University, in cooperation with the Carolinas Golf Association, has published a "Turfgrass Pest Management Manual." The 64-page publication contains 90 color photographs with grass illustrations and is divided into six sections: pest management strategies, turfgrass vegetative identification, weeds in turf, diseases, insect pests on

turf, and soil sampling. A glossary and information sources section are also included.

The manual is designed to help lawn care, athletic field, roadside, parks and grounds personnel, and other professional turfgrass managers identify the major turfgrasses and turfgrass pests. A better understanding of turf pest life cycles, symptoms, and biology is also stressed.

Extension and research personnel, nurserymen, retailers, dealers, landscape contractors, and maintenance personnel will also find it useful in correctly identifying turf pest problems and helping to insure that appropriate control measures are employed. Educators will also find it a handy textbook for classroom use. Lawn care operators may find it a valuable sales tool for distribution to customers.

The information in the manual is prepared by specialists and researchers in the Departments of Crop Science, Entomology, and Plant Pathology in the School of Agriculture and Life Sciences at North Carolina State University. Ordering information can be obtained by writing: Crop Science Extension, Box 7620, North Carolina State University, Raleigh, NC 27695-7620. ■

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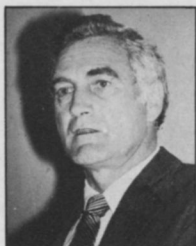
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PLCAA UPDATE

Dr. Robert Miller and Bob Styduhar, of ChemLawn Corporation, and James R. Brooks, Executive Director of the Professional Lawn Care Association of America (PLCAA), testified before the House Subcommittee on Department Operations, Research and Agriculture at the recent Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) hearings.

Brooks reports in *Turf Talks*, the PLCAA newsletter, that the hearing was more of a pseudo news event staged for the benefit of the media, than a means to determine the truth. He says the hearing was called to order at 9:30 a.m. with six members of the subcommittee present. The first witness was a congressman from Georgia who had been in the pest control business for 20 years. The second witness was a representative from the Department of Agriculture. Both were in support of the present FIFRA regulations.

Brooks explains that television cameras and crews from NBC Washington



Robert Miller



Jim Brooks

and NBC San Francisco entered the hearing just as a three person panel was called to the witness chair. Brooks says "a well rehearsed, emotional testimony was presented" by the panel, consisting of a widow whose husband had allegedly died of exposure to daconil while playing golf, a representative from a group called People Against Chlordane, and a representative from a garden club involved in the current issues in Montgomery County, Maryland. Following the panel's testimony, the camera crews left.

Later that afternoon, Miller present-

ed the group's summary statement to the chairman and one subcommittee member. One additional member of the subcommittee returned during the testimony. The only question from the chairman was whether or not daconil was used by lawn care companies. There were no television cameras or crews.

Delta Air Lines, in cooperation with PLCAA, is offering a special 35 to 40 percent discount off Delta's round trip, undiscounted day coach fares for exhibitors and attendees traveling on Delta to PLCAA's sixth annual conference held in Tampa, Florida November 18-21. To take advantage of the discount you must leave for Tampa or Orlando between November 8 and 21; stay no longer than 15 days; and call toll-free 1-800/241-6760 between 8:30 a.m. to 8:00 p.m. EST to reserve your seat. When calling refer to file number L0034. The date of ticket purchase will determine the percentage of discount. ■

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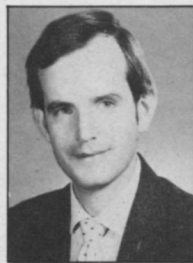
Albert J. Lanoie, has been appointed District Sales Manager for OMC Lincoln. He will be responsible for dealer development and sales of Cushman® and Ryan® turf maintenance equipment in the Northeastern United States and the Atlantic seaboard as far south as Virginia. Most recently, Lanoie was Eastern Regional Manager for P.B.I. Gordon Corporation. He was formerly Superintendent of Potowomut Country Club, East Greenwich, Rhode Island.

Lanoie has a bachelor's of science degree in agronomy from the Stockbridge School of Agriculture at the University of Massachusetts. He also attended graduate school at the University of Massachusetts, and holds an associate degree in business administration from Johnson and Wales College, Providence, Rhode Island. Lanoie served with the U.S. Navy Seabees as an underwater diver in Vietnam, and was decorated with the Bronze Star, two Vietnamese Crosses for Gallantry, and the Combat Action Ribbon.

Melnor Industries, Inc., manufacturers of lawn and garden products, chemical sprayers, hose reels, and accessories, announces the appointment of **David Sukenick** to the position of Manager-



Lanoie



Sukenick



Gardner



Yarborough

Sales Administration. Sukenick was formerly associated for six years with Ex-cell Home Fashions, Inc., a manufacturer of shower curtains and decorative pillows, located in New York City. In this newly created position, he will be responsible for a broad range of sales administrative activities including customer service.

John Murphy, Yukon, Oklahoma, has joined UAP Special Products, Inc. Murphy is responsible for sales to UAP customers in Oklahoma and southern Kansas. UAP will serve Murphy's territory from its warehouse in Cordell, Oklahoma.

Following a 26-year career with the Upjohn Company, **Jim Lipari** has

joined International Seeds, Inc., Halsey, Oregon, as Turf Consultant, according to J.L. Carnes, President. Carnes says Lipari will work with ISI on trade shows and call on golf course superintendents and athletic field turf managers. Lipari has a bachelor's of science degree in turf management from Delaware Valley College, Doylestown, Pennsylvania. After a two-year stint in the U.S. Air Force he joined Upjohn in 1956 and called on golf courses throughout the United States promoting pesticides.

LESCO, Inc., Rocky River, Ohio, has named **Phillip R. Gardner** as a new Vice President. Gardner, who started with the company in 1976, works out of LESCO's Sebring, Florida facility. In 1979, Gardner was named a Regional Sales Manager for the Southeastern United States. In January, 1983, he was promoted to Southeast Regional Manager for all operations as well as regional sales. Gardner is a 1961 graduate of Westerville High School. Before joining LESCO, he worked for eight years with Groezinger Golf Enterprises as Golf Course Superintendent of Black Hawk and Minerva Lake golf courses near Columbus, Ohio.

Also in LESCO personnel news, the company has named **Bob Yarborough** head of Market Development — Special Products. Yarborough is presently overseeing development and marketing for a new pre-emergence herbicide, LESCO Pre-M (pendimethalin). Before joining LESCO, Yarborough worked as a sales representative for Mobay Chemical Company and for the Tuco Division of Upjohn. From 1974 to 1979, he was Superintendent of Golf and Ski Operations at Tanglewood Lakes Golf and Country Club, Greentown, Pennsylvania. Yarborough holds a bachelor's of science degree in agronomy from Delaware Valley College of Agriculture, Doylestown, Pennsylvania. ■



Acting Dean of the College of Agriculture and Life Sciences at Cornell University, Dr. Kenneth E. Wing (left), makes a special presentation to Janet Worthington Dudones, President of the New York State Turfgrass Association. The plaque, which was awarded to NYSTA at their recent conference in Syracuse, NY, was presented in appreciation of the support NYSTA has given to the college through their fund-raising efforts and donations to turfgrass research at Cornell.



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CUTTING COMPARISONS

Mowing maintenance businessmen are quite opinionated when it comes to mowing equipment. The 12 operators we spoke with gave praise to some mower lines and suggested ways to improve other mower lines.

Ask any mowing maintenance businessman about the equipment he uses and you will more than likely find him quite opinionated on the subject. Everyone in the industry has his "favorite" brands and can state exactly what he likes and dislikes about the mowers he owns. With that in mind, we rattled the cages of about a dozen mowing maintenance operators who responded to a mowing maintenance survey we sent out recently. (See accompanying survey article.) You may not agree with their opinions, but we hope they will give you something to think about.

COUNTRY LANE. Norbert Breinig, owner of Country Lane Snow and Mow of Dexter, Michigan, has been in the business for 12 years and believes his combination of five Gravely front-mount mowers and two M306 Kubotas is unbeatable. "I still have my original Gravely, which must be at least 10 or 11 years old and it is not worn out yet," says Breinig. The only problem he sees with the Gravely is the light construction of the decks which eventually crack from vibration. But then the rigors of professional use will take their toll on even the best commercial mowers.

Even so, Breinig believes there are some commercial mower lines that just don't make the grade, namely, Yazoo, Howard, and Hustler. "All three of those machines cost an arm and a leg and they don't cut grass that well," says Breinig. "They don't do slopes worth beans. Where I live, there is a lot of hills and ditches and you cannot put a Yazoo, Howard, or Hustler into a ditch and get it out. My Gravelys go into ditches." Breinig appreciates the Gravely's ability to ride through ditches because the less he has to do with pushmowers, the faster he can get the job done, and the more money he can make.

He says Gravely repairs are also a snap. Breinig does 90 percent of maintenance and repairs himself and he says he can rebuild a Gravely engine for \$120. "There is nothing on that machine that is not replaceable, that is cheaper than buying a new engine," says Breinig. He claims he rarely spends over \$200 to \$300 per year in repairs on each Gravely. Breinig also raves about the durability of his Kubotas. "One has 1,000 hours on it and the other has 800-plus," says Breinig. "I have never touched either one of them with a screwdriver."

But Breinig believes the caliber of operator you hire is even more important than the brand of machine you buy. He says you have to "hire the right people, train them, and make them take care of their equipment."

He cannot describe a "recipe" for attracting and training the right employees, but he seems to have evolved a successful technique.

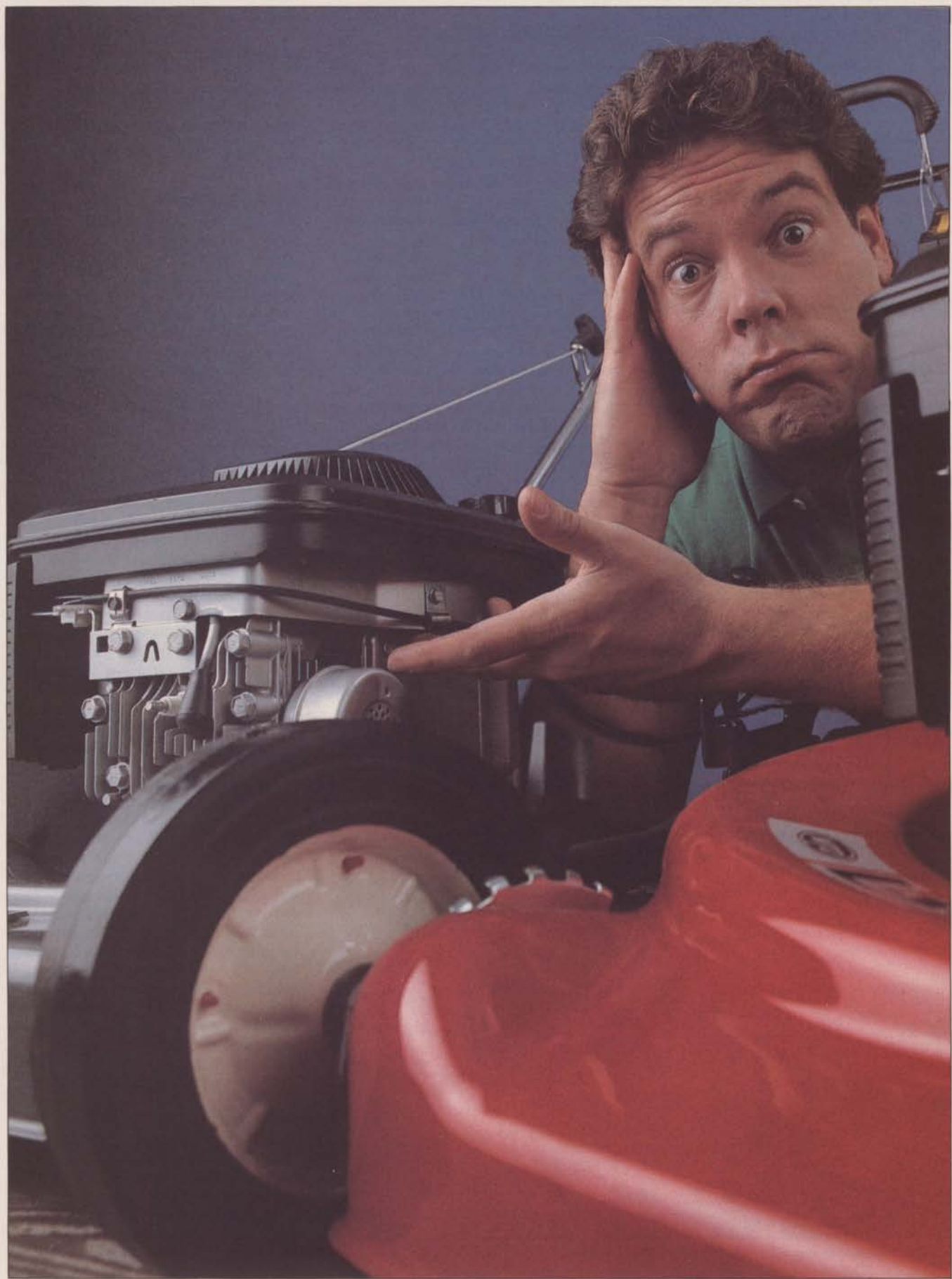
Breinig believes safety is something that has to be ingrained in employees, not built into machines. "You can't protect the rider from the machine if he is dumb enough to put his foot under it," says Breinig. He removed the deflector shields from his mowers because the shields windrow the clippings and make a mess. It takes more time for operators to rake up the clippings, and Breinig would have to charge an additional service fee. He says his customers would balk at the charge and drop his services for those of a cheaper, cutthroat operator.

"So you tell your people to be careful," says Breinig. "When you cut a lawn, you walk over it and pick up stuff so you don't hit anything. In 12 years, I've only caught one big rock and thrown it against a window."

PROND LANDSCAPE. Unlike Breinig, Eric M. Prond, owner of Prond Landscape Services, Toledo, Ohio, has had good luck with Yazoo riding mowers. Prond also uses Grasshopper riders, Bunton walk-behind mowers, one Toro 36-inch walk-behind, and homeowner-model Toro pushmowers with sidebaggers. He can honestly say he "would buy another one of any of them at any time." Prond has never worn out a Yazoo or a Grasshopper and says he would rebuild them at least once before replacing them.

He buys only cast iron engines so they can be bored out. "I have Buntons I bought 10 years ago," says Prond. "On some of them we just put on a new engine because the rest of them never wears out." He has tried other brands, but he always goes back to Yazoo, Grasshopper, Bunton and Toro. "We had a John Deere in here a week ago, but it just doesn't hold a candle to them," says Prond. "You have got to pick the grass up. The Grasshopper has the best vacuum system. It doesn't have an extra engine. It has its own power plant up front."

HURST LANDSCAPE. William C. Hurst, owner of Hurst Landscape in Holland, Ohio, is sold on Bunton 36-inch walk-behind mowers and Snapper commercial pushmowers. However, he is unhappy with his Cushman riding mowers, mainly because of reoccurring oil leaks. "Every time I fix an oil leak, tear the engine down, put seals in it, and put it back together, it will last a little while and then start leaking oil again," says Hurst. "I'm very unhappy with it."



He would like to see other corrections made on the Cushman mower, like more horsepower and a different type of engine. "A guy sold me on that air-cooled engine, but I think they all should be water-cooled," says Hurst. The smaller mowers should be powered by two-cycle engines, according to Hurst, because two-cycle engines have twice the lifespan of four-cycle engines. Hurst believes Briggs and Stratton could especially benefit by producing two-cycle, rather than four-cycle engines.

"On one of the Bunttons, I replaced the Briggs with a four-cycle Honda engine and that seems to working out really well," says Hurst. He hates to say that because he would really rather support American-made products. "But with the 11-horse Briggs, I'm lucky to get a season out of one of them."

ENVIRONMENTS WEST. Hurst isn't the only mowing maintenance businessman with gripes about Briggs and Stratton engines. Gregory Novosel, Executive Vice President of Environments West, Huntington Beach, California, also did some engine swapping in favor of Honda engines. Novosel is satisfied with his Kees riders, but he replaced the Briggs engines on his Sensation pushmowers with Honda engines. "I wouldn't say the Briggs is bad, I would just say that Honda is a better engine," says Novosel.

He has heard Honda may install a device in its engines that would solve a problem he has had with oil. This device would prevent starting the engine if no oil is in the pan or up in the cylinders. When mowing on slopes, Novosel says sometimes oil will not rise properly in the cylinders. There are also times when operators get careless

and forget to refill the crankcase after changing the oil. "That (device) would be a great help for any piece of equipment," says Novosel.

GARDENING SERVICES. Another operator who has fallen away from the Briggs and Stratton fold is Leon Laub, owner of Gardening Services Unlimited, Whittier, California. Laub is replacing his Briggs engines with Honda engines, but he is also dissatisfied with Japanese-built two-cycle equipment. The Japanese products are lightweight and easy to handle, but Laub says the lightweight construction sacrifices durability.

He is also dismayed by the source of so many of today's hedge trimmers, leaf blowers, and other small outdoor equipment. "It would sure be nice if an American could build them, so I wouldn't have to buy so much Japanese products," says Laub. "I buy American when I can, but when it is impractical or an unwise business decision, I go with what is the best for the money."

Laub also has had trouble with his three, 21-inch Snapper pushmowers, two of which are self-propelled. Wheel spindles bend easily, wheels wear out, and the mowing height adjusters also wear out quickly, according to Laub. Snapper discharge chutes also clog easily on wet grass and Laub says his operators must waste valuable time to stop and clean the chutes. He is testing a two-cycle, self-propelled Toro pushmower and says Toro's self-propelled mechanism is superior to Snapper's. "It is much stronger and more heavy-duty," says Laub.

Despite the many problems he has had with Snapper mowers, he uses them mainly because parts and qualified repairmen are readily available in his

area. "Snapper is probably the most widely-used mower now in southern California," says Laub. "It is easily repaired, as are the Briggs engines." He says brands such as Toro and Honda are not nearly as popular, therefore dealer support is also lacking. "Because of the repair problem, I have duplicates, triplicates, and even quadruplicates of every piece of machinery, so when the number one machine is down, we can always go to another machine," says Laub.

MAPLE RIDGE. Unlike nearly every other mowing operator we interviewed, Robert J. Knox, Jr., owner of Maple Ridge Lawn Service, Morris, Connecticut, has some good things to say about Briggs and Stratton engines. "I have one 16-horse Briggs engine I have used for six years and all I have done to it is a valve job," says Knox. "On the larger engines, they have a good air-cool system. I have had tremendous luck with them."

Unfortunately, he also has some bad things to say about Briggs engines — and other similar engines, such as Kohler and Wisconsin. "I have yet to see a mower that doesn't collect grass in the (block/head cooling) fins," says Knox. "We have to clean the leaf blower fins almost every two days or else we fry an engine. I was getting one to two seasons out of an engine and when I started cleaning the fins every other day during fall clean-up, I now have one machine that has lasted me five years now." Knox is surprised to find that even fellow professionals in his area don't realize the cooling fins must be kept free of debris to prevent overheating and premature engine failure.

Knox has nothing but praise for his Gravely riding mowers — a 50-inch Gravely; and a new 60-inch Gravely Promaster. However, he is not pleased with the belt-driven blade system on his four, 60-inch older Yazoo mowers, one of the reasons he recently bought the Gravely Promaster. Knox says Yazoo transmission rebuilds involve a lot of work. "I stuck with the Yazoos as long as I have because of their price," says Knox. Other mower brands in the same class have only recently become competitive with Yazoo's price, according to Knox.

As much as he likes the Gravelys, Knox still hasn't found a rider that can handle the hilly lawns he has to contend with in northwest Connecticut. "If a mower manufacturer could produce something that would stay closer to the ground, put the center of gravity right on the drive wheels, you would be a little better off," says Knox. "The Promaster Gravely will climb, but it won't handle a bank too well." A walk-behind mower might cling to the banks



Blair Lampitt, Grasshopper Lawn Service, Fort Myers, Florida

better, but Knox says after doing 30 lawns a day, walking that long and far is just too much for most operators.

LUCAS LAWN. Leon Lucas, owner of Lucas Lawn Maintenance, Detroit, Michigan, would like to see Ransomes, Inc. change the mower deck wheels on its Bobcat mowers. Lucas says the mower deck wheel bearings wear out too often. "In fact, I have been putting Bunton wheels on Bobcats because the arm is so much better, the wheels don't wear," says Lucas. "I have never had to replace the wheels on a Bunton." Lucas operates Buntons, Bobcats, and 16-horsepower Snappers with 48-inch mower decks.

KILE LAWN CARE. George Kile, owner of George Kile Lawn Service, Charleston, Tennessee, has been using "belly-pan" mowers, but thinks it is about time to change to front-mount mowers to get a better cut. Kile says the "belly-mount" John Deere tractors he has been using also leave tracks in clients' lawns.

However, the most important mower feature, as far as Kile is concerned, is parts availability and dealer service support, and John Deere can provide both. "The John Deere dealer in town probably has as good a service department as anybody here," says Kile. "If a machine is down, they can call and have a part in 24 hours. They will pull off a regular job for a homeowner and get me out because they know I'm mowing every day."

CONTOUR LANDSCAPING. Jerome Caile, owner of Contour Landscaping, Skokie, Illinois, has yet to scrap a mower. Caile keeps his fleet on the lawns by rebuilding and replacing engines. "The oldest we have is seven years old and it is on its second engine," says Caile.

Most of Caile's mowers are 36-inch walk-behind Bobcats that he wishes the manufacturer would produce with fewer automated mechanisms. "I would like to do away with the linkages," says Caile. "They always seem to come into the garage tied up with rope." Caile's operators often have to jury-rig things like throttle cables to get through a work day. "Get rid of the throttle cables and go with some sort of simple, mechanical on/off idle," says Caile.

GREENLEFE LAWN CARE. At Greenlefe Lawn Care in Tallahassee, Florida, Rick Laurienzo mows only with Snapper mowers. Although he still has the same number of Snapper riders, Laurienzo is phasing into Snapper self-propelled pushmowers because he can actually get lawns mowed faster with them. Maneuverability is the big-



Ann Tucker, Oakbrook Maintenance Company, Oakbrook, Illinois

gest problem on residential lawns, according to Laurienzo. "In the Tallahassee area, you aren't going to find hardly any yards without 15 to 20 trees," says Laurienzo. "We went to the 21-inch self-propelled lawn mowers — one person doing the backyard and one person doing the frontyard. I've actually reduced my time on the yard by about 15 minutes."

Unfortunately, the self-propelled Snappers have a flaw that has been making repairs difficult for Laurienzo. "They have a drive disk that is attached to the deck and spins freely," says Laurienzo. "This drive disk is almost impossible to change, unless you take the engine off the deck and half the self-propelled parts off as well." The constant strain of commercial mowing wears out the drive disks, so Laurienzo has learned to keep a supply of back-up disks available. "They either need to come up with a special tool to work on that or change the design a little bit."

THE GROUND CREW. Bill James, Vice President of The Ground Crew, Inc. in Arlington, Texas, operates a pretty impressive mower fleet — six, 72-inch Excel Hustlers, one with a grass vacuum; two Ransomes Bobcats; one Jacobson Turfcut; 20, 36-inch Kees walk-behinds; and 80, 21-inch Bobcat pushmowers. James doesn't have any serious problems with any of the mowers he uses.

In the case of Kees mowers, he says there is a parts availability problem because the company does not have an effective distributorship system. "They are basically the low-bid as far as walk-behinds go," says James. "You can buy four of those for the price of three of anything else."

James keeps 20 to 30 Tecumseh engines stockpiled to replace the ones that breakdown on his Bobcat mowers. "When something comes along that takes too much time to mess with, we will wait till the winter and slap a new engine on it for \$65 rather than pay a mechanic to play around with it." James has some definite ideas for mower improvements he would like to see.

"They haven't found a great wheel

adjustment for most of the commercial mowers," says James. He complains that pushmower wheels often become loose. "The best wheel adjustment ever made was the Jacobson cast aluminum deck with an adjustment that screws right into the deck," says James. "At our Dallas operation, we use Jacobson decks with Tecumseh engines — sort of a homemade mower. We bought out a company that had all these decks and made our own mowers one winter. For \$65 we had a brand new mower."

ARRINGTON MAINTENANCE.

At Arrington Grounds Maintenance, Inc., Operations Manager Michale Doll services his St. Petersburg, Florida, market with 60-inch Yazoos; 36-inch, 11-horsepower, self-propelled Kees mowers; and two-cycle, 4-horsepower commercial Toro pushmowers. Doll is impressed with the Toro pushmowers. For one thing, they are the lightest pushmower he could find. He says that is important to operator endurance.

In the past, Doll used Lawn-Boy pushmowers because they could be rebuilt for \$75. But today the Lawn-Boy short-block costs about \$125 and the entire mower costs over \$450. Doll thinks that is particularly uneconomical since he can only get one season out of the engine. "But I can get two seasons out of this Toro without working on it," says Doll. "That's over 4,000 hours mowing."

Doll is also impressed with durability of the Yazoos. There are better mowers, like a Heston for about \$14,000, but Doll says the Yazoo is by far the best for the price. "I can buy two Yazoos for the price of one Heston and they will both last three or four years," says Doll. "The maintenance on a Heston is about \$2,000 a year."

CONCLUSIONS. By now, mower manufacturers reading this article are either beaming with pride or gnashing their teeth over the comments from the mowing maintenance operators we contacted. There seems to be a certain amount of continuity in the likes and dislikes of these operators. It is probably safe to place credence on any point some of the people we interviewed could agree upon.

However, you should note that we spoke with people from both coasts and a few states in between. A mower that performs well in California, may not have the same track record in Connecticut. And there is no accounting for the kind of treatment each of these operators have given their mowers. In other words, the phrase *caveat emptor* still stands. — *Tim Weidner* ■

The author is Managing Editor of ALA magazine.

SHARP IDEAS

It is important to know what to look for in a good mower, but it is even more important to know proper operating procedures for any mower. John Deere offers us some valuable mowing tips in their "Know-How" booklet.

The folks at John Deere and Company have put together a 12-page booklet entitled "Lawn Care Know-How." The booklet primarily concerns proper mowing techniques, but some of the "10 basic principles" covered in the information piece also include topics such as watering, fertilization, dethatching, weed-killers, and soil testing. Most homeowners regard mowing as simply a means

SCHEDULING MAINTENANCE

A regular maintenance schedule is essential to prolonging the life of any mower, or fleet of mowers for that matter. The John Deere Horicon Works has printed a manual for its Model 330 lawn and garden tractor which contains a listing of items which should be considered when drawing up a maintenance schedule.

•**10 hours or daily.** Check: engine oil level, transmission oil level, coolant level, air intake screens, air restriction indicator and safety system.

•**50 hours or weekly.** Check: tire pressures, battery electrolyte level, alternator belt tension, tractor for loose hardware, and gear case oil level for tractor with 2,000 rpm rear PTO. Lubricate: front wheel spindles, steering draft link, and drive shaft.

•**200 hours.** Clean air cleaner. Change engine oil and filter. Change transmission oil and filter. Pack front wheel hubs with grease.

•**600 hours.** Tighten hose clamps on air intake and cooling system hoses. Have a certified mechanic check engine idle speeds; adjust engine valve clearance; and inspect fuel injectors.

•**Seasonal — as necessary.** Replace fuel filter. Replace air cleaner. Drain, flush, and fill cooling system. Replace thermostat. Change gear case oil for tractor with 2,000 rpm rear PTO.



To avoid mower injury that can kill trees, remove grass in a 1- to 3-foot

of keeping their lawns from looking shabby, but John Deere would like them to consider the agronomic benefits possible when utilizing proper mowing techniques.

First, Deere tells us to mow high. The height of the grass blades determines the depth of the root system. The higher the grass is cut, the deeper the root system and the more able the grass is to reach water and nutrients during time of heat and drought. But don't exceed the recommended height for your particular variety of grass. Warm-season grasses should be cut from 1 to 2 inches high; cool-season grasses from 2 to 3 inches.

Inform mowing customers of the value of a frequent



circle and fill the circle with mulch. This protects trees and makes trimming easier.

mowing schedule. Grass should be cut often enough to observe the one-third rule: Never cut more than one-third of the grass blade in any one mowing. Cutting more than a third shocks the root system. Some of the root system must die back because there is less green leafy material to react with sunlight to make food that is stored in the root system.

Too often, grass is allowed to grow high before cutting it too low. That practice weakens a lawn. Frequent mowing actually encourages grass to grow horizontally into a thicker carpet that helps choke out weeds.

The Deere booklet notes that grass should be mowed creatively. If always mowed in the same pattern, grass can develop a lean that results in skipped

spots and an uneven cut. It is best to change directions every time you mow, and overlap each swath by about four inches. Turn the mower on sidewalks and driveways when you can to help prevent scuffing the turf.

Keeping the mower blade sharp is important too. A dull blade can shred the tips of the grass blades, creating entry ways for disease organisms. Shredded grass tips turn brown and give the lawn a dried-out appearance. In spring, when the soil is wet, a dull blade can pull grass plants out of the ground. Grass is soft in spring and easy to cut. But as summer wears on, grass becomes tough and wiry; it dulls blades faster. So sharpen the mower blades more frequently in summer to prevent shreds.

Also, try to mow when the grass is dry. There are many reasons for this. It is easier to slip on wet grass, especially when mowing hillsides. Drops of moisture can carry disease organisms from one part of the lawn to another. Wet soil is more easily compacted by heavier mowing machines. Compacted soil impedes the movement of air and water into the ground, causing grass roots to weaken or die.

Safety is also an important consideration when mowing. A self-propelled walk-behind mower moves over the lawn at about 3 mph, but the whirling blade tips can reach speeds of more than 200 mph. That's why it is so important to be careful when mowing. The high-speed blades can fling stones and nails at terrific speeds. Therefore, you should clean up any debris on the lawn before mowing. Look for dog bones, chains, broken glass, and other

Grass should be cut often enough to observe the one-third rule: Never cut more than one-third of the grass blade in any one mowing. Cutting more than that shocks the root system.

debris.

But even the most careful search is bound to miss some objects, so be sure the mower is equipped with a downward-curving discharge chute that can deflect most thrown objects to the ground a short distance away. A rear-mounted grass collecting system can be useful too. Some collecting bags are made of ballistic material used in bullet-proof vests. These bags help protect you from flying debris.

Also use caution when checking the blades or mower deck. Before clearing a clogged discharge chute, stop the machine and disengage the mower blades. To be certain the blades are not moving, turn off the engine and wait for it to stop. Disconnect the spark plug wire on walk-behind models to be sure the engine won't restart if you accidentally turn the blade.

Tractor safety is important, too. Before you even start your mower's engine, know all the controls and how to stop quickly. To avoid tipping, slow down before making a sharp turn. Do not drive the mower where it can slip or tip, so steer clear of roots in the terrain and other hidden hazards.

For a copy of this free booklet, send your name and address to: Department D-869, John Deere, John Deere Road, Moline, IL 61265. ■

BLADE SHARPENING TIPS FROM TORO COMPANY

TORO

The Toro Company

The Commercial Products division of the Toro Company has published a booklet entitled, "Sharpening Reel and Rotary Mowers." The bulk of the booklet is devoted to the more complex process of sharpening reel mower blades, but we would like to excerpt for you some of the information about rotary blade sharpening. Toro tells us that four items must be checked when sharpening a rotary mower blade.

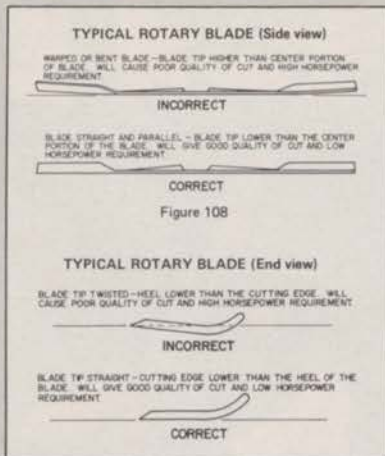
First, the blade must be checked to assure that it is not bent and has the correct attitude in relation to the mower deck housing and the ground surface. A warped or bent blade will create a situation where the blade tip is higher than the center portion of the blade and will cause poor quality of cut and high horsepower requirement. A twisted blade tip makes the heel lower than the cutting edge. This will cause poor quality of cut and high horsepower requirement.

Second, the blade must be sharpened correctly. Do not grind from the bottom of the cutting edge. Grind the top side of the cutting edge only. An incorrect sharpening angle will cause poor quality of cut and sap horsepower.

Third, the blade balance must be checked each time the blade is re-

ground. A commercial balancer will give the most accurate measure of blade balance. If the blade is not balanced, grind some metal off the heavy "end" of the blade, not off the cutting edge. Then check the blade balance again.

Finally, after the blade has been sharpened and placed back on the mower, it is very important that the blade retaining nut be sufficiently tightened to insure that it will not



loosen during operation.

To obtain a copy of this booklet (Form Number 80-300-PT), contact the Toro Company, 8111 Lyndale Avenue South, Minneapolis, Minnesota 55420.

IN FUTURE ISSUES

Next month *American Lawn Applicator* analyzes cost control for both spray application and mowing/maintenance operations. We'll also feature a report on lawn care equipment — should the typical lawn service businessman always buy new equipment? How long should he keep it? We'll probe these questions and more, and also direct you to the best outlet for equipment resale in September's issue.

In October, *ALA* presents pre-convention coverage of the Sixth Annual Professional Lawn Care Association of America Conference and Trade Show, to be held in Tampa, Florida. A schedule and description of educational sessions, speakers, conference exhibitions, and local points of interest will be included.

What does the lawn care market look like in 1986? Find out in November when *ALA* peeks at the latest innovations in mowing, maintenance, and spray equipment, as well as turf chemicals. We'll also take readers on a trip into the future for a look at upcoming industry trends. Keep reading!

TURF GROWS ON YOU

Chicago artist Bill Harding has taken turf aesthetics to new heights. Most people are content with growing their grass in the soil, but Harding has transformed clothing and cars into grassy artforms!

If a Chicago artist has his way, lawn care operators may soon need to expand their service routes to include garment accounts. Bill Harding, 26, has discovered what operators have known all along, that grass is not only aesthetically pleasing but practical. But operators might not have known that grass can be more than just a groundcover.

Harding grows lush grass suits by combining Manhattan perennial ryegrass seeds, a 3M Corporation high-tack adhesive, and cloth. By surrounding the seed covered suits with plastic to create a greenhouse effect, he sprouts clothes that are sure to mow down the garment industry. Armed with only a spray bottle containing plain tap water, no pesticides or fertilizers, Harding grows a ready-to-wear suit in only 12

There may be other vegetative creations in Harding's future. Now on the drawing board is a more stationary suit which would have other types of plants growing on it.

days.

Harding uses Manhattan ryegrass seed because he has always had success with it. "It grows so quickly, comes up really thick, and has a very nice color of green," says Harding. It actually roots itself directly into the fabric, he says.

According to Harding, each 20-pound suit is a small, personal environment which can be correlated to a larger one. "It symbolizes a very pure, lush environment that the Earth was at one time," he says.

Harding's grassy notions budded when he saw a fellow artist growing grass hydroponically. "I had him show me how he did it." From there Harding's ideas flourished. Originally, he explains, "I grew grass in a briefcase for



Harding (right) and turfmate Diane Christiansen model his innovative designs in grasswear.

one of my events (exhibits). Then I got the idea to grow grass on a suit of clothes and have someone chase me with a lawn mower." Harding has even been known to drive a sporty grass-

covered Buick. Lately, he has appeared publicly, clad in a grass suit, carrying a clear Plexiglas® briefcase containing water and goldfish.

(continued on page 36)





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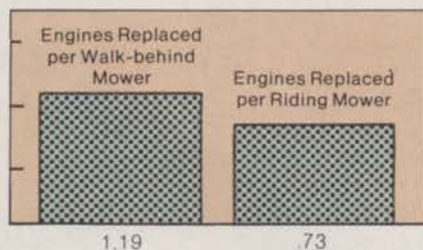
SURVEYING THE INDUSTRY

ALA magazine polled the industry to find out more about the average mowing maintenance operation. Here are the results of our survey.

If you want good information, you have to go directly to the source. So we mailed a mowing maintenance survey to 480 mowing maintenance businessmen. From those operators, 85 completed forms were returned, for a 17.7 percent rate of return.

After tabulating the responses from the six questions posed to the participants, we drew a profile of the average mowing maintenance operation. The bulk of an operator's business stems from residential accounts, according to the survey. Respondents say they service an average of 38.35 residential and 20.42 commercial accounts.

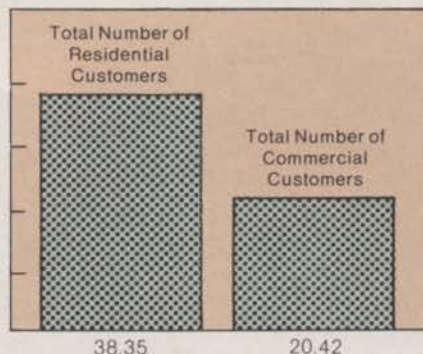
Although the number of commercial accounts serviced is nearly one-half the number of residential accounts, its average size is over three times that of a residential account. Responses indicate the turf area of a commercial account is usually 3.09 acres, while residential accounts measured .92 acres.



How many engines do you replace before you purchase new mower equipment?

Businessmen in Michigan report the largest average commercial accounts, measuring 11 acres.

To determine the type of equipment used to service the different accounts, participants were asked to list the number of walk-behind and riding mowers they currently have in use. By tabulating the responses, we determined that an operator uses an average of 5.48 walk-behind and 2.21 riding mowers to service his customers. The



How many mowing/maintenance customers does your company service annually?

purchase price of a walk-behind mower ranges from \$400 to \$600, a small investment compared to the purchase price of a riding mower, ranging from \$3,000 to \$13,000.

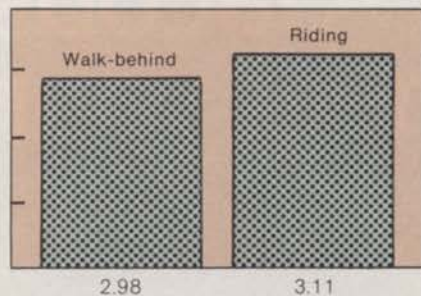
Participants report that the average life of both types of mowing equipment is very similar. The walk-behind model will last, on the average, for 2.98 years. The lifespan of a riding model averages 3.11 years. To maintain the mowers in operating condition, a businessman will replace 1.19 engines on a walk-behind and .73 on a riding model before purchasing new mower equipment.

To help ALA meet the editorial needs of mowing maintenance operators, participants were asked what editorial topics they would like to see addressed. The unmet need most often cited in the survey was for additional managerial information. Professionalism/ethics was mentioned as a topic to help the operator conduct himself in the business world.

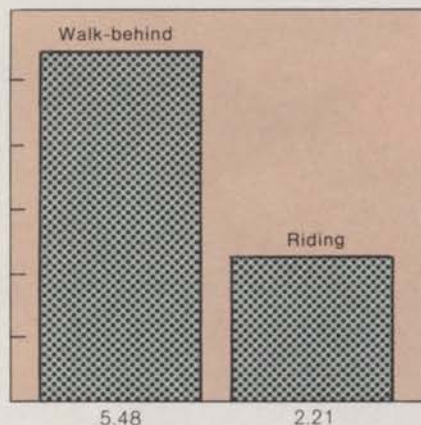
According to the survey, readers would also like additional information on industry training procedures and safety precautions. Finally, we have been asked to investigate and report on the advantages and disadvantages of gasoline versus diesel fuel. — Lisa Furiga



What is the approximate average size turf area serviced by your company?



What is the average life of mowing equipment used by your company?



How many mowers does your company currently have in use?

FINE AND TALL

There are certainly some disadvantages to consider when using tall fescue cultivars, but some of the newer fine-leaved tall fescues have some characteristics that may make them superior to other turf-type grasses for many applications.

Tall fescue is a hardy grass that produces little thatch (Figure 1), has a tough leaf tissue, good wear tolerance, and adapts to a wide range of soil textures and pH. It grows well in sunny or moderately shady areas (Figure 2) and ranks ahead of other cool season species for summer heat and drought tolerance. During most Midwest summers, deep-rooted, green tall fescue cultivars stand out like a "sore thumb" next to elite, but dried-out Kentucky bluegrasses and perennial ryegrasses in non-irrigated test plots in Columbia, Missouri.

We have commonly recommended 'Kentucky 31' tall fescue in Missouri for use on lawns, school grounds, and athletic fields. With proper establishment and management procedures, we can grow an attractive turf with this old tall fescue workhorse.

A fertile seedbed is important and should include ample phosphorus, potassium, and lime. For lawn turf, heavy seeding of about 8 pounds per 1,000 square feet is preferred to former pasture recommendations as low as 2 to 16 pounds per acre. The heavy seeding rate will result in a denser turf that helps to compensate for a lack of rhizomes and tillers. Also, competition between plants gives finer-textured leaves and a more pleasing turf appearance.

Lighter seeding rates may be used where establishment of a ground cover is the primary objective and turf appearance is of secondary importance. Yearly maintenance should include mowing turf to 2-1/2 to 3 inches for lawns and fertilizing with 3 to 4 pounds nitrogen per 1,000 square feet per year, mostly in the fall, to promote tillering and to maintain density.

There are some serious disadvantages to culturing 'Kentucky 31,' and they should not be overlooked. It tends to become clumpy and infested with other cool-season grasses if it is not established and managed properly. Because it produces only occasional rhizomes (Figure 3) and lacks abundant tillers, tall fescue cannot compete with spreaders like Kentucky bluegrass. On occasion, it may be damaged by warm weather diseases like brown patch and *Fusarium* blight, especially if it is watered improperly and overfertilized. Also, its leaf texture, which is coarse compared to that of Kentucky bluegrass, is objectionable to some people.

In 1979, 'Rebel' tall fescue, a fine-leaved, rapid-tillering cultivar, was introduced to the turf world. This has been followed by an array of fine leaved cultivars (Figure 4), many with similar vegetative characteristics (Table 1).

Introduction of the new tall fescues has brought a new dimension to use of this species for turf. Most of the new cultivars produce abundant tillers, one of several advantages over cultivars with fewer tillers like 'Kentucky 31'. For example, we recommend seeding 'Kentucky 31' at about 8 pounds per 1,000 square feet.

But some of our current studies (Figure 5) and the earlier research of Dr. C. Reed Funk and his associates suggest that newer cultivars like 'Rebel' require much lower seeding rates compared with 'Kentucky 31' to establish satisfactory turf. In fact, Funk and Johnson-Cicalese suggest that heavier seeding rates may lead to increased disease incidence in a dense, overcrowded seedling turf.

Our own research during 1982-83 in the greenhouse and field suggests that a 4 pound per 1,000 square feet seeding rate for the newer tall fescue cultivars should be satisfactory for most uses (Burch, 1984). Heavier rates of 6 to 8 pounds per 1,000 square feet may be needed for early fall (October 1-15) seedlings in areas like Missouri where there is a danger of frost heaving and desiccation of young seedlings in winter. In this situation, a denser turf cover will help to insulate the soil and reduce temperature fluctuations which are more pronounced on bare soil.

Our research also suggests that spring or late summer seedlings may be preferred over fall seedlings if frost heaving is a primary concern because seedling plants will be better established and more robust going into winter. The optimum seeding time in Missouri is about August 21 to September 1. This schedule allows the developing seedlings to avoid much of the summer stress but provides maximum time for establishment before winter if moisture is available. Seeding rates of less than 4 pounds per 1,000 square feet may suffice if turf is not subjected to wear for at least a year.

Research by H.L. Portz (1984) of Southern Illinois University supports this observation. Most of the newer, rapid tillering cultivars in our tests were well established one year after seeding in April or September, 1983, at rates of 1 and 2 pounds per 1,000 square feet (Burch, 1984). These turfs were irrigated as needed to prevent dormancy, mowed at 2 inches, and they were given moderate rates of 2 to 3 pounds nitrogen per 1,000 square feet per year. Spring-seeded plots re-



Figure 1. Plug of five-year-old 'Kentucky 31' tall fescue turfgrass showing lack of thatch development.

ceived broadleaf weed control treatments during establishment to reduce plant competition in summer.

What about heat and drought tolerance? One of our nonirrigated tall fescue management studies, mowed at 2-1/2 inches, was subjected to extreme heat and drought stress between July 3 and September 8, 1984. Less than 2 inches of rain fell during this interval and 1.4 inches of that total occurred during a thunderstorm in late August. Coarser cultivars like 'Kentucky 31' and 'Kenhy' had a small advantage in color retention as turfs entered dormancy in July, but the advantage lasted for only a few days (Hunt, 1984). Likewise, these cultivars had a small greenup advantage when ample rainfall returned in September (Table 2). Once again, the advantage was noted for only a few days. No effects of fertilizer treatments, initiated in March, were observed at this time.

These initial observations suggest that the newer cultivars possess the good to excellent heat and drought tolerance which is typical of the species. Of course management, particularly nitrogen fertilization, and rainfall patterns may affect the response of established cultivars to heat and drought stress on a year-to-year basis.

We also noted that 9-month-old cultivar stands which had been inadvertently seeded at perhaps 1 to 2 pounds per 1,000 square feet in a southwest Missouri study survived the same extreme summer conditions reported earlier for Columbia. Those established at estimated seeding rates of about 5 to 6 pounds per 1,000 square feet often failed. Plants of the lower seeding rate had less competition and were more robust and presumably better rooted than the finer leaved, more diminutive plants of the higher seeding rate.

Cultivar or Exper.	Sponsor	Cultivar or Exper.	Sponsor
Ky-31	Univ. of Ky.	ISI CJ	Interntl. Seeds
Kenhy	"	Hounddog	"
Johnstone	"	Brookston	"
Rebel	Loft's Seed	TF 813	"
Clemfline	"	NK81425	Northrup King
Syn Ga 1	O.M. Scotts	NK82508	"
KS 78 4	"	Willamette	William Seed
Arid	Jacklin Seed	Mer Fa 83	Barenburg Br.
Barcel	"	Falcon	E.F. Burlington
Maverick	Pickseed	Adventure	Warren's Turf
Mustang	"	Jaguar	G. Williamson
Apache	Turf-seed	5GL	Pureseed
Olympic	"	Finelawn I	Finelawn Res.
5L4	"	Tempo	Ag. Services
Festorina	Western Seed	Unknown	—

Note: These entries are being evaluated at most Agricultural Experimental Stations throughout the country; additional cultivars have been developed since the test was initiated.

Table 1. 1983 National Tall Fescue Evaluation Test, Mt. Vernon (Southwest), Missouri.

Cultivars in our irrigated (as needed) tall fescue management study were mowed one to two times per week at 1-1/2 inches. Summer quality of most of the newer cultivars was generally good, even during periods of extreme heat stress in July and August.

Fertilization procedures for the newer tall fescue cultivars are still a question. Our management studies and those of other researchers may give answers on best rates and timing of fertilizer applications for these turfs. We believe that a moderate level of at least 2 to 3 pounds nitrogen per 1,000 square feet may be needed to maintain satisfactory tiller density. This is reinforced by observations of non-irrigated tall fescue cultivars in southwest Missouri which were given an average of only

1-1/2 pounds of nitrogen per 1,000 square feet annually over the past four years (Wooley, 1984). Cultivar stands were thinned during this interval and plots are now about 40 to 80 percent infested with fine leaf fescues (of the creeping red type) and common Kentucky bluegrass (Table 3).

Obvious uses for the new tall fescues include turfs for home lawns, commercial buildings, and other lawn areas. We also receive questions from athletic field managers on the feasibility of using tall fescue for sports turf. 'Kentucky 31' tall fescue has been a favorite in the Midwest for school fields because of its heat and drought tolerance and tough leaf tissue which resists wear. But a pure stand of 'Kentucky 31' will soon thin under moderate to heavy



Figure 2. A 'Kentucky 31' bluegrass lawn at the Eisenhower Memorial Library, Abilene, Kansas. Figure 3. Experimental tall fescue rhizome development from University of Missouri testing.



Figure 4. University tests were performed to compare the textures of "improved" 'Hounddog' tall fescue turfgrass and 'Kentucky 31' tall fescue turfgrass.



Figure 5. Effect of varied spacings of transplanted 'Rebel' tall fescue on tiller development after a controlled six-week environment study. The weak seedlings on the right were spaced 1/2-inch apart. Seedlings on the left were spaced 1 inch apart. Seedlings in the middle pot were spaced 3/4-inch apart.

use. Newer cultivars produce an abundance of tillers, as was mentioned earlier, which suggests that they may recuperate more rapidly from wear stress on athletic fields compared with 'Kentucky 31'. Long-term observations of two soccer fields at the new St. Louis Soccer Park should provide good information on the new fescues' potential. These fields were seeded at a rate of 5 pounds per 1,000 square feet with a 90 - 10 percent mixture by weight of two "new" tall fescue cultivars and two "improved" Kentucky bluegrass cultivars, respectively. Kentucky bluegrass was included because its underground rhizome system should add to the turf's potential for recovery.

The fields have held up well after three years of moderate use with the exception of the goal areas. These are difficult to sustain with any species. Management programs call for an annual overseeding, following aerifica-

tion, with the same tall fescues used in the original planting. — John H. Dunn and Kenneth L. Hunt

The authors are Professor of Horticulture and graduate student, respectively, in the Department of Horticulture, University of Missouri, Columbia, Missouri.

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Texture	Cultivars	Density	Entering Dormancy 9 = best	Green Up
Coarse	Kenhy	5.9	6.0	4.0
	Clemfine	7.0	5.0	3.8
	KY-31	7.0	4.7	3.6
Less	Maverick	7.4	3.6	2.7
Coarse	Marathon	7.7	4.3	2.5
	Falcon	7.8	3.3	3.1
	Rebel	7.8	3.3	2.9
Medium	Hounddog	7.9	3.3	2.9
	Brookston	7.9	3.3	3.0
	Mustang	7.9	4.3	3.3
	Jaguar	7.9	2.7	3.5
	Olympic	8.0	3.3	2.8
LSD at 5 percent		0.4	1.1	0.6

Note: Higher rating for color retention of cultivars entering dormancy or greening up indicates better response to summer heat and drought stress.

Table 2. Tall Fescue Management Study, non-irrigated, Columbia, Missouri, 1984.

Cultivar or Experimental	(%)	Cultivar or Experimental	(%)
Mo H-1	58	MO H-2	44
Rebel	53	Galway	41
Ky. 31	52	G1-307	40
NJ T-1	51	MO PCTB	36
Kenmont	46	5661-321	32
NK 5-30	45	MO 96	28
Ky. 31	45	Kenhy	21
LSD at five percent		21	21

NOTE: Data was transformed according to the Arcsin method.

Table 3. Tall fescue component of turf after 4 years of low maintenance, Mt. Vernon (Southwest), Missouri, 1984.

PATCHY PROBLEM

Very little turf disease information is available about southern turf diseases, so Austin Hagan thought we might like to be enlightened to the plight of warm season grasses afflicted by patch diseases.



Figure 1. Brown patch symptoms on Meyer zoysiagrass (photo by Kim Sheffer).



Figure 2. Numerous blighted patches on zoysiagrass turf beginning to merge together. Figure 3. Broadleaf weeds often move into brown patch damaged turf.

Brown patch or *Rhizoctonia* blight, caused by the fungus *Rhizoctonia solani*, is an important disease of both cool and warm season turfgrasses across the United States. In the deep south, this disease can cause real problems for homeowners and ground maintenance personnel on several warm season turfgrasses. St. Augustinegrass, centipedegrass, and zoysiagrass are usually hardest hit by brown patch. This disease is also found on common and hybrid bermudagrass.

High maintenance turfs tend to be damaged most often by brown patch. Evidently, high nitrogen fertility levels, plus increased thatch accumulation, favors disease development.

Symptoms of brown patch are not too difficult to identify. At relatively high cutting heights, circular brown spots which first appear only a few inches in diameter quickly expand in size (Figure 1). Weather permitting, these spots will merge, forming large irregular patches of damaged turf (Figure 2). Wilting and collapse of St. Augustinegrass and centipedegrass foliage often gives these patches a sunken appearance.

A border of dark green wilted plants, called a smoke ring, is rarely seen on warm season turfgrasses. Damaged turf may begin to recover as conditions become favorable for further spread of brown patch. Regrowth of the damaged turf often begins in the center of the

Symptoms of Rhizoctonia blight or brown patch are not too difficult to identify. At relatively high cutting heights, circular brown spots are only a few inches in diameter at first, then they quickly expand into large brown patches.

patches resulting in a ring or frog-eye pattern. It is not unusual for weeds to move into an area severely thinned by brown patch (Figure 3).

Damage to individual plants is usually restricted to the foliage. Leaves attacked by the fungus first become water-soaked, wilt, and finally turn brown. On some broad-leaved turfgrasses, distinct tan-colored leaf spots surrounded by a gray-green, water-soaked margin are sometimes found. If the fungus moves into the crowns or stolons, large areas of turf may be killed.

Brown patch is often considered a hot weather disease. On cool season grasses, this disease is usually found during the summer months. However, brown patch is rarely a problem at this time of year on warm season turfgrasses. Disease development on zoysiagrass and centipedegrass occurs in the late spring and fall during periods of wet, overcast weather. Damage is often heaviest after several days of showers at temperatures of 70 to 80 degrees Fahrenheit. In humid coastal areas, it is not unusual to find brown patch during mild winter weather on St. Augustinegrass and centipedegrass lawns.

Recently, a second disease called yellow patch caused by another *Rhizoctonia* species, *R. cerealis*, has been identified. This disease has been reported on bermudagrass and zoysiagrass following cool wet weather

in North Carolina and Arkansas. However, bluegrass and bentgrass appear to be more important hosts of this disease.

The severe foliar blighting normally associated with brown patch is not found on yellow patch-damaged turf. Individual leaves turn yellow, but often are not killed. Damage appears as circular yellow to tan spots, 0.5 to 2 feet in diameter sometimes surrounded by a thin brown band of dead plants in late winter or early spring. A frog-eye or doughnut pattern often is found as the turf begins to recover. Symptoms usually disappear as growth resumes in the spring.

MANAGEMENT PRACTICES. Nitrogen fertility levels have a tremendous impact on brown patch. High levels of nitrogen stimulate the production of soft, succulent leaves that are very susceptible to attack by *R. solani*. To help prevent brown patch outbreaks, low rates of nitrogen fertilizers should be applied monthly to bi-monthly through the growing season to maintain slow, even turf growth. Avoid fall nitrogen applications on St. Augustinegrass or centipedegrass to reduce the risk of a brown patch outbreak during the winter. In addition, phosphorus and potash fertility levels should be maintained according to soil test results through the growing season.

The availability of moisture also plays an important role in brown patch development. Good drainage is needed to remove excess water from the turf. To speed evaporation of water from the foliage, prune shrubs and trees to reduce shade and improve air movement. On disease-prone turf, dew may be removed each morning by dragging a pole or hose across the turf. Finally, irrigate turf at mid-day to minimize the period of time the foliage remains wet.

That often harbors many disease-causing fungi, including *R. solani* and *R. cerealis*. Yearly verticutting or core aeration is needed, particularly on high maintenance turfs, to prevent a thatch buildup and some problems with both brown patch and yellow patch.

CHEMICAL CONTROL. The occurrence of brown patch is often so sporadic that regular fungicide applications, especially to most home lawns and other low maintenance turfs, are often a waste of time and

Common Name	Rate oz/1000 ft ²	Spray Interval (Days)
Anilazine 50W	4-8	7-14
Benomyl 50W	2	5-14
Chlorothalonil 40.4f	3-11 fl oz	7-10
75W	4-8	7-10
29.6F	4-16 fl oz	7
11.2F	12-24 fl oz	7-10
Cycloheximide + Thiram (0.75 + 75W)	2-4	3-10**
Cycloheximide + PCNB (1.3 + 75W)	6	3-14**
Fenarimol 50W	0.4-0.8	5-14
Iprodione 50W	1.5-2.0	14-28
Maneb + Zinc Ion Complex 80W	4-8	7-14
Thiophanate-Methyl 50W	2	5-14**
Thiophanate-Methyl + Zinc Ion Complex 15:60W	3	5-14**
Triadimenf 25W	1-2	7-21

*Sold under different trade name by several formulators.

**For use on St. Augustinegrass and bermudagrass only.

Table 1. Common names of some fungicides registered for brown patch control on warm-season turfgrasses.

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money. The regular use of fungicides should be limited to high maintenance commercial turfs or home lawns previously damaged by brown patch. Preventative fungicide treatments need only be applied when weather conditions favor rapid spread of brown patch. Fungicide applications should be made at 10-21 day intervals, depending on the product selected, until conditions no longer favor disease development. If brown patch does appear, shortening the spray interval between fungicide applications should slow further spread.

A curative spray program is the best way to take care of brown patch on most home lawns. Fungicide applications should begin as soon as disease symptoms appear and continue until the turf recovers. Such a program must be started as soon as symptoms are found to avoid serious damage. For effective control, apply fungicides several times at full label rates at five to seven day intervals. Additional preventative treatments may be needed during mild, wet weather to stop further disease outbreaks.

A wide variety of fungicides with good activity against brown patch are on the market (Table 1). Chipco 26019® and Bayleton®, with their long residual activity, are excellent preventative treatments on lawns maintained by professional lawn applicators where frequent fungicide applications are impossible. Benomyl and chlorothalonil, which are sold by most garden centers have the best combination of efficacy and residual activity against brown patch of fungicides available to homeowners.

Not all formulations of benomyl may be legally used on home lawns. Benomyl, sold under the trade name Tersan 1991®, can be used only on golf courses, athletic fields, and commercial turfs. Several specialty products companies market benomyl for the homeowner market. Use of fenarimol is also limited to golf courses, athletic, and commercial turfs. Cycloheximide plus thiram, cycloheximide PCNB, thiophanate-methyl, and thiophanate-methyl plus maneb plus zinc iron complex are not cleared for use on zoysiagrass or centipedegrass. The remaining fungicides listed in Table 1 can be used on all warm season turfgrasses without any additional restrictions.

Since symptoms of yellow patch usually disappear by spring, fungicides should rarely be needed. To date, field trials have failed to identify a fungicide that specifically has good activity against this disease. Fungicides recommended for brown patch should provide effective control if a spray program is necessary. — Dr. Austin Hagan ■

The author is Extension Plant Pathologist at Auburn University, Alabama.

TOXICITY AND YOU

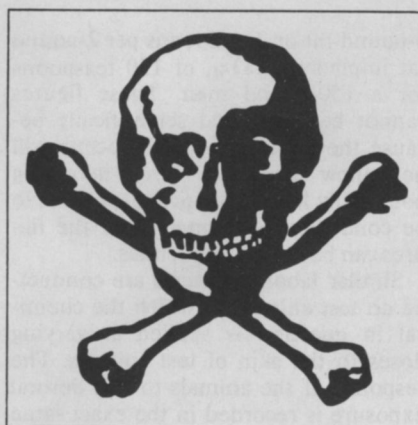
The "LD₅₀" concept, and pesticide toxicity in general, is one of the most misunderstood topics in the lawn care industry. Dr. Patricia Vittum clears up some of the confusion in this informative article.

In the past 20 years, ever since Rachel Carson's *Silent Spring*, more and more attention has been paid to pesticide toxicities to the user and non-target organisms. There are three basic ways by which a person or other non-target organism can come in contact with a pesticide. Each of these methods of exposure presents its own hazards.

Oral exposure occurs when a pesticide is eaten or drunk, generally by accident. Ingestion of a pesticide usually is more dangerous than simple skin contact, because the chemical gains rapid access to the body, passes through the digestive tract lining, and interferes with the nervous system. Most ingestion accidents can be avoided by making sure that all pesticides are stored in their original containers, clearly marked as poisons, and kept in a secure place. Some chemicals may be ingested if the applicator does not wash his hands, face, and clothes thoroughly after using a pesticide.

Dermal exposure, in which the pesticide comes in direct contact with the skin of the applicator (or child or pet) is perhaps the most common method of accidental exposure to pesticides. If the applicator is not careful while mixing, handling, or applying pesticides, chemicals can be spilled on the skin and absorbed into the body. If pets or children are allowed to play on a treated lawn immediately after an application, before a liquid application has been allowed to dry or before a granular application has had a chance to work its way into the thatch, the pets or children may come in contact with a small amount of pesticide.

However, the formulations of pesti-



cides generally used on home lawns make the possibility of acute poisoning very unlikely. Nevertheless, dermal exposure remains a very common route of pesticide entry into the body and proper precautions must be taken to avoid poisoning accidents.

Respiratory exposure occurs when

aspects of pesticide use is the preparation of any pesticide in the spray or spreader equipment. Dusts and wettable powders have very fine particles which are readily suspended in air and emulsifiable concentrates often release fumes during mixing. Even granular formulations may release fine dust particles during the process of filling the spreader. Therefore, respirators should always be used as a general precaution whenever mixing or preparing any pesticide for application.

Most chemicals, including pesticides and household chemicals, are toxic to humans if encountered in sufficient amounts. Chemicals differ only in their relative ability to harm humans and other non-target organisms. Toxicity may be *acute*, in which case a single exposure of sufficient magnitude induces poisoning symptoms, or *chronic*, in which case a series of relatively low doses accumulates over time to induce poisoning symptoms. Because of limitations in laboratory facilities and tech-

Every pesticide applicator should be familiar with the signal words of all the materials he uses. Whenever two pesticides are equally effective against a pest, he should use the pesticide which is less toxic, or the one which carries the less stringent signal word.

the fumes or vapors of a chemical are inhaled. Respiratory exposure usually can be avoided by using a properly maintained respirator whenever applying pesticides, especially in poorly ventilated areas. One of the most hazardous

techniques, chronic toxicities are very difficult to quantify. However, acute toxicities, based on single doses of varying amounts of the chemical in question, can be established for most materials.

The term "LD₅₀" is used to define

toxicity. The LD₅₀ is the amount of chemical that will kill half (50 percent) of the animals tested (Lethal Dose 50 percent). Obviously, the government frowns on conducting potentially lethal tests on people, so tests are conducted on large numbers of laboratory rats or rabbits. Several doses or rates are tested to get a range of responses.

To illustrate the concept of LD₅₀, consider this example. A laboratory has 500 white rats, each of which weighs 1 pound. The laboratory wishes to test the toxicity of a given chemical. The rats are divided into five groups, with

at this rate died. It usually takes more chemical to kill a large rat than a small rat (and, similarly, it usually takes more chemical to poison an adult than a child), so the laboratory conducted a similar test using 2-pound rats and found the LD₅₀ to be 2 teaspoons per 2-pound rat.

Scientists collect as much data as possible on several different kinds of laboratory animals and extrapolate this data to predict human responses to the chemicals being tested. In the example discussed here, the laboratory would reason that an LD₅₀ of 1 teaspoon per

The term "LD₅₀" is used to define toxicity. The LD₅₀ is the amount of chemical that will kill half (50 percent) of the animals tested (Lethal Dose 50 percent). The essential concept to understand is: the lower the LD₅₀, the less chemical is needed to kill an organism. Therefore, the lower the LD₅₀, the more toxic the chemical.

100 rats in each group. Each rat in Group A is fed 1/4-teaspoon of the chemical, Group B receives 1/2-teaspoon per rat, Group C receives 1 teaspoon per rat, Group D receives 2 teaspoons per rat, and Group E receives 4 teaspoons per rat. The rats are left in their cages for 48 hours, after which the researcher counts the number of dead rats. The results are shown in Table 1.

In this example, the LD₅₀ for this chemical was 1 teaspoon per 1-pound rat, because half of the animals tested

1-pound rat or 2 teaspoons per 2-pound rat implies an LD₅₀ of 150 teaspoons for a 150-pound man. These figures cannot be confirmed scientifically because the government and society will not allow laboratory tests involving potentially lethal chemical exposures to be conducted on humans, but the figures can be used as guidelines.

Similar laboratory tests are conducted on test animals in which the chemical in question is applied at varying doses to the skin of test animals. The response of the animals to this dermal exposure is recorded in the exact same manner as the oral exposure, and an acute dermal LD₅₀ can be determined. Oral and dermal tests are conducted using technical grade ("pure") material as well as the pesticides as they will be formulated for marketing. Sometimes the dermal LD₅₀ of a formulation will be listed as "2,000mg/kg," which is read "greater than 2,000mg/kg." In these cases, an exact number is not ob-

Group	Chemical/ Rat	Number Dead After 48 Hours
A	1/4 tsp	12
B	1/2 tsp	24
C	1 tsp	50
D	2 tsp	74
E	4 tsp	93

Table 1.

Category	How Toxic?	Acute LD ₅₀ (mg/kg)		Probable lethal oral dose/man	Signal Word
		Oral	Dermal		
I	extremely	0-50	0-200	a taste to a teaspoon	DANGER-POISON (skull and crossbones)
II	very	51-500	201-2,000	1 teaspoon to 2 tablespoons	WARNING
III	moderately	501-5,000	2,001-20,000	1 ounce to 1 pint	CAUTION
IV	slightly	over 5,000	over 20,000	1 pint to 1 quart	CAUTION

Table 2.



tainable because the material, as formulated, cannot be applied in sufficient quantities to the body surfaces of the test animal to kill it.

By convention, LD₅₀s are expressed in metric terms, in milligrams of chemical per kilogram of body weight of the animal tested (mg/kg.) A kilogram weighs 2.2 pounds, so an average man weighs 70 kilograms (154 pounds.) A chemical which has an oral LD₅₀ of 1mg/kg would therefore have an oral LD₅₀ of 70 milligrams per average



man, which is roughly equivalent to the weight of 1/15 of a paper clip.

The essential concept to understand is: the lower the LD₅₀, the less chemical is needed to kill an organism. Therefore, the lower the LD₅₀, the more toxic the chemical.

Most laboratory studies of LD₅₀ determine the acute toxicity of a material, or the effect of a single dose or exposure on a test animal. Information on chronic toxicity is much more difficult to obtain. This is unfortunate be-

cause most pesticide handling problems involve a series of exposures, perhaps over a period of several weeks or months, to small amounts of a pesticide rather than a single large dose. However, the acute oral and dermal LD₅₀s do provide a guideline to relative toxicities. In general, those materials which are most toxic in a single dose are also most apt to be toxic when the handler is exposed to a series of small doses.

The pesticide applicator can use the signal word for a pesticide as a guideline

to its acute toxicity. The federal government has established four classes of toxicity for pesticides, summarized in Table 2, and assigned signal words. The pesticide label must include the appropriate signal word, which indicates the relative toxicity of the pesticide as it is formulated. Remember that the signal words are based on the formulation. In the case of emulsifiable concentrates (ECs) and wettable powders (WPs,) these materials are further diluted in water before they are applied to a lawn, reducing the toxicity of the material.

Most ingestion accidents can be avoided by storing pesticides in their original containers, clearly marked as poisons, and kept in a secure place.

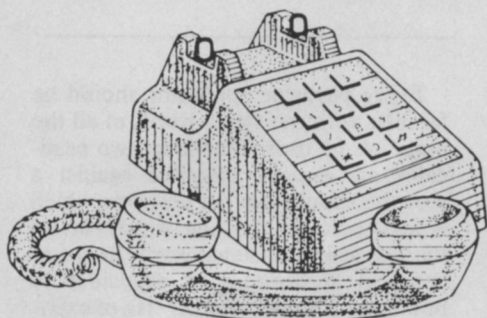
Every pesticide applicator should be familiar with the signal words of all the materials he uses. Whenever two pesticides are equally effective against a pest, he should use the pesticide which is less toxic, or the one which carries the less stringent signal word. Remember that applications of pesticides to home lawns carry a greater risk of exposure to people and pets than does similar applications to commercial vegetable or fruit settings, because homeowners use their lawns for a variety of recreational activities. Thus, if all other factors are equal, opt for the material which is less toxic to you, the homeowner, and pets. — Dr. Patricia J. Vittum ■

The author is an entomologist at the University of Massachusetts at Amherst. Much of the information contained in this article appeared first in Entomology, Bulletin Number 3, "Pesticides: Toxicity to Humans," prepared for licensed pesticide applicators in Massachusetts. Single copies may be obtained by sending a stamped, self-addressed envelope to the author: Dr. Patricia J. Vittum, University of Massachusetts, Suburban Experiment Station, 240 Beaver Street, Waltham, MA 02254.

For further information on toxicology and chemical safety, a plain-language guide, titled "The Dose Makes the Poison," is available from California Farmer Publishing Company. Author M. Alice Ottoboni, Ph.D., teaches people about toxicity and how to work safely with the chemicals they handle in her soft-cover book (\$9.95). For copies: write California Farmer Publishing Company, 83 Stevenson Street, San Francisco, California 94105.

HOW TO RING UP SALES

With the rising costs of direct mail promotions and personal sales calls, telemarketing is becoming increasingly more popular. Once you understand proper telephone technique, you'll be able to implement a successful telemarketing program.



Every month when your phone bill arrives, it's natural to look at your telephone and grimace. But instead of viewing your telephone as just another business expense, use it as a marketing tool and start ringing up sales!

Between 1970 and 1980, the cost of personal selling tripled. With the escalating prices of postage, paper, and printing, the cost of direct mail is also skyrocketing, causing more lawn care businessmen to consider telemarketing as a means of selling their service.

And telemarketing can be a viable tool — if a proper program is implemented utilizing effective telephone technique. To understand the importance of correct telephone technique, you first must understand what telephone communication implies.

The person speaking with your salesperson is deprived of four of his five senses. He must rely on his sense of hearing, so his imagination works overtime to develop an image, which increases chances of misinterpretation of output. This is especially important when you consider that a person's first direct contact with your company is often by telephone, that first impressions often are lasting, and that you have only one chance to make that first impression.

If an organization offers services which are difficult to find, it has little to worry about in terms of image. However, given the competition in the lawn care industry, the amount of ground work that is carried out by telephone, and the undeniable importance of first impressions, it becomes obvious that correct telephone technique is essential.

EFFECTIVE TECHNIQUE. So let's talk about what makes good telephone technique, whether you're placing or receiving calls. If you're answering a call, make sure you pick up the phone promptly. Do not allow the phone to ring more than two or three times, because delays in answering can create an image of confusion, neglect, or a generally unprofessional

atmosphere.

Once you pick up the phone, avoid carryover of conversation or mood. Carryover of conversation refers to someone's finishing a conversation or comment while lifting the receiver, so the first thing the caller hears is something like "...and have it taken care of today. Hello." This is irritating and unsettling to the caller. Carryover of mood is often worse. It occurs when something has aggravated a person immediately prior to his answering the phone, resulting in a terse "Hello." That's not the kind of tone that will stimulate new business.

It's important for you to make the person you're talking to feel comfortable and welcome. Your voice should be clear and exude a cordial, competent, composed personality. If another call should interrupt your conversation, politely ask the first caller for his permission to be placed on hold and return promptly.

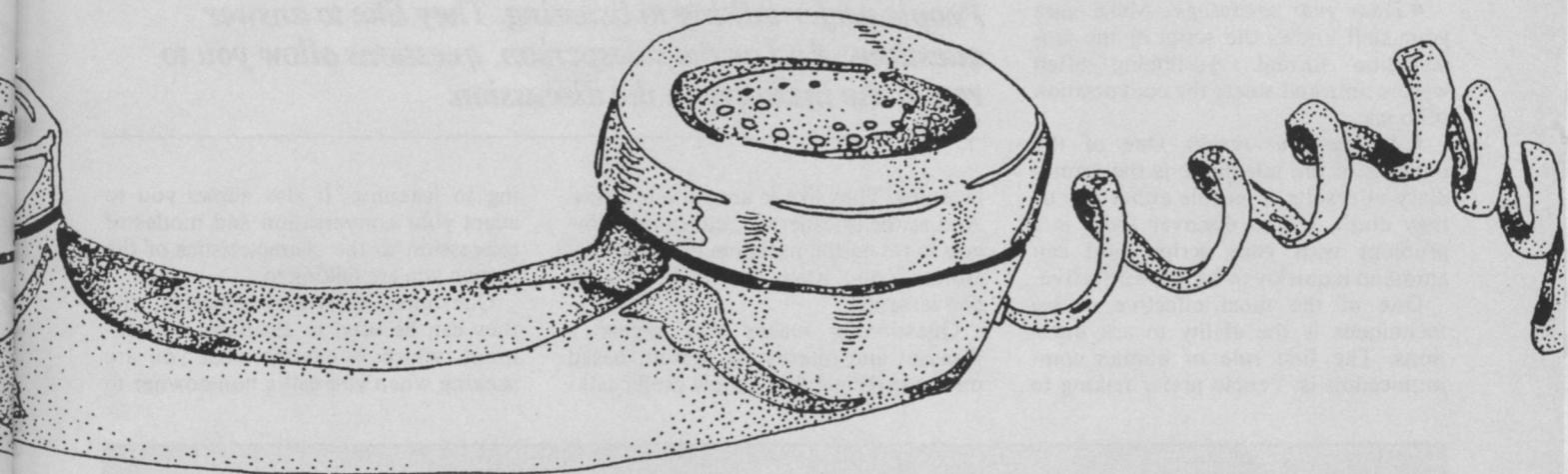
If you are expecting someone to return your call, don't leave the telephone unattended. Again, a negative image is created when a customer hears endless ringing at his end of the line. Answering machines may be impersonal, but appropriate if you are unavailable

Sixty-three percent of all sales are made after the fifth rejection, and 75 percent of all salesmen quit after the first "no." That explains why 25 percent of the sales force often gets 95 percent of the sales.

to answer your phone.

BE PREPARED. Prior to placing a telephone call, you should have in front of you the name of the party being called, the complete telephone number being dialed, an outline or checklist of points to be covered during the call, and reliable writing implements and paper. If you are not prepared and you constantly have to put a person on hold to find information relative to the call, you portray an unorganized image which can be interpreted as an attitude of indifference. And who wants to purchase service from someone who doesn't





care?

Minimize any background noise, such as loud music, voices, paper rustling, or running water. These distractions not only cause you to lose focus of the caller, but it often makes it hard for the person you're talking with to hear, too.

The telephone especially amplifies sounds made from smoking, chewing gum, or eating. *Never* place a call with anything in your mouth. And to guarantee your voice is heard clearly over the phone, speak directly into the mouthpiece.

Unless you are making a conference call, do not use a desktop amplifier/microphone that enables you to speak and listen without using the receiver when making sales telephone calls. In some cases, people sound as if they are speaking from the bottom of a well. In addition, it may inhibit the other party from speaking since he knows his conversation is not totally confidential. If for some reason you need both of your hands to be free while making a call, consider using a head set or a shoulder rest. At any rate, the phone should be held securely so the receiver does not fall.

HOW TO TALK. When talking to potential customers over the phone, speak in a normal, conversational manner. If you speak too quickly, it sounds like you're mumbling; speaking too loudly sounds like shouting. A composed voice is essential for reflecting a business-like manner. And while you're trying to sound interested and excited about your service, don't overdo it. Artificiality is often conveyed by over-cheerfulness or overconcern, which can create an image of being false, hence, creating distrust.

Prior to closing a call, double check all information the caller gave you with him. For example, if you've asked him information regarding the size of his lawn or the number of trees and ornamentals on his property, repeat those figures to verify their accuracy. Repeat spellings of names, phone numbers, addresses, and any other data that could easily be misinterpreted.

When you complete your call, hang up gently. And refrain from making any comments about a caller immediately after your conversation ends. On occasion, a person with this habit will make a comment before he cradles the telephone receiver completely and the customer may overhear. If derogatory statements are made, it probably will affect the potential sale.

If you need to call a customer back with information,

for instance if he wants a quote on service cost and you need some time to calculate his request, make sure you return the call *exactly* when you told him you would, if only to tell him the information he wants is still unavailable. By doing this you express concern, attention to detail, and other positive attributes which suggest your firm is a good one to do business with.

When using your telephone as a marketing tool, you should critically evaluate the advantages and disadvantages of selecting discount phone service. Several

It's important for you to make the person you're talking to feel comfortable and welcome. Your voice should be clear and exude a cordial, competent, composed personality.

companies offer long-distance services at rates lower than those of Ma Bell's. However, the quality of some of the connections is often poor a good percentage of the time. Quality communication is as important a concern as cost. If, for whatever reason you find it not worthwhile to pay for top-of-the-line phone service, at least be willing to pay more than the cheapest rate if lowest cost gives consistently low quality.

When used creatively, your telephone can be a powerful business tool. As far as cost effectiveness, a telephone salesperson can average between 600 and 700 more direct contacts by phone than by in-person visits. This is a big advantage for businesses with many small accounts.

PLAN A PROGRAM. But before eagerly ringing up potential customers, take some time to review the four steps essential to a successful telephone sales campaign, as cited by *Industrial Marketing* magazine:

- **Target your audience.** The contact list is one of the most important components of a telephone marketing effort; it's responsible for 60 percent to 70 percent of your campaign's success. The lawn care operator's best bet for developing this list is to contact customer referrals and homeowners living within a three- or four-block radius of current customers.

- **Fine tune the sales pitch.** Write a script that covers

all pertinent sales points clearly and concisely. Anticipate questions and be prepared to provide the appropriate answers.

- *Train your salespeople.* Make sure your staff knows the script or the presentation format. Ad-libbing often wastes time and steers the conversation off track.

- *Analyze your results.* One of the benefits of the telephone is the immediacy of results — people either buy or they don't. If you discover there is a problem with your script, you can amend it quickly to be more effective.

One of the most effective selling techniques is the ability to ask questions. The first rule of human communication is: People prefer talking to

One of the most effective selling techniques is the ability to ask questions. The first rule of human communication is: People prefer talking to listening. They like to answer questions. And as the salesperson, questions allow you to retain the initiative in the discussion.

listening. They like to answer questions. And as the salesperson, questions allow you to retain the initiative in the discussion. You have control of the conversation.

Questioning makes you appear a pleasant and interesting person, based on the principle that people prefer talk-

ing to listening. It also allows you to adapt your conversation and modes of expression to the characteristics of the person you are talking to.

Questions clarify and elaborate, and they can be used to establish commitment, which is exactly what you are seeking when you call a homeowner to

AN INDUSTRY PERSPECTIVE

Some of the biggest consumer frauds in history have been perpetrated through the use of direct mail. We're all familiar with them — land scams, nationwide raffles, and the like, says Marty Erbaugh, President of Lawnmark, Peninsula, Ohio. However, that doesn't stop many lawn service businessmen from using direct mail or make them feel uncomfortable with it.

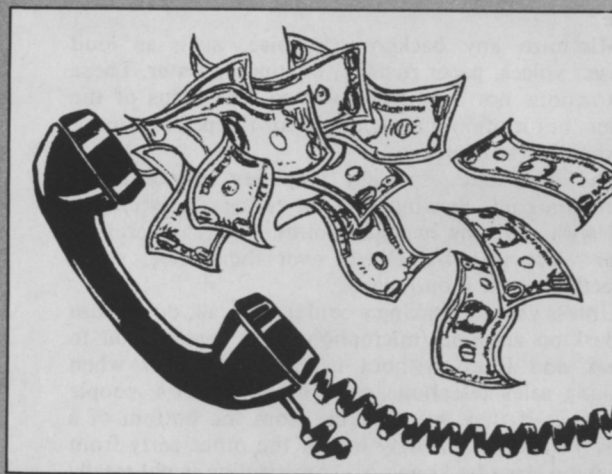
On the other hand, most lawn care operators are not familiar with telemarketing. "They have not used it and are not comfortable with it. As a result," he explains, "some people believe the use of the telephone is, per se, unethical." Erbaugh takes a different stand. He views these marketing tools as two different ways of communicating, each possessing its own advantages and disadvantages.

Longer, more graphic, and complex messages can be conveyed with direct mail advertisements. The recipient of the message can peruse the information at his leisure; however, the call to action is somewhat passive. With telemarketing, a direct message can be communicated instantly from one human voice to another and the call to action tends to be more active.

"Regrettably," notes Erbaugh, "telemarketing gets a bad name for the wrong reasons." For example, he says, some lawn care companies do not follow through with the quality of service they promise customers. "If that company tends to be a non-user of telemarketing, the industry perceives their problems to be production-oriented. If, however, that company utilizes telemarketing, their problems are considered a function of the way they market. While there are obviously interconnects between marketing and production," Erbaugh says, "failure to give adequate service to sold accounts is fundamentally a production/service-related issue, not a function of the selected communications tool in the marketing context."

Many firms throughout the country will use telemarketing as a tool for prospecting and getting new leads. Others will utilize the phone to give cost estimates for their lawn service. "Now from a big picture standpoint, I can't see anything unethical about that," explains Erbaugh. "Many industries have been doing this for years."

The problems and ethical skepticism associated with telemarketing arise when users begin "lowballing" and do not keep promises made. "If a company calls my \$40-per-service account on the phone, sells them service at \$18, has figured a way to make a profit, retains accounts,



and can satisfy that customer," Erbaugh says, "I say more power to them."

However, when a phone salesman calls a consumer and promises five treatments using 50 percent sulfur-coated urea, three treatments of broadleaf weed control, two preemergent treatments, two insecticide treatments, and balanced fertilizer at \$18 per treatment, and he doesn't even know what chemical is in his tank, let alone have a drop of preemergent in his warehouse, a dissatisfied customer is created, Erbaugh analogizes. Consequently, a perception is formed by the consumer that the lawn care industry is nothing but "a bunch of bandits."

"To one extent or another, the consuming public perceives us as generic," Erbaugh says. "Thus, the failures and shortcomings of one reflect on us all."

Despite any ill feelings toward telemarketing by the public, Erbaugh thinks the sales tool will become more popular. He believes the lawn care industry is "divorcing" itself from the measuring wheel and other techniques used in pricing service, and will use telemarketing "simply to make it more convenient for the customer to buy."

If Erbaugh's predictions are right, it sounds like all lawn care businessmen should have a vested interest in public attitudes on telemarketing. The communication tool you select is not the key, Erbaugh says. It's delivering what you promise. — Vivian Fotos

contract with your lawn service company.

The important thing to remember about telemarketing, and selling in general, is that you must be persistent. Don't get discouraged when rejected. Every day thousands of sales are made to people who, when first asked to buy,

said "no."

An objection should not be considered the end of an unsuccessful contact, but merely as a roadblock which must be cleared away. Sixty-three percent of all sales are made after the fifth rejection, and 75 percent of all salesmen quit after the first "no." That explains

why 25 percent of the sales force often gets 95 percent of the sales. ■

The preceding article was excerpted and adapted from The PMA Guide to Effective Telephone Technique, published by the Property Management Association of Metropolitan Washington.

TELEMARKETING ETIQUETTE

Emily Post would probably agree whole-heartedly that common courtesy on the phone is as important to success as it is in face-to-face encounters — perhaps even more so. Customers like to do business with people who treat them pleasantly and courteously. Below are some tips from Ohio Bell's "Telemarketing: Solving Business Problems Profitably" booklet, which will help you polish your telephone manners.

YOUR CUSTOMER IS IMPORTANT. No one likes to have their name repeatedly mispronounced or misspelled, so make sure you get the person's name when you speak with him and write it down correctly. In your personal records, you can note how the name is spelled and how it sounds. For example: DuBois ("Due-Boys" or "Due-Bwaa"). Once you know the customer's name, use it occasionally in the course of conversation to personalize your dialogue with him.

Listen carefully to your customer. By taking notes, you will remember selective important points. Also, an occasional "yes," "I see," and "uh-huh" tells him you are

with him and compels him to continue speaking. Remember to understand your customer's point of view, rather than always wanting to defend your standpoint.

A WORD ON HOLDING. When you must put your customer on hold, ask for his permission and wait for his reply. Excuse yourself when leaving the phone, then make sure you use the hold button or switchhook hold. *Never* lay down an open receiver. You don't want to risk the customer overhearing an embarrassing comment.

Don't leave the customer on hold for long periods of time. Check back with him every 30 to 60 seconds to assure him he's not being neglected. And when you return, thank the customer for waiting.

BE PREPARED. Have an adequate supply of paper, order forms, pencils, price lists, catalogs, and special sale information at your desk before you pick up the telephone. Also, keep a checklist of necessary information to remind yourself to be thorough.

When you've finished your conversation, thank the customer for his time. Let him hang up first, then gently hang up your receiver.

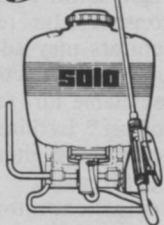
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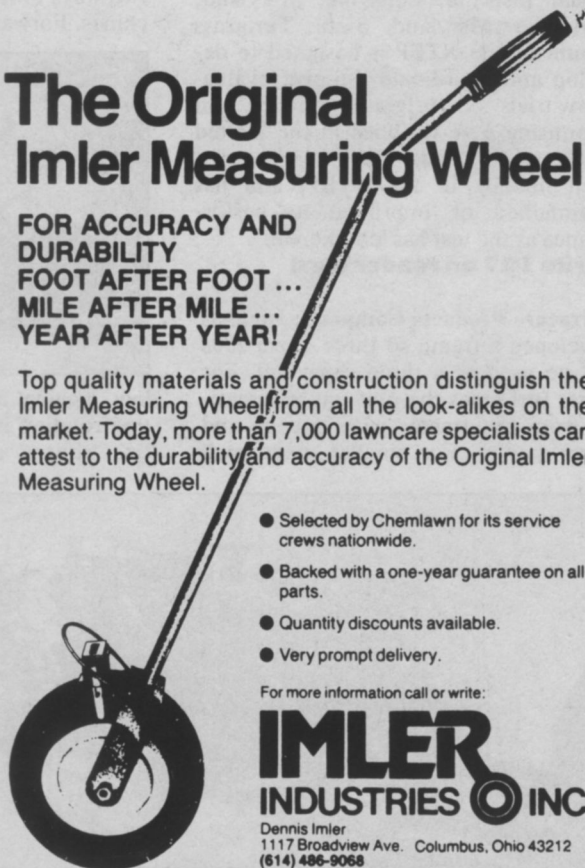
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PRODUCTS

The Redi-Ramp steel bi-fold platform has been introduced by **Metco, Inc.** The ramp fastens to the truck frame and folds into the position of the pickup tailgate. Redi-Ramp is capable of handling up to 1,300 pounds. A latch locks the ramp into the transport position. Its grated deck allows air to flow through for better gas mileage and visibility. The ramp fits any standard pickup truck.

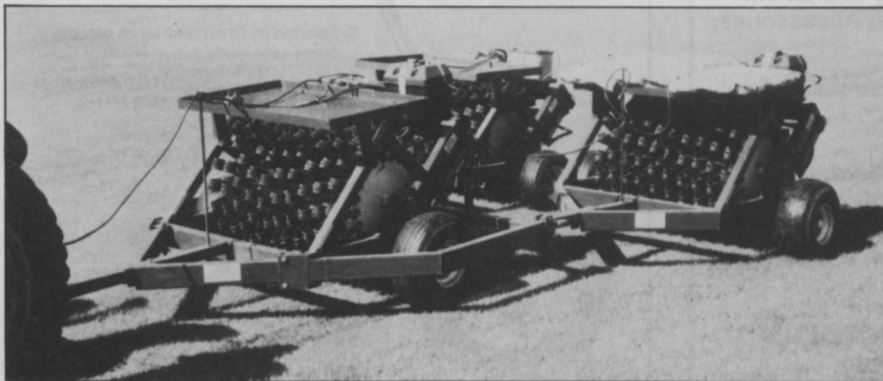
Write 113 on reader card

Eclipse Kentucky bluegrass from **Jacklin Seed Company** continues to demonstrate excellent turf qualities with its number one performance in the third year of the 1980 National Kentucky Bluegrass Test. Eclipse is consistently high in overall quality and shade tolerance in tests conducted at 32 sites nationwide. Included in the overall evaluations are more than 80 Kentucky bluegrass cultivars, and 20 new Kentucky bluegrass varieties.

The National Turfgrass Evaluation Program (NTEP), a self-supporting, non-profit program, is sponsored by the United States Department of Agriculture, Science and Education Administration, Plant Genetics and Germplasm Institute, Beltsville, Maryland, and the Maryland State Turfgrass Council. The NTEP is designed to develop and coordinate uniform evaluation trials of turfgrass varieties and promising new varieties in the United States and Canada. Eclipse performed well initially in the NTEP, and has maintained or improved its performance as the test has lengthened.

Write 127 on reader card

Terracare Products Company, Inc. has developed a frame so three Terra 200s can be used as a three gang unit. For larger turf areas the unit can be operated from the tractor with one up and down switch. For smaller areas, pull



the two draw bar pins and you have three machines.

Write 115 on reader card

Snapper Power Equipment's rear tine tiller product line includes three models. The products give the operator two ways to till with any one of the machines. Forward tine rotation is for shal-



low digging and cultivation. Reverse tine rotation is for deeper digging. The tine churns against the pull of the

wheels and can grind a path 20 inches wide through the hardest soil.

Features include disc drive and four forward speeds. Options for the three rear tine tillers include a hiller-furrower attachment for laying seed rows while tilling in forward tine rotation, a dozer blade for snow removal, and wheel weights for added traction.

Write 116 on reader card

Mojave, a new variety of turf-type tall fescue, has been released to Mid-Valley Agricultural Products, Corvallis, Oregon, by **International Seeds, Inc.** A dark green variety, Mojave has proven to be drought tolerant, has improved disease resistance, and produces turf of good overall density. Trials have shown that it produces turf of excellent quality, particularly in Southern California and the southeastern United States.

Write 128 on reader card

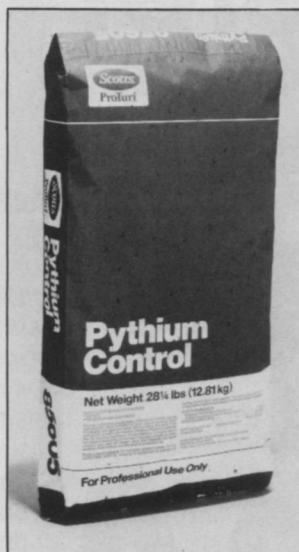
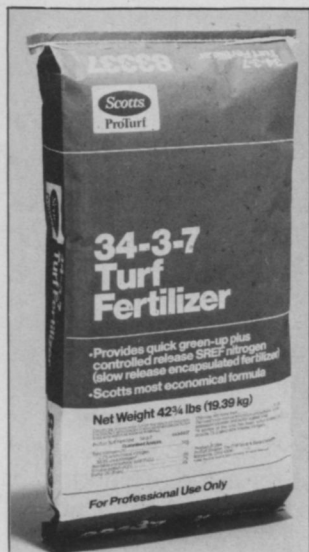
O.M. Scott and Sons Company recently introduced its new 34-3-7 Turf Fertilizer, which uses a single sulfur coating to provide a more consistent turf response. Other manufacturers may add wax and conditioners to their products, which may cause unpredictable turf responses. The new ProTurf® fertilizer offers users a safe, cost-effective alternative for fertilizing large turf areas.

Quick green-up and consistent nitrogen release are possible through a combination of urea and Scotts sulfur-coated urea. A sulfur coating without amendments means less tackiness, less

potential bag set and improved shelf life. Consistent particle size minimizes segregation and maximizes application uniformity. Sufficient sulfur helps correct soil deficiencies and maintain adequate levels.

Also from Scotts, is Pythium Control, made specifically to prevent and control *Pythium* blight on established turfgrasses (Kentucky bluegrass, bentgrass, perennial and annual ryegrass, and bermudagrass), as well as *Pythium* damping-off in seedlings in overseeded turf. Professionals will find it long-lasting too, from 10 to 21 days.

The active ingredient in the product is metalaxyl. It provides a systemic mode of action, which means it's absorbed through the leaf surfaces and roots of each grass plant. Once taken up, the chemical is translocated throughout the plant's

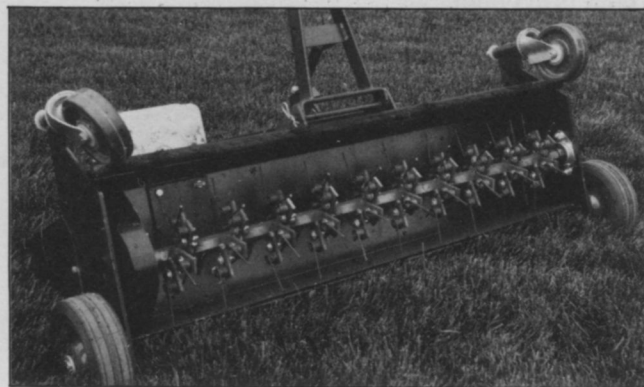


vascular system. In this way, Pythium Control prevents fungal spore germination, while controlling active disease organisms by inhibiting further growth. Its mode of action also makes the product less susceptible to changing weather and maintenance conditions.

Write 130 on reader card

Super Duty Thatcher Model 600, designed and built for the heavy duty use of lawn care professionals, has been introduced by **E-Z Rake, Inc.** It has a raking width of 38 inches and a 2.5 mph performance. It is powered by a 5-horsepower engine with quiet tone muffler, has a recoil starter, and a 6 to 1 gear reduction drive.

Drive wheels are steel with 8 by 2.75 semi pneumatic tires. Front wheels are swivel bearing casters for ease of maneuver-



ing. The deck is 14 gage steel with welded, reinforced 1/4 inch steel end plates. Other thatcher features include steel chain and sprocket drive with steel guard for safety, steel

(continued on page 57)



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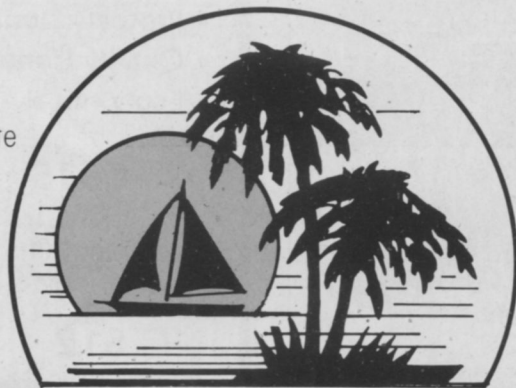
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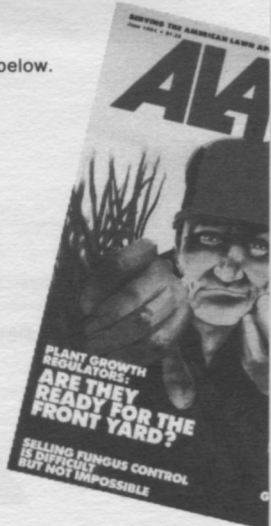
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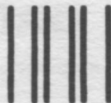
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TURF GROWS ON YOU

(continued from page 33)

How does the average person donned in a polyester-blend react when he sees Harding? "The response has been unanimously positive. People just seem to be drawn to it like a magnet." Because they have never seen anything like it and it's so visually appealing, "people are just stunned." Often, people want to touch the suit, Harding says, because they don't think it's real. "It seems to make them happy. It is something that can be enjoyed on many different levels," he adds.

Harding has received national and international attention because of his suits. The Manhattan Ryegrass Growers Association has contacted him for a special program it is producing; the Contemporary Art Center in North Carolina will be growing suits for children this summer. A documentary about the grass suits and cars Harding has grown is underway and a movie offer was made to him. Harding has even modeled his unique attire on the *Tonight Show* and a Japanese talk show.

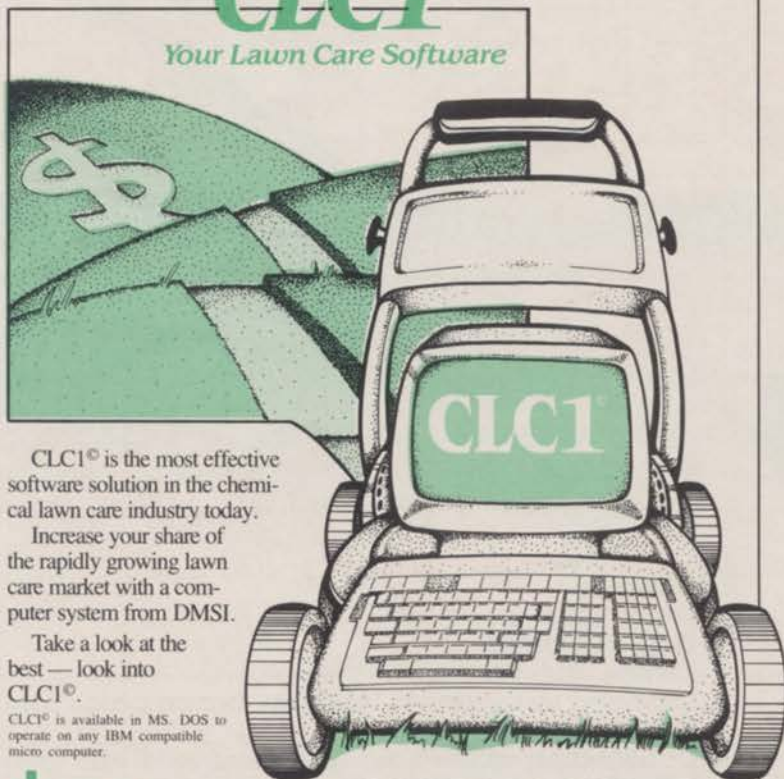
Like any turf, Harding's suits are susceptible to diseases. Harding reports that while he was growing a turf car in a

Kansas City garage which lacked proper ventilation, his creation was afflicted with a fungus. Because the treatment Harding applied was not effective, dead spots spread on the grass. "I get a real maternal feeling for the stuff, and when I saw there was a spot on the car, I just freaked. I replanted it and it didn't look too bad, but I could tell."

Harding has never cut his grass suits. "I just let them grow as much as they want." The average blade length on a suit is 4.5 inches, he says, and the longest blades on any suit he has grown were approximately 6 inches long. The lifespan of a suit is normally about two weeks. After that Harding returns each one to its natural habitat — his backyard. "If I took care of (them)," he says, "(they) could last up to a month."

On July 21, Harding has a date with a number of fellow grass lovers. "I'm planning to grow 35 grass suits and have people meet in the park wearing them." He adds, "I just want to have a

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Harding has been known to drive a sporty grass-covered Buick. In addition, he's appeared publicly, clad in a grass suit, carrying a clear Plexiglas briefcase containing water and goldfish.

lot of people in the grass suits and we will be like a tribe of grass people. I think I have always felt guilty because I was enjoying myself so much. I wanted everyone to have one so that is why I'm doing it."

Originally, Harding had planned to grow 100 suits, but because of a lack of funding, he decided to grow 35 suits. Harding has only grown suits for himself and one other person at a time, so this will be his first attempt to mass produce his creation.

There may be other vegetative creations in Harding's future. Now on the drawing board is a more stationary suit which would have other types of plants growing on it. It would feature tomato plants and herbs, he says. Eventually, Harding hopes to install a watering system on the sides of buildings so he can plant grass. "I think it would be great to green up a lot of cities that are bleak-looking, and it would also help with pollution," he adds.

Harding's grass suits may present problems and challenges for the lawn care operator, but one thing is for certain, core aeration should not be used while the customer is wearing the suit!

— Lisa Furiga

Write 40 on reader service card

PRODUCTS

(continued from page 51)

draw bar and safety hitch, adjustable steel engagement lever, and a front brush guard for added safety.

Write 117 on reader card

HMC/The Green Machine is now packaging its One-Mix® multi-ratio, two-cycle oil in five convenient sizes. Only two sizes have been available since the product was developed by HMC and introduced six years ago. The company also has redesigned the packaging and created two new display units for promoting the product.

The purity factor of the base oil gives it a very high viscosity rating of 95. It eliminates the need for a variety of fuel/oil ratios for different types of two-cycle engines.

The new container sizes are a 3.2-ounce "Econo-Pac" and a 3.2-ounce "Pro" tube, each yielding 1 gallon of mixed fuel. Larger quantities are bottled in 8-ounce, 1-quart and 1-gallon plastic containers, yielding 2-1/2-, 10-, and 40-gallons respectively. The quart and gallon containers are fitted with a 3.2-ounce measuring cap. One-Mix is competitively priced from 89 cents for the "Econo-Pac" to \$16.95 for the gallon-size container.

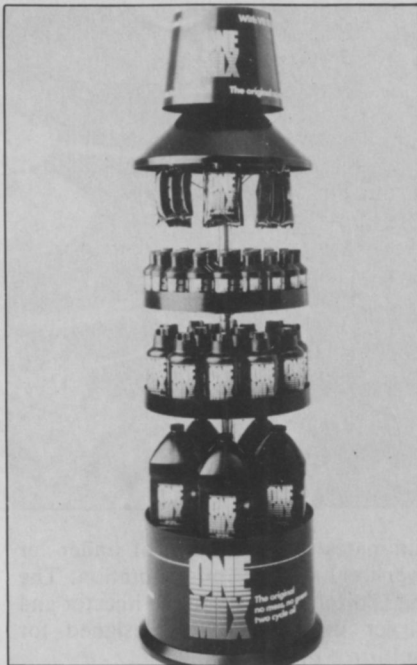
Write 129 on reader card

Exmark Manufacturing Company, Inc. has introduced the power Turf Rake. The rake features a 20.5 by 22.5 inch raking deck designed to cut through thick thatch and root-bound grass.



Powered by a 5-horsepower Briggs and Stratton engine, the rake slices through thick grass, preventing thatch build up that can suffocate a lawn. The forward movement of the rake's 28 steel cutting fingers unbinds roots, giving grass new life while promoting deep growth.

With its interchangeable slicer assembly, the rake becomes an aerator. Other features include a 3 quart tank, belt-driven blades controlled by a centrifu-



gal clutch, single-action height adjustment, wheels with greaseable sealed bearings, and semi-pneumatic tires.

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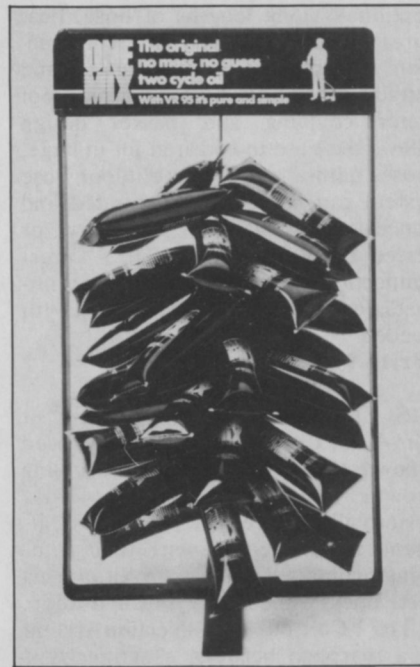
A portable, maneuverable walk-behind lawn aerator has been introduced to the professional lawn care industry by Feldmann Engineering and Manufacturing Company. The lightweight aerator models 1700 and 1800 feature a choice of two different styles of aerating tines in a 25-inch aerating swath. Powered by a 2- or 3- horsepower Briggs and Stratton engine, this compact aerator is designed for hard to reach places such as fence areas, building walk-ways, and shrub and flower beds.

Write 119 on reader card

A power unit/rear mount tiller, Model 900, has been introduced by the Roto-Hoe Company. The model is equipped with a K181 Kohler 8-horsepower engine that is 4-cycle, single cylinder, and air-cooled.

To make the tiller easy to operate, the throttle, power unit clutch, and shift rod lever controls are mounted on the handle. The 990 can cultivate a variety of soil types. Standard equipment includes 13 inch diameter tires, 16.5 pneumatic wheel and tire assembly with Carlisle power trac lug design, a separate power unit and tiller clutch, a depth gauge to determine the depth necessary for soil condition, and a five speed transmission — five forward and one reverse speed.

With the 990, which weighs 295 pounds, a variety of attachments can be used, including a shredder/chipper, snow thrower, log splitter, tillage tools,



aerator, sickle bar, generator, and water pump. Features for the machine include belt guards to protect the drive



belts, a fully adjustable carburetor, and an automatic internal compression release for easy starting.

Write 124 on reader card

With the new LESCO, Inc. Roller Base, turf managers can provide manual watering of large turf areas without worrying about marring the grass. The LESCO Roller Base, constructed of light-weight, 4-inch PVC pipe mounted on a heavy-duty steel roller frame, allows smooth manual watering with a free-wheeling base which can be attached to various sized sprinklers. The base comes equipped with brass swivel hose connections and fittings which can be adapted for 3/4- or 1-inch hose. The PVC tube can be opened to add weight to the base.

Write 135 on reader card

The Zierden Company introduces a high-quality construction, eye-appealing hose system that can carry ex-

ceptionally long lengths of hose. Features include, rugged frame construction, chrome-plated hose basket, and attractive painting. A unique leak-proof water coupling and basket design allows the hose to be cared for in large, loose, natural coils. The outdoor hose system can be remotely operated and concealed in garden shrubbery or placed behind a wall or fence. Direct connection to water supply provides immediate use for whatever hose length needed.

Write 134 on reader card

TIS Enterprises, Inc., a division of Elm-Balm Corporation, has announced a new tree injection system for applying growth regulators. This easy-to-use system allows tree crews to apply treatments simultaneously with their trimming operations. It offers maximum effectiveness while saving time and labor.

The "Colt 60" tree injection system is a marriage between a syringe-type injector and a self-powered trigger mechanism. A tiny 60 millimeter plastic bag dispenses the growth regulator through the injector into the tree. Each bag contains a factory-sealed, pre-measured dose of growth regulator. This guarantees dosage accuracy and



eliminates the possibility of under- or over-treatment by miscalibration. The bag is disposable, while the injector and trigger mechanism are designed for multi-tree use.

Write 133 on reader card

Ag-Tech Industries has introduced the Preseeder to help transform rough-graded lots into finished seedbeds. A specially designed rotor and roller work together to prepare the soil for lawn

seeding. An adjustable rotor with tines is angled horizontally to displace rocks and other debris into a windrow.

The rotor depth is adjustable with a remote cylinder which allows the machine to finish grading and prepare a seedbed free from rocks and debris. The Preseeder can be operated from a minimum 22 horsepower tractor with 540 rpm PTO drive, a three point hitch, and a remote hydraulic valve. ■

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AD INDEX

Ben Meadows Company	49
Bulkem Corporation	61
Ciba-Geigy Corporation	63
Classen Manufacturing Co.	23
Distribution Management Systems	56
Dow Chemical	6,7
Feldmann Manufacturing	42
Florida Turfgrass Association	21
Graham Lawn Care	14
Hahn, Inc.	17
Imler Industries, Inc.	49
Jacklin Seed Company	59
Jacobsen Division of Textron	34,35
F.D. Kees Manufacturing Co.	62
Lebanon	60
LESCO	64
Liqui-Land	22
Mallinckrodt, Inc.	9
Mobay Chemical Corp.	2,3,25
Nice 'N Green Plant Foods	51
Northern Hydraulics	20
Perma-Green Supreme	18
Pickseed West	55
Practical Solutions	22
Professional Turf Equip.	18
Olathe Manufacturing	62
RGB Labs, Inc.	4
Salsco, Inc.	19
Spring Valley Turf	14
Terracare Products Co.	23
Trebor Corp.	10
Tuflex Manufacturing Co.	15
Walker Manufacturing	42

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(continued on page 62)



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(continued from page 60)

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