

Searching for fuel alternatives: Diesel, propane in your future?

If you rank a three-quarter ton pick-up truck with a gasoline engine right up there with Mom and apple pie when it comes to your list of patriotic delicacies, you may be a wonderful American, but a very fuelish businessman indeed.

According to a report given by Jerry Faulring, president of Hydro

Lawn in Gaithersburg, Maryland, at the recent Virginia Turfgrass Conference, gasoline is the least efficient energy source available to the businessman today, significantly edged out by both diesel and liquid propane fuel.

Ever since 1973, a very real concern for all businessmen in the United States and most of the

world has been increasing fuel costs. Motor fuels have increased in cost well over 300 percent in just seven years.

Clearly, all lawn care competitors, at least by region, have been faced with the same problem. Fuel costs consumed roughly four percent of the typical lawn care



By allowing customer credit for up to two applications, Jerry Faulring of Hydro Lawn, Gaithersburg, Md., feels that fuel consumption will be lowered 12 percent per stop.

A Harcourt Brace Jovanovich Publication

Volume 5, Number 3
MARCH 1981

LAWN CARE INDUSTRY

Serving lawn maintenance and chemical lawn care professionals

Pre-Tax Profit	
Average 1979 Gross Receipts	\$117,089
Average 1979 Pre-Tax Profit	\$16,442
Pre-Tax Profit Per Income Dollar	\$0.14

Source: LCI Survey 1980

LCI SURVEY Pre-tax profit pegged at 14%

Readers of *Lawn Care Industry* accrued an average pre-tax profit of 14 cents per dollar of gross income in 1979, according to a recent survey conducted by the magazine.

The average pre-tax profit for each reader surveyed amounted to \$16,442. The figure was reached

DROUGHT Water shortages hit lawn care industry across country

Extension specialists at Cornell and Rutgers Universities are predicting that last year's drought will return with equal vigor in 1981 to hit the lawn care industry, already beleaguered in many parts of the country by water shortages and turf burn-outs.

Conditions are particularly harsh in the Midwest, south central and northeastern states where drought, accompanied in many cases by grub invasions, has forced lawn care services to change existing approaches to turf management.

With the exception of some smaller companies, most owners are finding their customers faithful throughout the emergency, with only a handful choosing to stop service due to poor color or desiccation.

"Most people are extremely

understanding," said Gary Custis, regional agronomist for the ChemLawn Corporation in Creve Couer, Missouri.

Custis estimates that easily 60 percent of ChemLawn's accounts in the Missouri area suffered turf damage last year, while about 40 percent have damage so severe



"Our industry is being discriminated against in favor of, for example, the bottling industry, which has no restrictions on it," says Frank Claps of Frank Claps Landscape, Larchmont, N.Y.

that extensive renovation is needed. "We set seven weather records in Missouri last year," he said. "It can't get much worse."

ChemLawn recommends that their managers make the transition from bluegrass to tall fescue in order to combat drought conditions. Custis says that they have had success with the K-31 variety in particular, a much hardier and stress tolerant turfgrass.

"We're in a transition zone," he said, "and are pushing the tall fescues. It's the bluegrasses that were getting wiped out during last year's drought and K-31 stands up particularly well."

Most experts interviewed on the subject of drought management advise cutting back on heavy turf maintenance in the fall in order to toughen the grass to withstand stress in the spring.

"We're going with less nitrogen in order to maintain root growth as opposed to topgrowth," said Custis. "Our whole emphasis is on maximizing efficiency — we're holding back on pushing the grass."

"Too much nitrogen makes the

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UPDATE Madison limits 2,4-D use in move deemed compromise

A moratorium on the use of the popular herbicide, 2,4-D, was lifted by the city council of Madison, Wisconsin early last month and replaced by a series of limitations described by advocates of both sides as a "compromise."

Following often emotional testimony by members for and against an outright ban of the material, the city council voted 14-7 to prohibit use of the weed killer on the city's general parklands and median strips.

Spraying will be allowed on turf areas on golf courses, athletic fields, the city cemetery and bo-

tanical gardens. Use in non-turf areas such as conservation parks, farmed areas, and for poison ivy and noxious weed control will also

"We were lucky to have the ban opposed by only one vote."

be permitted.

The ruling was instated after the council voted 11-10 against a total ban of the material. "We won and

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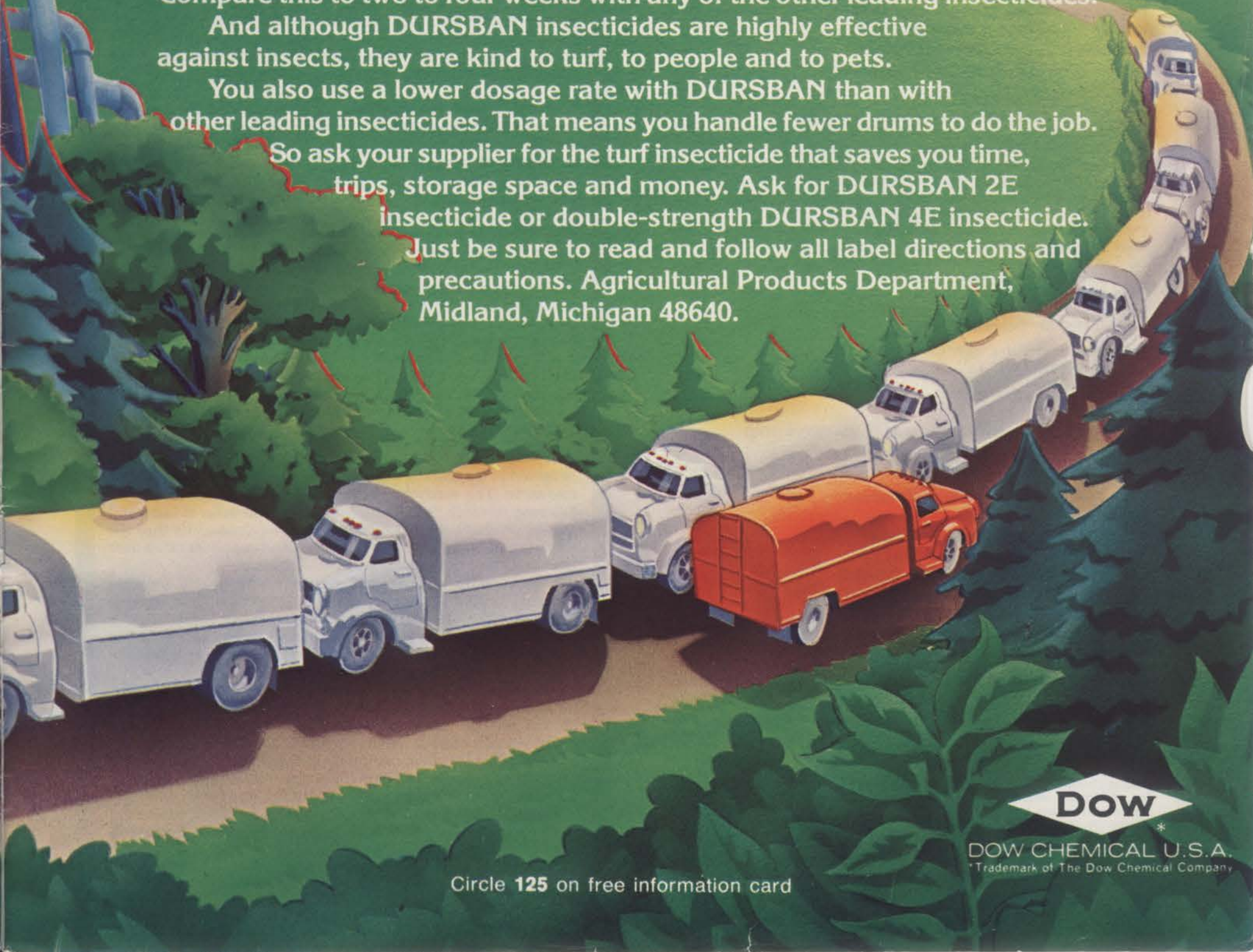
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2,4-D from page 1

lost," said Russ Weisensel, director of the Wisconsin Agri-Business Council. "I hate to see a ban of any kind."

As reported in the February issue of *Lawn Care Industry*, 2,4-D was temporarily banned this January in Madison after a child, whose father was exposed to the Vietnam war defoliant, Agent

"We'll never have a tougher group to face than the City Council," said Weisensel, director of the Agri-Business Council. "On the other hand, we'll never be better prepared and the county will be looking at the city."

Orange, had a seizure after a Parks Department crew sprayed a nearby park with the chemical.

"We'll never have a tougher group to face than the Madison City Council," said Weisensel. "On the other hand, we'll never be better prepared and the county will obviously be looking at what the city did."

Weisensel said that each advocate had three minutes to speak, with the pros and cons alternating. "The problem was, there were so many people in favor of the ban that we eventually ran out of speakers. We were lucky to have the ban opposed by only one vote."

In a related incident, the District Attorney of Dane County has filed a suit accusing the city of Middleton of violating state law by using a banned herbicide in city parks. Dane county encompasses both Madison and Middleton.

The herbicide used in Middleton was 'Oxford WK-82 Low Volatile Herbicide,' which also contains 2,4-D.

The civil forfeiture action filed in Circuit Court against the city and two employees charges the weedkiller was used during the ban to kill dandelions.

Use of these chemicals "creates a risk, hazard, or probability of injury to persons and is a careless or reckless use of a herbicide that violates the Wisconsin Administrative Code," according to the complaint.

Middleton park foreman, Edwin Haack, is accused of applying the herbicide with authorization from David Donoghue, director of public works.

The suit seeks a court-ordered forfeiture of \$100 to \$500.

MEMOS

For a few dollars more. Although lawn care budgets have already been set for 1981, your calculators may be clucking again by the middle of the year. According to a recent article published in the *Wall Street Journal*, prices at the pump will jump at least 10 cents by late this month and an additional six cents by July. At worst, prices will rise 25 cents by late March and 15 by July.

A number of factors are directly responsible: the current round of crude oil price increases from OPEC is expected to come to 10 percent, adding at least five cents a gallon to the price of gas within a few months. And the gradual removal of U.S. controls on domestic crude will probably add about four or five cents every quarter until decontrol is completed October 1, 1981. Hopefully, the decontrol settlement will bring prices back to normal.

Even they're confused. Many of you may agree with the Postmaster General who has decided to postpone the controversial switch to a nine digit ZIP code until June because, he says, "the postal service must do a better job of explaining the program's benefits to direct mailers," who account for some 80 percent of all mailing. Postmaster William Bolger said the service wants to "exercise all due caution in instituting this important and far reaching development."

Postal officials say the new system will improve the efficiency of mail deliveries and hold down costs. It would direct mail to a letter carrier's route rather than to just a post office, and could save as much as 571 million dollars when fully effective in 1987. Early indications are that by using the new nine-digit ZIP, lawn care businessmen might be able to save up to a penny a piece on their direct mailings.

Looking into the future. The 1980 Maintenance Symposium, sponsored by the Associated Landscape Contractors of America last December in Seattle, received some "exceptional" feedback, according to Rod Bailey, who chaired the program. Represented were owners and managers from all over the maintenance field who met to discuss "long range planning" for the industry. The symposium was broken down into two 'Industry Directions' panel discussions, the first concerning organization and finance, and the second on new products and equipment. "We wanted to give them some exposure to the breadth of the industry," said Bailey.

Charting employee benefits. As the cost of living goes, so goes the price of employee benefits. And the best way to calculate the sometimes deceptive cost of doing business is to keep a dead reckoning of your even more elusive benefit program. As reported in *American Nurseryman* magazine, Joseph Lawson and Ballard Smith, both associated with SESCO management consultants in Bristol, Tennessee, estimated that "the average payment for benefits last year was close to 38 percent of payroll, nearly \$2.50 per payroll hour, and almost \$5,200 a year."

With that amount of money at stake, it pays lawn care businessmen to keep abreast of the cost (materially, as well as psychologically) of the various benefit programs, options under each, and their respective administrative advantages. Because a company's benefit plan usually matures as the company grows, it is best to keep a look-out for which phases of your program overlap and what new program can eliminate the need for others. In this way, each particular benefit can become a permanent part of your package and help slash the cost of business unknowns.

Lawn sales survey. The forecast for lawn and garden sales will be mixed in the coming decade, according to a report in *Retailer* magazine. The study by Frost and Sullivan, an international business research firm, indicates that annual sales of lawn and garden products are expected to increase substantially through the first half of the decade, but retailers and suppliers differ over how extensive the growth will be.

Average sales in lawn and garden products will increase annually by 13.7 percent in the 1981-1985 period, the magazine reported. "The fact that this long range growth is just slightly less than that for the year term may simply reflect a large degree of uncertainty about the future in light of changing economic and energy conditions."

Among its more significant aspects, the report indicated that fertilizer sales will increase 16.2 percent, seeds and insecticides at 12.6 percent. In a less spectacular but promising note, the report said contract lawn service and power equipment accounted for less than one percent of the total market, but are "rapidly growing areas." The study also pointed to the growing strength of chain franchise operations in lawn retailing. Although independent retailers accounted for 85 percent of the survey's sample population, these stores accounted for just 53 percent of sales, followed by chain and franchise operations at 38 percent and cooperatives at 8.5 percent.

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LAWN CARE INDUSTRY (USPS 397250) is published monthly by Harcourt Brace Jovanovich Publications. Corporate and Editorial offices: 757 Third Avenue, New York, New York 10017. Advertising offices: 757 Third Avenue, New York, New York, 111 East Wacker Drive, Chicago, Illinois 60601 and 3091 Maple Drive, Atlanta, Georgia 30305. Accounting, Advertising Production and Circulation offices: 1 East First Street, Duluth, Minnesota 55802. Subscription rates: one year, \$15 in the United States and Canada; all other countries: \$40. Single copies: \$2 in the United States and Canada; all other countries: \$4.50. Controlled circulation postage paid at Cleveland, Ohio 44101. Copyright © 1981 by Harcourt Brace Jovanovich, Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher.

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 22 ☐ Specify or recommend purchase
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 32 ☐ \$50,000 to \$150,000
 33 ☐ \$150,000 to \$300,000
 34 ☐ \$300,000 to \$750,000
 35 ☐ \$750,000 to \$1,000,000
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 39 ☐ 500 to 2,500
 40 ☐ 2,500 to 5,000
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 53 ☐ Chemicals \$ _____
 54 ☐ Equipment \$ _____
 55 ☐ Irrigation \$ _____
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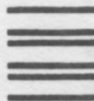
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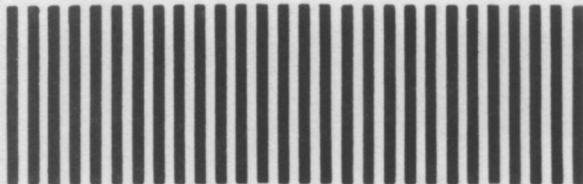
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DROUGHT from page 1

tips of the grass supple," says Frank Claps, owner of Frank Claps Landscape in Larchmont, New York. "They become susceptible to sweating and disease — whereas a starved lawn is less apt to get diseased."

This means, of course, that customers are going to have to be satisfied with less than dark green color, but most agree that the severity of the drought forces managers to consider survival management over beautification.

Lawn care managers aren't unaware of the business opportunities that accompany the drought, either. In Missouri, where the drought has given rise to a considerable grub problem, companies who once offered free and optional pesticide treatments will be charging for them this season.

"Pesticides will be needed more," said Bill Knoop, area turf-grass specialist at the Texas Ag-

ricultural Extension. "We're going to beat it to the punch in a marketing way."

Homeowners who have traditionally maintained their own

service because they figure their grass died in spite of a lawn care service are in a minority," he said. "Overall it didn't really hurt us."

Green Valley will be going with

In New Jersey, where the local Hudson reservoir is regularly tapped for New York City's prodigious water demands, levels are down to a dangerous 36 percent. The scarcity has the industry vying angrily for water rights in what for many has become a testy political issue. And, according to Frank Claps, the green industries are taking the hindmost.

lawns will be looking for some help once they realize they will be facing the same conditions this year, predicts Dave Murphy of Green Valley Company, Shawnee Mission, Kansas.

"The people who will stop

a slow release fertilizer — the best foil for low moisture that the industry agrees upon — in order to thwart burn-outs and toughen turf. The slow release products are less moisture reliant and will contribute just enough nitrogen to keep the turf "hungry" and avoid over regulation.

What with the supply of natural precipitation low, many of the country's water reservoirs are depleted. Lawn care managers have been forced both to change maintenance techniques and push for a more equitable water distribution from local government and water commissions.

In New Jersey, where the local Hudson reservoir is regularly tapped for New York City's prodigious water demands, levels are down to a dangerous 36 percent capacity.

The scarcity has the industry vying angrily for water rights in what for many has become a testy political issue. And, according to Frank Claps, the green industries are taking the hindmost.

"The municipal fathers are just not doing their job," he said. "They're discriminating against our industry in favor of, for instance, the bottling industry which has no restrictions on them. Lipton's Tea, Hellman's Mayonnaise are also not subject to the same limitations."

"We want them to give us

permission to use water for specific purposes. We're not looking as much for water to water our established lawns and plants, but for our young material. If our plant material should die, the cost would be astronomical."

Claps voiced a common complaint throughout the lawn care industry with regard to government — namely, that for all its importance for the nation's survival, the industries associated with agriculture are routinely scorned in favor of fast money industries.

In order to safeguard turf and plant stock, Claps and his colleagues at New York's Turf and Landscape Association are both lobbying the state legislature and making recommendations for the use of wetting agents and anti-transpirants for their more delicate stock.

Peter Bongiovanni of Bongiovanni Landscape in Westfield, New Jersey and a member of the New Jersey Nurserymen's Association, says they are also "bringing pressure to bear on the Department of Environmental Protection."

"We have a 53 day supply of drinking water here in New Jersey and they wanted us to haul bottled water to our sites so we didn't have to use our customer's water. But that's just impossible."

Citing the combination of drought and recession that has weakened his industry in the last two years, Bongiovanni said that although he hopes President Reagan will help lift economic burdens, "one thing for sure, Mr. Reagan can't make it rain."

In summary, the lawn care industry seems confident and well organized for its fight to contain drought damage this year, having learned by the experience of previous years. Extension specialists are working closely with managers to beat the problem.

The key issue, however, seems to be better recognition by government of the importance of the industry to the public, and less discrimination during times of emergency shortages.

CHART from page 1

by asking readers to indicate their pre-tax profit after subtracting all costs of overhead from their total 1979 receipts.

When asked for gross receipts for chemical application and mowing and maintenance services for 1979, readers polled declared an average of \$117,089.

The final profit per dollar figure represents the percentage of total pre-tax profit over gross receipts in 1979 after all overhead costs were subtracted.

The 14 cents figure represents a decline of eight cents per dollar of pre-tax profit in relation to the same survey conducted by the magazine the year before. In that survey, readers reported an average pre-tax profit of 22 percent, or 22 cents per income dollar, a significantly greater profit margin than this year's figure.

The results of the 1980 survey are based on a 53.6 percent response to 500 questionnaires mailed to readers of *Lawn Care Industry* last year. For a copy of the survey, contact: Bob Earley, editor/publisher, *Lawn Care Industry*, 757 Third Avenue, New York, NY 10017.

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company's operating budget in 1980. This is not a large percentage and since lawn service price increases have generally kept apace, it would seem everyone is equally disadvantaged.

However, according to Faulring, it is possible for two different lawn care companies to have dramatically different total fuel costs. And a savings of only two percent on fuel costs in an average operating budget of \$300,000 would produce \$6,000 to spend on company maintenance or clear profit.

The points to consider when selecting lawn care vehicle engines are:

Capital investment cost. A gasoline engine converted for propane adds about \$1500 and the diesel option adds about \$4000 to the standard gasoline chassis in the two ton class.

Operating cost. Propane costs about 20 percent less per mile and diesel fuel about 25 to 30 percent

less for the energy equivalent of gasoline.

Maintenance cost. Propane and diesel powered engines both incur lower ongoing maintenance costs.

Fuel availability. In times of shortage or allocation, propane and diesel will generally be more available.

The diesel unit paid back its capital cost in fuel savings alone in 3.8 years. Over an average seven year life for the unit, the new savings (with fuel costs constant) was estimated at \$1,505.00. Hydro Lawn estimated the total savings from the diesel to be \$2,355.00.

Chassis resale value. Diesel has a marked advantage, almost returning the initial capital costs. The return value for a propane powered vehicle is not as clear, but assume a better salvage value than a gasoline chassis.

Fuel storage systems. With propane, this is indispensable unless

you have ready access to a distributor. It's less important with diesel, particularly in light of the greatly increased number of gas stations selling diesel fuel. However, diesel fuel is not a bargain when purchased on the street.

Dual fuel problems. If your organization runs chassis with

differently fueled engines, it could mean two different vendors, or having to install two tanks and pumps at the same location.

Safety. Although most would think of this last, diesel and propane are both safer fuels once on board. Diesel has lower volatility and propane is discharged as a

vapor. However, propane filling stations may be more dangerous than gasoline or diesel.

Faulring also listed a number of factors which contribute to lower fuel consumption. "This is where one can become a real fuel conservationist which ranks right in there with ice cream and apple pie with regard to Americanism," he said. Points to consider include:

- Increase route efficiency by obtaining more customers on the same street. 'Miles per gallon' is meaningless without greater emphasis on gallons of fuel consumed per customer. Driving 100 miles per day might earn a 50 percent MPG improvement over 50 miles per day, but if both trucks service 20 accounts, the higher MPG unit will use 33 percent more fuel per account.

- Reduce marketing area to enhance route efficiency. According to Faulring, a production truck in the lawn care industry will not be profitable if it averages more than three and-a-half miles per stop over the course of the year.

- Reduce chassis size, engine size and payload in order to reduce energy consumption. "Hydro Lawn realized a 55 percent MPG improvement for pick up units by doing this without sacrificing efficiency or production," said Faulring.

- Reducing payload alone with identical chassis will improve MPG.

It is increasingly important to properly match chassis size and engine size to accomplish the task required. Historically, it has been commonplace to order standard models which may not have the most energy efficient chassis/engine-size combination.

This is also true of large chassis sizes. When selecting larger chassis, it is very important to precisely determine horsepower requirements and then select the smallest engine that will satisfy that requirement. All truck manufacturers have charts and formulas to assist these calculations. There are many considerations such as the general terrain of your market area, desired highway speeds that need to be addressed when selecting chassis size, engine size, transmission, rear end ratios, and tire size and type.

There are other general operational strategies that should be considered to determine if you are operating inefficiently or conservatively. "An example of this surfaced in our operation in 1980," said Faulring. "Traditionally, we have always waited to perform a treatment to a customer's lawn until the previous treatment was paid for. This is a very safe position to take when reviewing your bad debt ratio, but earns the distinction of being very fuelish and inefficient from a production point of view."

"In 1980, Hydro Lawn used the safe strategy. We were least efficient and usually less productive at the end of the treatment periods because our production people were performing so called 'clean up' routes of customers slow or late to pay for their previous treatment."

"We earned our worst gallon per stop ratio of about 1.15 gallons and our best ratio of about .46 gallons per stop. These ratios show a fuel efficiency disparity of 150 percent

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Mixing quickly in hard or soft water, BANVEL can be applied with conventional spray equipment. And when you use it according to directions, it will give you the most beautiful, weed-free turf you've ever had.

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from our worst to best cases."

In 1981, Hydro Lawn plans to relax the rules and allow a customer credit for up to two treatments. Faulring's expectation is that average fuel consumption per stop will be lowered about 12 percent.

"If we had done this in 1980, I suspect that our total 1980 fuel bill would have been about \$10,000 less. I think it's the smartest move we've ever made."

The additional added benefit will be dramatically improved production efficiency through the elimination of clean up routes. Faulring says Hydro Lawn will be able to add about 300 stops per vehicle to the annual cycle which will allow them to increase revenue per production vehicle by about \$10,000 without any increase in fixed costs or hours worked.

So, what insurance can be provided in 1980 to guarantee the survival of the lawn care industry in 1990?

First, gone are the days when the industry can afford to haul around a 1600 or 2000 gallon tanker to spray a few gallons of fertilizer on a lawn. The watchword is lower application rates in order to reduce tank and chassis size and the energy required to move the unit around town.

The dry application companies have traditionally been more fuel efficient because they don't haul a lot of water. But even a dry application company can conserve considerable amounts of fuel by selecting precisely the right chassis size powered by the most efficient engines.

Until 1980 Hydro Lawn operated an all gasoline fleet except for a tandem axle 3000 gallon hydro-seeder. In 1980 they purchased five Chevrolet two ton chassis with diesel engines and two one-half ton pick up trucks with diesel engines, in addition to several other gasoline powered trucks. The choice of diesel was the result of considerable study and analysis and for a variety of reasons even the final decision could be characterized as experimental. "No one could be positive that diesel would save us money," said Faulring.

The analysts at Hydro Lawn compared a one half ton gasoline powered truck (305 cubic inch V-8) with a one half ton diesel (350 cubic inch VO-8). Both trucks were equipped with automatic transmissions, 150 gallon fuel tanks, and radial tires.

The diesel unit received an average of 18.61 miles per gallon, while the gasoline unit received 16.14. If both trucks travelled an average of 11,500 miles per year, Faulring calculated that the diesel unit saved his company \$215 over the gasoline unit when gas was \$1.17 per gallon and diesel was \$1.00 per gallon.

At that rate, the diesel unit paid back its capital cost in fuel savings alone in 3.8 years. Over an average seven year life for the unit, the net savings (with fuel costs constant) was estimated at \$1,505.00. Other factors that contributed to estimated savings were an increased trade in value of approximately \$500 and savings in reduced maintenance costs over a seven year period of \$350.

Hydro Lawn estimated the total

savings from diesel unit to be \$2,355.00, with the real payback term, taking into account all factors, to be 2.45 years.

Using the same criteria for similar trucks in the two ton class, Faulring estimated the diesel unit would account for approximately \$11,792.00 in total savings over a seven year period, paying its cost back in 2.1 years.

Finally, liquid propane gas units should be considered. There are some very significant advantages, especially for companies who find it impractical to convert an existing gasoline fleet to diesel. The following advantages exist:

- You can convert an existing gasoline engine to liquid propane power for approximately \$1200 to \$1500.

- Fuel costs are approximately 40 percent less than gasoline—liquid propane gas usually has a 100 octane rating which means more energy per unit of fuel. Although one gallon of liquid propane gas will not provide the

equivalent of one gallon of gasoline with regard to miles per gallon, it is still a cheaper fuel source per mile of travel.

- Longer engine life is assured with significantly reduced maintenance and repair costs. Liquid propane gas units burn cleanly, leaving fewer engine deposits and longer spark plug life.

- Liquid propane gas saves up to 80 percent on oil costs by maintaining lubrication properties of oil by a factor of five to 10 times.

- Vandalism, spillage, and evaporation are almost eliminated since liquid propane is a completely sealed system.

- There is currently a very adequate supply of liquid propane and a high probability of being available in short term periods of gasoline shortages.

Since liquid propane is a derivative of crude oil, its costs are expected to follow gasoline and diesel prices. However, with the deregulation of natural gas, it is

conceivable that liquid propane will become more and more in demand for heating purposes. This may cause price to rise more rapidly than if natural gas had not been deregulated.

In summary, it appears that in 1981, gasoline is the least efficient fuel power source; that liquid propane offers a compromise between diesel and gasoline; and that diesel fuel is the best and most efficient alternative. However, all facets of operation and financial conditions must be considered. For example, says Faulring, it might look good to switch to diesel, but current interest rates and a tight money supply might make such a decision impractical.

"And further, with fuel costs at four percent of sales, you may be able to find other areas of your operation, which if addressed, could reduce costs as much as or more than a modest improvement in energy costs without capital investment," said Faulring.

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A good root system is important to get lawns through hot summer periods. **Columbia** has shown good resistance to Fusarium blight in California tests where Fusarium is a problem during dry summer periods.

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

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

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

But not you!

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

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

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

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

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

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

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

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



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

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

ORNAMENTAL DAMAGE: Any broadleaf herbicide can damage trees and ornamentals if used indiscriminately. But, for Trimec to cause such damage as a result of translocation, it would have to be applied at more than *ten times* the label recommendation. We estimate that more than 2 million lawns were sprayed with Trimec in 1980; there is not a single report of damage to trees or ornaments.

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

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



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

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

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

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

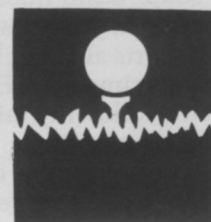
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INSIDE THE INDUSTRY

Are you ready for a computer?

There was a time when the small business owner did not have to think about a computer. Computers were too big, too complex, too expensive. Computers were for large companies.

But times have changed. Small computer systems, based on mini-computer technology, are now within the budgets of many lawn care companies. They can fit right into your existing office space and they are simple enough to be used by the clerks or typists you already have.

Small computers have a second very important feature: they are "interactive." With an interactive system your people can "converse" with the computer through a TV-like terminal located right in their offices. That means you no longer need a lot of paperwork and a lot of intermediary steps to get data into and out of the computer.

The people who use the data are the ones who use the computer. And since the computer's files get updated directly, they are working with accurate information instead of past history.

A third, more recent development, is perhaps the most significant of all in making computers available to small companies. That development is the evolution of a new type of business — the independent computer supplier. Many of these firms have been represented at turf shows across the country, including the recently held Professional Lawn Care Association of American Conference and show held in Louisville.

These firms are specialists who procure the best computer equipment they can find, combine it with the application programs you need for your business, then install the system and handle any related computer chores you wish.

Independent computer suppliers are more than just vendors. They are a management resource, much like your CPA firm, law firm or investment counselor, helping you with your information management needs.

Like many executives, you may have some basic questions about computers in your lawn care business. Experts at Digital Equipment Corp., Merrimack, N.H., have prepared the following information to deal with questions you might have about adding a computer to your lawn care business system.

Cutting costs. One way to improve your margins is to cut your costs of doing business.

The first step is to identify precisely how much your various activities are costing you. And that's where a computer can help. A computerized general ledger system can break your costs down into very fine budget areas. A

computerized inventory control system allows you to reorder material in the most economical lot sizes.

It can also tell you when to reorder so you can reduce the size of your on-hand stock, while still meeting customer demand. Finally, a computerized analysis of your vendors can tell you whether you can buy in larger quantities from fewer vendors so you can take advantage of better discounts.

Increasing productivity. As you survey the various departments within your business, you are bound to spot areas where people could be more productive if they had more complete, more accurate information at their finger tips.

For example, the computer is good at doing repetitive tasks. When a clerk prepares an invoice, he can type in the account number and the computer can automatically fill in bill-to and ship-to addresses and all the other standard information, saving the clerk several minutes on each invoice.

Also, by making better information available, the computer lets you make better use of resources. A dispatcher can combine backhauls with deliveries; a shop supervisor can schedule work to minimize machine breakdowns and set-ups; and a warehouse worker can get packing slips printed in the order of bin locations.

Improving efficiency. To some extent, every company is troubled with inefficiency in the form of unnecessary paper shuffling and costly errors. The computer — especially small interactive computer — can streamline your oper-

ation. With an easy-to-use interactive terminal available to your employees, they can enter, store, access, and update file records without ever generating a piece of paper.

What's more, the computer can be programmed to validate data as it is being entered, so it can immediately catch invalid codes or miscalculations and give the person entering the data a chance to correct it on the spot, thus eliminating costly errors.

Bettering return. In addition to helping you reduce costs, there are other ways that computer-tight control can help you make more money. The computer can help

you get your bills out faster with better follow up on receivables. And when credit problems do arise, you know about it sooner so you can implement controls. Where time accounting is a problem, the computer can help professionals manage — and charge — their time more accurately. Also, with the computer, you can do analyses of customers, territories, products, or salespeople. So you can find out which are the most profitable, which are the least. This allows you to take appropriate and effective action — trim in the marginal areas, take advantage of the most profitable.

Improving customer service. Many firms have made excellent use of their computer system to improve the quality of services they offer customers. They have been able to fill orders faster and more accurately — sometimes telling customers over the phone whether items are in stock, what substitutions or specials are available, and when to expect delivery.

The computer also allows firms to offer a wider range of discount or credit structures to suit different customers. And no matter what business you're in, the computer can help you provide your customers account statements that are more up-to-date, more detailed, and more accurate.

Making better decisions. The computer can make managers more efficient by handling many of the day-to-day matters that often bog them down. The managers can establish guidelines — such as credit limits, inventory reorder points, etc. — and the computer

can alert them only when the guidelines are exceeded. This allows you to do management by exception.

The computer can also result in better management decisions by giving quicker access to more accurate information. But sometimes it isn't more information a manager needs. Sometimes they are swamped by details. Once basic data is stored on a computer's files, it is relatively easy to summarize, reformat, or perform analyses and calculations on the data. This allows you to extract information that is most useful to your task at hand. It also allows you to answer "what if" questions

to help you evaluate a solution before you decide on it. **Helping the business grow.** A small computer can be an effective tool in helping you manage growth. Some — like Digital's Data-systems — are modular and more terminals, more processing power, more storage capacity and more applications can be added as your increasing volumes demand.

A computer can thus grow as your business grows without the need for significant increases in clerical staff. And by itself, a well-managed computer resource can be an asset when you seek expansion capital. Bankers, for instance, tend to favor those firms that can demonstrate sound business and financial management practices.

There are essentially six things that a computer can do:

Capture data. As in a manual system, the computer can store data that is deposited directly into its files. But the computer can also "capture" data that is not direct input to specific files. For example, when an order is written out, data is created which affects several different files. An inventory status file is affected. A billing file is affected. And a delivery file is affected. A well-designed computer system can capture all the necessary information right from the source document and post it to all the appropriate files automatically.

Store information. The computer stores information in much the same way as a file cabinet or tub file, with two all-important differences. First, the computer can retrieve data at electronic speeds; in a typical system a clerk can retrieve a record from a computer file in seconds, by typing a few single keystrokes. Second, the computer can index a file in a wide variety of ways, making the data far more accessible.

Process data. Computers can perform the most complex calculations, in fractions of a second, with unerring accuracy. But processing means more than mathematics. Once your data is stored in a form the computer can read, it can be sorted, moved from one place to another, summarized, analyzed, and verified with little expenditure of time and effort. If you ask your clerk to collate a lengthy report, it may take days. Properly programmed, a computer can do it in minutes.

Interact with people. One of the most recent developments in the computer field is interactive processing. This is usually implemented with video terminals in remote locations — manager's office, billing department, shipping dock, etc. — which are linked to

Computers can perform most calculations in fractions of a second. But processing means more than mathematics. Once your data is stored in a form the computer can read, it can be sorted, moved from one place to another, summarized, analyzed, and verified with little expenditure of time and effort.

the computer either directly or through telephone lines. With these terminals, you can access the computer's power. So you can retrieve data from files, up-date files, or make calculations whenever you need to.

Perform housekeeping chores.

We said you should consider the computer a "black box." That's easier to do today than it was a few years ago, because now many "utilities" or "housekeeping" programs have been designed to automate the operation of the computer itself. For example, certain programs handle the various tasks going on within the computer so that several people can interact with it simultaneously. Other routines make the computer easier to use by "tutoring" the user in a conversational way. Editing routines can double check the data that people want to put into your files, by verifying codes, checking calculations, and generally spotlighting errors before they get into the system. And if there are some files you don't want certain people to use, the computer can restrict access.

Print output. Virtually any piece of paperwork your business needs to generate can be produced by the computer — provided the necessary information is in the computer's files. These include payroll checks, invoices, inventory picking slips, bills of lading, month-end statements, and operating and management reports of all kinds.

Typically, computers are installed in modules called "applications systems" or "applications." An application consists of a set of computer programs that together perform the data processing tasks for a specific business function.

A word should be said here about something quite common in the computer industry: The generalized application package. As the name implies, this is a ready-to-go application written for general usage. The supplier of the package usually takes the trouble to learn about all the possible processing options a user would want — such as any possible deductions, various state and local tax rates, etc., for a payroll package — then he incorporates them into a generalized system.

The user can then pick the options he needs. With this approach, a supplier can incur his major development costs once and then resell the package to different users with relatively little additional overhead. Each user gets a system that seems tailor-made at a price considerably lower than the cost of a system written just for him.

In looking at the experiences of long-time computer users, it is possible to see a pattern in the way computers are put to use. In general, there are three distinct types of applications, described below:

Type one: data-intense applications. Typically, the first areas to be put on the computer are those where the greatest flow of data exists. These are often the basic accounting functions that a business must satisfy. The need for automation in these areas is usually very critical, because the errors and paperwork burdens that originate here can sap the vitality of a whole business. Yet at the same time, these areas are un-

iquely suitable for automation, and there are excellent packages available at very reasonable cost.

Applications for these areas are likely to be installed quickly and easily, and the results can pay back the initial investment in a relatively short time. A prime example is payroll processing. Your current system for payroll is probably transferrable to an in-house computer system with no disruption to your staff or your traditional policies. With an in-house computer, input data and perhaps master file information would be handled online so you can check and catch errors on the spot. The

There are many different elements that make up a total computer system, including the applications and services needed for your particular business. As a result, you should be wary of "average system" price tags, because your true costs may bear little relation to these printed claims.

tremendous processing capability of the system would let you handle more deduction than you handle now. You could print checks and earnings statements, plus any time sheets, journals or other reports, on your own site. And data from each payroll run could be captured for automatic year-end or quarterly processing.

Type two: functional applications. By functional applications we mean those bread and butter applications that relate to the real business of your firm. These include order processing, inventory control, sales analysis, vendor analysis, labor distribution, production scheduling, vehicle scheduling, warehouse control, actuarial and investment analysis, and merchandising among many others. These are often tackled after the data-intense areas are up and running successfully.

Applications in these areas help people who have direct contact with your customers or who are responsible for your products or services. They also help you achieve tighter control over your largest capital investments, such as your inventories or production facilities. Often the key to solving many of the problems that arise in these areas are two things the computer does best: (1) speeding up the flow of data, and (2) making accurate information more readily available to employees.

General packages are also available for some of these areas, although some special programming may be needed to accommodate your particular operations.

Type three: data-based applications. The term "data base" was coined to account for the unique capability of computers to access files in a number of different ways. This means that larger files containing a wealth of information could be shared by two or more applications. The terms "data bank" or "data pool" are sometimes used to describe this.

There are two types of applications made possible by a data base. First, there are applications to calculate trends or general rules that will help in making plans for the future. For example, sales forecasting and market simulation. Second are those applications that require information from

more than one area. For example, a comprehensive purchasing system needs order information, on-hand inventory information, plus vendor and payables information.

A central data base that can be accessed by different applications lets you cut down on the number of redundant files. And, by entering data online, you can make it immediately available to all the areas that use it, so your people can work with accurate, up-to-date information. Building the data base and the integration of various application areas usually takes considerable effort and time. To do it successfully, you must have a

clear view of where you want to be at the end of that development effort.

Self evaluation. The first and most essential guideline concerns your role in the process: you must clearly define the desired results you want from the system. This requires an evaluation of your own personal objectives for your business.

What are your immediate and long-range goals? What changes do you want to implement? What benefits of a computer are most important to you? Thinking through this exercise at the outset will allow you to give clearer direction to the development of your computer system, and get a better system in the end.

Feasibility study. Any computer acquisition process should begin by questioning the feasibility of a computer. You should carefully study your current business operations to find out what it costs you now. This will involve a detailed survey of each application area you can identify in order to compile such data as the number of transactions handled each day,

what is involved in each transaction, the people and equipment required, forms used, and so on. Then, determine what it would cost to increase your current methods to handle any projected increase in business.

Above and beyond this, of course, are the unique benefits of a computer that you couldn't realize simply by adding to your staff. Benefits like getting reports you don't get now. Using more sophisticated business techniques. Shortening the time required to process transactions. Or freeing up clerical and management talent for other areas. You must set a value on these potential benefits and weigh them in the balance.

At the end of your feasibility study you should be able to state confidently that a computer either is or is not worthwhile, that the investment will pay you back in cost savings, efficiencies or some other standards you set, at a return equivalent to your other business investments.

Vendor selection. At this point, you should consider outside help. As mentioned earlier, this help is available from the independent computer supplier . . . a new kind of company that has become a growing force in the business world in recent years.

These firms are not only computer experts, but they also have special expertise in the industries they serve. They can bring a high degree of understanding — as well as actual experience — to an examination of your current operations, your business goals, and your unique problems and requirements.

These suppliers provide what is called a "turnkey" system. As the name implies, a "turnkey" system is one that involves little start-up effort by the user. The supplier studies the user's requirements, adds standard application packages (or tailors certain applications, depending on the need), and installs the system virtually complete and ready to run.

You can learn the names of suppliers from listings in local business directories or yellow

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Guidelines for buying a small computer system

- See a working version of your future system before you buy.
- Check your supplier's references by calling on some of his customers.
- Check out the manufacturer of your supplier's hardware (is the manufacturer in business to stay? Are his products highly regarded?).
- Insist that your hardware comes from one manufacturer only, in order to avoid disputes or violations of warranty.
- Make sure the supplier puts safeguards on the source coding of your applications (to protect against fire or other forms of loss).
- Insist on easy back-up procedures for your files.
- Define acceptable criteria for your system, including formats of input and output and the time it takes to do specific functions.
- Take delivery of your hardware with at least some working applications.
- Ask your supplier about on-going software maintenance, in case you ask for changes to your applications.
- Buy a system with growth potential (always buy at the middle or bottom of the line).
- Buy a system that is expandable by adding on system elements, such as memory, terminals or disks, rather than by expensive conversions.
- Follow up on your responsibilities (especially preparing the site, getting your people ready, and reprinting your forms to fit the new computer).

COMPUTER *from page 15*

pages, from references of accountants and business colleagues, or from inquiries to computer manufacturers. The process of selecting your supplier is much like the one you used in selecting your accounting firm or law firm. You'll want one with a sound business reputation and a track record of success in solving problems similar to yours.

Systems study. To provide a system that meets your needs precisely, the supplier will have to perform a thorough systems study. But before this study gets too far along there are two steps you should take on your own.

First, you should study your operations to see if there are any changes you wish made, which are not related to the installation of a computer. Today, computers are carefully designed to avoid disruptions in business routine. But some firms want to take advantage of this period of change to make

additional changes in their personnel or procedures.

Second, you should identify any specific problems you want the computer to solve and you should establish priorities. As mentioned earlier, the accounting applications are the ones commonly put on the computer first. But they don't have to be. If another area is more pressing in the light of your own goals, focus on that first.

These initial stages (including the feasibility study), are the ones that require the most homework by top management. But by doing this homework well, you can lighten your future load considerably. Remember, the computer is simply a tool to do a job. The better you define that job, the more satisfactory the results will be.

At this point, you're ready to request proposals from one or more suppliers. By considering competing suppliers you can enhance your own learning process and perhaps see alternative ap-

proaches. (A note of caution: Be careful not to play one vendor off against another. Reputable computer suppliers are professional people whose consultation and service are nearly as important as their product offerings. If you try playing them against each other, you may drive off the best ones and find yourself dealing with the least competent of those in your area.)

Most likely, the suppliers will conduct extensive interviews with you and your chief operating people. And when they do, be sure to give each supplier the same direction and the same access to your business so that all the proposals you receive can be compared point for point.

Proposal evaluation. If you've done a good job in the preceding areas, you should now have one or more proposals that directly address problems you've identified. You will probably want to involve your chief operating and accounting people in the evaluation

process to make recommendations based on specifics within the proposal.

In evaluating a proposal, you are trying to answer two questions: (1) Will the proposed system do a good job for you?, and (2) Can the supplier live up to the claims in the proposal? There is no magic formula for arriving at the answers. But a good rule of thumb is to accept nothing on faith. Insist that the supplier clarify or expand upon points in the proposal that you don't understand or feel are incomplete. And don't be overly impressed by computer jargon to the point where you're letting details pass without close scrutiny.

As you go through the evaluation process, be sure to evaluate the intangibles involved in doing business with particular suppliers. You should consider the manufacturer of your supplier's hardware and systems software components. If that manufacturer financially sound and firmly committed to the business? Does it have an extensive and responsive service organization? Are its products well-known and highly regarded in the business world? Also important is the expandability of the computer. Most likely, the system described in your proposal is one of several models in a line or family of systems. Make sure there is plenty of growth potential beyond the model you buy, and that the process of growth involves "adding on" in modular fashion, not converting.

The checklist of "guidelines for buying a small business system," included in this section, should suggest some do's and don'ts as you go through your evaluation process.

A word about costs. As discussed in earlier sections of this booklet, there are many different elements that make up a total computer system, including the applications and services needed for your particular business. As a result, you should be wary of "average system" price tags, because your true costs may bear little relation to these printed claims.

How can you determine your true costs? A turnkey supplier's proposal is a good place to start, since it will include costs for a computer configuration as well as for any customized applications you may need. Over and above what the supplier will charge you, there may be costs involved in training, in converting your old systems to the computer, in preparing a room for the computer, in acquiring additional insurance, and in stocking up on paper, ribbons, and other supplies. It might be wise to calculate these costs over time — say five years — and to include both recurring and non-recurring expenses.

If you finance the system, you should figure in your cost of money. To your advantage is the depreciation allowance on a purchased system. And of course, there's the capital investment tax credit, too. These additional pluses and minuses will bring you to a bottom line figure much closer to what your actual cost will be.

Calculating your costs over a period of time can be very instructive. You might find, for example, that the monthly cost of your

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system equals what you would pay to hire one additional clerk. (In fact, many firms have found that to be true.) By doing this, you can put the costs of your small business system into a more meaningful perspective.

Implementation schedule. Once you select a system, you should agree upon an implementation schedule with your supplier. This should consist of two things: (1) a list of milestones during the development period, and (2) criteria for satisfactory progress as of each milestone date. Your schedule should be reviewed and updated frequently so that your expectations are always in line with the actual progress being made.

You should keep in mind that you are entering into a business relationship that entails mutual responsibilities. You must be cooperative and accessible to your supplier; the best way is to assign one of your managers as project coordinator with responsibility for its success.

This coordinator will help your supplier write the system specifications and will evaluate the supplier's work to ensure those specifications are met. You should also avoid making changes once the development work begins. Or, if changes are necessary be willing to incur charges for them. At each development milestone, you should sign-off on the work done to-date and make progress payments which were agreed to before the work began.

Finally, you should start paving the way for the actual computer installation. Inform all your people that a computer is coming. The supplier can give you photos or promotional literature which you can circulate among your people to help answer any questions and alleviate any fears. As soon as input and output samples become available, circulate these, too. If any training is necessary, have it done early.

In the computer industry it is axiomatic that when top management is fully committed to the system, success is virtually guaranteed.

This leads to the most encompassing of your responsibilities. You must be willing to provide your personal commitment to the project to ensure its smooth and successful completion. Internal control. Because the system can help achieve efficiency in other areas, people often overlook the efforts needed to run the system itself efficiently. This involves establishing a number of internal controls.

First is the consideration of where the computer will go. Studies show that computers are most often installed within the accounting areas and responsibility for it is given to the controller or the financial manager. This arrangement may be the best one for you. But you should also consider the long-range development of your applications. If your production areas will be heavy users of the system, you might want it reporting to a manager who is more sensitive to needs in those areas. Today, it is not uncommon for the president or owner of a business to be directly in charge of the data processing function.

A computer system also requires a certain degree of discipline on

the part of your personnel. Input formats and procedures must be established and adhered to. The integrity of your data must be ensured by maintaining redundant back-up files and audit trails. Documenting your systems and procedures is also important; as is implementing some accounting system to monitor use of the computer.

THE ECONOMY

Housing starts holding

The lawn care industry traditionally rides piggyback on the fortune of the new housing market across the country. Happily, as the hammers ring with new construction, so, eventually, is turf established, sprayers spray, and grasses green. And, according to the *Wall Street Journal*, housing starts in 1980 were far better than anyone had expected.

Two new reports from the Commerce Department suggest that the housing market was holding up surprisingly well under the strain of high interest rates at the end of last year.

Housing economists had expected a much larger drop in construction starts because of high mortgage rates and sagging sales of homes. "I'm astounded," said Dale Riordan, chief economist for the National Savings and Loan League.

The Commerce Department reported starts of new, privately owned housing at a seasonally adjusted annual rate of 1,548,000 units in December, down one percent from November's revised rate of 1,563,000.

The December figures, still preliminary, put total starts for 1980 at 1,291,000, the lowest yearly total since 1975 when 1,171,000 units were begun. The 1980 level was 26 percent below the 1,745,100 units started in 1979 and 36 percent below the strong 2,023,300 units

started in 1978.

Several economists predicted that starts would drop a bit more in January and slide more sharply in February and March. William Young, an economist for the National Association of Home Builders, said the association was projecting starts below the 1.25 million rate during the first half of 1981. "It's going to be a very hard winter for builders," said Mr. Young.

Construction permits for future housing units were issued in December at a rate nine percent below that of November, the Commerce Department said.

Single-family housing starts sagged 6.4 percent in December while starts of multifamily apartments surged 9.1 percent. Thomas Harter, chief economist of the Mortgage Bankers Association of America said this indicates high prices and high mortgage rates are forcing many buyers to shop for condominiums apartments rather than one-family homes.

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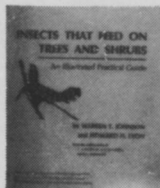
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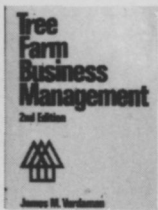


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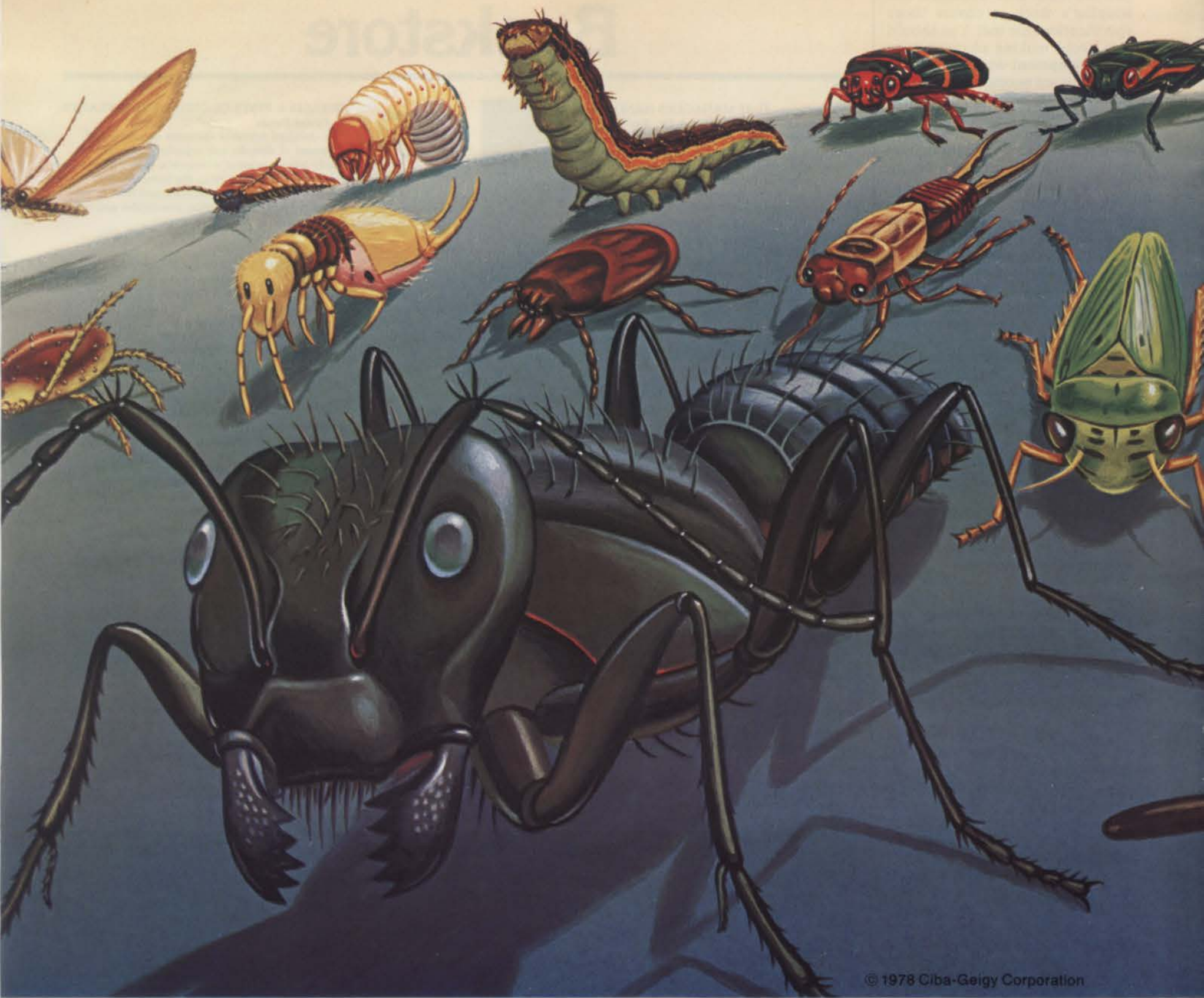
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MOWING/MAINTENANCE

Seasonal disease programs for tree and ornamental care

The success of a maintenance program on woody ornamentals requires identification of the customer, plants, diseases, climate, alternatives and implementation procedures, according to Dr. Robert E. Partyka, plant pathologist for the Plant Diagnostic Laboratories branch of Chem-Lawn Corp. in Worthington, Ohio.

The client's basic knowledge of plant problems must be considered, he told attendees at the 19th Illinois Turfgrass Conference. Is he coming to you or are you going to him because of your promotional programs? What does he expect, and can you satisfy those expectations? Your ability to communicate and your knowledge of the situation should be able to establish a reasonable approach to satisfy his needs.

Does your staff have a guide to use to properly identify plant material? Are all common plants recognized in the area? Not recognizing plant material may result in loss of credibility with a client or possibly plant damage if wrong materials are used, Dr. Partyka said.

What are the most common disease problems on the plants and when do they occur? How serious are they and are they controllable? Do you have the means to suppress them? Do all the plants have to be treated? These are some questions that have to be answered.

Climate, temperature, moisture. How do climatic conditions affect disease problems at certain times of the year? Temperature and moisture relationships become very important for short-term ef-

fects. What has happened in the past year or two that may influence specific disease problems? Are the disorders pathogenic or physiological?

Protective sprays are often considered, but is the timing accurate enough to give control? Is there an aesthetic value and cost relationship to be considered? Can susceptible varieties be replaced by resistant plant material? Can vigor of a plant be used to ward off a disease problem by proper fertility practices, or do we need a combination of fertilizer and protective materials? Can the job be done in the time span that is optimum for control and are equipment and manpower available to do it? With these points in mind, let us review some of the problems confronting professional ornamental care.

Failure of plant material to leaf out in the spring must be equated with plant vigor or winter stresses. Plant vigor is often difficult to evaluate because past history may not be known. However, this can



"As the season progresses, higher temperatures and limited moisture will often create stress conditions in a plant," says Dr. Robert E. Partyka of Plant Diagnostic Laboratories. "One has to determine how far the problem has progressed and whether corrective procedures are advisable. Removal and reestablishment of new plants with emphasis on preventing stress conditions from occurring again is often a more sound way to go."

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often be obtained by communication with the client. It is usually important to know the age of the plant material and how long it has been in place. Most problems on new growth are due to transplant failure so that the plant never became established in location to survive the normal winter stress conditions.

This can relate to initial vigor of the plant or the cultural practices given to the plant. Of course, the plant may have been dead to begin with and planted in the fall with no chance of becoming established. Unusual weather during the winter may have stressed the plant, resulting in further weakening and failure to grow. This is often common with plant material that may be out of its adaptive zone. Problems of this nature often cannot be corrected, and one must consider replacement with more vigorous or adapted specimens.

Spring foliage problems. Spring foliage problems are often common during periods of excessive moisture, Dr. Partyka said. Knowing the plant and disease organisms most prevalent under such conditions can determine what direction one should take in overall maintenance.

In general, leaf spots are often unsightly, and how long weather conditions favorable to disease exist will determine whether a protective program is necessary. Plant material will recover with development of new foliage after the weather conditions change. This is often true of anthracnose, a disease that starts early in the season and is often explosive when weather is optimum for it.

For apple scab, symptoms tend to develop gradually; often severe defoliation results, with limited foliage recovery. A sparsely foliated plant may be the outcome unless a protective control or resistant varieties are used. Many leaf spot diseases can be reduced in severity by maintaining plants in good vigor, so fertility programs are often a first line of defense if a resistant plant is not used. When limited leaf spotting or defoliation cannot be tolerated because of aesthetic considerations, timely fungicide applications can be used

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to maintain the majority of the foliage.

By no means can one expect to keep all the foliage spot-free, as this is too costly and often not feasible from the standpoint of a maintenance service. However, this understanding must be conveyed to the client at the onset of the program, so he knows what to expect from the protection program. Unusual weather may create heavy disease pressure on susceptible plants at certain times of the year. This possibility needs to be considered by the maintenance service.

Stress conditions. As the season progresses, higher temperatures and limited moisture will often create stress conditions in a plant. Many of these stresses are physiological, and one must be a good diagnostician to determine the cause.

Once the cause has been established, corrective procedures can

be established. However, one also has to determine how far the problem has progressed and whether corrective procedures are advisable. A good example is a young plant that is severely girdled with nylon twine or a large tree in a residential area that has a majority of its root system damaged. Palliative measures can be used and the plant will undoubtedly continue to exist for a time, but there is a question whether one can justify the time spent on plants that undoubtedly will die soon or will be so scarred that they will distract from the landscape.

Removal and reestablishment of new plants with emphasis on preventing stress conditions from occurring again is often a more sound way to go. This will require a good discussion with the client and explanation of the reasons for moving in this direction.

Stress conditions can lead to canker problems on many plants that may be insignificant at first but if allowed to develop will often

result in branch dieback and disfigurement of plants. Recognizing canker-prone plants can result in early surgery and vigor-improvement practices that can often save the plant. However, one must be attuned to factors in an area that can cause plant stress.

Vascular-type diseases. Vascular-type diseases often become established because stress conditions may predispose the plant to pathogen invasion or certain insect vectors may transmit the organisms.

Early recognition and positive diagnosis are necessary to initiate proper corrective procedures. The degree of control and the reliability often vary with the plant and specific pathogen involved. In cases of phloem necrosis of elm, there is little hope. Dutch elm disease control with systemic materials is more promising, provided application dates and rates are accurate. One cannot be absolutely certain that control can be maintained, but certain trees

may warrant the cost of such practices.

Early recognition of *Verticillium* wilt can often save a plant with proper pruning and fertility practices. However, if the organism becomes established through root invasion, chances are good that it is present in the soil, and weather conditions may predispose the plant to reinvasion in the future. Maintaining vigor in the plant is important to help avoid this reinvasion. The nature of the problem must be fully explained to the client. In some cases, this may be a futile effort because of the mobility of the organism.

Total injury as evident by yellowing or browning of leaves often suggests severe injury to the main trunk or the root system. This can often be related to a specific disease problem triggered by weather, or the plant may be susceptible to a soil-borne pathogen. Determine the cause, recognizing that the plant usually dies, and consider measures to prevent a recurrence when new plant material is put in.

REGISTRATION

EPA approves Carbide's Sevin

Union Carbide Corporation has said that the Environmental Protection Agency cleared the registration of Carbide's Sevin carbaryl insecticide and all its current uses, the *Wall Street Journal* reported.

The EPA decided that "the overall weight of evidence doesn't raise prudent concerns of unreasonable adverse risk," Carbide said. Sevin carbaryl, introduced in 1959 and currently one of the most widely used insecticides in the world, was reviewed by the agency under the Federal Insecticide, Fungicide and Rodenticide Act.

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CONFERENCE

Turfgrass meeting moves to Albany in 81

Since attendance at the recent 34th Annual New York State Turfgrass Conference and Trade Show almost doubled over the previous year's figures, plans are now being made to move the conference to Albany, New York on November 10-13, 1981.

The reason for this, as explained by conference chairman Richard McGovern of McGovern Sod Farms, Melville, NY, is the availability of a more modern facility, expanded trade show space and a more centrally located site within the state.

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Understanding characteristics of lawn care nitrogen sources

Nitrogen is without question the nutrient of most importance to lawn care businessmen in their overall lawn care soil fertility programs. As a result, much effort has been directed in the last 30 years towards understanding the influence of different nitrogen formulations, nitrogen rates and timing of nitrogen applications on turfgrass performance and quality.

Due to this continuing research and development, today's turf managers have available for their use a wide variety of nitrogen products having different characteristics, according to Dr. Thomas R. Turner of the University of Maryland. Although the diversity of nitrogen products available is certainly an advantage, confusion often results as to what to expect from each of the materials. Both an exaggeration of the merits and drawbacks of these nitrogen products and a lack of understanding of their basic characteristics has led to this confusion.

By understanding the important characteristics of each nitrogen source, lawn care businessmen will have a better idea of what pattern of turfgrass response to expect and should be able to make an informed choice of what product or products are best suited for their individual situations.

Current information is particularly needed for the three most important synthetic slow release nitrogen sources for turf — sulfur coated urea (SCU), isobutylidene diurea (IBDU), and ureaformaldehyde (UF), and the newer soluble materials which are billed as having slow release characteristics, the methylol ureas (MO).

To provide some of the information needed to understand these nitrogen sources, a description of the important properties and turfgrass response patterns has been prepared by Dr. Turner.

IBDU. This is produced by reacting urea with isobutyraldehyde. Two basic materials are available based on fertilizer particle size, coarse (0.7-2.5 mm) and fine (0.5 to 1.0mm). Coarse IBDU is 31 percent nitrogen with 27.9 percent total water insoluble nitrogen (WIN), while fine is also 31 percent nitrogen, but with 26.3 percent WIN.

The reason for the slow release characteristic of IBDU is its low water solubility. For nitrogen to be released, IBDU must be hydrolyzed (react with water) to form urea and isobutyraldehyde; however, since IBDU does have a low solubility, this process is slow. The primary factors which affect the speed with which nitrogen from IBDU becomes available to the turfgrass plant, therefore, are the soil water content and the particle size of IBDU (due to the surface area with which water can react).

Any factor affecting soil water content, such as soil texture, drainage, irrigation, and rainfall, will influence the rate at which nitrogen from IBDU becomes available for use by the turf. Release of nitrogen from IBDU in a sandy soil may be slower due to

lower soil moisture content than on unmodified, heavier soils. This effect could be somewhat offset, however, by increased irrigation on the sandier soils. Increased rainfall as well as irrigation, will also result in increased release of nitrogen from IBDU.

Soil moisture. The importance of soil moisture to the release of nitrogen from IBDU can be both an advantage and a disadvantage, Dr. Turner said. When dry conditions prevail and the lawn is growing slowly with minimal nitrogen requirements, release of nitrogen from IBDU is also reduced.

When rainfall is heavy to excessive during the growing season, however, lawn growth is rapid and mowing is difficult to keep up

with. This problem is compounded when IBDU is used because research has shown that nitrogen release is increased by the moisture and even more rapid growth is promoted. However, excessive growth during extremely wet periods may be a problem which occurs infrequently and one that many lawn care businessmen are willing to put up with if they are sold on the other attributes of IBDU.

Another advantage of IBDU is its superior cold weather response compared to other slow release nitrogen materials. Since nitrogen release from IBDU is only slightly affected by temperature, nitrogen can still be released when temperatures are low as long as water is

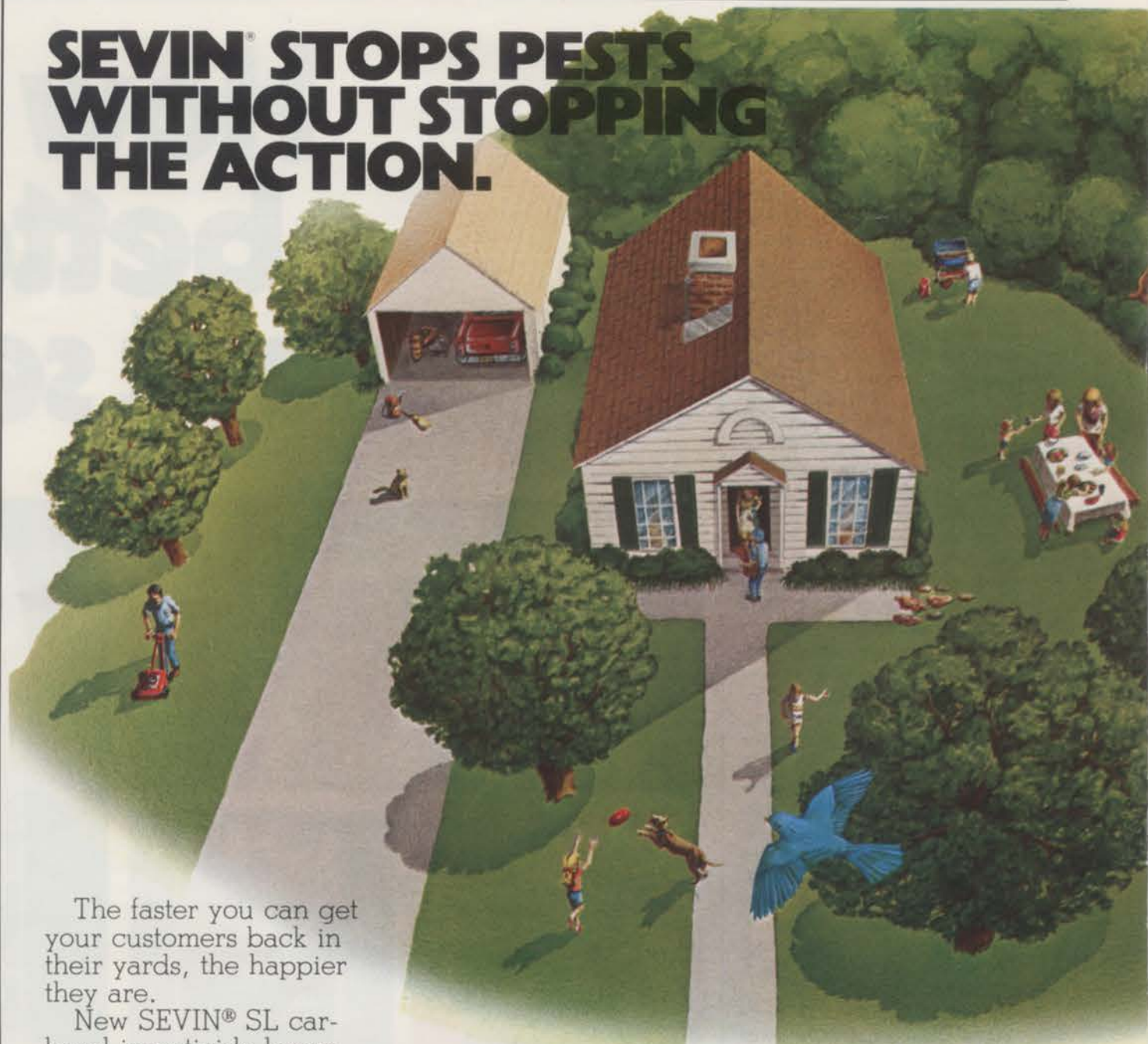
present. Research has consistently shown earlier spring greening of turf fertilized with IBDU. However, one drawback has been observed. In some years, turf fertilized with IBDU exhibited earlier spring greening, but also had a much more severe incidence of *Helminthosporium* leaf spot. As long as turf managers are aware of this potential problem, however, they can deal with it.

The other factor which affects nitrogen release from IBDU, the particle size, is not as important as might be expected. Generally, initial turfgrass response after an application is greater with fine IBDU; however, residual response to the coarse and fine material has been very similar even after four years of applications. This would indicate that fine IBDU is a more efficient material to use.

Sulfur coated urea. Two basic types of SCU products are produced, Dr. Turner said, one by the Tennessee Valley Authority pro-

to page 24

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cess, in which urea is coated with sulfur. This type is manufactured and marketed by Lakeshore Equipment & Supply Co. The second is by Canadian Industries, Ltd., in which prilled urea is coated with sulfur. Typical SCU products contain from about 32 to 37 percent nitrogen and 20 to 35 percent sulfur.

While the degree of slow release of nitrogen from IBDU and UF can be expressed as WIN, no standard has yet been generally applied to SCU. In some areas, a WIN or CRN (controlled release nitrogen) statement is made on the fertilizer bag. For research purposes, however, the slow release nature has been expressed as the dissolution rate. Generally, the dissolution rate refers to the amount of SCU that will dissolve in water in seven days under given laboratory conditions. This value, in effect, is an indication of the water soluble nitrogen. For instance, if a SCU product has a dissolution rate of 35 percent, then 35 percent of the material will act similar to a quickly available nitrogen source and the rest will be gradually released over a longer period of time. Some, but not all, SCU bags contain a statement indicating the dissolution rate.

Since SCU is manufactured from a very soluble material (urea) which is coated, the primary means of nitrogen release from SCU is through pinholes or cracks in the coating and also degradation of the coating. Thus, the most important factor affecting the rate of nitrogen release from SCU is the coating thickness, with soil moisture and to a lesser extent soil temperature also having an effect. SCU products ranging from extremely slow release to fairly rapid release can be produced simply by adjusting the coating thickness. However, products with less than a 20 percent dissolution rate (due to a thicker coating) have been shown to release nitrogen too slowly for satisfactory turf growth and are less efficient than other materials. Dissolution rates of 25 percent to 35 percent have been found to be most satisfactory for turf.

Exaggerated breakage statements. Cool weather turf response to SCU generally has not been as good with IBDU, but has been better than UF, Dr. Turner said. Although nitrogen release from SCU increases with soil moisture, excessive growth during wet weather has been less of a problem with SCU than with IBDU.

Exaggerated statements have been made about the possibility of breakage of SCU particles on non-putting green areas and subsequent burning of turf. The only way this might occur would be gross misuse of the product. If recommended rates and practices are used, no problems of this type will occur with SCU. Some recent research has shown that, with two applications a year, SCU generally results in a more consistent year around response than other slow release materials also applied twice a year. Also, one application per year of SCU has come closer to providing satisfactory turf year around than other slow release materials applied once a year.

Ureaformaldehyde (UF). UF has been used since the early 1950's

and is still a popular nitrogen source. Produced by reacting urea with formaldehyde, the most common UF products are 38 percent nitrogen with approximately 27 percent WIN. Two basic forms have been available, powdered (which is sprayable) and granular. Recently, a flowable UF material has been produced.

Under given environmental conditions, the rate of nitrogen release from UF depends primarily on the ratio of urea to formaldehyde used to manufacture the fertilizer. The more urea used in production in relation to the amount of formaldehyde, the quicker will be the release of nitrogen from UF. As more formaldehyde is added, longer chained UF polymers form from which nitrogen is more slowly released. Thus, products can be made which range from extremely slow release to relatively fast release by altering the amount of urea and formaldehyde mixed. The most common products, such

It appears that methylol urea has a major market with the home lawn care companies, as most reports indicate that it has a much lower burn potential than other soluble nitrogen sources.

as Blue Chip and Powder Blue, have urea to formaldehyde ratios of about 1.3:1. Recently, however, faster releasing materials with urea to formaldehyde ratios as high as 1.9:1 have been tested, are being marketed, and look promising.

Release by degradation. UF is basically an insoluble compound, with nitrogen being released through degradation of the fertilizer by soil microorganisms, Dr. Turner said. Thus, any factor affecting microbial activity, such as soil moisture, temperature, pH and aeration, also affects the rate of nitrogen release from UF.

As conditions become less favorable for microbial activity,

nitrogen will be released from UF at a slower rate. Since environmental conditions which favor turfgrass are similar to those which favor microbial activity, nitrogen release from UF should occur at rates similar to turfgrass requirements. However, there are two exceptions. In early spring, when cooler soil temperatures exist, a lag time exists between initial turfgrass growth and the release of nitrogen from UF due to microbial activity. Thus, early spring greening is substantially poorer when UF is used compared to SCU and especially IBDU. Also, during very warm weather, release of nitrogen can at times be greater than is needed for growth.

How to get better turf next season.



For the first two to four years of use, UF is less efficient than IBDU and SCU. During these initial years, UF applications normally have to be made at higher rates or supplemented with applications of other, more quickly available, nitrogen sources. After these initial two to four years, however, UF is generally as efficient as other sources. The newer UF materials, with the higher urea to formaldehyde ratios, do not have as great a lag period and thus their efficiency in the initial years of use is increased.

Research has been done by several companies to formulate the flowable UF materials to meet the needs of the home lawn care industry, Dr. Turner said. Research has shown that efficiency in the first years of use will be much greater than with the older UF products.

UF advantages. There are several advantages that the UF materials do have, Dr. Turner said. They have low burn potential and

are more difficult to misuse than other nitrogen sources.

Timing of application with UF is not as critical as with other nitrogen sources. An advantage to the home lawn care industry is that it can be applied in a sprayable form. (IBDU has also been successfully applied through spray rigs by some companies.) Research has shown that there is very little difference in turfgrass response to the granular or powdered forms of UF. If the lawn care businessman is aware of the lower efficiency during the first years of use and adjusts accordingly, UF is certainly a product which in later years will perform comparably to other slow release nitrogen sources.

Methylol ureas (MO). These materials are short-chained UF-type products that are soluble and are commonly about 25 to 30 percent nitrogen.

The theory behind the slow release action of MO is that when the short chained UF polymers in

solution (originally pH of 9.0 to 10.0) reach the soil, the decrease in pH causes longer chained UF polymers to form. These longer chained polymers would take longer to be broken down by soil microorganisms, thus nitrogen release would be delayed. However, there is not as yet much data supporting this theory. If it is true, soil pH should have a major influence on turfgrass response to MO and could make the response somewhat unpredictable.

Although it had been hoped that MO would act as a soluble slow release nitrogen source, early results from research indicate that length of turfgrass response to MO is very similar to the soluble nitrogen source urea. However, it should be pointed out that response to urea applications on heavier soils is usually longer than expected, six to eight weeks. It appears that MO has a major market with the home lawn care companies, as most reports indicate that it has a much lower burn

potential than other soluble nitrogen sources. Much research is needed to determine how MO reacts in the soil and how it is best used.

In summary, IBDU, SCU, and UF are all good slow release products. Knowing the individual characteristics of each material, lawn care businessmen can make a decision on which product or products they want, based on their particular needs and experience. The major factors influencing the decision on which product to choose may ultimately be the price and availability of the materials. Also, these nitrogen sources can be bought straight, or as mixed fertilizers. Know what you are getting. If soil tests indicate that your soil doesn't need any extra phosphorus, get a material with just nitrogen and potassium. If your soil is high in phosphorus and potassium, buy a straight nitrogen material.

RESEARCH

Mowing quality varies with perennial ryegrasses

Many new turf-type perennial ryegrasses have been introduced in recent years and most of the new cultivars have medium to good mowing quality, according to a recent study by Martin Petrovic of Cornell University.

In the past 10 years, there has been an explosion of new perennial ryegrasses to hit the market. The reason, according to Petrovic, is that the perennial ryegrasses offer several advantages over other turfgrasses, namely, very fast germination and establishment, which is very desirable on seeded stands, mowing quality and susceptibility to diseases such as *Fusarium blight*.

However, the older perennial ryegrasses were known for poor mowing quality and susceptibility to diseases of stem rust and red thread. Plant breeders saw an opportunity to make big breakthroughs with perennial ryegrass in respect to mowing quality and disease resistance. Their efforts paid off with many new turf-type perennial ryegrasses having acceptable mowing quality and moderate resistance to red thread. However, stem rust still represents a challenge, says Petrovic.

A new perennial ryegrass cultivar trial was initiated last fall at the Cornell University Turfgrass Field Laboratory in Ithaca, New York. The test consisted of three replicates of 38 perennial ryegrass cultivars seeded on six by six foot plots. Mowing was done as needed at a one-and-a-half inch cutting height with a reel-type mower. In August 1980, difference in mowing quality was already apparent. A rating of mowing quality was made on August 17, 1980, using a scale of good, medium, or poor quality.

Cultivars with good mowing quality were: Belle, Blazer, Delray, Derby, Diplomat, Pennfine, Regal, R-36 and R-40. Caravelle, Hunter, Linn, Manhattan, Pelo, Runner, Score, Sprinter, Trimmer, and Venlona had poor mowing quality. It should be pointed out that these plots were relatively immature and mowing quality could change with maturity.

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Landscape irrigation design for maximum water efficiency

Irrigation is a tool for turf and landscape management, and like any tool it must be properly designed, properly built and properly used to do an efficient job.

According to Bruce Camenga, of Toro's Irrigation Division in Riverside, Calif., any improper design, product, or operation will mean wasted water. At the 19th Illinois Turfgrass Conference, he discussed how to recognize and cure problems in installed systems where efficiency is poor, and covered design problems, installation problems, operational problems and changes in conditions.

Design problems. He said design problems are normally caused by errors in judgment or execution

by the designer and can generally be classified into four areas.

(1) Gallonage demand is too high, operating pressure is too low, or piping is undersized.

These conditions are caused by inaccurate information given to the designer or simply by designer error. All result in poor coverage because the sprinklers do not perform as they should. There are three solutions to this problem. One is to change to a sprinkler having a lower gpm with the same radius specifications.

However, if this is done, the running time must be proportionally increased because less water is being applied to the turf. Another solution is to determine

whether the pressure losses can be reduced or the available pressure raised by an adjustment to a pressure-regulating valve or by the addition of a booster pump.

The final solution is to delete some of the sprinklers from each section and form new sections to lower the gpm demand, a very time-consuming and expensive method of correction.

It means adding new sections, which mean more valves, which mean more stations on the controller. Sometimes the controller has no room for expansion, so a second controller must be added or a controller with more stations must be brought in.

(2) Sprinkler heads are spaced

too far apart.

This is another area in which the design is at fault and which usually is the fault of the designer misapplying the equipment. Too wide a spacing results in poor coverage — sometimes with little or no water being applied in the areas between the sprinklers — and usually is compensated for by running the sprinklers much longer than they should be run.

To correct this type of problem, you can either change the sprinklers to a different nozzle or use a different sprinkler that has a larger radius with the same gpm. If the gpm increases, there can be a corresponding increase in pressure losses, which means the operating pressure will drop and the radius may be even less than the original. Once again, if the sprinkler heads or nozzles are changed, the precipitation rate must be checked to see if the running time must be changed for the sprinklers.

Another method of correcting this problem is to increase the pressure — if possible. This change might increase the radius of the sprinkler, but would also increase the gallonage demand, which would increase the pressure losses. This type of correction must be approached with caution because the necessary increase in pressure could cause other problems.

If the sprinkler is already working at optimum pressure, the increase in pressure may cause a break-up of the water pattern and actually reduce the radius of the sprinkler. The increased pressure and gallonage could also cause a velocity higher than would be considered safe for irrigation design.

(3) Different types of sprinklers or areas to be covered are mixed together on one station.

This is almost always a designer error. If spray and rotary sprinklers are on the same irrigation station, a mismatched precipitation rate is created as spray heads normally have a precipitation rate of 1 to 2 inches per hour, but most rotaries have a precipitation rate of around ½ inch per hour. As a result, the entire station must be run long enough so that the rotary sprinklers are putting enough water on the landscape.

This means the area in which the sprays are located will be overwatered. In order to correct this problem, the types of sprinklers must be changed so that they are compatible or they must be separated from that station and put on an independent station or a station that already has a similar type of sprinklers. Designers often treat turf and ground cover the same, which means one station could be covering both areas at one time.

This is usually very inefficient because ground cover normally needs less frequent applications of water than most turf does. The correction is to physically separate the two types of areas being covered. This normally means another valve and another controller station. Quite similar is a situation in which shady areas are on the same station with a sunny area. When this happens, the watering schedule has to be set for the sunny area to keep the landscape in good condition.



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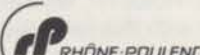
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The sprinklers on the same station in the shady area then are over-watering that area. Where different types of soil exist, design should take this variation into consideration so that one section does not cover more than one soil type. When more than one type is covered, you can often get run-off from a rather impermeable soil while the water is being absorbed nicely in another area.

Unfortunately the system has to be set up for the area that is absorbing water nicely, which means run-off will occur in the other area. The same type of situation applies where there are slopes and level areas in one project. If one station covers both a slope and level area, you will have run-off on the slope even though insufficient water has been applied to the level area.

(4) Materials selected are not proper for the job, creating maintenance problems.

Selection of materials is another area in which the designer can go wrong. Among improper selection would be selection of flush-type or non-pop-up sprinklers for use in turf areas, which would require that a moat or cement collar be placed around each sprinkler so the turf will not interfere with the throw of the sprinkler. Another improper selection would be high risers in shrub areas, especially along sidewalks and curbs.

High risers are ugly, distracting from an otherwise pleasant landscape, and subject to both unintentional damage and vandalism. The possibility of lawsuits resulting from people cutting a corner and tripping over these risers is also very real. Equipment is now on the market that will allow the sprinklers to be placed at a level below the shrub or ground cover and, when the sprinklers are activated, will pop up above the shrubs or ground cover.

A very poor selection of materials and swing joints or the entire

High risers are ugly, distracting from an otherwise pleasant landscape, and subject to both unintentional damage and vandalism. Equipment is now on the market that will allow the sprinklers to be placed at a level below the shrub or ground cover and, when the sprinklers are activated, will pop up above the shrubs or ground cover.

lack of them or flexible risers results in a maintenance problem when people or vehicles hit the sprinklers or risers extending above grade. If a suitable swing joint or flexible riser is not specified and installed, the sprinkler pipe is normally damaged, creating a large maintenance problem. Where there are slopes, low head drainage is always a maintenance concern.

It causes wet areas, which turn into quagmires as traffic passes through them. There is also a potential hazard created by low

head drainage. The hazard and maintenance problem can be eliminated by the addition of check valves in the line or risers that drain normally.

Since most sprinklers have a higher precipitation rate than the infiltration rate of the soil onto which they are throwing water, the controller must have a capability of being multi-cycled. By multiple cycling, the sprinklers run several times for rather short periods. This allows the water to infiltrate the soil. Multi-cycling has a further benefit in that it can be used to proportionately reduce the running time — and thus the water applied — to all the stations as the climatic conditions change.

If a designer does not feel comfortable with the information about a sprinkler, especially the distribution pattern, he should obtain the necessary information or bypass that particular product. If the coefficient of uniformity of sprinklers in pattern is poor, improper coverage will be the result, which will create a tremendous maintenance problem for the owner and will certainly decrease the designer's reputation.

Installation problems. Let's make a rather large assumption, Camenga told the audience, that all of the above problems over which a designer could stumble have been overcome.

He has designed the system properly as far as hydraulics are concerned, spaced the heads according to the manufacturer's recommendations, has not mixed the type of sprinklers or areas covered, and has made a good selection of equipment. The next problem then becomes what happens when the system is installed.

Sometimes the pressure at the sprinkler heads is reduced but the reduction is not related to design. The controllers or valves may have malfunctioned or nozzles may have become plugged. Improper installation could result in debris finding its way into the pipelines; if not properly flushed out, the debris could plug the sprinklers and valves and even create problems in the controllers.

Further, there could be deviations from the design; a contractor might use smaller pipe than shown on the design, either intentionally or unintentionally. Sprinkler heads could also be improperly spaced, resulting in poor coverage. There is always the possibility of the wrong sprinklers being installed in the wrong places. Naturally, these can be avoided with proper inspection of the job. This, however, is not always available.

As the control lines for the system are put in, the wire runs are sometimes too long or the wire is too small. A voltage drop could result that could keep the electric valves from operating. Poorly in-

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IRRIGATION *from page 28*

sulated wire connectors and damaged wire insulation can also create a voltage drop leading to malfunctioning valves. If the control lines are hydraulic rather than electric, leaks in the tubing, either the supply or the control lines, would create operational problems. Plugged or kinked tubing can cause malfunctions.

It is the duty of the contractor to make sure that the electrical source for the controller is proper and that the controller is programmed correctly. Excessive voltage could blow the controller apart and cause a fire hazard, whereas low voltage would keep the controller from operating properly.

Operational problems. Camenga said that if the system was designed properly and installed properly, the lawn care businessman who does irrigation work is still not home free. As climatic conditions change, the

program should be changed. If the program is not, either too much or too little water will be applied—either of which will create maintenance problems. There is a possibility of retro-fitting the system with moisture-sensing devices, which could eliminate much of this type of problem.

During the break-in period, the program has to be fine-tuned so that the running time per station for the areas is not too long or too short and the running frequency is proper. Also, the programming must be set so that the irrigation is done at the proper time. He said that the improper time would be during high water demand periods, day time hours, or when there is a heavy wind.

Condition changes at site. Even when the three major problem areas are covered, problems can still result. These results are created by condition changes at the site, he said.

A fairly frequent condition change is a drop in static pressure

due to higher water demands in the project area, which increase the friction loss in the city mains, resulting in lower available pressure. Correcting this condition is much like correcting the condition of poor design where pressure is too low. It might be possible to change to lower gpm sprinklers that have the same radius specifications.

Remember, however, that the running time would have to be increased proportionally. Another possibility would be to see if the pressure losses can be reduced in the irrigation system by using larger valves, piping, or water meter. There is always a possibility of incorporating an in-line booster pump to increase the pressure. If none of these possibilities is practical, then some sprinklers will have to be deleted from each section and formed into new sections to lower the gpm demand, thereby reducing friction losses.

In very rare cases there can be a radical increase in static pressure.

Irrigation systems have a range of pressures in which they perform properly. Too high a pressure is just as detrimental as too low a pressure. If a high pressure does come about, the system should be adjusted by the use of any type of valve that will reduce the operating pressure. This could be a throttling valve, pressure regulating valve, or flow-control valve. Many sprinklers have a pressure adjustment incorporated into them, which can be used. If these two suggestions do not solve the problem, an in-line pressure regulator should be installed.

In the past few years, we have seen another problem that can change the conditions on an irrigation system—mandated watering limitations. Although we hope these do not happen too often, they are a very real possibility. If limitations are imposed, naturally all automatic controllers must be reprogrammed to fit into the limitations.

Where water usage must be decreased, the best thing to do is to work on increasing the efficiency of your irrigation system by reducing run off, reducing excessively deep percolation, reducing low head drainage, eliminating daytime watering, and reducing overthrow onto unnecessary area. Unfortunately, most water-limitation programs penalize the already efficient systems. But even the most efficient systems can be made more efficient with a little study and a lot of common sense.

SALES

Shipments down for mower manufacturers

The average forecast of 27 companies who responded to an industry outlook survey by the Outdoor Power Equipment Institute is for an overall 3.1 percent decline in selected shipments for the current (1981) model year, which began September 1, 1980.

With the exception of rotary tiller shipments, which are expected to remain flat, the projections are for a decline in shipments of walk-behind mowers (down 4.7 percent), lawn tractors and riding mowers (down 3.1 percent) and riding garden tractors (down 4.4 percent).

As for major economic indicators, the industry projects the consumer price index to increase 12.1 percent in 1981 while the gross national product (in 1972 dollars) is seen increasing 0.6 percent. Housing starts are projected at 1.25 million, the unemployment rate at 7.6 percent, and the increase in producer prices for finished goods at 13 percent. Personal disposable income is forecast to increase 0.4 percent.

A total of 27 manufacturers representing the above product areas responded to the OPEI survey. Companies reported estimates only for the markets which they serve directly.

An industry outlook survey covering the 1982 shipment year will be conducted in April or May. The results will be presented by McDonough Power Equipment, Incorporated during the OPEI meeting June 14-17 at The Cloister in Sea Island, Georgia.

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Seville new to turf markets

A new St. Augustine grass that has been some 12 years in development was introduced to the market last fall by a Palmetto, Florida, company.

Called Seville, the grass is flourishing on the grounds of Pursley Sod Farm, which acquired the patent early last year.

Seville is a semi-dwarf, vigorously-growing perennial turfgrass with several outstanding attributes. It has a uniform texture, short internodes, shorter and narrower leaf blades as compared to other St. Augustine varieties like Floratine and Floratam, a tendency to grow horizontal, a rich dark green color, excellent tolerance to shade and cold, moderate seed head production ability and resistance to St. Augustine Decline Virus (SAD).

It is not resistant to chinchbugs, but has shown strong tolerance to gray leafspot disease.

Seville is somewhat easy to maintain and requires less frequent mowings than other cultivars, an obvious advantage from the standpoint of energy conservation. Moreover, because of shorter and narrower leaf blade, it does not produce excessive thatch. Color retention and spring green-up rate are good under moderate fertilizer and cultural management. It has responded well to nitrogen fertilization and supplemental iron.

Seville was developed in 1968 by Dr. Terry Riordan, former turfgrass breeder at O.M. Scott and Sons Company, Marysville, Ohio. Parent lines used for this cross were originally grown at O. M. Scott's research station at Apopka, Florida. Soon after the development of Seville, a plant patent was obtained by Dr. Terry Riordan and Jake T. Gruis of Scott's. The patent

and exclusive propagation and marketing rights were acquired by Pursley Sod Farms in the spring of 1980.

Over the last eight years, Seville's performance has been tested in the field at various locations in Florida, Texas and California. Pursley Sod Farm has established several test plots at various locations in Florida and Georgia, among them Walt Disney World Tree Farm in Orlando, University of Florida campus in Gainesville, Maclay Garden State Park in Tallahassee, Deerwood Country Club in Jacksonville, and University of Georgia campus in Athens. Seville is also being grown on a few home lawns in central Florida.

Due to a limited supply, Seville is being marketed as rooted plugs suitable for planting on existing or new turf areas on 12 to 18 inch centers. Estimated time for the establishment of rooted plugs is about three weeks. The grass then

can be mowed to one and a half inches.

Additional information on the availability, cultural management and marketing of Seville can be obtained from Pursley Sod Farms, Rt. 1, Box 402X, Palmetto, Florida 33561.

REGULATION

NACA head calls for peer review

A top spokesman for the agricultural chemicals industry has called on federal regulators to begin basing their pesticide policies on scientific rather than political judgments.

In a speech before the 35th Annual Meeting of the Northeastern Weed Society, Dr. Jack D. Early, president of the National Agricultural Chemicals Association, said that the pesticide industry was not adverse to government regulation "as long as the regulators base their decisions on scientific principle instead of political expediency."

"Unfortunately," he said, "in the political setting of the recent past, we have found that the latter supersedes the former more often than not."

Dr. Early cited the recent recall of the proposed nitrite ban and the suspended use of the herbicide 2,4,5-T as examples of unscientific handling by federal regulators of scientific matters. Public announcements of these bans on the slim thread of presumptive evidence, he noted, often create public crises when in fact none exist.


In addition, Dr. Early said that such unscientific regulatory actions have sparked a wave of anti-pesticide sentiment in many local areas and have helped influence a growing trend by some states to out-regulate pesticide law.

The NACA executive said that the industry was encouraged by Congress' recent decision to include provisions for peer review by independent scientists of scientific studies in the 1981 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Reauthorization Bill. The U.S. Environmental Protection Agency relies on these studies as the basis for their pesticide regulatory actions.

Dr. Early warned, however, that the public should not expect more scientifically balanced pesticide standards unless Congress considers certain modifications to FIFRA and is prepared to revise the Delaney amendment to the 1938 Food, Drug, and Cosmetic Act.

The Delaney Clause effectively bans any chemical compound or substance believed to have carcinogenic potential and has served as a major catalyst in the regulatory decisions which have resulted in the impromptu suspending or banning of pesticides and other chemical products.

Sorry about that. In our article on the new chemical waste laws in the January issue of *Lawn Care Industry*, it should be noted that liquid containers must be triple rinsed and that the rinse solution must be used during all regular operations.



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E. All nuts and bolts for assembly are stainless steel.
F. Because of the simplicity and ruggedness of this unit, it should never need replacement.
G. Three adjustable metering slides for calibration are the only moving parts.
H. A common ruler is used for calibration settings.
I. Please allow three weeks for delivery.
J. At this time, insert devices are available for cyclone brand spreaders model #99-100 and 100B only. If you want them for other types of spreaders, please send us MANUFACTURERS NAME, MODEL # of spreader and YOUR ORDER. Please allow 6 WEEKS FOR DELIVERY.

K. These units are not available from any other source at this time.
L. Payment in full must accompany all orders before shipment is made.
M. We will ship all orders via UPS in U.S.A. unless otherwise specified.
N. Total price \$50.00 per unit plus \$5.00 per unit for shipping and handling.

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*PATENT PENDING

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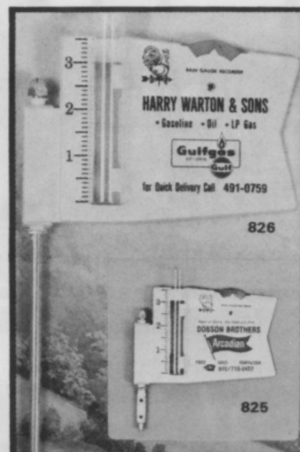
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Glade grows in up to 60% shade

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A Rutgers selection (tested as P-29), Glade Kentucky bluegrass is your guarantee of physically pure and genetically true seeds.

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U.S. Plant Patent 3151

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Salvage nitrogen with grass clippings

Many lawn care companies remove the clippings from their client's lawns by bagging them as they are cut. This consumes some energy itself, but more importantly, according to H. C. DeRoo of the Connecticut Agricultural Experiment Station in New Haven, it also wastes valuable energy in the form of nitrogen fertilizer.

The principle source of fertilizer nitrogen is anhydrous ammonia, which is synthesized at high temperatures and pressures using nitrogen from the air and hydrogen from natural gas or other hydrocarbons. Thus, a reduction in the large amounts of nitrogen used on lawns could save substantial energy.

In the fall of 1975, DeRoo established four turf plots at their Valley Laboratory in Windsor, Connect-

icut. Each plot was instrumented with tensiometers to measure soil moisture at various depths, with suction probes to remove samples of soil water at similar depths, and with wells to sample the ground water beneath each plot.

The primary purpose of this installation was to study the leaching of nitrate nitrogen to groundwater. This is important because nitrate nitrogen at concentrations greater than 10 ppm in drinking water can be harmful to infants and ruminant animals. To date, the studies on these turf plots have shown little loss of nitrogen by leaching.

After the instruments were installed, the turf plots were limed, tilled, fertilized, and seeded with a conventional mixture of Kentucky bluegrass and fescue grass. After establishment, the plots were fertilized once in the spring and once in the fall of 1976 and 1977 with a standard lawn fertilizer (10-6-4) containing 50 percent nitrogen.

Each application corresponded to a typical turf fertilization of about two pounds of nitrogen per 1,000 square feet. In 1978, the fertilizer nitrogen was changed to inorganic ammonium sulfate and enriched with the heavy isotope of nitrogen on two plots. This isotope (mass 15) is not radioactive, but can be distinguished from normal nitrogen, which is 99.6337 percent mass 14, with an instrument known as a mass spectrometer.

The determination consists of measuring the ratio of the two isotopes and comparing the ratio in the sample to the ratio in normal nitrogen.

The grass was mowed weekly in spring and fall and about every two weeks in summer. The clippings from each of the four plots were collected, weighed, and then subsampled for analysis for moisture, total nitrogen, and in 1978, for the isotope N (15). Following subsampling, clippings were returned to two of the four plots. In

1978, the experiment was revised so that clippings from one plot fertilized with N (15) were exchanged with the clippings from the plot receiving no labeled fertilizer.

In this way, the speed at which nitrogen from clippings was released by decomposition and utilized by the new growth could be measured. Clippings from the two remaining plots were discarded as before.

The response of the two plots receiving the clippings was obvious: the grass was greener and growth was more vigorous than where the clippings were removed. Thus, if the clippings are returned, less fertilizer nitrogen is required to maintain the same appearance.

On an annual basis the difference between the yields and nitrogen content of the clippings was substantial, particularly after the first year of establishment. In 1976 and 1977, about 1.8 pounds of nitrogen per 1,000 square feet were removed when the clippings were removed from the plot. This amounted to fully 45 percent of the total amount of nitrogen applied.

In 1976, the amount returned in the clippings was 56 percent, so that nitrogen equivalent to over half the fertilizer was added to the plots by the end of the season. This agrees with studies in Michigan of removal of clippings from Merion Kentucky bluegrass where an additional two pounds of nitrogen per 1,000 square feet was required to maintain turf quality comparable to that where clippings were returned.

Where clippings were returned, the yield of dry matter was greater by 15 to 55 percent, depending on the year and the source of nitrogen fertilizer. Since the yields were greater, the amounts of nitrogen contained in the clippings were also greater. Indeed, only the third year, nitrogen equivalent of nearly 80 percent of the total fertilizer nitrogen applied had been returned to the plot in the clippings.

Two objections to leaving the clippings on a lawn might be mentioned. One is simply the appearance of brown, dead clippings which may spoil the looks of the lawn. With frequent mowing to heights to one-and-a-half to one-and-three-quarter inches as in these experiments, appearance was not a problem.

A second objection is that failure to remove clippings may contribute to the accumulation of thatch. However, studies have shown that clipping debris does not form a major component of thatch. Grass clippings decompose relatively readily, especially when cut at such a size that they fall through the turf close to the soil.

This rapid decomposition is verified by our measurement of the appearance of the nitrogen isotope tracers in plots receiving clippings containing N (15). Within one week after cutting, the tracer had begun to appear in the new growth of grass. The accumulation of tracer nitrogen was followed in order to estimate the amounts of nitrogen in the crop derived from all sources. At the end of the third year, about one-third of the nitrogen harvested in the lawn grass came from soil organic nitrogen, one-third from the cumulative effect of returning clippings to the plot.



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NEWSMAKERS

Gregory Richards, vice president of **Hydro Lawn** in Gaithersburg, Maryland, has announced the following promotions: Bill Stocker has been promoted to assistant branch manager; Hollis Hopkins and Steve Scott to customer service managers.

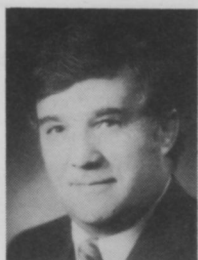
At the Springfield, Virginia branch, Jed Erickson has been promoted to branch manager, Robert Butterworth to assistant branch manager and Jeff Beksell and Frank Abbruscato to customer service managers.

At the Seat Pleasant, Maryland branch, Norman Tetter has been promoted to branch manager and Jeff Ayers to customer service manager.

At the Columbia, Maryland branch, Jim Anderson has been promoted to assistant branch manager.



Wick



Marrs

Art Wick has been named to fill the newly expanded position of product manager of fertilizer and turf seed for the **Lakeshore Equipment and Supply Company** in Elyria, Ohio. In his new position he will be responsible for product development and marketing, research coordination and product technical training.

Paul R. Marrs of Bloomington, Minnesota has been named vice president, marketing and sales, for the **Judd Ringer Corporation** in Eden Prairie, Minnesota.

Ms. Kelli R. Sneed, a junior at Texas Tech University in Lubbock, and a major in landscape architecture, has been awarded a \$500 scholarship grant by Weather-matic Division of **Telsco Industries**, it was announced by Telsco president L. O. Snoddy.



Sneed



Fletcher

Willard J. Fletcher has been appointed engineering manager for **Telsco Industries**. He will direct Telsco's new products research and development program, as well as supervise engineering activities to improve current product lines.

The **New York State Turfgrass Association** recently honored four of its leaders for outstanding contributions to the group. The Citation of Merit, the highest award the association bestows, was presented to Ed Worthington of the **Ed Worthington Corporation** in Saranac Lake, New York. His "Turfgrass Gazette", published since 1960, has been a familiar piece of turfgrass literature for

customers and industry and educational people.

Robert A. Russell, vice president of **J. & L. Adikes, Inc.** of Jamaica, New York, was feted for outstanding and unselfish contributions to NYSTA. He is first vice president of the **American Seed Trade Association**, secretary treasurer of the **Lawn Institute**, and a participant in many other local turf associations.

Dr. Richard Smiley of **Cornell University** was presented with a plaque in recognition of his years of service as liaison between NYSTA and Cornell. That position has now been assumed by Dr. Martin Petrovic.

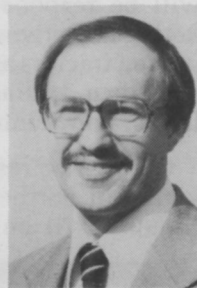
A plaque signifying thanks for service as president of the NYSTA was awarded to Melvin B. Lucas, Jr., who is currently president of the **Golf Course Superintendents**

Association of America.

William D. Hughes is director of the **Toro Company's** new business development group, responsible for developing new business opportunities for the company. Joseph Walto is director of design and development, new products, and Stanley M. Brown is new business development manager.



Hughes



Allen

Neal K. Allen is the manager, international sales, for **Simplicity Manufacturing Company** in Port Washington, Wisconsin. He is responsible for the growth and direction of the company's inter-

national sales and marketing activities.

P. J. Lenihan is manager of **Lawn Medic** in Winston-Salem, North Carolina. Gary Suroter is owner of **A-Pest L & T Division** in El Paso, Texas. Gary Morris is operations manager for **Excelawn Corporation** in Lombard, Illinois. Richard F. Dalby is president of **Lawn Magician**, in Colorado Springs, Colorado.

The **Sensation Corporation** has announced the appointment of a new distributor for the states of Kansas and Oklahoma. The **Hec-kendorn Corporation**, Cedar Point, Kansas, will handle Sensation's full line of lawn maintenance equipment.

Lee A. Delaney has been appointed president of **Teledyne Wisconsin Motor**. Delaney, immediately prior to his appointment, had been president of **Murphy Diesel Co.**, in Milwaukee, Wisconsin and has been active in the diesel and gasoline engine

to page 36

EXCEL HUSTLER 261

New, big machine performance in a compact size, low price.



EXCEL'S economical new HUSTLER 261 with 60" deck offers unparalleled performance with a surprisingly small price tag. Superior engineering also gives the 261 features that keep productivity up and operating costs down.

The infinite maneuverability, plus added performance features like the 60" 3-way deck with floating action and short wheelbase, lets you cut trimming time around any obstacle so operating costs can be reduced significantly. The 261 is the ideal grounds maintenance machine for parks, apartment complexes, condominiums, cemeteries, or anyplace where tight maneuvering is needed.

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PEOPLE from page 35

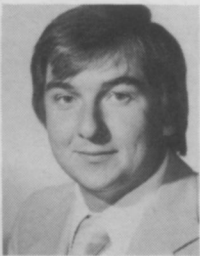
industry throughout his career.

John Meadors is owner and president of **Meadors Lawn and Grounds Maintenance** in Danville, Virginia and is involved primarily in mowing and other maintenance services.

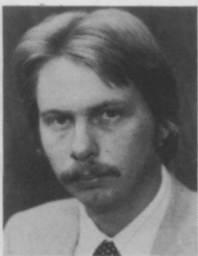
Robert Pendzick is president and Richard Gembolis is residential sales manager of **Lawns Incorporated** in Milwaukee, Wisconsin, a chemical lawn care and maintenance service started in 1959.

Thomas Mauer is manager, Stephen Corrigan and Martin Jagodowski partners, of **Mountain View Lawn Care**, in Holyoke, Massachusetts. Mountain View is a relatively new operation, begun in March of 1980.

Larry A. Kirsch is supervisor, parts merchandising, for **Simplicity Manufacturing Company**. He will be responsible for the promotion and sale of parts and accessories for the Simplicity product line.



Kirsch



Taugher

Steve M. Taugher is district sales manager for **Simplicity Manufacturing Company**, manufacturers of powered lawn, garden, and snow removal equipment.

Ben Malinkowski is executive technical representative for **Scott's ProTurf**.

Don Brouger is technical representative for central and southeastern Ohio for Scott's ProTurf.

Dave Wolfard is technical representative of Scott's ProTurf for Kansas and western Missouri. Wolfard spend four years as an assistant golf course superintendent in Oklahoma City, Oklahoma, after completing school.

Steve Viafore is Scott's ProTurf representative serving the Long Island, New York area.

Three district managers have been appointed by the October Power Equipment Division of the **J. I. Case Company**. Appointed were Douglas Korthals, Jefferson-town, Kentucky; Bernard Ott, Saginaw, Michigan; and James Simons, Jr., of Royersford, Pennsylvania.

As district manager, Korthals will be responsible for the marketing objectives of Case lawn and garden tractors and attachments in southern Indiana, southern Illinois, and Kentucky.

Ott will be responsible for marketing in northern Michigan, and Simons will be covering eastern

Pennsylvania and New Jersey.

Robert E. and Carol Miller own and operate **Acme Maintenance**, in Acme, Michigan, a chemical and maintenance lawn care service.

Edward Gruber is manager of **Davey Lawns**, in Pittsburgh, Pennsylvania. David W. S. Boose is owner of **Jacaranda Landscape and Maintenance**, in Naples, Florida. Rick Shafer is owner of **Evergreen Lawn Care and Landscaping**, in Sparks, Nevada. Jeff Winters is owner of **The Professional Landscaping Company** in Springdale, Arkansas. Barry Stern is manager of **Green Care, Incorporated** in Smyrna, Georgia.

Dick Bowman is advertising manager of the **White Farm Equipment Company** in Oak Brook, Illinois, the marketer of a full-line of farm wheel tractors, harvesting machinery, outdoor lawn and garden equipment and related accessories.



Bowman



Giageos

Donald P. Giageos is national sales manager of Simplicity Manufacturing Company. His most recent position was manager, marketing services, for the company. In his new assignment, he will be responsible for the company's domestic sales activity and its field sales force.

COST CUTTINGS

Are you a hazardous waste generator?

Are you generating hazardous wastes? If so, it may be costly and time consuming to repair the damage to both nature and your relationship with government. In order to find out whether you are complying with the terms of the Resource Conservation and Recovery Act passed by Congress last November, here are some contacts to call in your area:

In Connecticut, Maine, Massachusetts, Rhode Island, Vermont and New Hampshire, contact Rich Cavagnero, EPA Region I, (617) 223-0240.

In New Jersey, New York, the Virgin Islands, and Puerto Rico, contact Harry Ruisi, EPA Region II, (212) 264-0503.

In Delaware, the District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia, contact Shirley Bulkin, EPA Region III, (215) 597-8751.

In Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee, contact Ray Cozart, EPA Region IV, (404) 881-3446.

In Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin, contact T. J. Kim, EPA Region V, 800-572-3176 (IL); 800-621-3192 (IN, MI, MN, OH, WI).

In Arkansas, Louisiana, New Mexico, Oklahoma, and Texas, contact Fred Woods, EPA Region VI, (214) 767-2765.

In Iowa, Kansas, Missouri, and Nebraska, contact Dennis Degner, EPA Region VII, 800-892-3837 (MO); 800-821-3714 (IA, KS, NE).

In Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming, contact Jim Rakers, EPA Region VIII, 800-332-3321 (CO); 800-525-3022 (MT, ND, SD, UT, WY).

In Arizona, California, Hawaii, and Nevada, contact Bill Wilson, EPA Region IX, (415) 556-1407.

In Alaska, Idaho, Oregon, and Washington, contact Betty Wiese, EPA Region X, 800-542-0841 (WA); 800-4260-0663 (AL, ID, OR).

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Jobe's Fertilizer Spikes for Beautiful Evergreen Trees and Shrubs (12-6-8)

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Colorado Balcom Chemical Inc. Greenley	Nebraska Big Bear Equipment Omaha
Florida Souther Agricultural Insecticides, Inc. Palmetto	New Jersey Andrew Wilson Inc. Mountainside
Georgia Regal-Chemical Co. Alpharetta	New York Agway Inc. Syracuse Green Spaces Yonkers J & L Adikes Jamaica
Illinois Chicago Toro Drake-Scruggs Equip. Inc. Decatur Turf Products, Ltd. West Chicago	North Carolina So. Agricultural Insecticides Inc. Hendersonville Boone
Indiana The Daltons Inc. Warsaw	Ohio Chemi-Trol Chemical Co. Gibsonburg Lakeshore Equipment & Supply Elyria
Iowa Big Bear Equipment Des Moines Davenport	Oregon Van Waters & Rogers Portland Wilbur Ellis Portland
Kansas Champion Turf Equipment Wichita	Pennsylvania Farm and Golf Course Supply Philadelphia Lawn and Golf Supply Pheonixville Miler Chemical Hanover
Kentucky George W. Hill & Co. Florence Ky.	Rhode Island Old Fox Chemical East Providence
Maryland Commercial Lawn Services Inc. Rockville Cornell Chemical & Equip. Linthicum Heights	Texas Chemical & Turf Specialty Dallas
Massachusetts Richey and Clapper Co. Natick	Virginia Wilson Feed and Seed Richmond
Michigan Lawn Equipment Corp. Novi W. F. Miller Co. Birmingham	Washington Van Waters and Rogers Kent Seattle Wilbur-Ellis Co. Seattle Spokane
Minnesota Minnesota Toro Minneapolis Turf Supply Co. St. Paul	Wisconsin Reinders Bros. Inc. Elm Grove

Write 131 on reader service card

Bruce D. Jennings, III has been appointed marketing development manager for the chemicals division of the United States Gypsum Company. Jennings' responsibilities will include expanding market opportunities for gypsum's use in agriculture.

Ronald E. Slater is field sales manager, accounts, for **United States Gypsum**. Slater's responsibilities will include coordinating the activities of sales engineers and serving as local technical representative.

The Toro Company has announced that Ernie Jones will be the new company representative for the San Francisco Bay-area chapter.

Ronald E. Slater is fields sales manager, accounts, for the Western district of the **United States Gypsum Company's** chemicals division.

William M. Hannon is chairman of the board and chief executive officer of **Murray Ohio Manufacturing Company**, one of the na-

tion's largest producers of lawn-mowers. Robert A. Flesher is vice chairman and John L. Duncan is president and chief operating officer.

John L. Ufjeil is executive vice president of **Mallinckrodt, Inc.** Mallinckrodt is a manufacturer and marketer of specialty chemicals.

John Perdeau is owner of **Beauty Lawn**, Sylvania, Ohio.

Matt Flanagan is branch manager for **Chemlawn**, in Rocky Hill, Connecticut.

Kenneth R. Millius is owner of **K.R.M. Garden Management**, in Sun Valley, California.

The Southern Turf Equipment Company, Charlotte, North Carolina, is the distributor for the Sensation Corporation's full line of lawn and maintenance equipment.

Consolidated Turf Equipment, Limited, in Winnipeg, Manitoba, is distributor of Sensation's products.

Richmond Power Equipment

Company, Richmond, Virginia is distributor of Sensation's lawn maintenance equipment.

Roberts Supply, Inc., in Orlando, Florida, will handle Sensa-

tion's lawn care distribution in Orlando.

Donald Andrews was honored by the **Upjohn Company** for outstanding achievement in sales.

MEETING DATES

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. Doble, 349 Soil & Crop Science Center, Texas A & M University, College Station, TX 77843, 713-845-4826.

American Sod Producers Association Summer Convention and Field Day, Hershey Lodge, Hershey, Pa., July 15-17. Contact: Bob Garey, Executive Director, ASPA, 9th & Minnesota, Hastings, NE 68901, 402-563-4683.

University of Florida Turfgrass Research Field Day, Fort Lauderdale, FL, April 1, 1981. Contact: Dr. Bruce J. Augustin, University of Florida Agricultural Research Center, 3205 SW 70th Avenue, Fort Lauderdale, FL 33314, 305-475-8990.

New York State Turfgrass Conference and Trade Show, Empire State Plaza, Albany, New York, November 16-19. Contact: Janet Dudones, The Ed Worthington Corporation, 50 Petrova Avenue, Saranac Lake, NY 12983.

RADNOR VALLEY SLICED TWO-THIRDS OFF CREEKBANK MOWING BILLS.

Mark Curtin
Superintendent
Radnor Valley Country Club
Villanova, PA

You don't have to be a golfer to appreciate the job EMBARK plant growth regulator did on these creekbanks.

Mark Curtin, grounds superintendent of this 18-hole golf course, used to catch a lot of flack about lost balls if he wasn't constantly cleaning up these creekbanks. And the way he tells it that used to cost quite a piece of change. About \$3,200 a season.

"That old creek meanders along about a mile through the course. It used to keep a four-man crew busy for three days. Three weeks later we'd be back again. At least eight times a season.

"Now, just two treatments of EMBARK PGR and two mowings and I'm home. \$1,000 a year against \$3,200."

With EMBARK PGR, you spray whenever grass is actively growing. Spring, summer or fall.

One spray replaces two months' mowing, at a fraction of the cost.

Ask your local distributor for EMBARK plant growth regulator. And this season bank on fewer mowings.

3M HEARS YOU.



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PRODUCTS

Sidewinder's power pumpers

Sidewinder "Green Line" utility sprayers from the FMC Corporation are equipped with a Briggs and Stratton three horsepower engine which drives a centrifugal pump delivering five gallons per minute at up to 60 psi.



The engine drives a positive displacement piston pump which

can deliver three gpm at 300 psi in the model 30HP. Both sprayers have tanks made of high density polyethylene. Both sprayers have a big four inch filler opening with a drain plug for easy filling and cleaning.

Suited for nurseries, estates, small parks, greenhouses, truck farms, large gardens and small fruit orchards, these easy-to-use sprayers have attractive options to make them suit a variety of needs. The model 15HP comes with the model 745 spray gun, but a model 757 gun is optional as well as a wand kit, tree gun extension, root feeder and double discharge greenhouse gun.

The model 757 pistol grip spray gun is standard on the 30 HP sprayer, but options include a five foot spray boom with nozzles covering an 80 inch swath, a tree

gun extension, a greenhouse gun with double nozzles, a root feeder and a pressure gauge kit.

Write 701 on reader service card

Rugged catch-all

The new Zeeter catcher for the Dixon ZTR 308 riding mowers allows an uninterrupted flow of



clippings through a seven inch diameter poly tube, with no sharp angles or corners to impede free flow. With a minimum lift factor, the grass feeds into a tough nylon bag suspended firmly from a steel frame and held in place by a rigid

housing lid. This assembly keeps the five-and-a-half bushel bag from sagging and dragging, even when full of heavy grass.

The bag is easily removed for emptying: unlatch the lid, slide the bag off the frame, reverse that procedure to reattach. The clear, 40 millimeter Lesan tub is heavier than industry standards and withstands impact from both within and without. The entire catcher can be attached or removed from the mower with a minimum of time and effort. With the mounting bracket secured by only two fasteners, most owners will probably leave the mounting in place during mowing seasons.

Write 702 on reader service card

Ritzi Rails scuff at scuffs

Classic Ritzi-rails bed side protectors from Classic Auto Accessories will not only keep your pick-up truck looking new, but



will also hide damage already done to an older truck. Made of bright diamond tread aluminum for design and durability and available for GMC-Chevy and Ford wide bed trucks.

Write 703 on reader service card

WITH A KUBOTA FOR MAINTENANCE, YOU WON'T HAVE GROUNDS FOR COMPLAINT

It seems that more and more grounds maintenance professionals these days are switching to our Kubota tractors.

We are pleased by this development, but not surprised.

After all, Kubota is the world's largest manufacturer of mid-size tractors, 12 to 81 hp.

That means our tractors fall into the most desirable size, price, and horsepower range for your type of work.

And Kubotas are built to tackle grounds maintenance chores of almost every type.



hard work, all Kubota models are available with 4-wheel drive.

Besides all that, Kubotas have another very important advantage. They are amazingly trouble-free.

Quality construction is one of the reasons, but even more important is that every one of our tractors comes equipped with a tough, durable, water-cooled diesel engine.

Not only are diesel engines more economical than gasoline engines, they are also much easier to maintain.

For one thing, they never need a tune-up.

With no spark plugs, no distributor, and no carburetor, there's nothing to tune.

We are proud to have a large

national sales network that is notable for its commitment and quality.

So for a good look at our leading grounds maintenance models, pay a visit to your local Kubota dealer.

He'll show you why owning a Kubota lets you spend your time maintaining the grounds, not the tractor.



We're looking for work.



Honda introduces heavy duty mower

Designed to handle heavy duty jobs, American Honda's self propelled mower features design innovations to meet work demands for durable and dependable equipment.

Honda's five horsepower GV-200 vertical engine delivers plenty of power to handle heavy cutting jobs. A sturdy, mechanical governor controls engine speed and a trochoid oil pump insures proper engine lubrication.



The new HR-21-5 also features the Roto-Stop, a blade stopping system pioneered by Honda to minimize hand and foot injuries. When the handle lever is released, the rotor blade stops within a few seconds while the engine continues to run.

The HR-21-5 is powered by a self-propelling rear wheel drive system improved for superior handling. The mower has a fixed speed setting and two optional speed settings obtained with minor adjustments. New features include a belt tension roller and a heavy duty drive gear with driven face for added durability. Two ball bearings have been installed in

Standard features include rear PTO, 3-point hitch, and a dependable hydraulic system.

Larger models, beginning with the 30-hp L305, have independent or live power.

Our tractors are therefore prepared to handle the implements you need for mowing, fertilizing, trenching, loading, hauling, and snow clearance.

To add to their capacity for

Write 120 on reader service card

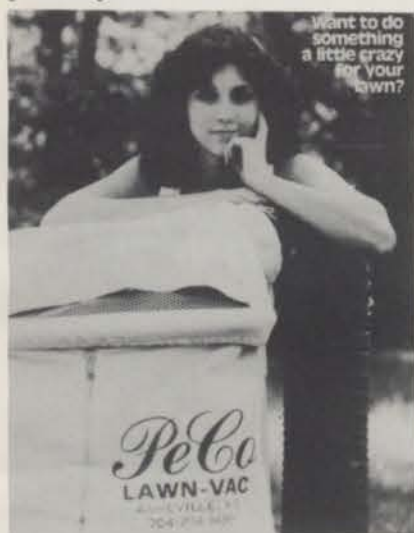
each front and rear wheel for longer wear.

Standard features include a dual element type of air cleaner to minimize engine wear and an aluminum cutter housing. The rear grass bag holds up to two bushels and its slim design affords maximum maneuverability.

Write 704 on reader service card

Lawn vacuum swallows debris

As you mow your lawn, the PeCo Lawn Vac pulls up all debris through the mower deck using a gas-powered or PTO-driven vacuum, then mulches and deposits it in the unit's easily-emptied bagger or metal box. A wand attachment is also available for hard to reach places—under bushes and along pathways.



Engineered for long life and power, the unit comes with a powerful three horsepower, 3600 rpm engine, or a modification for your tractor's PTO drive unit. Each PeCo Lawn Vac is designed specifically for your tractor model so it may act, with your tractor, as a single unit.

The PeCo Lawn Vac will pick up, bag and mulch up to 12 or more bushels of lawn debris. On most models, the heavy canvas bag includes a disposable plastic liner for easy removal and can be thrown away or used again. Then the mulched material can be used for gardens, shrubs, trees, or any place where you would like to work organic matter into your soil.

Write 705 on reader service card

Rear discharge tractor-mower

The 448-18 horsepower garden tractor from J. I. Case features the Case hydraulic drive (Hydrive)



system which powers the tractor and attachments. Included as standard are an Onan twin-cylinder, four-cycle engine; rug-

ged twin-channel frame; cast iron axles both front and rear; and a high clearance design.

The unit has the Snap-Fast attachment system can handle the Case built mowers, utility blade, lawn sweeper, snow blower and dump cart. The 448 will also handle the Case hydraulic tiller. Rear-discharge design of the mower permits close-up trimming on either side of the deck. All steel welded construction is mounted on a floating drawbar suspension and the rear-discharge chute concentrates clippings under the rear axle for convenient pick-up.

For commercial uses, the new mower is built for extra cutting width. Parallel linkage suspension maintains an even cut the full width of the deck. Precision timing belt-drive synchronizes the three blades at the required cutting speed. Blades are mounted in line and overlap.

Write 706 on reader service card

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MONEYWISE

Social Security tax rates up

Up, up, and away! Social Security tax rates rose to 6.75 percent on the first of January, with an accompanying tax base increase to \$29,700.00. This means that at the present rate, both employee and employer (in matching funds) would pay out a maximum of \$1975.00 in Social Security taxes. As a perennial hedge against the future, the rate and base are scheduled to rise according to the table below. Plan accordingly.

Year	Rate	Base	Employee contribution (matched by employer)
1981	6.65%	\$29,700	\$1975.00
1982	6.70%	32,400	2170.80
1983	6.70%	35,400	2371.80
1984	7.05%	39,000	2613.00
1985	7.15%	42,900	3024.45
1986	7.15%	46,800	3346.20
1987	7.15%	50,400	3603.60
1989	7.15%	54,000	3861.00
1990	7.65%	57,600	4118.40

With GSL Sulfate of Potash, there is far less chance of burning lawns or gardens!

GSL Sulfate of Potash (0-0-52-18) is the **safest** and **most effective** potash you can use! It is nearly free of chloride and has the lowest salt index of any potash. (0.85 vs. 1.94 for potassium chloride.) It is the safest potash you can buy.

Because GSL Sulfate of Potash contains 18% sulfur, you get better disease resistance to Fusarium Patch, Ophiobolus Patch, Dollar Spot Fungus and Powdery Mildew. You also get less Poa Annua infesting your lawns.

GSL Sulfate of Potash contains both K and S in the ratio used by grasses. This results in a better response to the nitrogen, phosphate and other nutrients you apply.

Let GSL Sulfate of Potash help you keep customers satisfied, increase repeat business and add to your profits.

GSL makes several grades of Sulfate of Potash for solutions, granulated, blended or suspension products. Call or write for complete agronomic information.



Great Salt Lake Minerals & Chemicals Corp.

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Northeast Office: 880 Rosedale Ave., Marion, Oh. 43302 • (614) 382-5304
Southeast Office: P.O. Box 1102, Smyrna, Ga. 30081 • (404) 977-2322
A subsidiary of Gulf Resources & Chemical Corporation • Houston

Write 112 on reader service card

Braided high pressure hose

This 800 psi high pressure hose from Green Garde is ideal for pest and weed control operators, horticultural and grounds maintenance personnel, and landscape



and tree spraying contractors. With a bursting pressure of 3,000 psi, this hose features extra strong braid reinforced double tube PVC. Extra bright chartreuse color will not mark patios or curbs. Less than half the weight of conventional

hose, it will slide over ground and around corners and trees. Made in 400-foot continuous lengths without splices.

Write 707 on reader service card

Snapper grass catcher

The Snapper Vac-n-Pac Grass Catcher is a vacuum cleaning attachment for Snapper Garden Tractors from McDonough Power Equipment. Installed directly and easily to the rear of Snapper tractors, the Vac-n-Pac prevents jack-knifing while operating in reverse because there is no pull cart.

The Vac-n-Pac is used with a 48 or 54 inch rear discharge mowing unit which provides the shortest distance for cuttings and litter to travel because the air duct is mounted in the center rear instead of on the side.

With the rear mounted Vac-n-Pac and a rear discharge mower,

you can trim close on both sides and easily maneuver around trees, shrubs and buildings. And, since the catcher is all heavy gauge metal, there are fewer moving parts and less maintenance.



The Vac-n-Pac grass catcher will vacuum cuttings, leaves, pine straw, pine cones, twigs, and light litter. When used in conjunction with a Snapper Thatcherizer, a

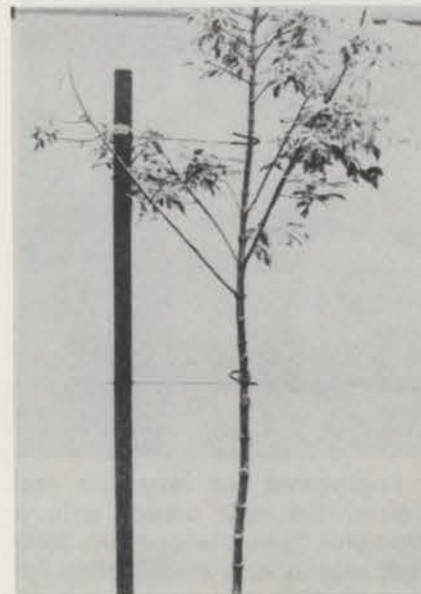
front mounted spring loaded tine device for loosening thatch, the Vac-n-Pac will also pick up thatch. Therefore, taking, sweeping, and separate vacuuming is eliminated.

Write 708 on reader service card

Bringing up young striplings

Straight Tie guy wires are simple, neat and easy to install, saving both time and material. Made from nine gauge wire, they have a 360 degree loop at one end and are covered with a weather resistant sleeve to protect the tree from damage along with special self-locking fasteners.

Straight Tie allows newly planted trees, up to one and-a-half inch caliper to be supported with just one stake and allows the tree to move naturally so it develops properly.



Most newly planted trees are either overtaken or understaked. Overstaking with three stakes in a triangular pattern does not allow the tree any movement. Understaking with no supportive tie allows the tree too much movement and sometimes tree damage occurs from the tree hitting the stake.

Write 709 on reader service card

Triplex reel mower cuts like shears

Locke Triplex power mowers are best utilized on large grass areas or for lawns with considerably shrubbery, walks and raised borders. All models may be used with sulkies which may be attached or detached in less than a minute. Grass catchers are available for use on these mowers with seven blade reels for extra low cut.



Locke Triplex offers three different widths of cut: 70 inches, 75 inches, and 85 inches. All are available with forward and reverse or forward-only drives. Side reels lift to full vertical position for easy transport and compact storage.

LESCOSAN*

CAN-

- CONTROL CRABGRASS MORE EFFECTIVELY

than any other pre-emergence herbicide.

- CONTROL CRABGRASS LONGER

than any other pre-emergence herbicide.

- BE APPLIED WITH CONFIDENCE.

Lescosan is labeled for bents. Lescosan does not damage grass roots or thin turf.

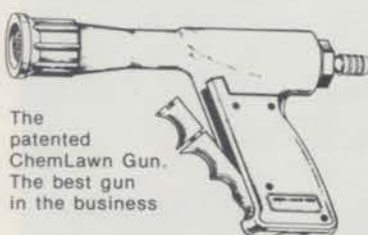
- BE PURCHASED NOW IN CONVENIENT FORMS.

Lescosan 4E is competitively priced, an emulsifiable concentrate, not a wettable powder, for ease in mixing and application. In addition to Lescosan 7G and 12.5G, Lescosan 3.6G + Fertilizer is available in a formulation to provide cleaner, greener turf with one application.

**LESCOSAN CAN DO ALL THIS.
CAN YOU AFFORD TO BUY ANYTHING ELSE?**

Lescosan* (Betasan-registered trademark of Stauffer Chemical Co.)

CALL BARB. SHE'LL TAKE YOUR ORDER.



The patented ChemLawn Gun. The best gun in the business.

LESCO PRODUCTS

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

Write 121 on reader service card



The 60 series power mowers differ from the standard series in that clutches and transmission drives have been eliminated in favor of belt drives for both reel and traction. Drives in the grass cutting area continue to be chain so that wet conditions will in no way affect the operation of the mower. Castings have also been eliminated in favor of rugged weldments improving rigidity and minimizing vibration.

Write 710 on reader service card

Total lawn care system with Chew Chew

The "Chew-Chew" line of lawn vacuums from the Lambert Corporation and a complement of versatile attachments make up a total lawn care system that vacuums, mulches and bags in a single operation. Each of the three models allows consumers to reduce litter, leaves, grass and hedge clippings to one-eighth their original volume.



Lambert's three lawn vacuum models have capacities of five, seven and 10 bushels, and engines for the units range from a three-and-one-half horsepower model to a self-propelled five horsepower unit. Each model vacuums through a 30 inch steel nozzle and features a single lever height adjustment and stabilizer wheels in back of the nozzle. All three models have vented cloth inner bags and insertable disposable plastic bags.

Attachments available to complement the "Chew Chew" line include a shredder/hopper that diverts vacuum suction to an all-steel hamper for shredding tree branches, hedge clippings, straw mulch and discarded garden plants. The mulched material can then be deposited directly into disposable plastic insert bags for trash pick-up.

Write 711 on reader service card

Flowable Maneb formulation

Stoller Chemical has just received EPA clearance for a new four pound flowable Maneb formulation. Label recommendations include control of most disease of vegetables, ornamentals, turf and grasses. Manufactured by a micro-flo process, Stoller flowable Maneb assures consistent micron-size particles. The smaller the particle, the better the coverage and crop protection.

Stoller Flowable Maneb exhibits activity against a wide range of fungal organisms. It protects decay of stems, foliage and vegetable parts. Low rates give effective control even under the most severe disease conditions. The product

mixes readily with water and is compatible with most insecticides, including spray oils. Consult State Agricultural Service or State Agricultural Experiment Stations in your region for recommendations.

Write 712 on reader service card

New hard fescue is a good mixer

Tournament Hard Fescue from Pickseed has produced outstanding turf results. Persisting under warm, dry conditions, Tournament was bred in Holland and based on its hardiness and longevity, Tournament produces a low-growing, dark green, fine-textured turf with excellent germination, seedling vigor, and establishes a dense turf. Testing in Europe, the United States, and Canada has indicated that the hard fescue has high resistance to common turf diseases and can be adapted for use in most reclama-

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MARKETING IDEA FILE

Are your customers talking back?

Your customers are probably the most important people you know. It's always good to keep a close professional relationship with them, and one of the best ways to serve this need is a customer service card. Recently, Perf-A-Lawn Corporation in New Carlisle, Ohio, sent out what they call "You be the judge" cards to all the customers in their eight branch offices. The response rate was a handsome 14 percent.

Among some of the questions asked were: "How were you treated when you first called Perf-A-Lawn?"; "Has Perf-A-Lawn lived up to your high standards?"; "How has your lawn looked this year?"; "Has your service been prompt and professional?"; "Is there anything you believe we should change about your program?"; "How did you originally hear of Perf-A-Lawn?"; "What other service would you like Perf-A-Lawn to offer?". Writes Perf-A-Lawn's Mike Hiller, "Although we realize the information we obtained from these cards was bias, it did at least let our customers know that we are actively enthused about being their lawn care company."

[illegible]

Customer satisfaction. That really says it all. To keep your customers satisfied, their lawns must be thick, green and attractive. But that's not always easy. Wouldn't it be great if there were a product specifically designed to answer your needs?

There is. Super Fairway Fertilizer from ProTurf®.

It's a dry-applied granular fertilizer produced by Scotts® exclusive Polyform® process. Super Fairway Fertilizer spreads quickly and evenly to provide good distribution of nutrients. That means you can treat more lawns a day. And more lawns mean more profits.

Plus, Super Fairway Fertilizer has a high nitrogen analysis that provides quick green-up and sustained feeding for up to eight weeks. Your customers see the results in a short time and get good-looking lawns that last for weeks and weeks. And, because of its high analysis, you'll have fewer bags to handle.

Super Fairway Fertilizer has other benefit-related features. Using potassium sulfate as the potash source provides increased plant safety, so you'll get fewer call backs. Which leads to greater peace of mind. Also, because excess bulk and weight are removed, you can reduce storage space by one-third and lower labor costs with fewer bags to lift and spread.

It all adds up: Improved results / More lawns treated per day / Fewer call backs / Greater peace of mind / Fewer bags to handle / Reduced storage needs / Lower labor costs.



You owe it to yourself, and your customers, to try ProTurf Super Fairway Fertilizer and reach a new bottom line... more satisfied customers.

Inquire about the other special ProTurf products, services and selling programs, specially geared to lawn care service needs. Your Tech Rep has all the information, so give him a call. Or call Scotts direct . . . toll free: 800/543-0006 or call collect 513/644-0011 in Ohio.

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Write 130 on reader service card

PRODUCTS from page 41

tion work with very good tolerance to salinity.

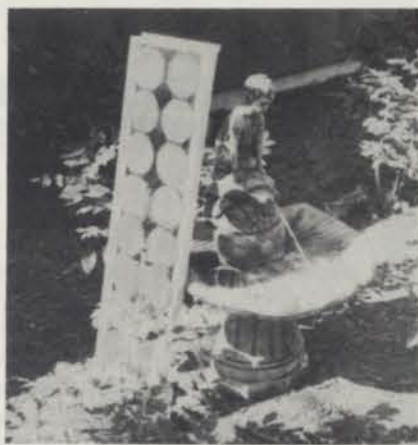
Fine fescues are important as components of lawn seed mixtures for cool sites with moderate shade. Blending several fescues together to make use of the best qualities of each is recommended. If the lawn is to be entirely of fine fescues, about four pounds of seed are needed for each 1,000 square feet.

Like most improved fine fescues, Tournament performs best under less intensive management, low nitrogen levels, less mowing and reduced watering. Specific recommendations will vary by region, so consult your local turf specialist for best results.

Write 713 on reader service card

Solar powered pump

Solar powered water pump from ACP Solar Potentials is ideal for decorative fountains or waterfalls. Submersible pump is only five



inches long, pumps up to eight feet at approximately two gallons per minute. Solar voltaic panel provides the power.

Write 714 on reader service card

Tight trimming rotary mower

This versatile riding rotary mower from Jacobsen features an optional water-cooled engine for heavy duty service. The four cy-

linder 67 CID engine produces 25.5 horsepower and 47.8 foot-pounds of torque at 2800 rpms.

Compared to an air-cooled engine, its low operating temperature of 180 degrees (F) extends the life of valves, rings and other internal working parts. The Out Front 72 mows a 72 inch swath and has maneuverable rear wheel steering for tight trimming around trees, under shrubs, and other hard-to-handle places.

Its deck suspension is articulated for mowing hills and dales, operational stability and climbing curbs in transit. The deck also has anti-scalp caster wheels and rollers. As with the 19.9 horsepower air-cooled engine, the machine has a hydro-static transmission with a single foot-pedal control. Steering has been revised for easier operation and a new seat provides greater support and comfort.

Write 715 on reader service card

TOOLS, TIPS, TECHNIQUES

What a maintenance contract should cover

It may be just a piece of paper, but a lawn maintenance contract will protect both you and your customers from gambling on each other's rising expectations. As a legal document, it's defense against customer ignorance, unreasonable demands, acts of God, and maybe even trimming the rose bushes, if you please. In short, a script for smart business.

What should your professional contract look like? What should it include? What should it ignore? If it conforms honestly to your service capability, a good contract may end up saving you time and money.

The California Landscape Contractor's Association in Los Angeles, California has come up with a mock-up contract that they recommend for all kinds of landscape maintenance work. It is divided into two areas, 'General Scope' and 'Lawn Maintenance,' with each section becoming progressively specific. Here are some of its highlights.

The 'General Scope' section sets up the overall business terms of your service. Included are such items as duration of contract, guarantees to supply all equipment, labor, transportation and permits as needed, number of inspections per year, and the exact dimensions of your lawn care responsibilities.

The second section on 'Lawn Maintenance' sets up specific areas of responsibility. How many times per month will you

Make a separate agreement on slope maintenance. Slopes can be both difficult to maintain and hazardous to service and should be handled separately.

mow, trim and edge?; Will you be using reel or rotary mowers? What will your mowing heights be in warm weather? In cold weather? When you fertilize, how much nitrogen will you use every 1,000 square feet per year? And how often will you apply weed, pest, and fungus controlling agents to the lawn? Is reseeding an option for you? If so, will you water? And if so, how often? These are all important aspects of lawn maintenance which you should set terms for before the first crew arrives. Get it all down in writing first.

If you are into tree, shrub, and vine maintenance, what, where, and when will you prune? Do you have pole pruning equipment? Then include that in the contract. Do your customers expect you to deep root-feed their trees? Get it in writing. If you trim vines, some customers are touchy about how it should be done, and particularly about how their vines are attached and reattached. Make sure you know beforehand.

Most of the time, customers are absent when your crews arrive. Even small details like these should be discussed and included in the contract so you won't end up paying for service calls or inadvertent damage. How many times should their shrubs be fertilized? How many times should their trees?

The next section of this model contract concerns flower beds, ground cover, and slopes—potentially risky areas of your customer's landscapes. What exactly do they want trimmed? And where? The contract suggests that you make a separate agreement on slope maintenance. Slopes can be both difficult to maintain and hazardous to service and should be handled separately. Do they require complete disease and pest control in their flower beds? Have them specify everything. It can only save you money.

The final section deals with irrigation. Some customers may want you to adjust and service all their sprinkler heads for coverage. You may prefer to do it this way in order to avoid customer mistakes. At any rate, get it into the contract.

The final statements of the contract are perhaps the most crucial. They read: "All items not checked on this contract shall be considered extra and shall be charged under separate purchase order according to the nature of the item." Just a 'drip bucket' clause to protect you against unforeseen circumstances. And that's the name of the game—protection—it can only help you save.

WATER PENETRATION AQUA-GRO®

YOUR KEY TO MORE SATISFIED CUSTOMERS



Irregular growth of turf in stratified soil when maintained with plain water.



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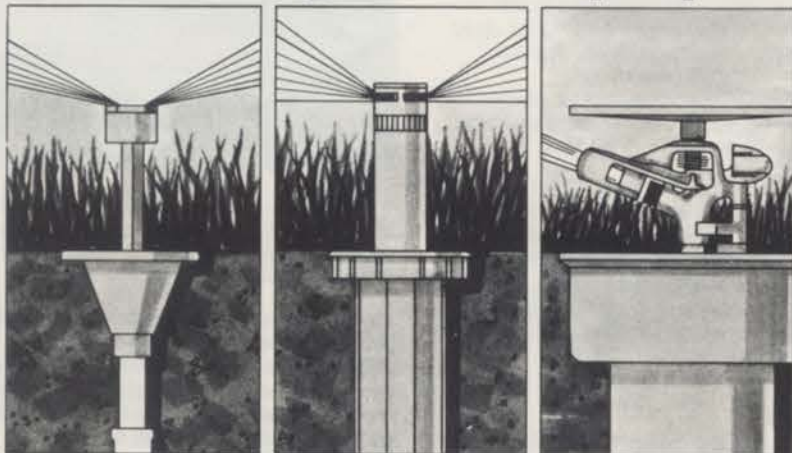
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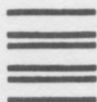
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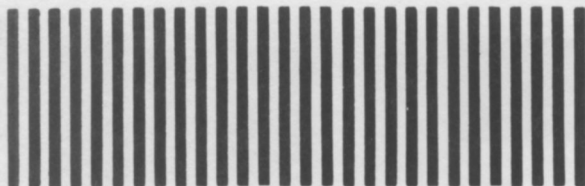
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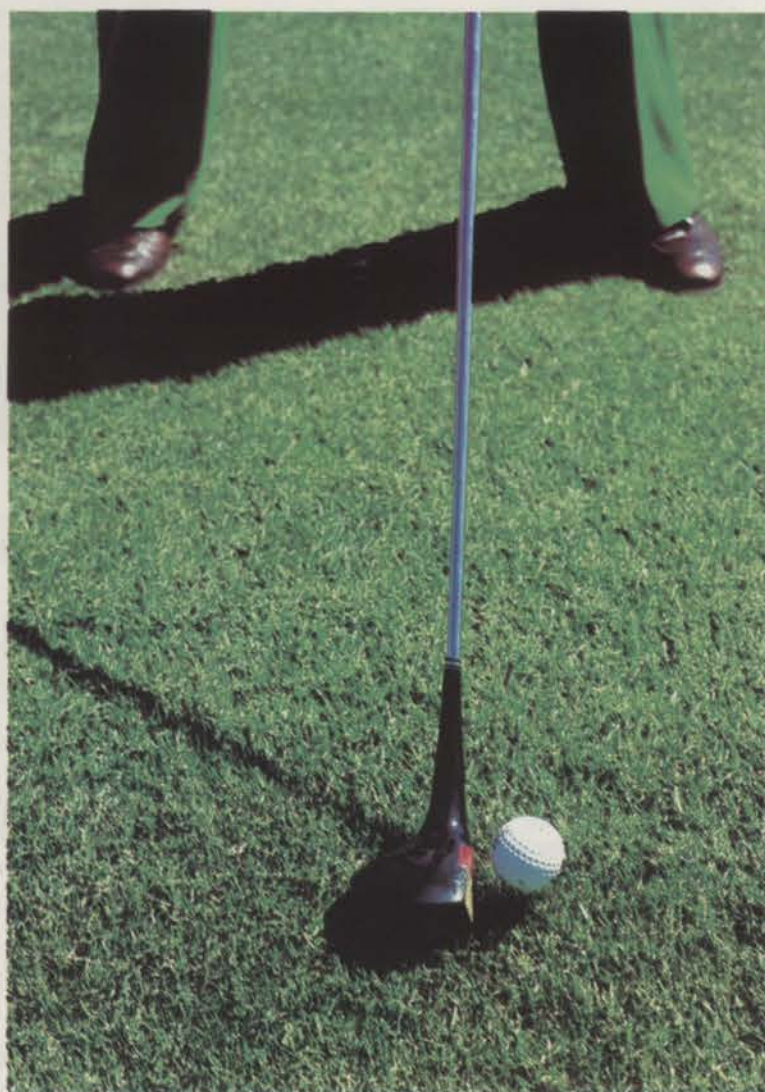
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BEHIND THIS ISSUE



Are we going to lose 2,4-D? This is a question I have been asked more than once by lawn care businessmen across the country. As you can see from assistant editor Paul McCloskey's story on page one of this issue, Madison, Wisconsin officials came one vote away from banning the use of 2,4-D in that city. Only some uses are being restricted.

And Des Rice, president of The Weed Man in Toronto, told me earlier this week that Canadian agriculture officials are still working to restrict use of 2,4-D north of the border.

Who knows what is going to happen? I sure don't, but in a recent conversation with an exec from one of the top lawn care chemical suppliers, he told me: "The government is going to take it away. It might take awhile, but I really believe they have their minds set on it, and it's going to happen." Sobering words to be sure, but you can bet that LAWN CARE INDUSTRY will stay on top of any developments, and keep our readers alerted as to what they can do.

Another situation that has reached crisis proportions in some parts of the country is available water for drinking, not to mention landscape use. Many, many lawns across the country suffered considerable damage as a result of water shortages and extreme heat,

and as Paul McCloskey reports in his story on the front page, the situation is still critical in many areas.

Another page one story in this issue, based on a talk given by Jerry Faulring of Hydro Lawn in Gaithersburg, Maryland, of the Virginia turf conference gets into fuel alternatives for lawn care companies. Businessmen I talk to say that their vehicle fuel costs represent anywhere from four to nine percent of their total yearly expenses. That's a big chunk, and you should be looking into diesel or propane conversions for your equipment.

One last thing. We've changed our front page to give it a little more punch, and we've also changed some of our column heads. We hope you like the changes.

Bob Gentry

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HELP WANTED

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