REGULATION

Congress extends mower deadline

Congress has granted mower manufacturers a six-month extension to comply with the Consumer Product Safety Commission (CPSC) safety standard for walk-behind mowers.

The action delays the effective date —originally Dec. 31, 1981 — to June 30, 1982.

The action came as part of the CPSC appropriations measure, which is part of a larger bill including the Department of Housing and Urban Development.

The Outdoor Power Equipment Institute has also reported that the Research Triangle Institute (RTI) has submitted a final report to CPSC on its study of the validity of the agency's proposed thrown objects test for power mowers.

The CPSC's current plans call for reproposing thrown objects requirements for walk-behind mowers by October of this year. They were included in CPSC's May 1977 proposed standard, and have been the subject of debate and study since then.

The latest RTI report was an attempt to review public comments about the proposed standard, link the hazard potential represented by actual injury data to the test procedure and its acceptable criteria, and develop and test a computer simulation model to predict the injury potential of various mower designs.

NO EXAGGERATED PROJECTIONS

Lawn businessmen look at year with 'cautious optimism'

by Paul McCloskey
Assistant editor

Reports from around the industry indicate that lawn care businessmen will be faced with a number of economic uncertainties this year. A new administration in Washington, soaring interest rates, and government regulation of chemicals vital to the industry are the chief variables. The pulse of the industry remains quick, nonetheless, and businessmen are speaking with cautious optimism of the new season.

Although a few executives interviewed expect a slower first half due to wariness on the part of consumers hard hit by inflation last year, most feel that the business atmosphere will clear and killing interest rates subside once President Reagan assumes real economic leadership.

None, however, have made exaggerated business projections, prefering instead to tailor their marketing forecasts to stronger consumer confidence in the dollar. Also, those interviewed suggest that the industry must concentrate on achieving maximum labor and equipment efficiency this year, while gearing up for a more aggressive advertising and promotion effort.

Michael Brown, for instance, president of L&M Lawncare in Canton, Ohio, is offering his customers an unusually high eight percent discount on year long service if they pay in advance. "This will have two results," said Brown. "First, it will save the customer some money, and second, it will allow us to use the extra cash for purchasing in the spring."

An attractive prepayment plan allows the industry to generate much needed cash flow in the spring to help withstand the initial cost of starting up again. This is especially true in the northern regions where winter is the perennial off-season for lawn care crews. The plan also provides an alternative to taking out expensive loans.

L&M will also institute a new program of equipment and labor efficiency. Their trucks will be operated in two shifts, with one crew going out at dawn, returning in the early afternoon to wash and load the trucks for the next shift. The afternoon shift will then work until nightfall. Zeroing in on the industry's losses from expensive downtime, Brown remarked that

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WISCONSIN

Madison restricts 2,4-D; ban overturned in county

The regulatory bandwagon continues to roll over users of the phenoxy group of herbicides. The latest attack comes from Madison, Wisconsin, where, under pressure from environmentalists, city officials have issued a moratorium on the use of the popular weed killer, 2,4-D.

The temporary ban was issued by the park superintendent after a child, whose father had been exposed to Agent Orange in Vietnam, had what his parents called a seizure while a Parks Department crew sprayed the herbicide.

Agent Orange contained 2,4,5-T, which has been banned for use in the United States. Environmentalists have argued that 2,4-D should also be banned.

The successful lobbying action was organized chiefly by Lynn Haanen, a member of the Dane County board of supervisors, the Madison City Council, and chairman of the county's ad hoc Agent Orange Committee. With the support of many Vietnam veterans and citizens attuned to the issue, the proposal passed the City Council and a county hearing was slated.

The decision was reversed at the county level, however, when representatives of the Golf Course Superintendents Association of America, the chemical industry, and university research departments were on hand to defend use of the material.

Citing gross underrepresentation at the initial city hearings, Russ Weisensel, executive director of the Wisconsin Agri-Business Council, said that among the 17 who appeared at the hearing, only two were in opposition.

"There was no doctor's report on the seizure," he said. "The youngster was seizure prone, and the hearing was set up only 24 hours after the incident occured."

The make-up of the county hearing was more evenly distributed between members for and against, he said. Represented were 10 or 11 scientists from the University of Wisconsin and a cadre from two of the biggest manufacturers and users of the chemical, Union Carbide and O. M. Scott and Sons.

The County Agriculture and Zoning Board, responsible for

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QUICK STARTS

hould get involved
INDUSTRY, page
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LCI SURVEY

Average chemical lawn firm has 500 accounts

The average reader of *Lawn Care Industry* involved in chemical lawn care has 500 accounts, according to a recent survey conducted by the magazine.

The same survey showed that the average reader of the magazine involved in mowing/maintenance had 86 accounts.

Overall, 14.9 percent of LCI readers handle chemical application accounts only, 21.6 percent handle mowing/maintenance accounts only, and 39.9 percent of the readers handle both chemical application and mowing/maintenance accounts. Other readers are not appreciably actively involved in lawn care.

Projecting these results to the total readership of the magazine actively involved in lawn care, the survey showed that LCI readers service 3.6 million chemical lawn care accounts a year, and 700,000 mowing/maintenance accounts, for a total of 4.3 million accounts serviced.

These figures imply that 6.8 percent of owner-occupied,

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Number of accounts		
Type	Average/ reader	Projection to LCI readership
Chemical application	500	3.6 million
Mowing/ maintenance	86	700,000
Total		4.3 million

Source: 1980 LCI survey

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MEMOS

A Reagan economy: Ronald Reagan makes the big difference in the outlook of business executives for this year. The prospect of the newly installed administration in Washington and the economic-policy changes it is likely to bring are what executives are mentioning most often as reasons for optimism about the U.S. economy's future.

Corporate leaders generally believe 1981 will be better than 1980 for their own companies (despite the recent surge in interest rates and speculation about renewed recession) and most expect some overall improvement in the economy this year.

The basis for that optimism, executives say, is the new Republican administration. Heads of companies of all sizes say they expect some progress to be made in reducing government spending and in lightening what they consider to be the burden of federal regulations. Although the Federal Reserve Board's restraint on availability of credit is likely to remain severe, many executives expect modest gains in profitability.

"The atmosphere will be completely different with the Reagan administration," predicts the chairman of a diversified agricultural/horticultural company. "Business policies will be put on a sounder basis, and we businessmen will feel better. It will encourage us to improve production," he told the *Wall Street Journal*.

Many executives are hopeful that government involvement in business and the economy will be reduced during the Reagan years. Many executives cite factors related to fewer regulations and restrictions and less government involvement in describing the most important business development they expect in the 1980's.

Computer-designed mowers: Simplicity Mfg. Co., Port Washington, Wis., an Allis-Chalmers company, employed computer techniques to design its 1981 fleet of riding mowers. Working with the Advanced Technology Center of Allis-Chalmers Corp., Simplicity engineers employed the dynamic design techniques of modal and Fourier analysis, dynamic testing and finite element analysis to provide improved design of the system for structural and design performance. Through these activities excessive vibration of the frame and steering wheel were reduced to minimal levels.

The procedure and results obtained by Simplicity in this particular design project was recently acknowledged by the Society of Automotive Engineers (SAE). During the Society's annual conference in Milwaukee, Wis., Simplicity was invited to present a paper to the group on this project. The technical paper entitled "Riding Mower Development by Dynamic Design Techniques," was presented by H. T. Knudson of Simplicity, along with P. T. Shupert and P. H. Sheth, Advanced Technology Center.

Superintendents, watch out: The impact the lawn care industry is having on state turfgrass conferences continues. As an example, of the 1,745 attendees to the recent Ohio Turfgrass Conference, 25 percent (428) were members of the lawn care industry. On the other hand, 32 percent (551) were golf course superintendents.

Dow pushing to be number one: Dow Chemical Co., manufacturers of Dursban insecticide widely used in the lawn care industry, will become more aggressive in the future, according to a recent article in Chemical Week. "I'd love to grow faster than DuPont," Paul F. Oreffice, Dow's president and chief executive officer, told the magazine.

The article dealt largely with chemical uses other than the lawn care industry, of course, but said that with relatively high cash flow and the chemical industry's most aggressive use of borrowed capital, Dow has steadily improved its production processes and relentlessly built up a world-wide network of large plants and "live-wire" sales forces.

Two years ago, the company's top executives issued a call for divisions to push hard on product innovation. It was that call that eventually led Dow to expand in agricultural chemicals, among other areas.

The art icle said that Dow officials expect continued growth in their Agricultural Chemical Division, which could eventually produce about $500 million in annual sales. There, a good part of Dow's hopes for the future is based on tetrachloropyridine, which gives the company the routes to a broad spectrum of products ranging from Dursban to N-Serve, a relatively new nitrogen-fixing compound.

Computer biggies looking at small business: The race is on among the leading computer and office equipment manufacturers to capture a stronghold in the fast-growing market for small-business computers.

This is not news to lawn care businessmen who have attended the Professional Lawn Care Association of America Conference and Trade Show in Louisville and other turf conferences around the country. Where in the past booth space has largely been occupied by chemical companies and equipment manufacturers, computer companies are now snapping up space. There were four separate companies alone at the PLCAA show, and others at state turf conferences.

Such heavyweights as International Business Machines, Data General, Digital Equipment and Xerox are all pitching for the small businessman's dollar. But for all their savvy in marketing to huge enterprises, these companies are not yet sure how to reach the small ones. Their target is more than four million small businesses with fewer than 200 employes each, including many lawn care companies. But small computer prospects are more difficult to identify than their large corporate counterparts.

Despite uncertainties, the big information processing companies have little choice but to attack this market. "It's really a defensive move," one industry expert told *Business Week*. "Companies have to compete in the small-business market to defend their market share against low-end competitors who will want to build up."

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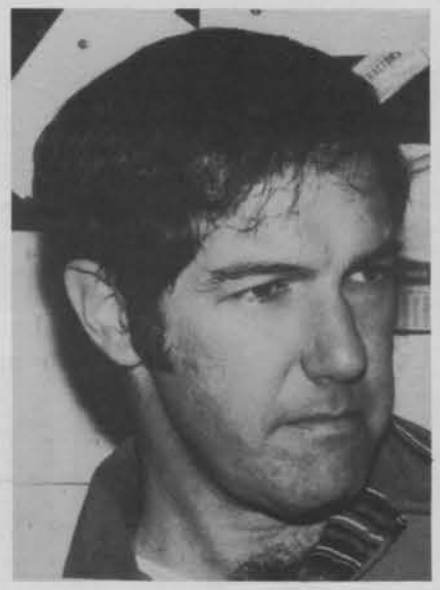
SURVEY *from page 1*

single-family homes in the United States are serviced by readers of *Lawn Care Industry*, based on the federal government's *Current Housing Reports*, published by the Bureau of the Census.

However, industry experts estimate that the number of owner-occupied, single-family homes that could *ever* require the services of a lawn care firm (subtracting inner-city homes, for example) is closer to 48 million in number. Using these assumptions, readers of the magazine service closer to nine percent of these homes.

Results of this survey are based upon a 53.6 percent response to 500 questionnaires mailed to readers of the magazine in mid-1980. At that time, respondents predicted a 17 percent increase in customers in 1980 over 1979. If these predictions held up, LCI readers were servicing 10.5 percent of the 48 million owner-occupied, single-family homes by the end of last year. A similar survey will be conducted by the magazine later this year.

For a copy of the complete 1980 report, contact: Bob Earley, editor/publisher, *Lawn Care Industry*, 757 Third Ave., New York, NY 10017.



"Barring a major recession," says Bob Cohen of The Green Scene in Tarzana, Calif., "we are very up about this year. Things are going to be more positive. Isolated shocks may come, but the overall trend will be up."

Michael Brown of L & M Lawncare, Canton, Ohio feels that his eight percent pre-payment discount will "save the customer some money, and allow us to use the extra cash for purchasing in the spring."

"One of the ways we can get around the 2,4-D issue is to keep up our diversity," says John Wright of Wright Lawn Spray Service in Bloomingdale, Ontario. His business was up 30 percent last year, and he hopes for the same this year.

"I don't know quite why," says Terry Stout of R.B. Stout, Inc., Akron, Ohio, "but ever since the election, people have begun to spend a lot of cash in our garden store. Not checks, not credit cards, but cash."

CAUTIOUS OPTIMISM *from page 1*

"the industry's going to have to get far more efficient with the use of equipment."

Oddly enough, however, the fortunes of the lawn care industry don't seem to be keyed to larger, national economic turbulence. The most severe recessionary years of the mid-seventies were practically a boom time in lawn care. Aside from the cost of taking out loans at close to twenty percent last year, most companies surveyed report a substantial growth in their consumer base.

The reason, according to Bob Cohen, president of the Green Scene, in Tarzana, California, has to do with consumer instincts. "Inflationary pressures force people to look within themselves and concentrate on home maintenance. There's less money to spend on transportation for instance, and people's private surroundings assume greater importance, give more satisfaction."

Many of the outfits reviewed by *Lawn Care Industry* feel that the recessionary years have been an overall object lesson in business prudence. Labor efficiency and investment techniques acquired during years of spiralling inflation will, if sustained during good years, lead to steady, mature growth.

Accordingly, Cohen plans to keep his prices for last year's customers the same in the hope that his consumer base will broaden significantly. "Barring a major recession," he quipped, "we are very up about next year. Things are going to be more positive. Isolated shocks may come, but the overall trend will be up."

Some of the smaller companies interviewed also look forward to prosperity in the coming year. Larry Livingstone, owner of Livingstone Lawn in Birmingham, Alabama, runs a one-man outfit and although operating with low overhead, says that he now has just about all the business he can handle. He plans to add one employee to his company this year, representing a 100 percent labor growth.

Livingstone doesn't believe President Reagan can cut interest rates with a stroke of a pen, however, a sentiment common throughout the industry.

"A 19 percent interest rate is outrageous," says Norm Berman, president of Lawn Ranger, Inc. in East Brunswick, New Jersey, "but you have to finance growth, there's just no alternative."

Berman feels that the high cost of borrowing will force the industry to assume a more aggressive business posture, stimulating the weaker companies to compete. "It's a survival of the fittest kind of thing," he said. "People will be forced to adopt stronger marketing techniques."

Maintaining that the lawn care industry is somewhat indepednent of larger, big business trends, Berman says, "We've always had greater growth in times when the economy was in bad shape. We can't pay a whole lot of attention to economic indicators. We have to just go ahead and do it."

Some are experimenting with new promotional and pricing ideas to excite the market. Some are holding steady, choosing to develop their existing accounts. But all are optimistic, cautiously so to be sure, for the coming year.

Paul Bizon, President of Pro-Grass in Hubard, Oregon, agrees that the recession affects big business more adversely than lawn care. "I don't believe that it is affecting people who are salaried and want to keep their grounds in top shape," he said.

Bizon is optimistic for the coming year and plans to add two more trucks to their line. They also have the unusual advantage of being able to promote their service through a sod company which they have interests in, enabling them to offer complete post-sodding lawn care attention.

A different set of conditions prevails across the border in Canada. Lawn care businessmen there are being forced to contend with the possible ban of the broadleaf herbicide 2,4-D and so are more emotional about their prospects. 2,4-D is currently the most commonly used herbicide and a ban would devastate most spraying companies there.

Without the ban, however, they report a good, solid year. John Wright of Wright Lawn Spray Service in Bloomingdale, Ontario, reports that his business was up about 30 percent last year and hopes the same for 1981.

"One of the ways we can get around the 2,4-D issue is to keep up our diversity," said Wright. "We offer a broad range of services that will help us recover from going into shock over the possible ban."

Most agree that diversifying not only increases business volume, but can help offset economic stress in slow years and combat particularly local hazards to company business. Terry Stout, vice-president of R. B. Stout, Inc. in Akron, Ohio, believes that their broad network of landscaping, spraying, and nursery services offers them relief from high interest rates and spring time cash scarcity.

"Our garden store helps with cash flow in the spring," he said. "Also, we have a tangible asset with our in-ground stock, so we go through an agricultural lending institute for our loans."

Stout hopes the Reagan administration will deliver the promised economic well-being and already he has seen some improvement. "I don't know quite why," he said, "but ever since the election, people have begun to spend alot of cash in our garden store. Not checks, not credit cards, but cash."

Most throughout the industry see the close to 20 percent interest rates as one of the chief obstacles to growth in the coming year. Allan Duey of Jay-Lan, Inc. in Sioux City, Iowa, is battling the high cost of loans by taking out thirty day renewable notes with the hope that the rates will eventually decline.

Anticipating about a 25 percent growth in company assets, Duey intends to raise his prices about the same percentage in 1981. Sioux City area turf was devastated by a bluegrass Billbug infestation last year, a particularly destructive outbreak that Duey feels will encourage his customers to absorb the higher costs and request full year service.

Jay-Lan hopes to generate spring cash flow by implementing their pre-payment program as early as the middle of December, allowing themselves to be well prepared once service returns to full swing in the spring. Since the cost of their chemicals will remain the same, Jay-Lan is optimistic about the year, and along with most everyone else, hopes the new President can ease the crippling rate of inflation.

Insect infestation was particularly severe in the Richmond, Indiana area where Gary Kitchel operates E-Z Lawn. In 1980, the chinchbug and webworm plague there was intense, forcing business slowdowns as a result of the volume of service calls required.

Some of the customers hit hardest were those who had requested reduced service. This year, Kitchel says, they will provide only a full year spray service and will not allow their customers to skip any applications. This will have the effect of improving the customers' lawns and reducing his service liability, Kitchel says.

He plans to begin his own pre-payment plan this spring so he can get a good start on his business, suffering now somewhat from the hot weather and insect pestilence of last year.

For the most part, local conditions were reported as much more significant to successful business than national economic cross-currents. But many businesses were not immune to national economic misfortune. Robert August, for instance, one of the owners of Toledo Lawn Service, Inc. in Ohio, hopes that he can regain the business lost to him when the automobile industry was forced to lay off many of their employees.

"My residential service slacked off last year," he said. "But I'm confident that with Ronald Reagan in office now, business will free up."

August is a firm believer in free competition. He recommends that his customers take the most competitive bid they can get in order to boost consumer confidence. This, in turn, supplies him with the most competitive references for business and broadens his customer base with committed accounts. "We had a lot of trouble

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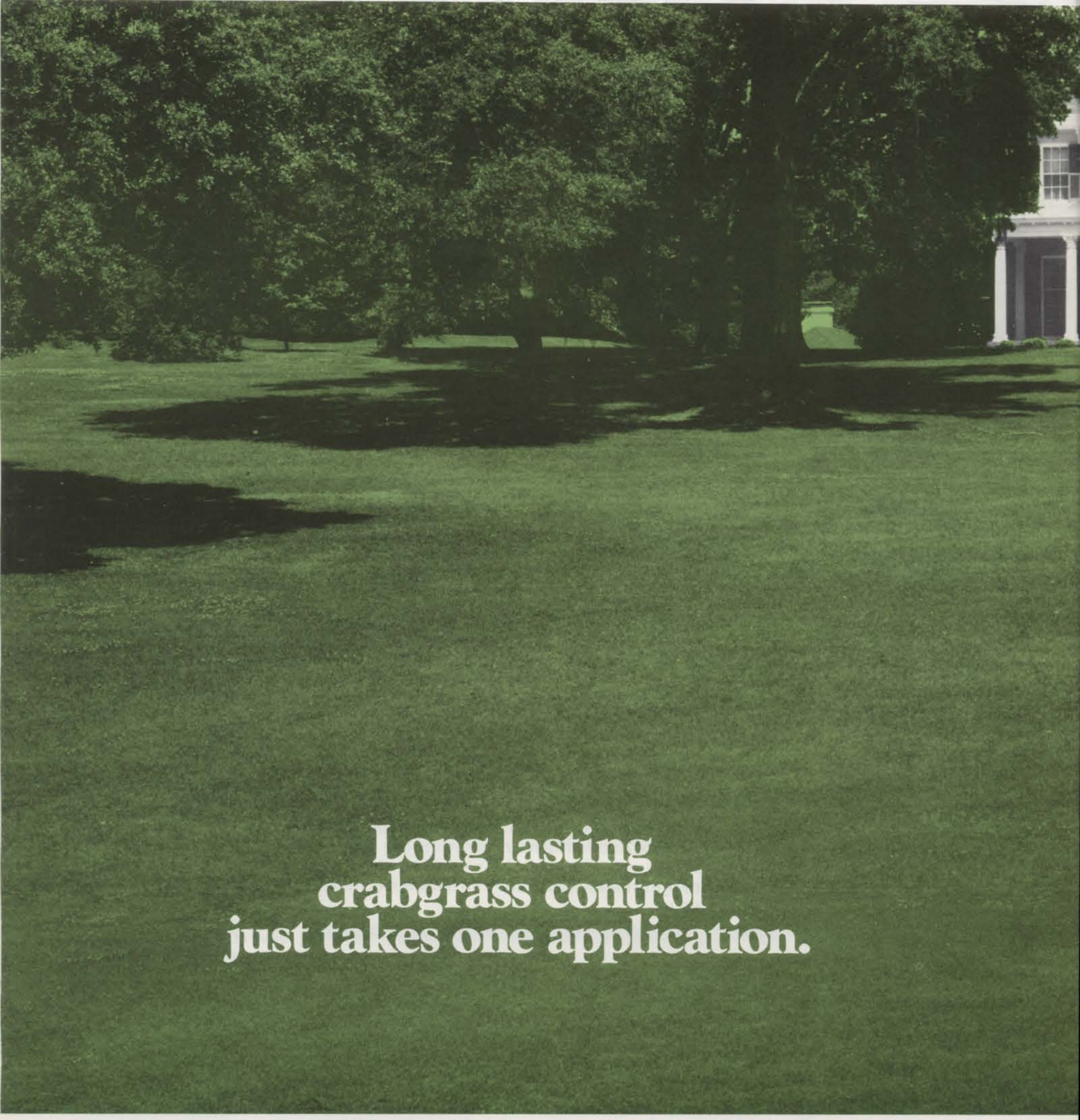

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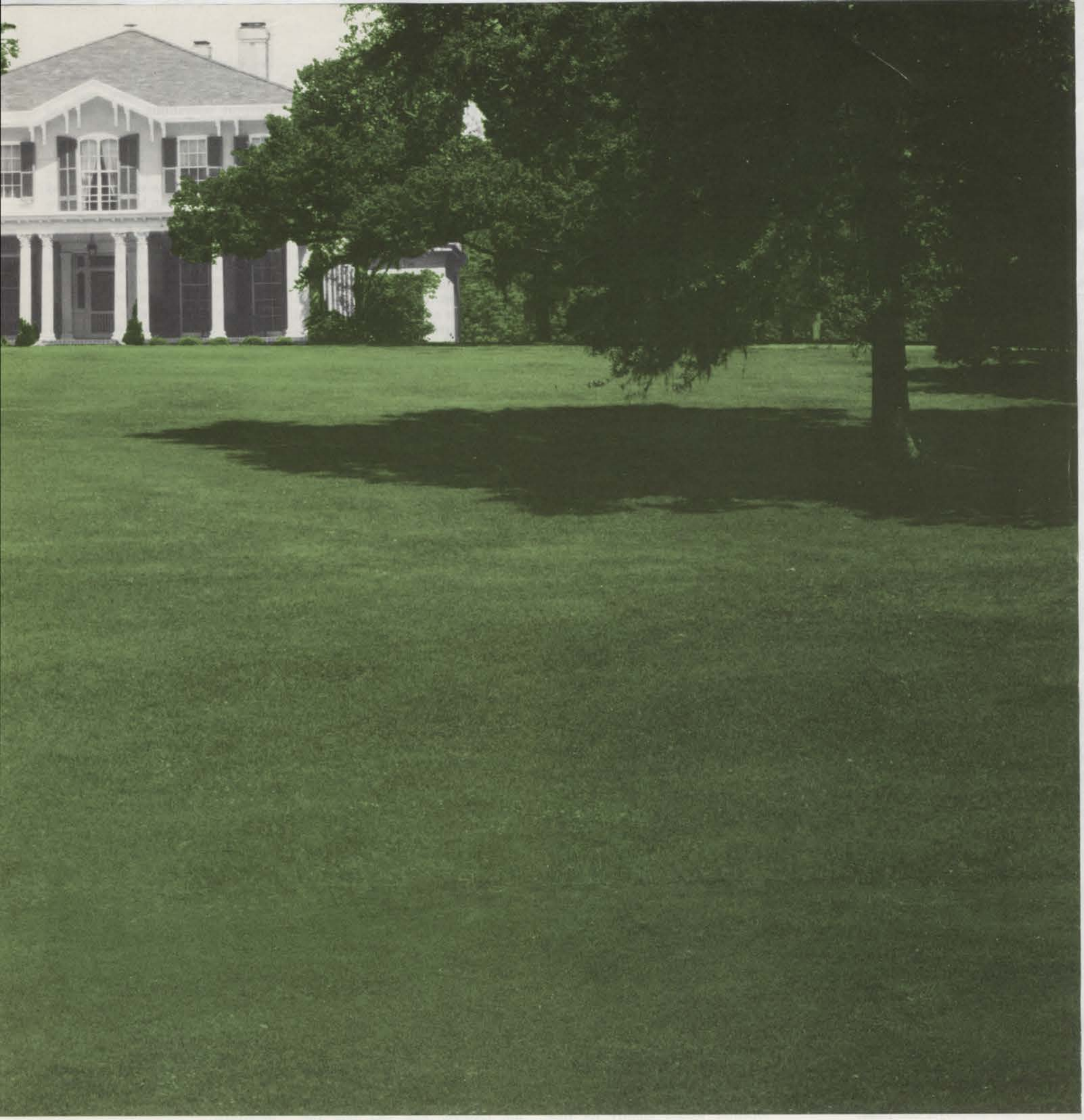

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The Andersons	Betasan plus fertilizer	Midwest
Faesy & Besthoff, Inc. Edgewater, New Jersey	F & B Betasan 4-E, 3.6-G and 7-G	Northeast
Lakeshore Equipment and Supply Co., Inc. Elyria, Ohio	Lescosan 4-E, 12.5-G and 7-G Betasan plus fertilizer	National
Lebanon Chemical and Fertilizer Corp. Lebanon, Pennsylvania	Lebanon Betasan plus Fertilizer	National
Mallinckrodt, Inc. St. Louis, Missouri	Pre-San 4-E, 12.5-G and 7-G	National
Occidental Chemical Co. Lathrop, California	Best 4-E and 12.5-G	West Coast Southwest
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Platte Chemical Co. Greeley, Colorado	Clean Crop Betasan 4-E	Midwest West
Pratt-Gabriel Div. Miller Chemical and Fertilizer Co. Robbinsville, New Jersey	Pratt 4-E, 12.5-G, 7-G	Northeast
Pro-Lawn Products, Inc.	Betasan 7-G	Northeast
Rockland Chemical Co. West Caldwell, New Jersey	Rockland Betasan 4-E, 12.5-G and 7-G Betasan plus fertilizer.	Northeast

What you need to know about back pay liability, overtime exemptions, and new wage and hour legislation

by Richard I. Lehr

It was a pleasure meeting many of you at the Professional Lawn Care Association of America National Convention in Louisville. Before discussing current developments, I would like to respond to some questions which were raised during my presentation there.

1. If a lawn care employer is not following the wage and hour guidelines, how many years is he responsible for back pay liability? According to the Fair Labor Standards Act, employers are only responsible for two years worth of violations, unless a determination is made of willfullness or gross misconduct in violating the statute, which would then make the employer responsible for three years of back pay.

If a lawn care employer revises his pay system to comply with wage and hour requirements, then the amount of back pay liability is reduced for every week the lawn care employer complies.

"If the bonus is designed to encourage increased production on the part of the employees, then the bonus constitutes earnings which must be added to the overall wage and hour calculations," Lehr said.

For example, assume that for the next year, the lawn care employer uses a proper pay system. If an employee questions how he was paid during the past two years, the lawn care employer's liability may be limited to the one year during which he did not comply with wage and hour requirements.

2. How does a lawn care employer qualify for a minimum wage and overtime exemption as a retail or service enterprise? As we discussed in Louisville, retail enterprises with gross annual sales of less than $325,000.00 ($362,500.00 as of January 1, 1982) are exempt from minimum wage and overtime requirements. The following conditions must be met to qualify for the exemption:

(a) The retail or service establishment must be the employer.

(b) The selling or servicing in which the establishment is engaged must have a "retail concept."

(c) The establishment must be a nonenterprise establishment; that is, it usually may not be a branch location of a larger company.

(d) Over 50 percent of the establishment's yearly dollar volume of sales must be made within the state where the establishment is located.

(e) At least 75 percent of the establishment's yearly dollar volume of sales must be recognized in the particular industry as retail sales or services.

(f) At least 75 percent of the establishment's yearly dollar volume of sales must be to purchasers who do not buy for resale.

Many lawn care employers may qualify for this exemption. However, the factors which qualify an employer for this exemption must be scrutinized and followed carefully. It is unlikely that larger lawn care employers in more than one location would qualify for this exemption.

Certain industries, such as the landscaping industry, appear to have common interests with the chemical lawn care industry. However, a landscaping company is prohibited from claiming the retail and service industry exemption, which I do not think a lawn care industry will be prohibited.

The difference is that landscaping is not considered retailing with a consumed service. Lawn care employers are more analogous to pest and termite companies for wage and hour purposes, than to landscaping or other nonchemical lawn care employers. According to wage and hour cases, insect and pest control employers are eligible for the retail and service industry exemption. I am optimistic that lawn care employers may qualify for this exemption also.

3. If a lawn care employer pays his employees according to the bonus system, do the bonuses count in calculating the regular hourly rate? Whether or not a bonus must be taken into consideration for an employee's overall compensation depends on the nature and purpose of the bonus. If the bonus is designed to encourage increased production on the part of the employees, then the bonus constitutes earnings which must be added to the overall wage and hour calculations.

On the other hand, if a bonus is a discretionary reward for past services, which is not devised until after the services have been rendered, then the bonus may be excluded from wage and hour calculations. For example, if a lawn care employer gives a Christmas or year end bonus, such bonus would not be included in the wage and hour calculations if the bonus remains discretionary and is not given as part of a work incentive package. If the bonus is given on the basis of weekly or monthly production, then it may have to be included, since it is a production incentive for the next week or month.

Employer ordered to continue distribution of turkeys. In the case of Aeronca, Inc., the National Labor Relations Board ordered the employer to resume its practice of giving employees turkeys for Christmas. The employer was ordered to compensate his employees for the value of a 14-16 lb. turkey.

The NLRB found that the employer violated the National Labor Relations Act by not bargaining with his employee's union, the International Association of Machinists, before eliminating the Christmas turkey program.

A Christmas bonus paid over a number of years is considered compensation, ruled the Board, and may not be discontinued without giving the union notice and an opportunity to bargain over the change. The fact that the employer made the change as part of an austerity program was irrelevant on the issue of the employer unilaterally discontinuing the bonus.

This case vividly illustrates the limitations on an employer's ability to run his business when his employees have voted for a union. No employer practice or policy is beyond union scrutiny, whether it is Christmas turkeys, beverages for soft drink machine, or wages, hours and conditions of employment. A union prevention program, as discussed at Louisville, will keep lawn care employers a step ahead of the unions.

Erosion of the "termination at will" right. There has been a long established common law rule that an employee, without a contract for a specified term, may be discharged at any time (known as "at will") or may quit at any time. However, the recent case of Cleary vs. Airlines demonstrates the erosion the employee at will concept.

Lawrence M. Cleary was an airport operations agent in Los Angeles. He was terminated from a $22,000.00 a year job after 18 years of service. The court held that Cleary has the right to prove whether or not he was terminated unjustly, and also has the right to seek compensatory and punitive damages for breach of the employer's good faith and fair dealing, which are implied in the employment contract.

The court explained that its position demonstrates "the continuing trend toward recognition by the courts and the legislature of certain implied contract rights to job security, necessary to insure social stability in our society."

Furthermore, the court explained that the time-honored "employee at will" concept "when viewed in the context of present day economic reality and the joint, reasonable expectations of employers and their employers may indeed be fictional."

This case portends events to come in the area of wrongful discharge. Regardless of whether or not employees have rights protected by a collective bargaining agreement, the courts, legislatures and administrative agencies are scrutinizing employee terminations.

Lawn care employers should respond by following the basic principle of not terminating an employee unless there is just cause to do so. A lawn care employer who builds the "Paper Fortress of Documentation" will have the necessary information leading to a termination decision, and that decision will not surprise an employee who was warned, disciplined or counseled throughout the employment relationship.

New wage and hour legislation. According to representatives of the United States Chamber of Commerce and the National Association of Manufacturers, there is a good possibility that a subminimum wage for youth will be adopted next year. Senator Orin Hatch has introduced a bill to set the youth rate at 75 percent of the minimum wage. Organized labor will vigorously oppose this bill, as labor perceives a subminimum wage for youth leading to a loss of jobs for potential full time employees and in laid off union members.

EEOC approves final sexual harassment guidelines. Effective November 10, 1980, the Equal Employment Opportunity Commission's guidelines on sexual harassment at the workplace hold employers liable for the acts of supervisors and agents "regardless of whether the specific acts complained of were authorized or even forbidden by the employer and regardless of whether the employer knew or should have known of their occurence."

Employers do not have the same strict responsibility for nonsupervisory employees. Employers will be considered responsible for the sexual harassment of employees by nonsupervisory employees if the employer "knew or should have known of the conduct" of those employees, unless the employer can show that "immediate and

to page 12

Lehr is a lawyer with Sirote, Permutt, Friend, Friedman, Held & Apolinsky, Birmingham, Ala.

LAWN CARE INDUSTRY

Just fill in card...(all items must be completed before inquiries can be processed).
Check one box in each category

1 Check one that best describes your business:
Lawn care service business involved primarily with fertilization, weed and insect control:
10 ☐ Liquid 11 ☐ Dry 12 ☐ Both
13 ☐ Primarily mowing/maintenance service
14 ☐ Landscape Contractor/Lawn Service Co.
15 ☐ Pest Control/Lawn Service Co.
16 ☐ Nursery or Garden Center/Lawn Service Co.
Grounds Care Manager for:
17 ☐ Private or public estate
18 ☐ School, College, University, Hospital, Industrial Park or similar facility
19 ☐ Government grounds; such as parks, around municipal buildings, or military facility
24 ☐ Cemetery or memorial gardens
25 ☐ Dealer or Distributor
26 Other _____

2 Check one which best describes your buying responsibility:
21 ☐ Purchase
22 ☐ Specify or recommend purchase

3 If your business sells its services to homeowners, commercial or industrial accounts please answer the following:

3A/ Estimated gross annual receipts from lawn service operations in current year:
31 ☐ Up to $50,000
32 ☐ $50,000 to $150,000
33 ☐ $150,000 to $500,000
34 ☐ $500,000 to $750,000
35 ☐ $750,000 to $1,000,000
36 Other _____

3B/ Approximate # accounts serving in current calendar year:
37 ☐ Up to 100
38 ☐ 100 to 500
39 ☐ 500 to 2,500
40 ☐ 2,500 to 5,000
41 ☐ 5,000 to 10,000
42 Other _____

3C/ Is your business:
43 ☐ Independent
44 ☐ Franchise
45 ☐ Chain Affiliated

4 If you are a grounds care manager (not selling lawn care services) estimate the following:
51 ☐ # acres you're responsible for_____ acres
Annual expenditures for:
52 ☐ Chemicals $ _____
53 ☐ Fertilizers $ _____
54 ☐ Equipment $ _____
55 ☐ Irrigation $ _____
56 ☐ Plant Materials $ _____

5 **For more information** about products displayed in this issue, print the reader service number in the spaces provided below and block out A, B, C, or D for specific information needed.
61 [a] Need Catalog literature
62 [b] Need more price Info
63 [c] Interest in Purchasing
64 [d] Have specific problem—have salesman call.

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	a b c d		a b c d		a b c d		a b c d
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91 First Initial | Middle Initial | Last Name

92 Your Title

93 Company Name

94 Mail To:

95 City | State | Zip Code

96 Phone: Area Code ☐☐☐ No.: ☐☐☐☐☐☐☐

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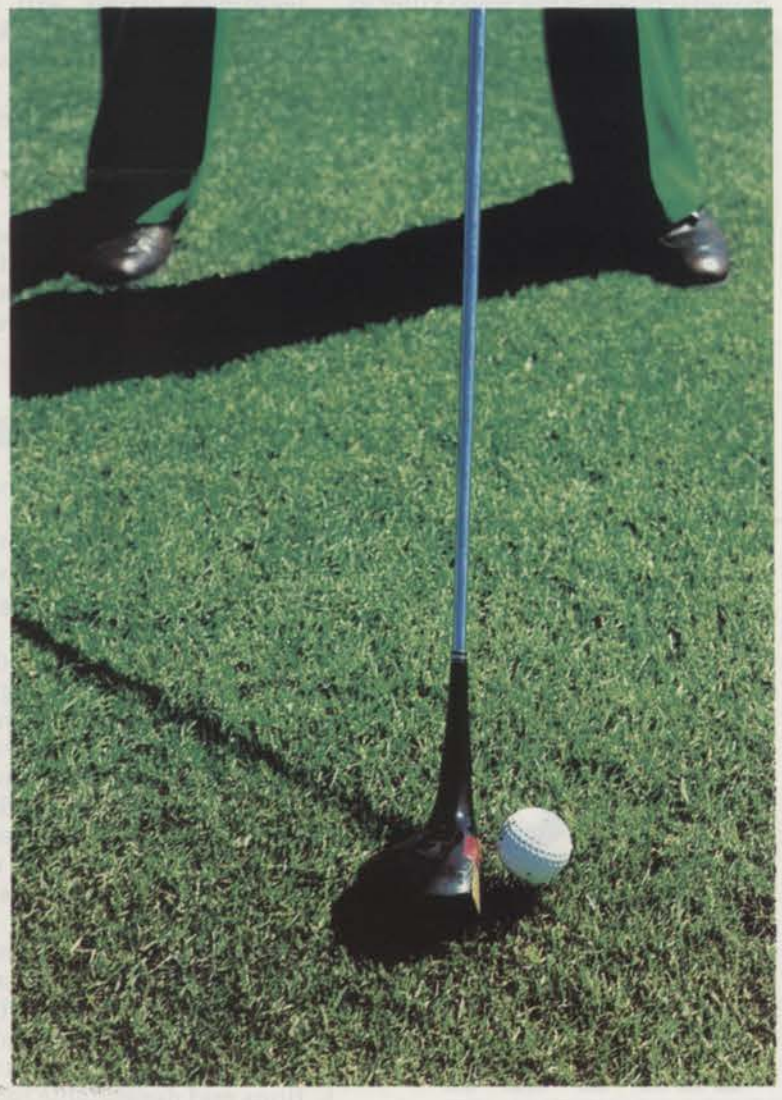

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2,4-D *from page 1*

making recommendations to the County Council for limiting use of the herbicide, voted unanimously not to restrict its use at that meeting.

Environmentalists say they will continue to push for restrictions on the use of the herbicide in general parklands and median strips because the issue is still current and may be appealed at any time. Wiesensel says users are prepared for more agitation if it may come.

To the biggest users of the chemical, 30 years of unrestricted use of 2,4-D with negligible side effects is a profound enough toxicity test. "They are blaming any kind of symptoms on Agent Orange," said Wiesensel. "Everybody's looking for a scapegoat."

Wiesensel stated that if 2,4-D was as toxic as the environmentalists claim, the crude application methods in effect over 30 years ago would have resulted in far more tragedies.

"We've had 30 years of these herbicides without that kind of damage," he said. "The chance of exposure has been so great for so many people. We used to use homemade equipment and it used to slosh over our backs."

"There's just no such thing as a safe herbicide in 1980," he concluded, refering to the glut of regulatory overkill.

The big users aren't unsympathetic to the concerns of the environmentalists, but they question the scientific basis of the proposed cutbacks. Palmer Maples, educational director of the Golf Course Superintendents Association of America, supports House of Representatives bill 7018 which calls for peer review of any threatened products.

The bill demands a more controlled scientific review of allegedly harmful products in order to prevent political recriminations.

In much the same vein, the Environmental Protection Agency, reviewing the effects of 2,4-D on human populations in light of public fear, is requesting further information from manufacturers to determine the safety of the chemical.

In April of last year, Barbara Blum, deputy administrator of the EPA, issued a statement asking all manufacturers of the weed killer to "commence studies to provide the missing evidence."

EPA's review of 2,4-D studies showed that the evidence of adverse health effects weighs far more heavily against 2,4,5-T than against 2,4-D.

"For one thing," Blum said, "there is no evidence at this time that 2,4-D contains any form of dioxin, the contaminant in 2,4,5-T associated with cancerous tumors and birth defects."

At this point, she said, the agency, while taking no action restricting use of the chemical, will require the manufacturers of 2,4-D to provide additional information in the areas of tumor inducing and reproductive effects, and metabolism in animals.

She said EPA also plans to conduct certain reproductive studies on 2,4-D in its own laboratories while awaiting the industry results.

"Both legitimate and less legitimate claims will be made once the government takes a step toward limitation," said Mr. Wiesensel, in response to EPA's action. "There will certainly be more of a case against the Veteran's Administration, for instance."

2,4-D is currently used in over 1500 products registered with the EPA and more than 700 million pounds of the active ingredient are distributed annually.

CAUTIOUS OPTIMISM *from page 5*

with fly-by-night outfits during the spring," he said. He now hopes to defeat them through sound public relations.

August also is piqued by high interest rates, but manages to side step the banks by lending his corporation his own private funds, repayable during the course of the year when business quickens. This reduces his business credit somewhat, but he feels that it works out the best for him and his corporation.

The general consensus, therefore, points to the fact that nothing helps business better or beats back the cost of overhead and lending than responsible consumer relations and dependable service. Ray Morse, who runs Lawn Medic of Hintington in West Virginia, says: "I tell my customers that if they even hear of a chinchbug spotted in the neighborhood, to call me."

"I run a completely guaranteed granular lawn care service. If a problem ever arises, I just have to go and fix it." Morse sees no problem with the national economic doldrums affecting his particular company. "I generally work for upper middle income people who aren't affected as much by hard times, and so my business will be relatively stable next year."

Morse appears a picture of business confidence. Like most of those interviewed, he has a plucky sense of enterprise and a keen eye to his market. Generally, lawn care businessmen seem to be mobilizing to full strength for the coming year. Despite looming economic uncertainty on the national front and some related local distress, the industry remains flush.

Some are experimenting with new promotional and pricing ideas to excite the market. Some are holding steady, choosing to develop their existing accounts. All are optimistic for the coming year.

While everyone indicates steady growth, the key to the future lies in Washington. If the nation's economic future brightens there with the coming of strong financial management, and lawn care businessmen continue to cultivate their market to best advantage, the entire industry could ride an economic slipstream to guaranteed success.

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FYLKING KENTUCKY BLUEGRASS U.S. Plant Patent 2887

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Write 118 on reader service card

Steve Derrick (center) of Professional Turf Specialties, Inc., Normal, Ill., handed over the keys to a new 1,250-gallon tank spray truck at the conclusion of the recent Professional Lawn Care Association of America Conference and Trade Show in Louisville. Dan Duncan (left) and Ed McKinzie bought the truck right off the floor. They are owners of Apex Pest Control and Lawn Care, Inc., Bradenton, Fla.

WISCONSIN

Reinders conference set for next month

Reinders Brothers, Inc. will host its fifth annual turf conference, equipment show and service clinic March 18-19 at the Waukesha Expo Center in Wisconsin.

Reinders sales manager Ed Devinger said that this is the largest show of its kind held in Wisconsin. It has been held every other year since 1973. Attendance this year is expected to be about 1,600.

Lawn care sessions will be held.

For further information, contact: Ed Devinger, Reinders Brothers, Inc., 13400 Watertown Plank Road, Elm Grove, WI 53122, 414-786-3300.

ASSOCIATION

Irrigation seminar planned

The Irrigation Association will hold its first two-week Landscape Irrigation Institute in cooperation with the University of California at Riverside, California from March 23 to April 3, 1981.

The intensive two-week course, designed for personnel of manufacturing, distributing, contracting and consulting firms, will include 11 days of instruction and field trips.

Registration information is available from the Irrigation Association Headquarters at 13975 Connecticut Avenue, Silver Spring, Maryland 20906; telephone: (301) 871-1200.

CLCA

Landscape show nears sell out

The California Landscape Contractors Association's 1981 Landscape Industry Show is rapidly approaching the 'sold out' stage. As of December 1st, Robert Baier of the Plant Control Corporation in Irvine, California and show chairman, reported that the show had reached the 80 percent mark. Scheduled for March 26-27, the 1981 show promises to be a comprehensive one for the landscape industry.

The committee hopes to have every aspect of the industry covered including the related services and products used in office management. Stationary suppliers, office furniture and equipment distributors, communication system experts, as well as public relations and financial consultants are being urged to exhibit in the 1981 show, according to Baier.

This will be the second such show sponsored by the CLCA, featuring landscape suppliers from the industry and those who contribute to the ongoing operation of any business enterprise.

For further information regarding the 1981 Landscape Industry Show, contact David Concannon at CLCA's office, 1419 21st Street, Sacramento, California 95814; phone number: (916) 448-2522.

LEHR *from page 8*

appropriate corrective action has been taken."

Though the EEOC guidelines appear to place the responsibility for sexual harassment on the employer, the EEOC is likely to still consider the surrounding circumstances leading to the sexual harassment when assessing the employer's liability. There are steps which an employer should consider implementing in order to minimize its potential liability for sexual harassment when committed by management and non-management employees.

1. Include in the company personnel manual a clear policy prohibiting sexual harassment in the workplace.

2. Explain the no harassment policy to supervisors, and include the implementation of this policy as part of their overall supervisory responsibilities.

3. Let all employees know that the individuals who are responsible for handling employee complaints will also assume the responsibility for handling complaints of harassment at the workplace.

4. If a complaint of harassment is made, act promptly and investigate thoroughly.

If you have any employment or labor related questions, please write to Bob Earley, so Richard Lehr can discuss them in this column. 757 3rd Avenue, New York, NY 10017.

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Inside the industry

Should you be involved in structural pest control?

by Paul McCloskey, Assistant Editor

All businessmen must develop the art of strategic investment in order to foster company growth. Maximize goods and services, keep labor energetic, trim overhead and downtime costs: in short, keep your outfit lean and enterprising.

Lawn care businessmen have many working options open to them besides chemical and mowing and maintenance services. Some offer snow removal services during the off-season. Others are into turf establishment, seeding and ornamental care. A few even have garden store and display room outlets. All this in the name of providing a comprehensive lawn care program for customers with multiple needs.

One of the more controversial service options open to the industry is structural pest control. In many ways it seems a natural for the lawn care businessman. Routes and schedules have already been established, and much of the market has already been canvassed.

Both industries confront similar technical problems: many outdoor pests are wayward relatives of the indoor invaders which could ostensibly be handled by a lawn care maintenance program. The large trucks and chemical storage tanks would seem to be adaptable for interior structural needs. The two industries have roughly similar inventories. Chemical producers retail products for both industries. Seems like a natural, right?

Well, maybe, maybe not. *Lawn Care Industry* asked a number of both pest control and lawn care companies their reaction. Some of the responses were pointed denials; others were cautiously approving.

"The investment is already made," says Mike Krupnick, of Pest Doctors, Wailuku, Hawaii. "You already have your spray rigs and spray equipment. You make one stop, get two sales."

Too many, it was a question of the economics of the marketplace. How many services can one provide before you start spreading yourself too thin? In other words, is it cost effective to try to be all things to all customers.

To others, it was a question of timing. In many parts of the country, the structural and lawn pest control seasons overlap. Would you be selling yourself short in your established business if you geared up for another sideline just when your season peaked?

The reaction from industrial supply sources was honest and open-ended; it may be the best place to start. According to Forrest St. Aubin, national accounts manager, specialty products, for Mobay Chemical Corporation, "anything is possible."

A number of years ago, he said, the National Pest Control Association decided to take a long, hard look at the 'greening of America'. They spent considerable dollars and effort trying to ascertain whether it would be feasible for the pest control industry to tap the enormous resources offered by the lawn care industry.

The decision they reached was that it would not be wise due to the overall range and complexity of lawn care services. "In a vegetable garden, for instance," said St. Aubin, "you have more than one crop and its attendant different pests. Each has different growth cycles and require different chemicals. How do you propose to offer all these different services?"

Another problem mentioned was the difficulty pest control companies would face when treating trees for disease. Given the equipment limitations, it would be difficult for the average pest control crew to cope with treating a 60 foot elm, for instance. "And if you enter a market and then start restricting particular services, you're going to leave a terrible void that could be served by neither," he said.

He also pointed out the difficulty a pest control service would have coping with the routes and schedules maintained by lawn care companies. "We generally came to the conclusion that we could not cope as an industry with that degree of diversification," he said.

On the other hand, he believes that while there is a built-in problem associated with structural pest control companies going into lawn care, he said there was no real underlying reason why the lawn care industry could not embark on a pest control program.

"Lawn care requires heavy equipment. They already own basically the kind of equipment you use for termite work. Also both industries make use of entomologists. Very few pest control companies have funding in agronomic or horticultural research."

Looking at the problem from the point of view of the pest control industry, then, it would seem that the two industries are not very compatible. The idea itself seems to be a good one, but on closer examination, some believe the very nature of the two industries clash.

"Not so," says Mike Krupnick, who started his own pest control business in Hawaii and now is expanding into lawn care. His pest control crews offer a granular fertilizer service on their normal routes. "When you have a pest control truck travel fifty miles for a routine cleanout, why not offer the customer the lawn care also?" he said.

Krupnick believes it's a good tie-in in Hawaii where the lawn care season is year round, a feature that prevents peak seasons in the two industries to overlap. "The investment is already made," he said. "You already have your spray rigs and spray equipment. You make one stop, get two sales."

Krupnick stresses that there should be more communication between the two industries. "A lot of guys don't even know the name of their local pest control companies. There must be a working relationship between the two because both industries face common government regulations, both are hit hard by environmentalists. We can wash each other's hands," he said.

"I don't try to mix the two when selling a customer," says Tim Saunders of Mission Viejo Pest Control in California. "It's difficult enough to provide satisfaction in regard to structural pest control needs without throwing in another variable."

Hawaii seems to be a naturally agreeable environment for starting a unified structural and outdoor service, according to Krupnick. "Most people out here have an education in plant disease," he said. "You can walk into any restaurant, for instance, and find any number of qualified experts."

Although quick to point out the advantages of diversifying, he isn't blind to the complexities of the different operations and their technical procedures. "It isn't only a matter of training," he said. "For one thing, personalities are different. There's an entirely different psychological approach to the two services. One is very public relations oriented and the other's not."

Krupnick stresses that the quality of your personnel comes into consideration whenever you enter the inside of your customer's homes. "You're spraying inside people's homes and have to be very careful not to contaminate their water or food. Sanitation is the key."

In order to provide the best training for his crews in both fields, he has them enroll in courses at the local community college. This has the effect of both technical training and generating a sense of job importance in the workers.

While some see the opportunity for company growth in structural work, Tim Saunders, of Mission Viejo Pest Control in Laguna Hills, California, sees it more as a problem of company orientation. "I don't try to mix the

two when selling a customer," he said. "It's difficult enough to provide satisfaction to regard to structural pest control needs without throwing in another variable."

Saunders is circumspect when it comes to definining his market. "When you pay for a service, its value depends on the promises made to the customer. I basically ask myself what kind of business are we in. It's difficult enough to provide the right degree of service from the structural pest c ontrol point of view without raising expectations from the horticultural point of view," he said.

Saunders disagrees with those who think the combined operation is feasible not only from the point of view of consumer relations, but also from an operational standpoint. "It sounds like a natural," he said, "but you would be inviting disaster. If we interjected lawn care service for controlling aphids and white flies into our pest control business, we'd soon get run into the ground trying to be all things to all customers."

Saunders' ideas of what exactly a lawn care or pest control business should be is one of the main considerations voiced throughout the industry. For many it becomes a question of what services a company can provide without draining their labor from their mainline interests.

On the other hand, company size is a big factor in the decision making process. With enough resources, a company need not strain their existing services by overdevelopment. Chris Senske, of Senske Weed and Pest Control in Kennewick, Washington, is a case in point.

He does both, but agrees that there are both psychological and professional reasons to be cautious about offering the two services simultaneously. "Pest control has become more and more professional and more mature," he said. "Also, people who like to work outside don't appreciate inside work."

Generally, however, he believes that the advantages outweigh the disadvantages. As his pest control business volume increases, he finds that his overall volume expands geometrically. As to the problem with maintaining two different spraying schedules, he takes a positive approach. "Scheduling is always a problem," he said. "But one of the advantages is that you have one-time service calls. He also supports opening lines of communication between the two industries, maintaining that there would be "advantages to both" forthcoming.

Chris Senske of Senske Weed and Pest Control in Kennewick, Wash. does both, but says there are both psychological and professional reasons to be cautious about offering the two services simultaneously.

Another valuable source in any survey of the lawn care industry are the professional academics: turf specialists, entomologists, and agronomists. *Lawn Care Industry* contacted Dr. Patricia Cobb, an entomologist at Auburn University, in Auburn, Alabama. Although specializing in problems associated with structural pest control industry, she consulted with colleagues who were more familiar with the overall complexity of lawn care problems.

Their common opinion was measured disapproval of over-development. "I don't feel very good about lawn care people going into structural pest control, she said, "unless they have such a large business they can afford two different staffs and don't get in over their heads."

Nevertheless, she doesn't rule out the possibility of smaller scale development. "I'm not going to say it won't work, but you have to understand the two services. Structural pest control is a highly specialized area and an entire field in itself. There's more direct relation to people and food, for instance. Also, the pests are just not the same and the regulations guarding the two industries are quite different."

Dr. Cobb stresses caution to anyone trying to extend their services, particularly in the southeastern United States. "I feel that in the Southeast, lawn care is just beginning to take hold. There's so much potential for that business and more avenues for growth without getting into structural," she said.

The academics are a naturally cautious group. They deal with a highly technical side of the industry and counsel extreme business discretion when dealing with interior pest problems. As the voice of research and development, they believe the industries are widely different with regard to chemicals, application techniques, and equipment. They aren't businessmen themselves, however, and defer to industrial spokesmen when it comes to any final judgment of business possibilities.

Norm Goldenberg is past president of the National Pest Control Association and now runs a Tampa, Florida-based lawn care company in addition to his structural pest control work. He isn't squeamish when it comes to the industry's possibilities in the Southeast. His short assessment of the policy of a limited business is: "Tell the customer that."

Norm Goldenberg is past president of the National Pest Control Association, and is now also involved in lawn care from his Tampa, Fla.-based company. He believes that with proper management it can be done and thinks that the consumer will be better off with a more involved company handling both their indoor and outdoor problems. The year-round Tampa season provides more time for overseeing a double service schedule.

Goldenberg believes that with proper management it can be done and thinks that the consumer will be better off with a more involved company handling both their indoor and outdoor problems. "How can you service customers and not be involved in the termite business?" he asked.

Goldenberg's optimism stems from the scheduling freedom that the Florida climate affords. The Tampa lawn care season starts in January and continues through December, providing a lot more time for overseeing the complications of a double service schedule. A computer which regulates his accounts also provides some management help.

Whether optimistic or negative on the virtues of getting involved in structural pest control, most businessmen interviewed counsel caution and slow development. Robert Barry of R. W. Collins, Inc., in Satellite Beach, Florida says, "There are no short cuts" affording the transfer of services. Maintaining that complete new job descriptions and retraining is necessary, Barry stresses that even though there are overlapping services in both industries, you must establish two separate divisions, with separate managers in control. "Otherwise," he said, "it's a tragic mistake."

The varied reactions from around the industry indicate that it's not an easy proposition to enter the allied field. But few feel that it's impossible. All emphasize that both industries are on their way to complicated and technical development and must be approached with the best professional and technical guidance. Some think its quite feasible in their particular locale where conditions favor a double service set-up, and schedules don't overlap too drastically.

The consensus among those who have both operations is that separate branches must be managed. Whichever method is proposed all agree that utmost caution must be exercised. It may make the difference between "a natural" and "a tragic mistake."

Getting good crabgrass control

Without competition from crabgrass infestation, it is much easier to maintain a desired lawn for your customer. Then, with the aid of mowing, fertilizing and watering, the grass can survive, recover and perform to its genetic potential.

According to Dr. William H. Daniel, turfgrass specialist at Purdue University, selective pre- and post-emergent chemicals can also be used to prevent competition for space, moisture and nutrients, thus producing a better lawn.

Dr. Daniel said that in the Midwest, crabgrass usually germinates in early April until mid-July, when warm nights during rainy periods encourage seedling emergence. Initially, the grass grows slowly, so it may go unnoticed until late June when light green, wide-bladed leaves are being mowed. From June until killing frost, the vigorous growth of crabgrass predominates. Many seeds are formed in the fall to assure a new spring infestation.

Pre-emergents. A properly applied pre-emergent herbicide is toxic to crabgrass seed as it starts to germinate and to send out the first rootlet. Actually, some pre-emergent herbicides act on seedlings developed to the three-leaf stage.

The ideal pre-emergent herbicide application includes:

- A uniform application, avoiding streaks, skips and overlaps.
- Application at the surface, where the seed germinates.
- Providing a toxic concentration of the available fraction.
- Application when the seed germinates, April through July in most parts of the Midwest.

Dr. Daniel lists four major crabgrass herbicides, their trade names, and pounds of active ingredient needed per 1,000 square feet. Benefin (Balan) needs .05 pounds of active ingredient per 1,000 square feet for control. Bensulide (Betasan) needs .3 pounds of active ingredient per 1,000 square feet. DCPA (Dacthal) needs .3 pounds of active ingredient per 1,000 square feet. And siduron (Tupersan) needs .3 pounds of active ingredient per 1,000 square feet.

Of these, Dr. Daniel says, benefin, bensulide and DCPA will prevent *desired* grass seed from surviving, so avoid concurrent overseeding. In contract, siduron is selective, and overseeding of lawns can be done according to label.

"Many formulators combine fertilizers and preventors for concurrent application," he said. "For instance, lawn spray services often combine crabgrass preventors and fertilizers in the same—usually the first—application each spring. Some apply a touch-up in the next treatment for longer residual toxicity."

Foxtail, sandburs, goosegrass, barnyardgrass, witchgrass, lovegrass and most summer annual grasses may be prevented just like crabgrass. Therefore, these recommendations are applicable for many turf conditions.

Poa annua. Late summer use of herbicides before fall germination of *Poa annua*, annual bluegrass, may prevent seedling establishment in the fall, he said. However, siduron does not affect *Poa annua* germination. This grass may persist for years in cool, moist, shady areas, and in some cases, may even be a desired turf. But for the most part, *Poa annua* infestations are a major problem.

"Since good dense turf cover often shades and prevents new seedlings from surviving, mowing high and letting soil surfaces dry between irrigations will discourage growth of unwanted grasses. Rainy periods in late spring favor leaf spot disease on good turf and also favor crabgrass infestation and survival," he said.

Killing existing crabgrass. After crabgrass is evident as young plants — about July 4 until Labor Day in the Midwest — selective killing of crabgrass can release the desired turf for improved growth.

Two applications, five to seven days apart, or organic arsonates can kill sandburs, crab, goose, witch and barnyard grasses, foxtails, chickweeds, yellow sedge, johnsongrass and dallisgrass. However, it will not kill *Poa annua*, lovegrass, nimbleweed and some other weeds.

Formulations of either disodium, amine or calcium acid methyl arsonates, applied when soil moisture favors growth, can selectively kill by accumulating in the plant sufficiently to stop metabolism and cause death. Plan for a second treatment when buying your chemicals, Dr. Daniel said. Severe browning indicates excessive use, while yellowing by the third day indivates normal use. Since leaves must absorb the treatment, applying when mowing is needed allows better uptake and better control.

It is practical to combine crabgrass killers (AMA) and weed killers (2,4-D) in one treatment, if desired.

Mechanical thinning. After August 15, when crabgrass has developed big clumps and begins to produce seed, vertical thinning

Dr. William H. Daniel

may help release the desired grass for earlier fall regrowth. Power rakes, vertical mowers and other equipment can do the job.

These tools will cut off much of the crabgrass, thus removing the competition, and will loosen part of the accumulated thatch. Where overseeding is needed, spread the seed; then, go over the area again with a dethatcher. Finally, soak the area with water to get seed close to the soil, Dr. Daniel said.

Controlling summer weeds in lawns

Some of the most difficult-to-control turfgrass weeds occur during the summer months. These weeds are easily controlled if the problem is recognized early and control measures are implemented, according to turf experts at the University of Maryland.

However, as most often is the case, the problem is not recognized until later in the summer. At this time the weed is more mature and therefore less-easily controlled. Also, environmental conditions are not conducive for good weed control and the risk of damage to desirable turf species is greater.

The most commonly encountered summer weed problems are crabgrass, goosegrass, carpetweed, common purslane, spurge and prostrate knotweed. All of these weeds are summer annuals. Seeds of summer annuals germinate from early spring to early summer. The plants grow and mature during the summer and set seed providing for next year's crop. The plants are then killed by the fall frosts.

Management. Good management will aid in control of these weeds. Any time a turf stand becomes thin or weak these weeds may invade the stand. Therefore, management practices that promote a dense, vigorous stand of turf will help to prevent the encroachment of these weeds. The selection of adapted species and varieties for areas in the transition zone, for example, is the backbone of a good turf stand.

Proper fertilization, especially the timing of nitrogen application, is also important in controlling these summer weeds. Summer fertilization of cool-season turf species may cause cool-season grasses to thin out. The additional fertilizer in the late spring or summer encourages the growth of summer weeds. Proper watering and mowing practices are also important in promoting a dense, vigorous turf throughout the summer.

A single purslane plant may produce 100,000 to 240,000 seeds if allowed to reproduce over the entire season. It is important to control these plants before seed set.

In addition, compaction caused by too much traffic causes turf stands to weaken and thin out. In highly compacted areas, desirable turfgrass can no longer compete and knotweed is usually the sole survivor in these areas.

Post-emergent. The summer annual grassy weeds such as crabgrass and goosegrass are best-controlled before they germinate with pre-emergent herbicides. However, where pre-emergent herbicides are not applied or when application is made too late, a post-emergent organic arsenical herbicide can be used to control these weeds.

Examples of these herbicides are AMA, DSMA or DMA, MAMA, MSMA and calcium acid methanearsonate. They are marketed under many trade names.

These herbicides are best-used when the crabgrass or goosegrass is still very young, in the three- to four-leaf stage. At this time the plant is actively growing and uptake and translocation of the herbicide will be rapid. The soil should be moist before treatment is made and it may be necessary to repeat applications to achieve the desired control.

The common summer annual broadleaf weeds, carpetweed, purslane, spurge and knotweed should also be controlled when very young. In fact, many of the pre-emergent crabgrass herbicides should at least have some activity against these weeds. However, they are usually applied too late to control the early germinating knotweed or their residual activity does not last long enough to control late germinating carpetweed, purslane and spurges.

These weeds are susceptible to a broader spectrum of herbicides while still young. Also, the environmental conditions are more conducive to good control and less damage to desirable turf when these herbicides are applied in the late spring and early summer. All of these weeds begin to flower in mid- to late-June in Maryland and nearby areas, and seed set follows shortly. Studies have shown that a single purslane plant may produce 100,000 to 240,000 seeds per plant if allowed to reproduce over the entire season. Therefore, it is important to control these plants before seed set.

Carpetweed is susceptible to 2,4-D while young knotweed, purslane and spurges are moderately susceptible to 2,4-D. These weeds show intermediate susceptibility or resistance to MCPP. All of these weeds are susceptible to dicamba, especially at the rate of .5 pounds active ingredient per acre. However, dicamba is a very soil-mobile herbicide and at this rate, damage or kill may result if the dicamba is picked up by roots of trees or shrubs.

In addition, at this rate dicamba may cause discoloration of desirable turfgrasses if they are under heat and/or drought stress. Lower rates of dicamba will lessen these effects but weed control may also be decreased, especially on more mature weeds. Combinations of herbicides, such as 2,4-D plus MCPP plus dicamba will also provide good control, provided these summer annual weeds are treated while still young.

Fall control of broadleaf weeds

What's the best time of the year to crack down on broadleaf weeds? According to Noell K. Rogers, extension specialist, weed control, at Virginia Tech, the leafy pests are most vulnerable in the fall.

This is the time of year when many broadleaf weeds are in the seedling stage and are more susceptible to postemergence applications of herbicides. Furthermore, according to Mr. Rogers, many of the cool-season broadleaf weeds are either perennials or biennials and are more easily controlled in the rosette stage of growth.

The most common herbicides used for broadleaf weed control (2,4-D, MCPP, dicamba) have been around for quite some time. However, silvex, one of the most effective herbicides formerly used for selective postemergence control of broadleaf weeds, was suspended from use in February, 1979 and is no longer available.

Dicamba provides selective control for a greater number of broadleaf weeds than any other single herbicide because of its foliar as well as soil activity. But because of its mobility it cannot be applied safely near shallow-rooted trees or shrubs.

Conversely, 2,4-D is not likely to be absorbed through the roots, but it alone cannot control as many weed species as does dicamba.

MCPP is another herbicide commonly used for broadleaf weed control in turf. Some weeds which are resistant to 2,4-D such as hop and white clover, oxalis and red sorrel may be controlled with it. Therefore, a combination of MCPP and 2,4-D would control a broader range of weeds than when either herbicide is applied alone.

Recently, researchers have been evaluating 2,4-DP as a possible replacement for silvex, and initial results have indicated that a combination of 2,4-D and 2,4-DP may be effective for controlling dandelion, white clover, mouseear chickweed, red sorrel and wood sorrel.

However, turf research personnel are continuing to evaluate 2,4-D and 2,4-DP combinations to determine the susceptibility of other problem broadleaf weeds in turf. There are several other commercial herbicide formulations which may include various combinations of two or three active ingredients designed for more effective broadleaf weed control.

Another major area of interest concerns the application of broadleaf weed killers in newly-seeded turf. Although well established grasses generally have excellent tolerance to broadleaf herbicide, the margin of selectivity between broadleaf weeds and seedling grasses is very narrow for the growth-regulator herbicides. The rule of thumb has been to delay postemergence applications until the newly-seeded grass has sufficient growth to have been mowed at least twice.

However, a new approach is possible with bromoxynil, a respiratory and photosynthetic inhibitor, which can be applied to newly-emerged grass seedlings to control young broadleaf weeds. For best results, bromoxynil should be applied before broadleaf weed seedlings are past the three-leaf stage. For rosette-forming weeds, the rosettes should be less than one and one-half inches across.

Bromoxynil is labeled for use on several fescues, bluegrasses, and bentgrasses, but as always, the label should be read for specific tolerant varieties and precautions concerning applications should be followed to prevent injury to the turf.

Application techniques are relatively important when considering postemergence applications of herbicides. Applying the proper amount of active ingredient per unit area is the primary concern, so proper calibration of the spray equipment is of utmost importance.

Since the growth-regulator type herbicides are readily translocated throughout the plant, it is not imperative to hit every leaf of the weed. Nevertheless, the total volume should be kept low enough to prevent the spray solution from dripping off the foliage. Generally, an output of 30 to 60 gallons is adequate for good coverage while minimizing drift problems.

There is considerable in difference in the susceptibility of different weeds to the various broadleaf herbicides. Therefore, proper identification of the problem weed is necessary before the herbicide program can be selected. Many of the weeds which grow rapidly and flower in the spring actually become established in the fall as seedlings or rosettes and are more susceptible in the early stages of growth.

Unfortunately, weeds in the seedling or rosette stage are much more difficult to identify than flowering specimens. That is why it is important to identify as many weeds as possible while they are flowering and to keep records to indicate which weeds should be treated in the fall.

At groundbreaking ceremonies for the Toro Center, Leonard L. Johnson (right), president of L.L. Johnson Distributing Co., Denver, plants a Colorado blue spruce with help from John J. Cantu, Toro president, to celebrate the start of construction of a $30 million building complex that will become corporate headquarters for Toro in the Minneapolis suburb of Minnetonka.

MEETING DATES

Second Annual Agri-Turf Irrigation Exposition and Technical Conference, Hotel Utah, Salt Lake City, Utah, Feb. 15-18. Contact: The Irrigation Association, 13975 Connecticut Ave., Silver Spring, MD 20906, 301-871-1200.

Lawn Care Service Applicators Clinic, Chicago Botanical Gardens, Feb. 24-25. Contact: Thomas W. Fermanian, Illinois Turfgrass Foundation, P.O. Box 501, Urbana, IL 61801, 217-333-7848.

Midwest Regional Turf Conference, West Lafayette, Ind., March 2-4. Contact: Dr. William Daniel, Dept. of Agronomy, 2-443 Lilly Hall, Purdue University, West Lafayette, IN 47907, 317-749-2891.

Pennsylvania Turf Conference and Show, Hershey, Pa., March 2-5. Contact: Christine King, 412 Blanchard St., Bellefonte, PA 16823, 814-355-8010.

Massachusetts Turfgrass Conference and Show, Springfield, Mass., March 3-5. Contact: Dr. Joseph Troll, Stockbridge Hall, University of Massachusetts, Amherst, MA 01003, 413-545-2353.

Northeastern Pennsylvania Turf and Grounds Maintenance School, Wilkes-Barre, Pa., March 10-11. Contact: Christine King, 412 Blanchard St., Bellefonte, PA 16823, 814-355-8010.

Reinders Fifth Annual Turf Conference, Waukesha Expo Center, Waukesha, Wis., March 18-19. Contact: Ed Devinger, Reinders Brothers, Inc., 13400 Watertown Plank Rd., Elm Grove, WI 53122, 414-786-3300.

Landscape Irrigation Institute, University of California at Riverside, March 23-April 3. Contact: Angela Ditchey, The Irrigation Association, 13975 Connecticut Avenue, Silver Spring, MD 20906, 301-871-1200.

Turf and Landscape Institute, Anaheim, Calif., April 14-15. Contact: Ed McNeill, Southern California Turfgrass Council, 1000 Concha St., Altadena, CA 91001, 213-798-1715.

Arizona Turfgrass Conference, Phoenix, May 7-8. Contact: Dr. William Kneebone, Plant Sciences Dept., Building #36, University of Arizona, Tucson, AZ 85721.

University of Massachusetts Turfgrass Field Day, South Deerfield, June 24. Contact: Dr. Joseph Troll, Stockbridge Hall, University of Massachusetts, Amherst, MA 01003, 413-545-2353.

American Seed Trade Association Annual Meeting, Atlanta, June 28-July 2. Contact: ASTA, Executive Building, Suite 964, 1030 15th St., N.W., Washington, DC 20005.

American Sod Producers Association Summer Conference and Field Days, Hershey, Pa., July 15-17. Contact: Bob Garey, ASPA, Association Building, Ninth & Minnesota, Hastings, NE 68901, 402-463-5691.

University of Nebraska Turf Field Day and Equipment Show, Mead, August 4. Contact: Dr. Robert Shearman, University of Nebraska, 377 Plant Science Building, Lincoln, NE 68503, 402-472-1143.

Central Plains Turf Foundation/Kansas State University Turf Field Day, Manhattan, August 12. Contact: Dr. Robert Carrow, Kansas State University, Dept. of Horticulture, Waters Hall, Manhattan, KS 66506, 913-532-6170.

University of Rhode Island Turfgrass Field Day, Kingston, August 26. Contact: Dr. C. Richard Skogley, Agronomy Dept., University of Rhode Island, Kingston, RI 02881.

Virginia Tech Turfgrass Field Days, Blacksburg, Sept. 15-17. Contact: Dr. John R. Hall, 421 Smyth Hall, Virginia Tech, Blacksburg, VA 24061, 703-961-5797.

National Lawn and Garden Distributors Association Annual Conference, Opryland Hotel, Nashville, Tenn., Sept. 15-18. Contact: Nancy S. Irving, NLGDA, 1900 Arch St., Philadelphia, PA 19103, 215-564-3484.

Central Plains Turf Foundation/Kansas State University Turf Conference, Manhattan, Oct. 6-8. Contact: Dr. Robert Carrow, Kansas State University, Dept. of Horticulture, Waters Hall, Manhattan, KS 66506, 913-532-6170.

Florida Turf-Grass Association Conference and Show, Orlando, Oct. 18-21. Contact: Nona Murphy, Florida Turf-Grass Association, 1520 Edgewater Dr., Suite E, Orlando, FL 32804, 305-425-1581.

Professional Grounds Management Society Annual Meeting, Portland, Ore., Nov. 1-5. Contact: Allan Shulder, PGMS, 19 Hawthorne Ave., Pikesville, MD 21208, 301-653-2742.

National Institute on Park and Grounds Management, Kansas City, Mo., Nov. 1-6. Contact: National Institute, Box 1936, Appleton, WI 54913, 414-733-2301.

New York Turfgrass Conference and Trade Show, Empire State Plaza, Albany, N.Y., Nov. 16-19. Contact: Ann Reilly, 210 Cartwright Blvd., Massapequa Park, NY 11762, 516-541-6902.

Professional Lawn Care Association of America Conference and Trade Show, Commonwealth Convention Center, Louisville, Ky., Nov. 18-20. Contact: Jane Stecker, PLCAA, Suite 1717, 435 N. Michigan Ave., Chicago, IL 60611, 312-644-0828.

Ohio Turfgrass Conference and Show, Columbus Hyatt House, Dec. 1-3. Contact: Dr. John Street, 1827 Neil Ave., Columbus, OH 43210, 614-422-2592.

Texas Turfgrass Conference, College Station, Texas, Dec. 7-9. Contact: Dr. Richard L. Duble, 349 Soil & Crop Science Center, Texas A & M University, College Station, TX 77843, 713-845-4826.

CONFERENCE

Parks and grounds managers convene

The National Institute on Park and Grounds Management will hold its Eleventh Annual Educational Conference November 1-6, 1981 in Kansas City, Missouri. Combined with the Institute for the fourth consecutive year will be the concurrent National Turf Management Conference with its emphasis on non-golf turf.

The headquarters hotel will be the Radisson Muehlebach, in the downtown heart of the city. Due to their numbers, the exhibits will be housed in the adjacent Convention Center, with meetings scheduled in the Center during exhibition hours.

A management tool that many professionals use to keep up with their constantly changing fields, the conference attracts hundreds of professionals in charge of public parks and college campuses, both public and private.

The National Institute is an active organization in the grounds management field and now boasts over 600 members in its combined park, campus and private grounds manager roster. The conference, however, is open to all professionals in the park, campus and large grounds management area.

The Kansas City Park Department will be the conference host and provide a tour of selected facilities. The central location of Kansas City as a meeting site for 1981 will help to keep travel costs low as the professionals meet to gather significant information in the ever-expanding grounds management field.

For more information and future mailings, contact: National Institute, P.O. Box 1936, Appleton, Wisconsin 54913, phone number: (414) 733-2301.

NEWSMAKERS

Michael B. Morey has joined **Weather-matic Div. of Telsco Industries,** Dallas, Texas, as an irrigation systems designer and training instructor, it was announced by Richard B. Choate, director of training and chief design consultant.

Morey

Hagman

Jeffrey L. Hagman has been named market development supervisor for turf-related products in **3M Co's** Agricultural Products Project. 3M is based out of St. Paul, Minn. According to M. G. Shaver, marketing development manager, Hagman will be responsible for coordinating laboratory, field development and regulatory affairs, and for marketing communications and manufacturing activities. He previously helped develop 3M's Embark plant growth regulator in foreign markets, and will be responsible for marketing activities in the U.S.

Leighton D. Weddle has been named office manager and comptroller of **International Seeds, Inc.,** Halsey, Oregon, according to president J. L. Carnes. Weddle replaces Martin V. Koontz.

Earl D. James is owner of **Utah Spraying Service,** Sandy, Utah.

James R. Stevens is president of **Nitro-Feed Corp.,** Utica, Mich. Maria E. Marcotte is company manager. The company offers both liquid and granular chemical lawn application.

Jeffrey Gardner is president of **Mister Lawn Care,** Grand Island, N.Y. The company offers liquid chemical care.

Gardner

Dolce

Daniel Diliberto is president of **L & M Lawncare Lake County,** Eastlake, Ohio. Robert Pulver is vice president and John Dolce is general sales manager.

C. Richard Bryce and Wayne H. King are partners in **Lawn Salon,** McKeesport, Pa. The company offers chemical lawn care services.

Nick Dennis is owner of **Pro Lawn Plus,** Jacksonville, Fla. The company offers both liquid and granular chemical lawn application.

D. C. Oefinger is president of **Texas Green Turf,** San Antonio, Texas. The company offers both liquid and granular chemical lawn application.

Bob Field and Kyle Sheets are partners in **Grass Hopper Enterprises,** Abilene, Texas. The company offers mowing/maintenance lawn care services.

Marty Teitelbaum is president of **Lawn Champ,** Kinnelon, N.J. The company offers both liquid and granular chemical lawn care services.

Gary Buirley has been named production/service manager for **Turfgard Co.,** Troy, Ohio. His new duties will also include assisting the branch manager, according to company president Gary Weaver.

Dr. James F. Wilkinson has joined **Old Fox Chemical Co.,** East Providence, R.I. He was formerly director of research for **ChemLawn Corp.,** Columbus, Ohio.

Wilkinson

Besaw

Ronald Besaw is managing director of **Gemlawn Pty. Ltd.,** Kellyville, N.S.W., Australia. He offers both liquid and granular chemical lawn care, and has been in business since 1979. He recently joined the Professional Lawn Care Association of America after traveling from Australia to attend turf conferences in the United States.

Bruce Wilhelm is president and Douglas Wilhelm is secretary/treasurer of **B. D. Wilhelm Co.,** Denver, Colo. The company offers both liquid and granular chemical lawn care, tree care and sprinkler servicing.

Richard Miller is manager of **Ever-Green Lawns,** Aurora, Colo. The company offers both liquid and granular chemical lawn application.

Roy Sorensen is owner of **Royal Lawn Service,** Owatonna, Minn. The company offers chemical lawn care to its customers.

Kathryn E. Welch has been named specialty agriculture products sales representative for **Mallinckrodt, Inc.,** St. Louis. She will be responsible for the company's turf and ornamental product lines in the far West. Her territory will include Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Utah and Arizona. The appointment is the latest in a series of moves by Mallinckrodt to intensify its sales and marketing services to the industry. She previously was employed as a research assistant in the department of plant pathology, **University of California** at Berkeley.

Robert H. Johnston is president and Kenneth R. Gunn is vice president of **Lawn Arrangers, Inc.,** Columbus, Ohio. The company offers granular chemical lawn application.

John L. Cross and David L. Cross are partners in **Spray Green Tree & Lawn Service,** St. Charles, Mo. The company offers liquid and granular chemical lawn care services.


J. Cross


D. Cross

Geraldine Elise Massoth has been named product manager for Agricultural & Specialty Gypsum of the Chemicals Division for **United States Gypsum Co.,** Chicago. She has been with the company since 1977. Her earlier positions include senior planning analyst and field representative of retail promotion. Prior to joining U.S.G., she had 12 years of experience at **Needham, Harper & Steers** and **Foote, Cone & Belding,** both in Chicago.

Diane S. Zak has been promoted to director of human resources for **The Toro Co.'s** Irrigation Division, Riverside, Calif.

Vernon Bishop, president of **Lebanon Chemical Corp.,** Lebanon, Pa., has announced the appointment and promotion of Kendall S. Tomlinson to chief of operations for all corporate production and marketing divisions. Lebanon manufactures and distributes fertilizers to home and professional users in the eastern two-thirds of the nation. Tomlinson was previously employed by **Allied Chemical Co.**

Robert Herbruck, Jr. has joined **MTD Products Inc.,** Cleveland, as supervisor of special accounts, it has been announced by MTD vice president Warren W. E. Thrun.

John F. Eckhardt is owner/operator and J. Steven Eckhardt is manager of **Spring Green Lawn & Tree Care,** Wayconda, Ill. The franchise company offers liquid chemical lawn care and tree care. The franchise is headquartered in Naperville, Ill.

John F. Coyne III is president of **Managed Environments, Inc.,** Norcross, Ga. The company offers liquid and granular chemical lawn care and mowing/maintenance services. Vice presidents are Jimmy Anderson and Steven H. Miller.

Harry J. Raffa is general manager of **Lawn Medic Metro,** Little Falls, N.Y. Area managers are William Seely and Lev Merritt. The company offers liquid and granular chemical lawn care and is a branch of Lawn Medic, Inc., based in Bergen, N.Y.

Robert E. Hess is owner of **Spring Green Lawn Care,** Rockford, Ill. The company offers liquid chemical lawn care and is part of a franchise company based in Naperville, Ill.

H. Don Piepkorn is owner and Bill Benore is manager of the **ChemLawn Corp.** franchise in Fargo, N.D. The comapny offers liquid chemical lawn care. ChemLawn is based in Columbus, Ohio.

Douglas Columb is president and Barry Lerman is business manager of **Grasshopper Lawns, Inc.,** Watertown, Conn. The company offers liquid and granular chemical lawn care services.

Frank P. Cowdery is president of **Chem Turf, Inc.,** Anaheim, Calif. George Meeley is vice president and Harold Boardman is senior specialist. The company offers liquid chemical lawn care services.

Mark Grover is president and Byron Miller is commercial maintenance supervisor of **Grover Landscaping, Inc.,** Modesto, Calif. The company offers both liquid and chemical lawn care and mowing/maintenance services.

Raymond E. Scott is owner of **Spring Green Lawn Care,** Bourbonnais, Ill. The company offers liquid chemical lawn care and is part of a franchise operation based in Naperville, Ill.

According to sales manager John Culbertson, John Rector has joined the sales staff of **Pacific Green Sod,** Camarillo, Calif., as the new northern area sales director. Rector will be responsible for sod sales territories in Los Angeles, the San Fernando Valley and Ventura, Calif. For the past two years, he has been associated with **Pacific Green Lawn Care,** which is Pacific Green Sod's sister company in Santa Monica, Calif.


Rector


Robinson

Mike Robinson was recently named vice president of marketing for **Pickseed West, Inc.,** Tangent, Ore. Robinson, a nine-year veteran of the Northwest seed industry, will continue to be responsible for the company's proprietary marketing and forage seed. In the past two years, he has introduced Pickseed proprietary products in numerous markets throughout the U.S. Most recent new varieties introduced have included Fiesta, Dasher and Blazer perennial ryegrass and America Kentucky bluegrass. Robinson's other major responsibility is coordinating Pickseed's research and variety development. This includes liaison with leading turf and forage plant breeders as well as agronomists involved in testing and evaluation.

Clyde D. Stevens, vice president of **Lebanon Chemical Corp.,** Lebanon, Pa. died recently at age 59. He was a key figure in the growth of Lebanon in the non-farm fertilizer industry.

Ansil E. Poland, vice president and general manager of **John Blue Co.,** Huntsville, Ala. has announced that Robert G. "Bobby" Meadows has been named to head the new company facility in Timmonsville, S.C. The company manufactures fertilizer application equipment.

Jacqueline Cesped has been appointed district manager for the **Outdoor Power Equipment Div. of J I Case Co.,** Einneconne, Wis.,

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according to an announcement by sales manager Mike Hirschman. She will handle the northeastern Ohio territory.

Robert J. Moeller has been promoted to the position of vice president and general manager of **The Toro Co.'s Irrigation Division,** Riverside, Calif. Also, Ralph L. Donnelly has joined the company's **Outdoor Products Div.,** Minneapolis, as vice president of sales. He was most recently vice president of sales for **O. M. Scott & Sons,** Marysville, Ohio.

Moeller

Donnelly

James W. Ebbert is president of Lawn Care, Inc., Carnegie, Pa. The company offers granular chemical lawn application.

Joe Williams is president and Ray Weekley is vice president of **Lawn Master,** Pensacola, Fla. The company offers liquid chemical lawn care.

Mitch Maguire is turf manager and Ken Clemmer is fertilizer manager for **Moyer Lawn Care,** Souderton, Pa. The company offers liquid chemical lawn care services.

Mickey Strauss of **American Landscape, Inc.,** Canoga Park, Calif., has been elected 30th president of the **California Landscape Contractors Association.** Strauss succeeds Don Napolitano of **Associate Industries,** Montebello, Calif. Napolitano automatically becomes chairman of the board. Elected vice presidents were Tim Nord, **Nord Landscape Co.,** Bakersfield, Calif.; Efraim Donitz, **L. C. Landscape Consultants,** North Hollywood, Calif.; Jon Alsdorf, **Landscape-West Associates,** Fresno, Calif.; and Lloyd Thatcher of **Lloyd C. Thatcher Co.,** Fresno. Jay West of **Gardens West,** Sonoma, Calif. was elected treasurer and Jonnie E. Galloway of **Galloway Landscaping,** Escalon, Calif. was elected secretary.

Robert Raley has been appointed sales representative for **American Honda, Power Products Division,** for the New Jersey and Pennsylvania region, announced Lowell Deitsch, Northeast regional manager. The company is based in Gardena, Calif.

Leo J. Zanoni has been named public relations associate for **The Upjohn Co.,** and his work will include working with the company's **TUCO Div.,** Kalamazoo, Mich.

Thomas Reidy is president of **Spring-Green Lawn Care,** Joliet, Ill. The company offers liquid chemical lawn care and is part of a franchise company based in Naperville, Ill.

Jim Pochedly has been appointed district manager of the East Cleveland, Ohio office of **Davey Landscape,** Kent, Ohio. He joined Davey Tree in 1978 as a technician in the Akron, Ohio office. In January, 1980, he became assistant manager in Akron. He will be assisted in his new position by sales and service representatives Paul Hacky and Ron Talley.

New personnel in **Spring-Green Lawn Care Corp.,** Naperville, Ill., are: George Steffens has joined the company as assistant operations manager; Larry Williams is new operations manager for the company in Downer's Grove, Ill.; Wendy Peterson has been promoted to corporate field representative to Spring-Green franchises; Dr. Herbert Johnson of Lafayette, Ind. is opening up his new Spring-Green dealership this spring; and Ric Domer has begun operations of his new dealership in South Bend, Ind.

Robert C. O'Knefski, cooperative extension agent from Nassau County in New York, recently retired. He is a graduate of **Pennsylvania State University,** and holds a master's degree from **Rutgers University.** He previously had taught at the University of Connecticut, and also was a turf consultant for **O. M. Scott & Sons,** Marysville, Ohio.

The Agricultural Chemicals Division of **Diamond Shamrock Corp.,** Cleveland has announced the appointment of Larry D. DeRolf as Northeast regional sales manager. He replaces the retiring L. F. "Tom" Cherry.

Kent Tice has been named operations director for 80 **Lawn Doctor** dealerships in New Jersey and New England, it has been announced by Anthony Giordano, president of the Matawan, N.J.-based company. Tice has been with the company since 1972, and has been regional director for many of the company's key dealership areas.

Tice

Lupsha

Charles H. Lupsha has been named manager of domestic marketing for the Ortho Agricultural Chemicals Division of **Chevron Chemical Co.,** San Francisco.

Thomas C. Karmer is landscaping superintendent with **Edgerton Contractors, Inc.,** Oak Creek, Wis.

Armand D'Agostino is owner of **Spring-Green Lawn Care,** Roselle, Ill. The company offers chemical lawn care services.

Michael Fischetti is owner of **John's Lawn & Tree Service,** Fort Lauderdale, Fla.

Bill Trimmer is a partner in **Lawn Pro Co.,** Springfield, Va.

Ronald J. Quinlan and Wilma Quinlan are owners and operators of **Lawn Genie,** Fairforest, S.C. The company has been in business almost two years, and services the Spartanburg, S.C. area. It provides its customers with a full range of services including fertilization, chemical weed control, fungus and insect control, seeding and pH control. The company promotes itself as a "lawn health care service."

Mallinckrodt, Inc. has named Grace Fishel senior patent/trademark attorney. The company is based in St. Louis.

Richard Hayworth is president of **Yard Care Specialties,** Whittier, Calif. The company offers mowing/maintenance services to customers in southern California.

Daniel Ducatt is owner of **Greenskeeper Lawn Care, Inc.,** Defiance, Ohio.

George Neubarth is owner of **Evergreen Lawn Care,** Hudson, Wis.

Dean Ornellas is manager for **Al's Landscaping,** Mililani, Hawaii. The company offers mowing/maintenance lawn care services.

COST CUTTINGS

Shelf life and storage of pesticides

With the busy part of the lawn care season beginning soon in most parts of the country, storage and shelf life of pesticides is not that much of a present concern. But here are some tips from the University of Maryland on storage of pesticides. Keep them for your files.

All pesticides cannot be treated the same if a useful product is desired when the chemical is again removed from storage for use.

The shelf life of a pesticide is dependent on several factors: (1) storage conditions, (2) the type of formulation, (3) the kinds of inert ingredients present, and (4) the nature and stability of the chemical itself.

Most pesticides can be used if proper facilities are available. However, before storing any chemical, read the label. If you still have any questions, contact the manufacturer. Under normal conditions, the following rules apply for the maintenance of pesticides.

- **Never allow any liquid formulation to freeze.** On the other hand, dry and liquid formulations should never be stored where temperatures may exceed 100°F. Heat initiates the breakdown process.
- **All pesticides should be kept in a well-ventilated,** but dry place. Also, keep chemicals in the dark, as some are decomposed by prolonged exposure to sunlight (especially in glass containers).
- **Keep different chemicals separated.** Herbicides, fertilizers, fungicides and insecticides should, if possible, be stored in separate compartments with no air exchange between them.
- **Always keep chemicals in their original containers,** if possible. If the original container is damaged, use a substitute of similar composition and label it clearly. Glass, plastic and paper are the best storage, because many pesticides will corrode metal. If a container is opened (especially paper containers), it should be closed tightly and then placed in a clear plastic bag for added protection and safety. The clear plastic bag also allows easy identification of the contents without opening the bag.
- The floors and exterior walls are usually the dampest places in a room. Therefore, keep powdered, granular and dust formulations, and all chemicals in paper containers away from these surfaces where moisture may condense.
- Keep an up-to-date inventory of all pesticides and use the older materials first.
- When buying, try to limit amounts purchased to what will be used in one season. Do not store pesticides longer than two years under any conditions. Most manufacturers will not warrant them at all if held longer than this period of time.

James A. Watkins, author of *Turf Irrigation Manual* and director of training for **Weather-matic Div. of Telsco Industries,** Dallas, has retired and been replaced by Richard B. Choate.

Watkins

Choate

Robert Klemm is owner of **Independent Tree Care Co.,** Bay Village, Ohio.

E. J. Smith & Sons Co., Charlotte, N.C. will represent **Weed Eater** products in North and South Carolina. The company also handles **Toro** products and **Satoh** tractors.

Keith Shepersky has been named a sales trainer for the Turf Division of **Rain Bird Sprinkler Mfg. Corp.,** Glendora, Calif.

Morgro Chemical Co., Salt Lake City, Utah, has selected **Harris & Love, Inc.** as its advertising agency. In making the announcement, national marketing manager Larry J. Orton said the agency would assist Morgro in advertising its complete line of liquid and dry fertilizer products.

Alan R. Kurash is owner of **A & R Landscaping,** Westchester, Ill. Herbert M. Shapira is owner of **Lawn Doctor of Randolph-Canton-Sharon,** based in Framingham, Mass. The company offers chemical lawn care only and is part of the franchise operation based in Matawan, N.J.

Manny J. Paros is owner of **Lawn Doctor of Green,** based in Somerset, N.J. The company offers mowing/maintenance in addition to chemical lawn care, and is part of the Matawan, N.J.-based franchise network.

Norman Rothwell, **N. M. Rothwell Seeds,** Lindsay, Ontario,

Bailey

Dickey

Jacklin

Wiley

Canada, last year was elected president of the Lawn Institute. Vice president is Robert Peterson, **E. F. Burlingham & Sons,** Forest Grove, Ore. Robert Russell, **J & L Adikes, Inc.,** Jamaica, N.Y. is secretary-treasurer. Board members elected were: R. H. Bailey, **Merion Bluegrass Association,** Salem, Wash.; R. J. Buker, **F.F.R.,** West Lafayette, Ind.; J. L. Carnes, **International Seeds, Inc.,** Halsey, Ore.; H. G. Dickey, **North American Plant Breeders,** Mission, Kans.; G. Eros, **OSECO Limited,** Brampton, Ontario, Canada; J. Glatt, **Turf Seeds,** Hubbard, Ore.; Doyle Jacklin, **Vaughan-Jacklin,** Post Falls, Idaho; James Jenks, **Jenks-White Seed Co.,** Salem, Ore.; Ben Klugman, **Twin City Seed Co.,** Minneapolis, Minn.; Peter S. Loft, **Lofts Pedigreed Seed, Inc.,** Bound Brook, N.J.; E. F. Mangelsdorf, **Mangelsdorf Seed Co.,** St. Louis; Howard Schuler, **Northrup King Co.,** Minneapolis; John Southerland, **Stanford Seed Co.,** Buffalo, N.Y.; Denny Taylor, **Highland Bentgrass Commission,** Salem, Ore.; E. R. Townsend, **Whitney-Dickinson Seed Co.,** Buffalo, N.Y.; R. E. Wetsel, **Wetsel Seed Co.,** Harrisonburg, Va.; W. K. Wiley, **Pickseed West, Inc.,** Tangent, Ore.; and John Zajac, **Garfield Williamson, Inc.,** Jersey City, N.J.

James Walicik is president of **Best Lawns,** Schaumburg, Ill. The company offers chemical lawn care and mowing/maintenance services.

Wayne R. Marchetti is owner of **Colony Landscaping Co.,** Winter Haven, Fla.

Bart Wodlinger is owner of **Lawn Doctor of S. W. Montgomery County,** Rockville, Md. The chemical lawn care only company is part of the Lawn Doctor franchise network, which is based in Matawan, N.J.

Herbert H. Johnson is owner of **Custom Green Lawn Service,** Rockford, Ill.

Brian T. Spears is president of **Lawn Ranger, Inc.,** Bel Air, Md.

Michael Reed is assistant manager for **Techniturf, Inc.,** Brockton, Mass.

Keye/Donna/Pearlstein of Los Angeles has been named advertising agency of record for the **Rain Bird Sprinkler Mfg. Corp.,** Glendora, Calif., according to Rain Bird Turf Division marketing manager Rex Dixon. **Cochrane Chase, Livingston & Co., Inc.,** Irvine, Calif. will continue to provide full public relations services.

Wayne McCutcheon is **ProTurf** technical representative for Alberta, the Kootenays area of British Columbia, Saskatchewan and Manitoba. ProTurf is a division of **O. M. Scott & Sons,** Marysville, Ohio.

Fred M. Craig is treasurer of **GreenScope, Inc.,** Findlay, Ohio. The company offers mowing/maintenance services.

Michael E. Werman is owner of **Professional Grounds Maintenance,** Newton, Mass.

Robert Camoron is a partner is C.M.S. Landwcaping, Holyoke, Mass.

Michael E. Shapherd is vice president of **Turf Kare, Inc.,** Indianapolis, Ind.

Frederick W. Webb has been appointed regional marketing manager for the Specialty Products Group of **Fisons, Inc.,** Bedford, Mass. He will report to Keith O. Story, market manager. Also, John W. Murphy has been appointed regulatory affairs specialist for the company. In this position, he will be responsible for the preparation of petitions to the

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federal Environmental Protection Agency to secure registrations for company chemical products in the U.S. He will report to Paula F. Smith, manager, regulatory affairs. He holds a B.S. from the **University of Delaware,** and an M.S. degree from **Virginia Tech,** where he was employed as a graduate assistant.

Crown Chemicals, St. Louis has appointed John Deverey, president of **Arrowhead Sales,** Kansas City, Kans., to cover sales territories in Kansas, Missouri, Iowa, Minnesota, North and South Dakota. Representing Crown in Ohio, Indiana, Michigan and Kentucky will be Don Davis, president of **Don Davis Sales,** Harrisburg, Ohio. Representative for the Southwest is **G. T. Gilbert Co.,** Farmers Branch, Texas. **Dave Cline Associates,** Birmingham, Ala., represents Crown product lines in the Southeast.

Jeff McMaster has been named technical representative for the **ProTurf Div. of O. M. Scott & Sons,** Marysville, Ohio. He will service the eastern Ontario and Montreal areas in Canada.

Merlyn L. Curtis, has been promoted to engineering manager for the **Outdoor Power Equipment Division of J I Case,** Winneconne, Wis.

Appointments announced by **Fisons, Inc.,** New Bedford, Mass. include: Stephen W. Riley as manager of commercial development, and Roger P. Stollings, James F. Stewart, Patricia A. Saunders and J. Clayton Root as regional supervisors in the research and development group.

Joining **Westheffer Co.,** Lawrence, Kans. are Leonard Loen as operations manager and Mark Alvey as sales and marketing manager.

Officers for 1980-81 for the **American Sod Producers Association are: president, Raymond A. Johnson, Shamrock Turf Nurseries,** Hanna, Ind.; vice president, Stephen T. Cockerham, Rancho Verde Turf Farms, Perris, Calif.; secretary, Ray Weekley, **Prince William Turf Growers,** Fairfax, Va.; treasurer, James W. Huggett, **Long Island Farm,** Marshall, Wis. Immediate past president is E. John Hope, **Manderley Turf Farms,** North Gower, Ontario. New trustees are: Michele Williams, **Meredith Sod Farms,** Salt Lake City, Utah; Walt Pemrick, **Warrens Turf Nursery,** Palos Park, Ill.; Ralph W. White, Jr., **Southern Turf Nurseries,** Tifton, Ga.

DISTRIBUTION

Alabama's Sta-Green names Midwest agent

Sta-Green Plant Food Co., Inc., Sylacauga, Ala. has named the Lawn Aids Division of Lawn Aid, Inc., Tipp City, Ohio as distributor for its products in Ohio, Indiana, Illinois, Michigan and parts of Kentucky, Pennsylvania and West Virginia.

Sta-Green is the specialty fertilizer manufacturing arm of Parker Fertilizer Co., Inc., one of the oldest fertilizer manufacturers in America.

Since its founding in 1904, Parker has pioneered and produced a number of varieties of fertilizer for expanding markets. The company now manufactures more than 200 different products, including slow-release fertilizer, herbicide-fertilizer compounds, insecticide-impregnated fertilizer and soluble fertilizer. The company offers custom-blending.

Lawn Aids is a partnership of Gary Weaver and Ron Grove. The company will be marketing Sta-Green products along with other chemicals and equipment for the lawn care industry and other green industries.

COMPANIES

Warren's Turf acquired by Curran

Sources confirm that Warren's Turf Nursery, Inc. has been acquired by the Curran interests of Crystal Lake, Illinois. The sale consisted of transfer of ownership of Warren stock certificates to the Curran Contracting Company. All other information concerning the transaction is being withheld.

With nearly 5,000 acres of land under cultivation, the Warren firm is one of the largest growers of sod and turf in the world. The firm was founded in 1938 on ten acres of rented land near Palos Park, Illinois by Ben Warren and his father, Ben Warren Sr.

Warren's is currently developing the European, Asiatic, Australian and African markets for its patented A-34 bluegrass, of special value in those areas as a forage crop as well as for lawn establishment.

The A-34 bluegrass, developed from Warren's research facilities, was the only bluegrass out of 18 strains studied by Michigan State University for wear tolerance to peg an "excellent" rating. It is also shade tolerant in up to 65 percent shade cover and along with Warren's A-20 bluegrass, was rated highest out of 43 grasses studied by eight universities doing turf grass research.

In addition to turf research and development, the firm has patented sod cutters, harvesters, and a sod washing machine which removes soil from newly harvested sod. Sod removal allows for up to three to four times larger payloads and enables newly planted turf to knit to the site soil quickly. Soiless sod is now in use at Mile High Stadium in Denver, Colorado and Candlestick Park, in San Francisco, California.

Curran Contracting Company, with interests in paving, trucking, and railroad equipment, have indicated that they plan a minimum of management changes within the present Warren organization. "The Curran brothers have indicated a willingness to make further investments in the Warren Company future in the way of expansion into new markets," said Duane Blake, general manager of Warren's Turf Nursery.

DON'T MAKE EXCUSES. MAKE SURE, WITH CHIPCO® 26019.

LONG LASTING CHIPCO 26019 IS STRONG MEDICINE, FOR LAWN DISEASE PREVENTION.

What do you say to a customer when the fungicide you're using on his lawn fails to keep turf diseases from breaking out between treatments? Even if the customer thinks that a lack of water is causing that brown, burned look, you know better. Now you can prevent major lawn diseases—without making extra service calls—with CHIPCO 26019 fungicide. Chipco 26019 gives you the longest residual on the market. Long enough for you to effectively prevent diseases with your established spray schedule. When diseases threaten your customers' lawns—and your reputation—don't make excuses for a fungicide that fails, or doesn't last. Make sure, with Chipco 26019. It's the long lasting, strong medicine for lawn disease prevention. For details, ask your chemical distributor, or contact: Rhône Poulenc Chemical Co., Agrochemical Div., Rhône Poulenc Inc. Monmouth Junction, NJ 08852.

RHÔNE·POULENC

Write 132 on reader service card

Please read label carefully, and use only as directed.

Are you getting the right mix?

Certain tank mixes are widely and successfully used in the production and growth of turfgrasses, says Houston B. Couch, professor of plant pathology at Virginia Tech. Under certain conditions the decision to use a combination of materials as a tank mixture may be an appropriate one.

Under no condition, however, says Dr. Couch, should a person make a decision concerning an innovative "on the job" tank mixture of two or more materials without first clearly determining their compatibility.

Tank mixing of fungicides, and fungicides plus adjuvants, has been in practice in turfgrass disease control in the United States for approximately 50 years. This system of pesticide application is widespread today.

Many commercial turfgrass spray operators successfully use various mixtures of compounds. Also, the private operator can purchase single packaged products that contain two or more ingredients. When these are placed in the sprayer, they actually constitute a tank mix.

The preparation of "on the job" tank mixes presents the turfgrass management specialist with the possibility of convenience in both time and labor. In addition, there are occasions when either the indentification of the exact cause of the outbreak is not certain, or two or more diseases that require specific fungicides for their control are occuring simultaneously. It therefore becomes necessary to use a group of fungicides in conjunction with each other.

At these times, the possibility of a tank mixture may look extremely attractive. Throughout the growing season, the lawn businessman is often faced with the need to make a decision on whether to mix two or more pesticides and complete the spraying in one operation, or to apply the materials one spray at a time.

Before launching into a tank mixing program of either two or more pesticides, a pesticide and a fertilizer, a pesticide and a wetting agent, a pesticide and a spreader-sticker, or a pesticide and an extender, there are certain factors that must be taken into consideration.

One of the more important of these is a resolution of the question of whether or not the components are compatible. Compatibility is the ability of two or more components of a mixture to be used in combination without impairment of their toxicity to the target organism.

The different types of incompatibility that apply to pesticides and pesticide adjuvant combinations are physical, chemical, phytotoxic, and placement.

Physical incompatibility is the production of an unstable mixture. This is commonly seen as excessive foaming, and precipitation of a sediment on the bottom of the sprayer tank.

Even when tank mixes are tried on a small scale before being placed into widespread use and no phytotoxicity is observed, one cannot be certain injury might not occur later, says Dr. Houston Couch of Virginia Tech.

Ideally, all non-liquid fungicides, whether they are used in tank mixtures or not, should first be added to a small quantity of water, and this preparation then poured into the tank of the sprayer. This procedure will insure a more uniform dispersal of the material throughout the main body of water.

Chemical incompatibility is a reaction that results in a loss of toxicity to the target organism when two or more materials are placed in the spray tank. Also, whenever possible, water that is in the alkaline range should not be used as the carrier for fungicides.

Furthermore, adjuvants should never be added to a tank containing a pesticide until it has been learned from the manufacturer of both the adjuvant and the pesticide that the materials are chemically compatible.

Phytotoxic incompatibility is a reaction producing injury to plants when they are sprayed with a mixture of materials, which, if used at the rates in question and applied as one material at a time, would not be toxic.

Types of pesticide induced phytotoxicity are: a yellowing (chlorosis) of leaves; the development of necrotic spots; complete blighting or general withering of leaves; and retardation of the growth rate of the entire plant or one or more of its organs.

At times, the phytotoxicity may be latent — i.e., not be seen until several days or weeks after the time of application. Even when newly innovated tank mixes are tried on a small scale before being placed into widespread use and no phytotoxicity is observed, one cannot be certain that injury will not occur at the time the entire stand is sprayed.

This is due to the fact that interacting factors such as: air temperature at the time it is being used; plant genotype — i.e., some species and varieties are more prone to injury by certain fungicides than others; the degree of dilution in the water carrier; level of plant nutrition at the time of application; and the degree of soil moisture stress at the time the material is being used.

Placement incompatibility occurs when each of the materials in the tank mixture need to be placed in a different zone to be effective. A mixture of a foliar fungicide and a nematicide would be an example of this.

Emily, the Columbus (Ohio) Zoo's chimpanzee, unloads a new Toro Groundsmaster riding mower from the delivery truck. The 72-inch mower was a recent gift from Barefoot Grass Lawn Service, a subsidiary of The Toro Co., and Century Toro, Inc., the Columbus Toro distributor. It will be used by groundskeepers to maintain the zoo's grounds. Barefoot is based in Columbus.

SAFETY

Test for staff spray hazards

Lawn spray applicators are routinely exposed to toxic chemicals. In order to ensure that your employees are protected from pesticide overexposure, a program is available to provide a safety check. Called a cholinesterase monitoring program, the check ensures that:

1. Susceptible individuals with unusually low cholinesterase levels are not unduly exposed to pesticides which affect the nervous system.

2. Lawn spray operators are employing the necessary precautionary measures in handling these chemicals.

3. If these operators are indeed overexposed to these chemicals, the necessary steps are taken before clinically toxic symptoms occur.

According to Jeff McKenney, general manager of CLC Labs in Columbus, Ohio, constant exposure to organophosphates at varying levels may lead to one of two situations.

"It is important that the test for cholinesterase activity be conducted prior to the use of any organophosphate insecticide and periodically monitored throughout the spraying season."

One is the well-known acute accidental poisoning accompanied by observable symptoms like headache, blurred vision, fatigue, nausea, and excessive perspiration. This is due to the organophosphate blocking an enzyme in the blood called cholinesterase.

This enzyme actively prevents the built-up of acetylcholine, a chemical responsible for transmitting electrical impulses from nerve to nerve or from nerve to muscle. Thus, excess acetylcholine overactivates the muscles controlling our voluntary and involuntary movements leading to the above symptoms, or in severe cases, convulsions, respiratory depression, and possibly death.

The second situation may occur even at low levels of exposure. Since the inhibitory effects of organophosphates are cumulative, constant contact will lead to a progressive decline of the blood enzyme activity which may or may not be accompanied by clinical symptoms.

It is important that the test for cholinesterase activity be conducted prior to the use of any organophosphate insecticide and periodically monitored throughout the spraying season. The reliability of the biomonitoring program will increase considerably with the frequency of blood sampling.

The results of innumerable tests conducted over the last five years have been thoroughly evaluated and have provided a sound data base for establishing the normal ranges of cholinesterase values. Cholinesterase activities vary over a wide range among individuals and not uncommonly from day to day in the same individual.

Before you initiate this program, the following steps must be carried out as soon as possible:

"I never gave it much thought, but you're right! We never have had many complaints about the lawn work we've done, have we?"

1. Discuss with your company or personal physician the appropriate sampling and testing program that is specific for your needs. This will depend on the extent and duration of exposure to the organophosphates. The following programs are suggested.

2. Have your physician submit an order for either testing program to a drawing agency or a clinic of his choice. Write to Catherine Buttram, PMI Marketing, P.O. Box 4081, Atlanta, Georgia 30302; telephone: (404) 885-8154 for a listing of a drawing agency in your area.

If you opt not to contact a specific drawing agency, you will have to arrange for a qualified medical person to draw blood and separate the plasma from the red blood cells. (This will have to be done at your own risk).

3. Carefully follow the procedure list following program II to ensure a successful cholinesterase biomonitoring program.

Program I—Routine plasma and red cell Cholinesterase.

1. At the initiation of a cholinesterase testing program, a plasma and red blood cell cholinesterase will be drawn. This will be considered a baseline level for that person with which future test results can be compared.

It is best if this value is determined at a time when the person has not been in contact with cholinesterase inhibitors for at least two months. The time lapse is not mandatory, however, if noted.

2. A plasma and red blood cell cholinesterase will be run after the initial exposure to organophosphate and then at every subsequent testing interval. For

McKenney

example, the accepted practice is biweekly sampling until assurance that subsequent exposure will not decrease cholinesterase levels below a safe threshold.

3. All low or below normal plasma results will be marked for the customer's attention on the report.

4. Under normal circumstances, results will be reported back to the physician or his designate by return mail, or no later than two working days upon receipt of samples in our laboratory. Published literature from a major organophosphate manufacturer will be mailed with the first test results to provide some guidelines on evaluating the significance of test results.

It will be up to you and your physician's discretion whether immediate action should be taken if either or both plasma and red cell cholinesterases are considerably below your baseline values.

Program II—Routine Plasma Cholinesterase with reflex red blood cell cholinesterase.

1. The procedure for baseline determination will be the same as in Program I.

2. Only a plasma cholinesterase will be run at every sampling interval.

3. Red blood cell cholinesterase will be automatically run on these samples whose plasma value is low or below the established normal range. Based on previous clinical studies conducted by a major insecticide manufacturer and current data compiled in CLC's Laboratory, a plasma cholinesterase value below 0.50 pH is considered low.

Protocol for Drawing and Shipping

1. The customer or drawing agency can order adequate shipping containers and laboratory requisition slips.

2. It is necessary to fill out a laboratory requisition slip for each box of tubes mailed and also to properly identify the sample on a paper label attached to the tube with the following information: employee's full name, social security number and date drawn.

3. At the time of venipuncture, special care should be taken to ensure no contamination of the venipuncture site with cholinesterase inhibiting insecticides.

It is preferable to draw the sample before the employee has had contact that day with insecticides. If this is not possible, the venipuncture site should be washed thoroughly with soap and water.

4. Cholinesterase tests are to be drawn in a heparinized tube. This is a green stoppered vacuum tube containing sodium heparin as an anticoagulant. One, five, seven, or 10 ml. tube will assure an adequate sample.

5. The drawn sample should be centrifuged at 2500-3000 rpm for 10-30 minutes and the plasma removed to a clean glass test tube. This tube should be labeled with the employee's full name, social security number and date drawn. At least one ml of plasma should be submitted to the laboratory for testing.

6. The plasma and red cells should be packed in CLC furnished mailers along with the completed laboratory requisition slip for those samples. The samples must be mailed the same day as they are drawn to ensure immediate lab testing of the samples. Otherwise, delayed testing may compromise the validity of the test results.

Your samples will be processed within 24 hours upon arrival at CLC Labs. The final report will contain the actual cholinesterase levels, the normal ranges established in our laboratory, and specific notations for abnormal values for your immediate attention.

CLC's clinical laboratory staff may discuss the significance of cholinesterase values outside the established normal range with your physician and suggest alternative methods to determine more specifically the source of this variance from the accepted normal range.

An additional benefit to this program is the storing of your results at our archives for seven years, which will provide a sound data base for your employees' cholinesterase biomonitoring program.

TOOLS, TIPS & TECHNIQUES

Labor Department contacts

With the prospects for the coming lawn care season looking up, it seems more and more companies around the nation are adding new employes and new equipment. And as the industry continues to expand, it will be coming in closer contact with the rules and regulations of both state and federal government. Rules are rules, however painful, and if a company wants to compete in an expanding market, it's better to look before you leap. With this in mind, it might be wise to keep a line open to your nearest Department of Labor office for guidelines and precautions. Here is a list of regional administrators of the department. Write or call them at U.S. Department of Labor at the following addresses: J. F. Kennedy Fed. Bldg., Room 1001, Boston, MA 02203, telephone: (617) 223-4394; 1515 Broadway, Rm. 3580, New York, NY 10036; 3535 Market Street, Rm. 14320 Gateway Center, Philadelphia, PA 19104, telephone: (215) 596-6560; 1371 Peachtree St., N.E., Rm. 110, Atlanta, GA 30309, telephone: (404) 811-3989; 230 S. Dearborn St., 10th Floor, Chicago, IL 60604, telephone: (312) 353-3727; 555 Griffin Square Bldg., Rm. 744, Dallas, TX 75202, telephone: (214) 767-6801; 911 Walnut Street, Rm. 100 Fed. Ofc. Bldg., Denver, CO 80294, telephone: (303) 837-2218; 450 Golden Gate Avenue, Rm. 10064 Fed. Ofc. Bldg., San Francisco, CA 94102, telephone: (415) 556-5417; 909 First Avenue, Rm. 3144 Fed. Ofc. Bldg., Seattle, WA 98174, telephone: (206) 442-0100.

Philip A. Taylor (right), Jacobsen general manager of turf service, is briefed by Ralph Sylvester, Jr., company manager of product training, on new product service patches and certificates being used to motivate students toward proficiency in turf care equipment and maintenance and repair. New training logo appears on all materials including training workbooks.

Field and factory training has been a primary activity at Jacobsen for the past 25 years, with over 10,000 distributor and customer personnel participating in the company's various programs. Jacobsen, Div. of Textron, Inc. is based in Racine, Wis.

RESEARCH

Gypsum can aid lawn soil problems

Much interest has been generated in the last several years on the application of gypsum to turfgrass areas as an answer to a variety of soil problems. Some appear to regard gypsum in the same light as a new wonder drug and swear by its miraculous cures of compaction, poor drainage and other long standing turf problems.

According to Thomas R. Turner, extension turf specialist at the University of Maryland, almost all of these cases were in uncontrolled situations where a variety of management practices, such as fertilization and aerification, were changed at the same time to correct the existing problems.

It is nearly impossible, therefore, to determine whether the improvement in turf was due to the gypsum applications or to other management practices.

Also, very little research has been conducted on the merits of gypsum applications to turfgrass areas. However, by understanding the properties of gypsum, one can at least make some judgments about the possible benefits of gypsum application.

Gypsum is a combination of the calcium cation (Ca + +) and the sulfate anion (SO_4). Each molecule of $CaSO_4$ is associated with two water molecules, thus the proper chemical formula for gypsum is $CaSO_4$ $2H_2O$. The most immediate potential benefit of gypsum, therefore, is the calcium and sulfur nutrition of the turf plant. When one ton of gypsum per acre is applied, about 465 pounds of calcium and 372 pounds of sulfur is distributed.

Calcitic or dolomitic limestone can also be used to supply calcium to the plant. However, gypsum and limestone differ in two essential ways. Gypsum is more soluble and has little effect on soil pH. Thus where the soil pH is in a desirable range, but soil calcium levels are believed to be too low in relation to magnesium or potassium, gypsum should be used.

However, this is rarely necessary for turfgrasses. Whereas a certain calcium and magnesium balance is important in pasture grasses because of its effect on feeding animals, no turfgrass research has shown a detrimental calcium-magnesium imbalance effect.

Thus, where both the soil pH and calcium are low, limestone applications should be made. Where soil pH is adequate, no nutritional benefit should be expected from additional calcium applications.

Of greater interest and probably greater benefit is the sulfur which is added when gypsum is applied. Although the research information is scant, indications are that sulfur deficiencies of turfgrasses are becoming more common, possibly due to cleaner factory emissions over the years and the greater use of triple superphosphate instead of normal superphosphate which contained considerable sulfur.

Some recent turfgrass studies have shown deficient responses to sulfur applications. Therefore, some of the beneficial responses attributed to gypsum applications may be related to sulfur nutrition.

Another demonstrated benefit of gypsum is in the treatment of salt damaged and sodic soils by helping to increase the amount of sodium leached from the soil. The mechanisms are twofold. First, calcium from the gypsum can displace sodium from soil colloids, with the result that sodium becomes leached. Secondly, part of the caustic sodium carbonates can be converted to sulfate which can be leached.

Thus, soil previously unsuitable for turf growth because of high salt levels can be improved and used after gypsum applications and sufficient leaching. Typically, about one and a quarter tons of gypsum per acre are applied to a loam in Maryland to treat for salt damage. Less gypsum is needed on sandier soils, whereas more is needed on heavier soils.

Perhaps the most controversial benefit of gypsum applications is its alleged relief of compaction and improvement of drainage. Advertisements often state that gypsum will turn heavy clays into an open, porous structure with improved rainage and better air and water movement.

These types of results should only be expected where soil and sodium levels are abnormally high. Sodium will cause dispersion of the soil colloids, resulting in a lower percentage of large pores and thus poorer drainage.

Calcium, on the other hand, encourages flocculation of soil colloids and thus more large pores. Addition of gypsum to soils with higher sodium levels, therefore, should primarily displace some sodium from the soil colloids which can be removed through leaching. It can also improve drainage by encouraging flocculation of soil colloids.

Most soils in Maryland on which turfgrass is being grown do not have substantial sodium, however. None of the predominant cations (hydrogen, calcium, potassium, magnesium, aluminum, iron) found in Maryland soils cause dispersion of the soil colloids. Thus, major improvements in soil structure and drainage should not be expected from gypsum applications.

If surfur or calcium levels are low enough to cause a turfgrass nutritional deficiency, then improvement of turfgrass growth and the turfgrass root system could result in some improvement in the soil structure in the top four to six inches of soil. But this would be a slow process.

More research is needed on gypsum for use in turfgrass areas, according to Dr. Turner. It certainly has a place in treatment of salt damaged land and as a source of the nutrients calcium and sulfur. Quick cures of compaction and drainage problems of Maryland soils, however, are not likely to occur with gypsum applications.

MONEYWISE

Fuzzy on government labor guidelines?

The U.S. Department of Labor has published a booklet to help business, particularly small employers, understand and comply with major laws and regulations administered by the department. The booklet could come in handy for lawn care businessmen puzzled by government guidelines.

Entitled "Major Laws Administered by the U.S. Department of Labor Which Affect Small Business," the booklet describes in non-technical language the provisions of laws such as the Comprehensive Employment and Training Act (CETA), the Fair Labor Standards Act, the Occupational Safety and Health Act, and the Employee Retirement Income Security Act.

The booklet briefly describes 20 laws and regulations, lists the agency within the department responsible for administering the law, and gives a regional address and phone number where employers can get more detailed information. Some of the laws described apply to all businesses; others apply only to those businesses working under government contracts and subcontracts.

Developed by the Labor Department's Office of Small and Disadvantaged Business Utilization, the booklet may be obtained from the regional administrator of the Office of the Assistant Secretary for Administration and Management at the nearest office of the Department of Labor.

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Using soil amendments on established lawns

Many of the principles of soil management which apply to agricultural crops also apply very nicely to turfgrass soil management as well. But unlike most farmers, the turf manager normally does not have the opportunity to mix chemical soil with the soil by plowing. This results in some unique situations for turf.

According to Dr. Paul Rieke of Michigan State University, fertilizers and other chemicals applied to established turfs are left at the surface of the soil or in the thatch layer.

Nutrients which are in a water soluble form (like nitrogen) can be leached down into the root zone. Other nutrients, like phosphate, are much less soluble and are left at the surface. Gradually the applied material may move downward with water.

Thus when using low solubility, persistent chemicals, the turf manager must exercise caution to prevent a potentially harmful buildup of the chemical in a concentrated zone near the surface.

Liming agents. The objective of liming is to raise the pH of an acid soil to a more desirable level. Most grasses grow well between pH 5.5 and 7.5 with the ideal range from 6.0 to 7.0. Above 7.5, some grasses exhibit micronutrient deficiencies, especially iron. Below pH 5.5, the effects of high acidity tend to reduce root growth.

In very acid soils certain elements become highly soluble and can reach toxic levels for plants. Raising soil pH to reduce the toxic level of these elements is a practice which costs little and is easily practiced.

Soil pH has a number of effects on soil and plants including affecting nutrient transformations in the soil, soil macro and microorganism activities, organic matter decomposition, development of toxic levels of certain nutrients, turfgrass rooting, and competition among the plant species in the turf.

Obviously, soil pH can have a very significant effect on what happens in the soil and therefore, influence the management practices required.

Since liming agents are applied to the soil surface, the turf manager should be careful to note whether the lime recommendations are based on mixing the lime with a given depth of soil.

Recommendations for liming agricultural soils often call for mixing the lime to a depth of nine inches of soil or more. If the same rate of lime were applied to established turf a pH well above the desired range would result in the surface layer. Be sure your recommendations are made with established turf in mind.

In selecting a liming agent one should evaluate particle size, speed of reaction in the soil, cost, magnesium content, ease of handling, whether the material is caustic, and purity of the material.

When applying liming materials, if one desires a rapid pH change, a finer grind of limestone is suggested. If magnesium is low in the soil, dolomitic limestone is recommended if available.

The use of hydrated or quick lime materials is suggested only in unusual circumstance where rapid pH change is essential. These materials are hard-to-handle powders and can be caustic.

The slag materials vary widely in chemical content with variable contents of magnesium, phosphorus, and manganese, among other nutrients, as well as in neutralizing value. Be sure you know the chemical content of the slag before using on turf. This is true for any liming material, of course.

The cost and trouble to reestablish a turf make it imperative that only good liming materials be used and only when needed. Questionable materials should not be used even though they are cheaper.

One means of applying liming agents which golf course superintendents have used is to mix the appropriate amount of lime with topdressing soil and topdress after coring. This allows some of the lime to be applied somewhat lower in the soil.

In several parts of the country, liming agents are not needed because soil pH is naturally high or is increased due to irrigation with water high in bases. A soil pH increase from 6.4 to 7.2 in a sandy soil after six years of intensive irrigation has been reported.

Soil testing is the only dependable means of being sure of the need for pH adjustment. When sampling the soil under established turf conditions, the depth of sampling is very important. Follow the recommendations of the laboratory which is conducting the soil tests.

Acidifying agents. In many areas soil pH is much higher than desired, leading to reduced availability of certain micronutrients, especially iron. Some turf managers are interested in reducing pH, although the potential for turf injury from improper application is high. Any attempt to reduce pH should be approached very carefully

Acidifying agents include the use of acidifying nitrogen fertilizers, elemental sulfur, or possibly ferrous sulfate or aluminum sulfate. The latter two can be highly toxic to turf so their use to reduce soil pH is not recommended. Ferrous sulfate is used to provide iron to the turf as a foliar treatment, but at much lower rates than are needed to lower soil pH.

Acidifying nitrogen fertilizers include ammonium sulfate, ammonium phosphate, ammonium nitrate, urea, and any slow release fertilizer which forms ammonia in the soil. As the ammonia is nit-

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rified to nitrate by soil microorganisms, hydrogen ions are released in the soil causing acidification.

As an example of using acidifying fertilizers effectively, one superintendent in Michigan used ammonium sulfate on a green at the rate of four pounds of nitrogen per 1,000 square feet annually. After years the soil pH in the 0-2 inch depth was 6.8; at 2-4 inches, 7.4; and at 4-6 inches, 7.6.

In another study applying 14 pounds of nitrogen per 1,000 square feet annually to a loam soil over a six year period reduced soil pH in the 0-2 inch depth to 5.2, while it was 6.8 at 2-4 inches and 7.4 at 4-6 inches. When such rates of acidifying nitrogen carriers are utilized it is essential to test the soil more often to prevent developing serious pH problems in the surface layer.

Using acidifying nitrogen carriers may not change pH, however. In another study ammonium nitrate rates as high as 16 pounds of nitrogen per 1,000 square feet annually for seven years did not change pH because this was offset by irrigating with water drawn from a limestone acquifier. Throughout the study the soil pH remained at 7.5 to 7.7 on all plots. Each irrigation produced a "mini-liming."

Elemental sulfur has been used effectively to lower soil pH, but must be used very carefully. Obviously, excessive applications of sulfur can result in drastic pH changes in the surface layer with serious injury or death of the turf resulting.

There are several different types of sulfur materials which could be applied to lower pH. These include crystalline, granular, powder, or sulfur mixed with complete fertilizers. The powder form reacts very rapidly so lower rates should be used per application. The large granular crystals may take more than a year to decompose and react in the soil.

It is wise to use no more than five to 10 pounds of sulfur per 1,000 square feet per application with the five pound rate being preferred. Applications could be made spring and fall with a maximum of 10 to 15 pounds per year. It may take several years to lower pH, but it is better to be cautious.

Sulfur applications should only be made during non-stress periods, such as spring and fall. Do not lower pH on turf where calcium arsenate has been used in the past for annual bluegrass control. If the soil becomes quite acid, the arsenate becomes more available and serious turf loss could occur.

As more sophisticated systems are developed for fertilizer injection into the irrigation water, there arises the possibility of injecting acid into the water for lowering soil pH. This practice is not recommended unless you very carefully check to be sure that the proper rate of acid is being applied and that the irrigation system will tolerate the acid.

Gypsum. For soil high in exchangeable sodium (sodic soils), gypsum has been used effectively to replace the sodium on the soil cation exchange sites. The sodium can then be leached as sodium sulfate.

Good drainage and excess irrigation water (or rainfall) are needed to move the sodium well out of the rooting zone. When this occurs there can be a dramatic improvement in the physical properties of soil resulting in better turf.

There has been a suggestion that gypsum can be used to improve the physical properties of fine textured, non-sodic soils under turf conditions. This should be evaluated carefully.

"It is wise to use no more than five to 10 pounds of sulfur per 1,000 square feet per application with the five pound rate being preferred," says Michigan State's Dr. Paul Rieke. "Applications could be made spring and fall with a maximum of 10 to 15 pounds per year. It may take several years to lower pH, but it is better to be cautious."

Soil conditioners. There has been occasional interest in the use of soil conditioners for improving the physical properties of turf soils. Although there is some promise with the use of such materials, there are many problems to be solved yet, so soil conditioners cannot be recommended for turf at this time.

Wetting agents. Localized dry spots can be a deterrent to maintaining a beautiful, uniform turf. There can be a number of causes of

to page 36

localized dry spots on turf. One of these is the development of hydrophobic condition on sandy soils. Water does not penetrate into such soils, but runs off to adjacent areas.

Suggested solutions to the hydrophobic soil problem are the use of wetting agents and cultivation, primarily by coring. There was considerable variability among the wetting agents studied in terms of their ability to bring about rewetting of the hydrophobic sand.

The most effective among the group studied was Hydro-Wet, followed by Aqua-Gro. Other materials had to be used at considerably higher rates to achieve even some rewetting.

Wetting agent treatment responses varied from one application date to another so repeat applications in the same growing season were found to result in the most consistent responses. The localized dry spot problem tended to recur from one year to the next.

It is important to identify areas which are prone to the problem and treat early in the season to prevent serious development of the hydrophobic condition. Treatments applied in July and August sometimes did not result in turf recovery until the next spring even though the soil was rewet by the treatment the first year.

Wetting agents should also be used carefully since they can cause injury to the turf, especially if treated during heat or moisture stress period. Treatments should always be watered in to aid the movement of the wetting agent into the soil and to reduce the potential for phytotoxicity to the turf.

This story is from a talk given by Dr. Rieke at the 32nd Northwest Turfgrass Conference held in Richland, Wash.

Lawn Medic, Inc., Rochester, N.Y., recently honored its corporate managers and franchise dealers posting sales of from $250,000 to $1 million. From left are: Bill Michaelsen, Lawn Medic of Irondequoit/Rochester; John Nugent, Lawn Medic of Monroe and Genesee counties in New York; Patrick Lenihan, Lawn Medic of Winston-Salem, N.C.; Doug Squires, Lawn Medic of Greensboro/High Point, N.C.; company president Don Burton; Richard Ramadon, Lawn Medic of Orange, Conn.; Tom Cusack, Lawn Medic of Weirton/Ohio Valley; Lou Bower, Lawn Medic of Peoria,/Pekin, Ill.; Ken Lahr, Lawn Medic of Wheeling, W. Va.; Terry Baughman, Lawn Medic of Oil City/Meadville, Pa.; Harry Raffa, Lawn Medic of Syracuse/Utica/Albany, N.Y.; and Nap Moquin, Lawn Medic of Haverhill, Mass. and Salem, N.H.

VIRGINIA

Mole cricket is potential invader

Mole crickets are serious pests of turfgrass in many southeastern states, according to William H. Robinson, extension specialist in entomology at Virginia Tech. They have recently been reported in eastern Virginia tunneling under the soil and feeding on grass roots. While the insects have not reached pest status in Virginia yet, the potential for them seems great.

The turfgrass ecosystem is a dynamic, ever changing community of plants, animals, and bacteria, says Mr. Robinson. Any member of this community can rise to pest status within a few years (as did the black Ataenius beetle). Mole crickets certainly have this potential, and information on their life cycle, biology, habits and control may help in early detection and suppression of the pest population.

Biology. Mole crickets overwinter as adults in tunnels below the soil surface. In May and June the adults come to the surface, fly about, mate, and lay eggs. The eggs are deposited in hollow chambers tunneled in the soil. The mole cricket goes through about eight nymphal forms before becoming an adult.

Damage. A mole cricket tunneling through the soil, feeding on turfgrass roots produces three types of damage. First, they create ridges in the soil surface which looks as if a miniature mole had been working there. Secondly, they feed upon grass roots. And finally, uprooting the grass by tunneling subjects the plant to dessication. Mole crickets can also cause severe damage to bermuda grass. On golf courses, they often start on the border of traps and greens before moving in.

Control. There are insecticide sprays and baits labelled for controlling mole crickets. Good results have been reported with Dursban, Baygon, and diazinon. Sprays can be used in the spring, but the turf should be irrigated beforehand to help move the pests close to the surface. Recommended baits are to two percent Baygon, one-half percent Dursban, and two percent malathion, to be applied in the spring and fall.

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S. Pressley Coker, president of the American Seed Trade Association (left), was photographed with principal speaker, Dr. John B. Pittner, of the South Carolina Pee Dee Experimental Station, at the recent annual convention of the Atlantic Seedsmen's Association held in Charleston, W. Va. Dr. Pittner spoke on lawn and turf grasses in the Carolinas. Don Gruenbaum of O. M. Scott & Sons, Marysville, Ohio was elected president of the group. Charles Kindsvater of Otis Twilley Seed Co. is past president.

VARIETIES

Pros/cons of zoysia use in California

Zoysiagrass requires less maintenance than most other turfgrasses, according to Victor Youngner, professor of agronomy at the University of California. Good zoysia turf can be maintained with less fertilizer, water, and mowing.

Its slow growth may be a problem during establishment, but once established, this becomes an advantage. Although generally a home lawn turf, zoysia has been used successfully in golf courses, playgrounds and parks.

Zoysias are warm-season turfgrasses first introduced into the United States early in this century from east Asia. They consist of three closely related species, *Zoysia japonica*, Japanese lawngrass; *Z. matrella*, Manillagrass; and *Z. tenuifolia*, Korean velvetgrass or Macarenegrass.

Many botanists and agronomists consider them to be botanical varieties of a single species, because they hybridize readily and have the same chromosome number. They vary in texture from the extremely fine *Z. tenuifolia* to side-leaved *Z. japonica*. The former is used as a ground cover and is not well adapted to mowing as a turf.

Two cultivars are generally available today — Meyer, a strain of Japanese lawngrass, and Emerald, a hybrid between *Z. japonica* and Z. tenuifolia. Meyer is not recommended for California because of its long dormant period and its slowness in establishment.

Selected similar strains may be grown by California turfgrass nurseries. New, well-adapted cultivars may be available soon from the University of California breeding program. To ensure satisfaction, planting material should be obtained from local California growers or nurseries.

Zoysia can be grown in all the areas of California where summers are warm and winters mild. It thrives under high temperatures but begins to lose color when temperatures drop below 50 degrees F for several consecutive nights. Light frosts turn it straw color.

Emerald zoysia often remains green throughout the winter in coastal southern California. The length of the winter dormant period varies with location and weather from a few days to several months.

Zoysia makes a dark green turf resembling Kentucky bluegrass during its growing season. Although it spreads by stolons and rhizomes similarly to bermudagrass, its slow growth rate makes it easier to contain and keep out of flowerbeds or shrub plantings. Zoysia forms a very dense sod and is highly resistant to wear from foot traffic. Its leaves are stiffer than those of Kentucky bluegrass or bermudagrass.

Advantages. It is heat tolerant and thrives under high summer temperatures.

It has a deep, extensive root system that makes it drought tolerant and able to use water efficiently. Watering can be less frequent than with most other turfgrasses.

It makes a permanent lawn with few insect or disease problems.

Because of its slow growth, mowing and edging are required less frequently than with many turfgrasses.

It makes a satisfactory turf with less nitrogen fertilizer than is required for most turfgrasses.

It is tolerant of salt and of urine from dogs.

It will grow in light to moderate shade.

Disadvantages. In all but the mildest areas of the state, it has dormant periods of varying lengths, at which time color will be poor.

Because it grows slowly, a full

summer or more will be required to form a solid turf.

It is more expensive to establish than most turfgrasses.

Thatch may build up on the soil surface, inhibiting water infiltration and causing scalping when mowed.

Its toughness and density require the use of a sharp power mower, preferably a reel type.

It does not tolerate excessively wet or poorly drained soils.

Planting. Zoysia is usually planted vegetatively with plugs of sod or sprigs. Seeds are not used to start a zoysia lawn because plants do not grow true from seed and will not make a satisfactory turf.

In plugging, the plugs of sod approximately two inches in diameter and two to three inches deep are set into the prepared lawn surface at six to 12 inch intervals. The closer spacing will give more rapid coverage but, of course, will be more expensive.

Sprigging is done by planting the sprigs in rows four to six inches apart, partially covering them with soil but leaving tips exposed. If the supply of planting material is large, the sprigs may be broadcast over the prepared soil surface, rolled, and topdressed with soil or mulch.

Sprigs must not be allowed to dry out at any time and the soil must be kept moist after planting until new growth is well established.

Nitrogen fertilizer at the rate of one half to one pound of actual nitrogen per 1,000 square feet should be applied before plugging or sprigging. Phosphorus and potash fertilizer should also be applied at this time, if needed.

A small amount of organic or slow-release nitrogen fertilizer placed at the bottom of the hole before the plug is set has been shown to improve the rate of spread.

Sprigging is less expensive than plugging and usually gives a more rapid rate of cover. However, care of sprigs, especially watering, is more critical during the establishment period. Zoysia plugs may be set into an old lawn of other grasses and will gradually take over during a period of two to three years. The best time for planting is spring and early summer.

Zoysia care. Mow zoysia lawns at one-half to one inch. Because of its slow growth rate, zoysia may need mowing only once every 10 to 14 days during most of the year. A rotary mower may be used, but a smoother, neater surface will be obtained with a reel mower.

Light, frequent applications of a soluble material such as ammonium nitrate during fall, winter, and spring will help maintain cool weather color. Usually, a quarter pound of actual nitrogen per 1,000 square feet monthly from October to March will do the job.

If the lawn becomes dormant, fertilization should be discontinued until warmer spring weather. Applications of one pound of nitrogen in April and June will usually keep a zoysia lawn looking good through the summer.

In many areas, irrigation with one inch of water per week keeps a zoysia turf green throughout the summer. The actual needs vary with soil type and weather but, in general, are much less than those of most turfgrasses other than bermuda.

Rolling of the leaves and development of a deep blue-green color indicate a need for water. Because zoysia has a deep root system, the soil should be kept moist to several feet in depth. During droughts or water shortages, zoysia will remain alive, although poor in color, with greatly reduced amounts of water.

Most zoysia lawns will build up a thatch of dead, undecomposed plant material in time. Mechanical removal of thatch with a revovator or vertical mower may then be required. This must be done well before fall to allow ample time for regrowth.

In most areas, April or May would be an excellent time. Fall renovations and over-seeding as done on bermuda are not recommended. Application of a good preemergence herbicide immediately after thatch removal will prevent weed invasion during the recovery period.

A group of more than 50 French turf maintenance professionals participated in tours and turf care presentations hosted by Jacobsen Div. of Textron, Inc. recently at company headquarters in Racine, Wis.

The Jacobsen program was part of a two-week turf management study tour sponsored by Marly-Orag, S.A., Arpajon, France, exclusive French distributor for Jacobsen turf products sold through Orag Inter Ltd., Baden, Switzerland.

An audio-visual presentation describing the company's full line of turf and commercial products was conducted by Roger Thomas, vice president of international sales, and Richard Nelson, director of international sales.

THE SOUTH

Solving 'spring root die-back'

Researchers from Texas A & M University in Austin have shed new light on the phenomenon 'spring root die-back,' which occurs when the roots of bermuda and St. Augustinegrass turn brown during spring green-up, reports John Hall, extension turf specialist at Virginia Tech.

The phenomenon has now been observed for four years and involves the rapid dying of the overwintered root system in the spring in association with the green-up of bermudagrass. Roots that are white and healthy at the time of first leaf initiation rapidly turn brown in as short a period as 24 hours.

The bermuda and St. Augustinegrass appear to be without a living root system during this variable period of root establishment. Observations made in 1979 on Tifgreen bermudagrass by the Texas researchers indicate that root browning occured over an eight day period after the first appearance of new green leaves in the spring.

The mechanism controlling spring root die-back has not been substantiated. However, it appears that the rate of root regeneration can be affected by available carbohydrate levels.

The researchers have noted that supplemental applications of carbohydrate (five pounds sucrose per acre) did increase root regeneration growth rates by as much as 67 percent. The carbohydrate applications did not prevent the root die-back phenomenon, suggesting a more sophisticated mechanism is in control of the initiation of root die-back.

Problems. The thought of managing any turf without a root system for any period of time is frightening to the agronomist, says Mr. Hall. There is a whole host of potential problems that could arise on bermudagrass turf during this period of root regeneration.

Needless to say, many of these problems have been observed in the past without the knowledge that it was happening, because there was no functional root system under the bermudagrass.

During this period of root regeneration there is increased likelihood of injury to the bermudagrass from low temperature, herbicide application, drying winds, traffic, diseases, insects and possible nutrient deficiency. Pesticide applications that are not phytotoxic during mid-summer may be more harmful during this root regeneration period.

Solutions. Obviously, as a greater understanding of the root die-back phenomenon emerges, the question of how bermudagrass turf should be managed during this critical period will be more appropriately answered. But, given the current state of knowledge, it appears that the following management programs would minimize the likelihood of bermudagrass being damaged during the root regeneration period.

1. Avoid cultivating bermudagrass turf during this critical root regeneration period.
2. Delay soluble nitrogen applications until after the bermudagrass has regenerated its root system.
3. Delay mowing during this period.
4. Raise the height of the mower in the spring to maximize the plant's ability to generate carbohydrate. It can be lowered after adequate root regeneration has occurred.
5. Delay herbicide applications until after root regeneration. Obviously, this may not be possible in situations where preemergence herbicides are being used for crabgrass control. However, broadleaf herbicide (2,4-D, dicamba and MCPP) applications can be delayed without much negative effect.
6. Be certain adequate phosphorus and potassium soil test levels are being maintained to promote maximum rooting development.
7. Be prepared to control disease and insect activity that may occur during this critical period.
8. Be prepared to irrigate during this critical root die-back period.

As greater understanding of the bermudagrass root die-back phenomenon emerges through research and observation, approaches to managing bermudagrass will change.

Several questions now need to be answered by the researchers, according to Mr. Hall. Can it be stopped to allow development of a perennial root system? Do bermudagrass roots actually function in mid-winter, or do they die early in the winter, leaving the bermudagrass without a functioning root system most of the winter. The new research has inevitably led to further questions which must be investigated.

MARKETING IDEA FILE

One stop, two sales

This year, with the increased number of lawn care firms available, the homeowner may begin to take a closer look at the types of services offered by each. Some companies maintain a "lawns only" strategy in an effort to increase market penetration. Others are opting for a broader spectrum of services. The benefits of this are two fold. New customers are often sold on the company that can satisfy a range of immediate and future needs. Also, existing customers frequently expand service as more options become available.

Tree feeding is one important service that should be considered. Homeowners are increasingly aware of the need to feed tress, but they may hestiate to do it themselves. This can make it an appealing part of the "total package" offered by a lawn care service. Tree fertilizer spikes are one method which has attracted considerable attention within the industry. According to Dick Grandy, national sales manager for International Spike, Inc. of Lexington, Kentucky, "Fertilizer spikes are a low investment, low labor method of feeding trees and shrubs. Spikes can be hammered into the ground around a tree in just a few minutes. The nutrients are released slowly, so feeding continues throughout the growing season with just one application."

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- New York trial — Merit ranked above Baron, Kenblue and Park.
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New biological control for Dutch elm disease coming?

Test marketing of a new biological product to control Dutch elm disease could start as early as spring, 1983, it was announced by Daniel P. Hogan, Jr., vice president and general manager of the Ortho Consumer Products Division of Chevron Chemical Company.

Ortho has entered into an agreement with the Freshwater Biological Research Foundation and Montana State University to pursue an exclusive, world-wide license agreement to develop, produce and market a Dutch elm disease control product. The disease has been the major killer of elm trees for over 60 years.

Hogan told a press conference that Ortho has been field testing a new product for the past year with the Freshwater Biological Research Foundation.

A team of scientists at Montana State University, led by Dr. Gary Strobel, discovered a unique strain of bacterium called *Pseudomonas syringae* which produces an antibiotic that kills the fungus which causes Dutch elm disease but does not harm the tree. The team at Montana State was one of three groups of scientists who made up the recently concluded three-year DUEL (for (DUtch ELm) research project, created and funded by the Freshwater Foundation.

Now that the DUEL project is terminating, Ortho will carry on with further research and testing of the product. Dr. Joseph C. White, Ortho technical coordinator for special products, noted that while there are still many unanswered questions, test results to date are "very promising" and Ortho is hopeful that a Dutch elm disease control product can be test marketed during the spring of 1983.

The disease, which was first discovered in this country in 1930, has killed millions of trees at a cost of billions of dollars for removal and depreciation of property. Scientists knew even before the disease arrived in this country that death was caused by a fungus, *Ceratocystis ulmi*, which impairs the movement of water and nutrients through the tree's vascular system.

Numerous efforts to control the disease have failed and others have been only partially successful. The fungus has ravaged the elm population throughout the U.S. since first being transported here from Europe in some infested logs delivered to a furniture factory. The disease is spread by the elm bark beetle, which carries the fungus from tree to tree during breeding and feeding, and through the root systems of elms growing near one another.

Richard G. Gray, Sr., chairman of the Freshwater Foundation, instigated the idea of a multidisciplinary approach toward a possible control of Dutch elm disease late in 1976 and, with nearly $400,000 donated by Minnesota businesses and foundations, the effort commenced on September 1, 1977.

The unique strain of the bacterium can be grown in quantity, freeze-dried and "activated" by mixing with water and other special ingredients. When it is injected into a tree, it is readily transported through it, lives in the tree and provides continuing protection.

Initial field work by Dr. Strobel's team showed that trees pre-treated with the unique strain of *P. syringae* successfully resisted the disease when challenged with spores of the Dutch elm disease fungus. There has also been success in halting the spread of the fungus in trees which are already infected. The disease usually produces a wilting and yellowing or drying of foliage, usually followed by defoliation and death of the trees, often within weeks.

MEETINGS

Missouri lawn group sponsors ad seminar

The Professional Lawn Care Association of Missouri will hold its first seminar of the year later this month in Columbia.

Bob Earley, editor/publisher of *Lawn Care Industry* will moderate a day-long seminar on advertising and promotion techniques used in the lawn care industry.

The seminar will be held February 25 at the Hilton Inn in Columbia. The seminar will run from 10 a.m. to 4 p.m. Lawn care businessmen from Missouri and adjoining states are welcome to participate.

There will also be information available on availability of a cholinesterase-testing program offered by the Missouri group at the seminar.

For further information about the seminar or the cholinesterase-testing program, contact: Dr. Paul Schnare, Atkins Lawn Care, 1123 Wilkes Blvd., Columbia, MO 65201, 314-874-8000.

RESEARCH

Match N source to plant needs

The biological activity of methylene urea products can be substantially altered by manufacturing technology to satisfy the varying nitrogen needs of a wide range of plants, according to a paper presented by George R. McVey, senior researcher, O. M. Scott & Sons, at the annual meeting of the Association of American Plant Food Control Officials recently in Seattle.

According to Dr. McVey, selection of the proper source of methylene urea results in increased nitrogen efficiency (less nitrogen leaching or volatilization), reduction in turfgrass clipping removal and a reduction in plant injury as compared to more soluble nitrogen materials. He urged that methylene urea be labeled to depict more accurately the various fractions of these products.

A complete copy of the talk and illustrations is available on request from O. M. Scott & Sons, Dept. BB, Marysville, OH 43041.

TURF

Control of spring melt-out

The lush greening of turf in the spring is one of the early indications of the return of good growing weather. But too often that lush green slowly turns to large patches of yellowing and then dead brown grass.

According to Martin B. Harrison of Cornell University, this melting-out of spring turf is one of the most important diseases of bluegrass lawns during the cool, humid spring seasons. Grass not killed at this time may be so weakened that it will succumb more readily to adverse conditions later in the year.

This disease becomes active, says Mr. Harrison, in April and May when spores of the fungus *Bipolaris* spp. (formerly called *Helminthosporium*), start to grow. The infection caused then produces leaf spots, which have yellow brown centers with purplish-red borders.

Infection of the leaf sheath area in the crown of the plant causes leaf drop and crown rot. A severe invasion of the disease may cause such heavy leaf loss that an entire stand of bluegrass will appear to quickly fade or "melt out."

Control of melting-out can start with the planting of a bluegrass variety resistant to the disease. Several are on the market and a recent rating listed Adelphi, Birka, Touchdown, Merion, Bonnieblue, Fylking, Nugget and Pennstar as some with good resistance to this disease.

Planting a mixture of compatible varieties is a recommended practice rather than planting a single variety of grass, says Mr. Harrison.

Turfgrass management practices that avoid heavy fertilizer applications in the spring help to reduce the severity of spring melting-out. Applying fertilizer in the early fall is a more desirable practice.

Melting-out disease can be controlled by fungicide applications. Several materials currently available provide good control, especially when they are applied in the early stages of disease development. Some of the materials which recently have been highly rated are: Chipco 26019, Daconil 2787, Duosan, Dyrene, Kromad, Spectro and Tersan LSR. Other materials that are on the market may also work well in controlling disease.

An approach to control of spring lawn melting-out disease that includes several practices is recommended by Mr. Harrison. Use resistant varieties when starting a lwan, avoid heavy applications of fertilizer in the spring and use a recommended fungicide when early indications of the disease are first noticed.

LAWN CARE INDUSTRY

Just fill in card...(all items must be completed before inquiries can be processed).
Check one box in each category

1 Check one that best describes your business:
Lawn care service business involved primarily with fertilization, weed and insect control:
10 ☐ Liquid 11 ☐ Dry 12 ☐ Both
13 ☐ Primarily mowing/maintenance service
14 ☐ Landscape Contractor/Lawn Service Co.
15 ☐ Pest Control/Lawn Service Co.
16 ☐ Nursery or Garden Center/Lawn Service Co.
Grounds Care Manager for:
17 ☐ Private or public estate
18 ☐ School, College, University, Hospital, Industrial Park or similar facility
19 ☐ Government grounds; such as parks, around municipal buildings, or military facility
24 ☐ Cemetery or memorial gardens
25 ☐ Dealer or Distributor
26 Other _____

2 Check one which best describes your buying responsibility:
21 ☐ Purchase
22 ☐ Specify or recommend purchase

3 If your business sells its services to home-owners, commercial or industrial accounts please answer the following:

3A/ Estimated gross annual receipts from lawn service operations in current year:
31 ☐ Up to $50,000
32 ☐ $50,000 to $150,000
33 ☐ $150,000 to $500,000
34 ☐ $500,000 to $750,000
35 ☐ $750,000 to $1,000,000
36 Other _____

3B/ Approximate # accounts serving in current calendar year:
37 ☐ Up to 100
38 ☐ 100 to 500
39 ☐ 500 to 2,500
40 ☐ 2,500 to 5,000
41 ☐ 5,000 to 10,000
42 Other _____

3C/ Is your business:
43 ☐ Independent
44 ☐ Franchise
45 ☐ Chain Affiliated

4 If you are a grounds care manager (not selling lawn care services) estimate the following:
51 ☐ # acres you're responsible for_____ acres
Annual expenditures for:
52 ☐ Chemicals $ _____
53 ☐ Fertilizers $ _____
54 ☐ Equipment $ _____
55 ☐ Irrigation $ _____
56 ☐ Plant Materials $ _____

5 **For more information** about products displayed in this issue, print the reader service number in the spaces provided below and block out A, B, C, or D for specific information needed.
61 [a] Need Catalog literature
62 [b] Need more price Info
63 [c] Interest in Purchasing
64 [d] Have specific problem—have salesman call.

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91 First Initial | Middle Initial | Last Name

92 Your Title

93 Company Name

94 Mail To:

95 City | State | Zip Code

96 Phone: Area Code ☐☐☐ No.: ☐☐☐☐☐☐☐

Address shown is:
98 ☐ Business
99 ☐ Home

97 Signature: _____ Date_____

Do you wish to receive/continue receiving Lawn Care Industry? ☐ Yes ☐ No

FEBRUARY 1981 (Expires in 60 days)

reader service card

Use this card to obtain more information...fast.

c

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BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 665 DULUTH, MN

POSTAGE WILL BE PAID BY ADDRESSEE

READER SERVICE DEPT.

LAWN CARE INDUSTRY

P.O. Box 6200

Duluth, MN 55806

PRODUCTS

New "thatcherizer" is a good groomer

The Snapper Thatcherizer, from McDonough Power Equipment, simplifies what was once a costly and time-consuming job involving either a special rake or motorized de-thatching machine. The Thatcherizer, designed for Snapper self-propelled mowers or riding mowers, uses high-vacuum

action to pick-up and bag thatch in one operation. The front-mounted attachment loosens thatch from the lawn and the mid-mounted rear-discharge mowing unit cuts a path up to 54 inches wide. Leaves, pinecones, litter, and harmful thatch are vacuumed into a 17.5 cubic foot steel Snapper Vac-n-pac catcher. The catcher is a rear-mounted attachment that fits on all Snapper garden tractors.

Cut fuel costs with new diesel

The FMC Corporation's new Bolens HT20D Diesel Tractor with hydrostatic drive is powered by an air-cooled model WD2-860 Wisconsin Diesel rated at 19.9 horsepower. Because the engine provides higher torque at lower rpm, FMC cites reduced fuel consumption costs and longer life expectation.

The air-cooled diesel is a twin cylinder, four-cycle unit with cast iron cylinders and forged crankshaft. It features full pressure lub-

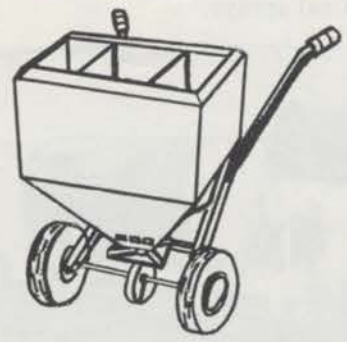
rication and direct, open chamber combustion. The engine is part of a new family of diesel engines introduced last year by Teledyne Wisconsin Motor, which offers parts and service backup through its extensive network of Wisconsin Engine distributors.

A two-spool hydraulic lift attachment allows the operator to perform two operations at once, using a shaft-driven PTO to operate a wide range of available front, center and rear mount attachments. Large acreage can be mowed quickly with 54 inch or 48 inch driveshaft driven mowers, making the HT20D tractor useful for commercial and light industrial applications, including parks and groundskeeping operations.

Conversion device saves thousands

Norman Lynd, owner of Green Thumb Lawn Service in Willow Grove, Pennsylvania, has invented and is now manufacturing this conversion device which will change a broadcast spreader into a combine without spending thousands of dollars.

Simple installation takes approximately one hour and can be removed in less than one minute for cleaning and replaced in the same amount of time. Made with rugged stainless steel and aluminum, the only moveable parts in the unit are three adjustable metering slides for calibration. A common ruler is used for calibration settings.



Capable of applying three different granular materials at one time, the conversion device prevents the user from hand mixing materials, using expensive premixes, and spending thousands of dollars on expensive combines and spray trucks.

Self-propelled bermuda planter

Bermuda King, long-time leader in Bermuda spriggers and planters, has developed a new self-propelled riding version of their proven planters for planting bermuda.

With this machine a contractor, municipality, or agency has a tool that can work small to medium areas quickly and economically without the bother and expense of

to page 44

a tractor to pull the planter. The operator cam plant up close to walls, curbs and buildings quickly and easily. The machine is compact, maneuverable, and easy to transport.

This newest Bermuda King model plants a swath 30 inches wide and puts down roots, sprigs, rhizomes, or cuttings. The planter packs plantings firmly in one operation and also feeds, separates, and plants sod.

Microscope is a quick study

Panasonic's FF-393 Microscope with Light is a portable, precise and useful tool. Light operates on two "AA" batteries and blue filter assures a distinct and vivid image. Switch mechanism turns light on

when microscope body is unfolded, off when body is closed. With a magnification capacity of 30X, the microscope features a thumbwheel turning knob for smooth focus adjustment.

Skid unit chews up labor costs

The Agrotec skid unit for commercial operators is versatile and easy to operate. It fits between the wheel wells of a pick-up or slides onto a flatbed, handling most chemical sprays.

Three hundred or five hundred gallon tank and centrifugal pump feed up to three handgun operators, providing fast application and reduced labor cost. Three hundred foot hose and handgun with electric rewind are included in the standard equipment. Various extensions, spraying tips, and other accessories are available.

New tractor with off-set engine

International Harvester's 247 model tractor with mounted off-set engine to provide operators with unrestricted visibility. The 247 is designed for grounds and maintenance applications and can accommodate a wide range of implements with its 540 rpm transmission drive pto.

In order to achieve precision, the 274 utilizes a sliding spur-gear transmission with eight speeds forward and two reverse. The speeds are stepped for controlled close work with top speed at 11.7 mph. A 30 horsepower, 99 cubic-inch, three-cylinder, water-cooled diesel engine powers the tractor.

A category L I, three-point hitch provides full position control and return to selected depth at the command of the operator. A center rockshaft with cultivator lift cylinder and stroke adjustment is operated by a three-position auxiliary hydraulic valve. A 5.7 gpm pump provides the pressure for all hydraulic functions.

Independent hydraulic disc brakes and mechanical fast steering combine to make the 274's turning radius just slightly over eight feet. Optional features include differential lock, fixed drawbar, protecting frame with canopy, bolster and wheel weights, and rear working light.

Sharp swaths with new cutter

As one of its new grounds maintenance Sidewinder accessories for small horsepower tractors, FMC Corporation's Agricultural Machinery Division has introduced the FM-48 Flail Mower, which cuts both rough and fine grass in uniform, neat, and manicured 46-inch swaths.

FMC Side-Winder "Green Line" Flail Mower-FM-48

The FM-48 can be adjusted for cutting heights as low as one-half inch and up to four inches. The mower features 108 free-swinging, overlapping, reversible blades, which rotate at 1767 rpms. Requiring a tractor with at least a 13 horsepower capacity, it will work well with larger tractors up to 20 horsepower.

To help maintain an even cut, there is a full width, heavy-duty gauge roller at the rear. The FM-48 is made by FMC, not by a private label manufacturer, so it incorporates the development of the Sidewinder-engineered designs, with high structural strength, as well.

Consumers report on riding mowers

"Ask Any Owner" is the title of a full color brochure published by Dixon Industries and written by satisfied consumers of Dixon ZTR riding mowers, their line of zero turning radius mowers.

Quoted excerpts range from

simple claims that Dixon cuts down mowing time, to performance data, and detailed descriptions of difficult mowing made faster and easier with the 'Zeeter.'

A number of reports deal with people who appreicate the hand level controls and total lack of foot pedal operation. Dixon mowers have no steering wheel, clutch, footfeed, gearshift, or brake pedal for slowing or stopping. The only foot action needed is to release the hand parking brake, and that too, can be done by hand.

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WIPE OUT GRUB PROBLEMS WITH PROXOL®.

PROXOL WORKS
Kills white grubs, sod webworms, cutworms and armyworms on contact. Proven results for many years by golf course professionals to meet their precise insect control needs.

NO ODOR
Proxol produces no unpleasant odor to offend customers.

PENETRATES THATCH
Readily penetrates thatch to concentrate in the soil at the zone of larval activity.

ENVIRONMENTALLY SOUND
Proxol does not produce a long-term residual buildup. At recommended rates it controls principal damage-causing insects as listed on the label without significantly affecting beneficial insects.

LOW CONCENTRATIONS
Proxol is effective at 1½ oz. to 3¾ oz. per 1,000 sq. ft. for cutworms and sod webworms. 3¾ oz. per 1,000 sq. ft. is required for grubs.

TUCO
Division of The Upjohn Company

USE IN A PROGRAM
Proxol is highly soluble in water. Easily applied with conventional ground equipment. Can be tank mixed with other non-alkaline pesticides. Low effective rates offer economy.

CONVENIENT
2 and 5 lb. packages make measurement easy. Eliminates waste.

READILY AVAILABLE
Over 150 U.S. distributors and 8 regional TUCO Distribution Centers assure convenient product availability.

ACTI-DIONE®
A TUCO broad spectrum fungicide, long used by golf course professionals, to stop turf disease problems before they start.

TOLL-FREE INFORMATION
For product availability and information just call:
Outside Michigan 1-800-253-8600
Inside Michigan (collect) 0-616-323-4000.

WRITE FOR MORE ABOUT BETTER TURF FROM TUCO.

Send coupon to:
TUCO • Dept. 9510 • 7000 Portage Rd., Kalamazoo, MI 49001

NAME
ADDRESS
CITY/STATE/ZIP CODE

TUCO

Write 138 on reader service card

Heavy duty power spreader

Designed to give you 25 percent more production with same application rate all day long, this power spreader from Consolidated Sales Service runs the same speed all day long and doesn't vary as the day grows old or the operator becomes fatigued.

Rugged construction of 10 and 12 gauge welded one-piece steel chassis features heavy duty relubeable bearing points with grease zerks all located in one central position. Fiberglass hopper is removeable for ease in dumping excess product and cleaning. Tires are pneumatic for smooth floating operation and long wear.

The Power Spreader is equipped with a three horsepower Briggs and Stratton engine with easily replaceable plastic impeller. Stainless steel fin covers are available for more durability at an additional cost.

Eight horse diesel

Professional lawn service companies concerned about rising fuel costs now have an alternative in the Bunton Company's eight horse power diesel engines in 36 and 52 inch lawn, turf, and mulching type models. Bunton engines are built in a one-piece wide welded steel frame with heavy gauge steel handles and featuring finger tip traction controls for easy turning and maneuvering. Bunton predicts a fuel savings of 50 percent or more with these self-propelled models. Options include a grass catcher on the lawn and turf models and a rider attachment on lawn, turf and mulching models.

MARKETING

Leaving your name behind

How do you label a product that's neither bigger nor smaller than a breadbox; not animal or mineral, and doesn't shake, rattle, or roll — lawn care, for instance? Lawn care companies provide in intangible service. It's often difficult for a prospective customer to pass a well kept lawn and identify the work as yours. You may have lost many a lucrative account in just this way.

The problem has been addressed by Bob Cohen, president of the Green Scene in Tarzana, California. He now thinks he has struck on a simple and effective method of labelling his work. Cohen has his crews leave a small sign on finished lawns which reads: "This landscape fed and protected by the Green Scene." His company's address and phone number is listed on the bottom and he plans to use a facsimile of the sign in his advertising literature.

Developing the right sign hasn't been easy, either. First he tried a larger five by ten inch card, but the more visible the sign, the less his customers liked it. Then he tried a smaller sign made of cardboard laminated with plastic, but snails with an appetite for the laminate devoured those and he had to abandon them. He finally settled on a small three by two inch plastic card manufactured by a horticultural printing company. They cost about a nickel apiece and can be ordered from Carscallen Nursery Label Company, P.O. Box 18092, Dallas, Texas 75218; phone number: (214) 285-6376. Just mention the Green Scene in Los Angeles. The response to the signs has been gratifying.

CLASSIFIED

RATES: 40¢ per word (minimum charge, $15). Bold face words or words in all capital letters charged at 60¢ per word. Boxed or display ads charged at $40 per column inch (one inch minimum). Agency commissions will be given only when camera-ready art is provided by agency. For ads using blind box number, add $5 to total cost of ad. Send ad copy with payment to Dawn Anderson, LAWN CARE INDUSTRY, 1 East First Street, Duluth, MN 55802.
BOX NUMBER REPLIES: Mail box number replies to: LAWN CARE INDUSTRY, Classified Ad Department, 120 W. 2nd St., Duluth, MN 55802. Please include box number in address.

HELP WANTED

WORKING TREE SPECIALISTS Excellent opportunity for individual with experience in Pest Control or Ornamentals. Salary and bonus depending on qualifications. Send resume and salary requirements, or call: Village Green, Ltd., 303 Wilson, West Chicago, IL 60185. (312) 293-1036.

MANAGER needed for lawn care company in Houston, Texas. Must have sales experience and be aggressive. Long working hours all year. Turf knowledge is a must. Answer this ad **ONLY** if you feel you fit this description. Excellent salary, great benefits and best opportunity for advancement in the lawn care industry! Send resume and include present salary requirements and financial expectations for next 1,2,3,4,5 years. Write LCI Box 41.

Chemical Lawn & Tree Care Company needs General Manager with at least three years experience with a national or regional lawn care company. Experience must include sales, and customer and employee relations. Salary open. 214-690-1051, Layson, Inc., P.O. Box 30121, Dallas, Texas 75230.

MISCELLANEOUS

PREPARE NOW to increase next year's profits. "Garden Tips" the monthly customer newsletter with your company name/phone. Proven response . . . cements customer relations, gets them to spend more, opens new doors expertly in new expansion areas. Low cost, effective profit building. Call today 516-538-6444, we'll send complete information or write: Garden Tips, Box 117, Garden City, NY 11530.

send a message...
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1. Number of insertions: (circle) 1 2 3 6 12
2. Start with (month)_____issue (Copy must be in by 1st of month preceding)
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PAYMENT MUST ACCOMPANY ORDER.
WE'LL BILL RATED FIRMS.
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COMPANY _____
STREET _____
CITY _____ STATE_____ZIP_____

MAIL AD COPY TO: DAWN ANDERSON,
LAWN CARE INDUSTRY, 1 EAST FIRST STREET,
DULUTH, MN 55802

RATES: 40 cents per word (minimum charge, $15). Bold face words or words in all capital letters charged at 60 cents per word. Boxed or display ads charged at $40 per column inch (one inch minimum). For ads using blind box number, add $5 to total cost of ad.

KELWAY® SOIL ACIDITY TESTER, used by PROFESSIONALS nationwide. Direct reading, lightweight, portable, fully serviceable, no power source. Model HB-2 reads moisture too. Available through distributors. For brochure contact Kel Instruments Co., Inc., Dept. T, P.O. Box 1869, Clifton, N.J. 07015. 201-471-3954.

FOR SALE

Chevy 1978c-65 Tanker, 1200 gallons, Two Hannay reels, Hose, Guns, Ready to spray, Excellent Condition, Reasonable, Call 301-728-5885.

For Sale. **ECONOMY TRACTOR,** New 14 HP engine, and stainless steel combine, that aerates, rolls, sprays liquids, applies 4 granular materials, 2 seed mixes all at once, complete with trailer $4,000.00. (203) 743-4287 after 6PM.

MEYER HIGH PRESSURE SPRAYER 400 gallon, skid mount 35 GPM. Wisconsin V4 Electric start engine. Good condition $2,000. Colonial Nursery, 812-476-2771, Evansville, Indiana.

1977 Chevy — C-60 lawn spray truck, excellent condition, 1,200 gallon steel tank mounted on 14 foot platform. 2 Hanney electric hose reels with 500 feet of hose on each. Bean 20-20 pump mechanical and jet agitation. $11,500. Call or write, Rusin Landscaping, Inc., 340 North Drive, Lorain, Ohio 44053. Phone 216-233-8217.

Liqui-System®-demonstrator on 1975 Dodge 300. 24,000 miles. Condition excellent. Sale $16,000. Lease $551.11 for 36 months plus $1,000. Liqui-Matic™ demonstrator on 1979 Dodge 300. 5,000 miles. Condition new. Sale $17,400. Lease $478.50 for 48 months plus $1,000. Both machines spray lawns at 20 GPM-2,000 gallons daily, spray trees at 800 PSI, and feed trees at 100 caliber inches per hour. These are not herbicide applicators. Liqui-System provides the ability to change formulas and functions on the job. Liqui-Matic has 2 pump injected streams for formula additions at the turn of a valve. All fiberglass bodies, prestige appearance. Liqui-System, P.O. Box 1043, Victoria, TX 77901. 512-575-5882.

For Sale: Liquid lawn care business near Columbus, Ohio. Treating approx. 4 million sq. ft., 225 lawns, 17,000 sq. ft. avg. Good basic business ready for expansion into large urban areas. 1978 Ford F-600, low miles, 1200 gal. stainless tank, w/Bean 20/20 pump, 2 — 600' electric reels. Well maintained A-1 equipment. Registered Trade Name. Write LCI Box #42.

Reinco Hydroseeder, 1,000 gallon on trailer. Excellent condition. $7,500. George. 317-873-5937 or 317-873-5231.

1980 1½ ton Chevy truck. (less than 3000 miles), 350 V8 Engine W/4 speed. 875 gallon tuflex tank w/heavy duty agitator. 10 G.P.M. Beam pump. All run off of Electric start Briggs & Stratton 8 hp engine. Plus electric Haney Hose Reel w/475 ft. of ½" hose. 850 gal. poly storage tank w/hoses and 3 hp transfer pump. Send replies to: Greenway Lawn Care, 42W722 Meadowsweet, Elburn, Illinois 60119. 312-365-9575.

1979 LAWN SPRAY TRUCK, 750 gallon compartmentalized tank. 15,000 miles. Electric hose, reel. $9,950 Like new. Call for photo & details. 216-357-8400.

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BEHIND THIS ISSUE

I feel great this month and I'll tell you why. First, the issue you are holding in your hands is the largest issue we have ever published. Second, I've got two new people to introduce to you that have become part of the LAWN CARE INDUSTRY team.

Ladies first. Kim Corry (she's the one with the earrings in the pictures to the right) becomes our sales representative in the Midwest, working out of our Chicago offices. She will be dealing with manufacturers and suppliers to the lawn care industry all the way from Ohio to Kansas, and from Minnesota to Kentucky. She comes to us from a sales position with Ross Laboratories, a division of Abbot Laboratories. She is also a graduate of Ohio State University.

You've already met Paul McCloskey, our new assistant editor. He wrote front-pages stories last month on the potential banning of the insecticides Dursban and diazinon in New York, and the story on the restriction of 2,4-D use in Canada. In this issue, he handled the 1981 outlook story on page one, and the INSIDE THE INDUSTRY feature on whether or not lawn care businessmen should be involved in structural pest control. He comes to us with a B.A. degree from the University of Chicago, and will work out of our New York offices.

As I said, these two contributed mightily to the biggest issue of LAWN CARE INDUSTRY ever — Paul to providing the large amount of copy that filled the issue, and Kim to our largest number of ad pages yet.

McCloskey

Corry

I've got it made now. Come in late, make plans for lunch, light up my pipe, sit back with the *Wall Street Journal* . . .

Rob Cooley

CLASSIFIEDS

PROFITABLE LAWN SPRAYING BUSINESS. Suburban north Jersey. 800 selected accounts. Data sheet available. Write LCI Box #43.

Dry fertilizer: Custom blended and packaged to YOUR specifications. Write Vogel's Seed & Fertilizer, 1891 Spring Valley Rd., Jackson, WI 53037. 414-677-2273, ask for Bill.

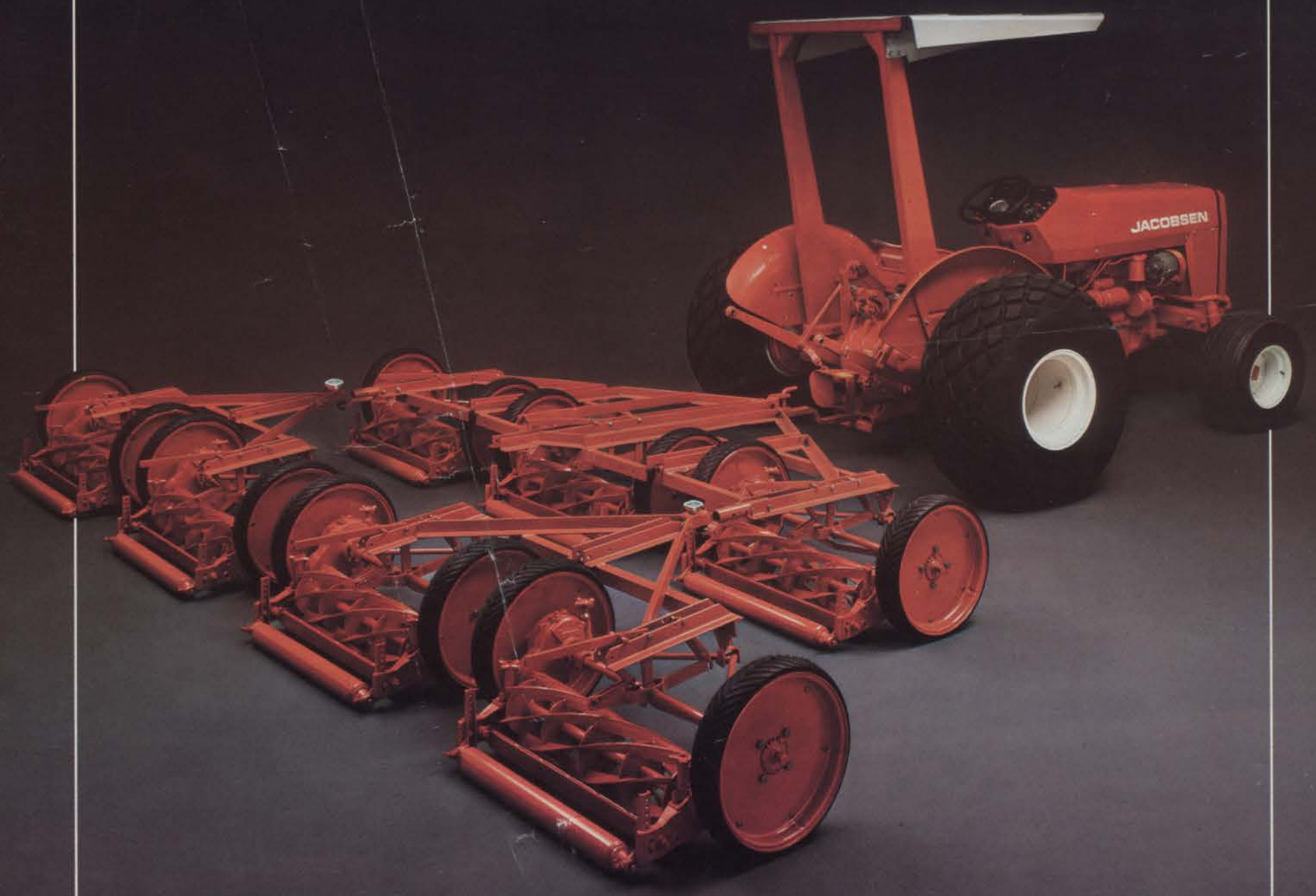
WANTED TO BUY

ACQUISITIONS WANTED: Lawn service company seeking growth through acquisition. Seeking firms servicing between 400 and 1,500 customers. Team up with experience. Key people retained. Smooth transition. Flexible. Write LCI Box 19.

ADVERTISERS

Write 120 on reader service card →

You just can't buy better gang mowers.



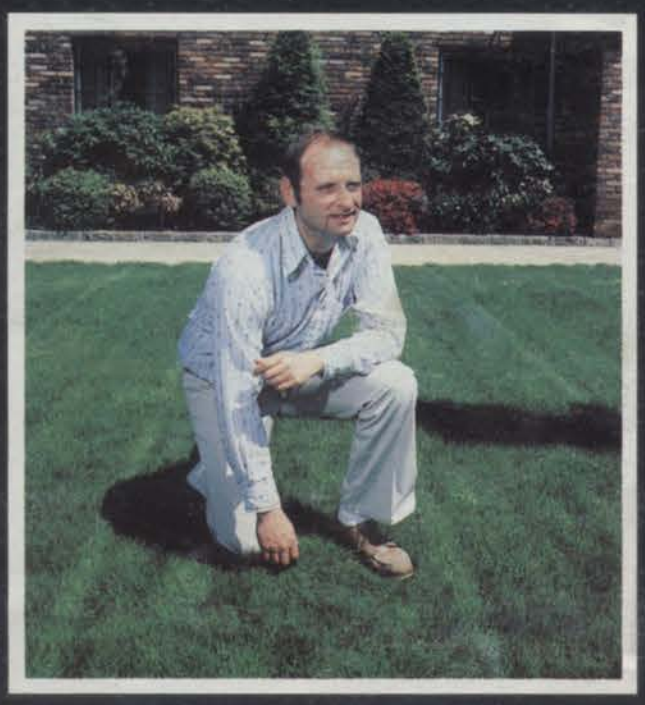
It's been proven time and again, day after day, acre after acre. You just can't buy better cutting gang mowers. For a very convincing demonstration, call your Jacobsen Distributor.

JACOBSEN
TEXTRON

Jacobsen Division of Textron Inc.

Jacobsen: You just can't buy any better.

"baron KENTUCKY BLUEGRASS is the most 'customer-proof' grass seed I can buy"



Alan Maged

Alan Maged,
Lawn-A-Mat dealer, Garden City Park, Long Island, New York. . .
one of the largest independent lawn care dealers, servicing over 2000 lawns.

"I make sure Baron is in every pound of grass seed we use. Last year it amounted to 80,000 pounds of Lofts special lawn seed mixtures. If all goes well, I'll order even more this year.

"Why do I insist on Baron? Because my customers expect me to compensate for everything, from the weather to their own mistakes. Some homeowners may let their lawn grow to six or eight inches, then cut it to three-quarters of an inch! Or they'll forget to water their grass during a drought, or use their lawn for a baseball field. With all that abuse, they still expect a good lawn.

"I need a 'customer-proof' grass seed mixture. So I specify Baron, Yorktown and other top quality Lofts grasses in my special mixture. I get a lush, green color, an excellent root system and the best resistance to leaf spot I've ever seen. Guess that's why I get better than 85% renewals every year.

"One last thing, I really depend on my suppliers for delivery and service. I've dealt with the Lofts people for 15 years and they haven't failed me yet. That's very important to me."

LOFTS
Lofts Pedigreed Seed, Inc.
Bound Brook, N.J. 08805/(201) 356-8700

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