

CEMBER, 1968

# WEEDS TREES and TURF



969  
Suppliers Guide  
and  
Equipment Directory

# when your season rolls around...



## be ready to roll with a NU nes sod harvester



### NU nes Slab Sod Harvester . . .

lifts, cuts, and conveys slabbed sod to loading platform. Handlers can load directly on to pallet as tractor moves.

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- The efficiency of this all-mechanical operation has been proven on Cal-Turf Farms in Patterson, California, and it can solve the problem of quick and economical harvesting of sod for all turf farmers.

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2006 Loquat Avenue, Patterson, California 95363, Phone (209) 892-6311



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# WEEDS TREES and TURF

December 1968

Volume 7, No. 12

FORMERLY WEEDS AND TURF

## The Cover

This December cover of WEEDS TREES AND TURF magazine illustrates the variety of equipment available to the non-crop

horticultural industry. Aerial devices such as these offer tremendous latitude and variety in selection. This is only one type of equipment listed in the WTT 1969 Suppliers Guide and Equipment Directory which begins on page 12.

The cover scene is from the demonstration field day of the International Shade Tree Conference at the Morton Arboretum near Chicago this past summer.



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## Chronister Heads Harvest Publishing Company

Hugh Chronister, general manager and a director of Harvest Publishing Co., has been elected president and treasurer of the firm, succeeding James Milholland, Jr., who continues as chairman of Harvest. Milholland has become a vice president of Harcourt, Brace & World, Inc., which owns Harvest, and will direct all of the Company's periodical publishing activities.

Harcourt has restructured a large part of its periodical publishing operation through the creation of a subsidiary, Harbrace Publications, Inc. Milholland is president of Harbrace. Harvest publishes five farm magazines and two business periodicals, including Weeds Trees and Turf.

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**BPA Application Applied For**

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## A \$3 Billion Business

Commercial weed, tree, and turf operations are a \$3 billion business in this country today. Further, they are being expanded.

WEEDS TREES AND TURF magazine editors have just completed a survey study of operators in the non-crop horticultural field. Based on accepted research sampling methods, the study clearly establishes the scope of the vegetation care and control industry. The \$3 billion figure represents the total gross volume of business by 30,000 operators who read WTT.

Generally, 1968 has been a good year with operators reporting a 14 percent net profit margin. Some 75 percent of those answering say they expect an even better year in 1969.

The non-crop areas of weed, tree and turf care and control constitute an important segment of our economy. The study indicates it will grow even more as more and more homeowners and industries turn to professionals for this type of service work. In the study, more than half of those reporting said that homeowner service contracts were the fastest growing segment of their individual businesses.

Looking ahead to 1969, and specifically at some of the major categories in the industry, we see many of the same problems which ushered in the previous year.

Namely, these concern pesticide applicators. This important group faces certain restrictive legislation and desperately needs a national organization to channel their efforts effectively. We are among the first to realize the need to protect the citizenry. But we also realize the impracticability of some proposed legislation. Perhaps the best start should be more state pesticide applicator associations.

Sod producers also are part of a growing industry in the field. They will shortly hold their second national annual convention. This group while making great strides during its first two years still has a long way to go. More growers need to join the association and help further their own business operations.

Turf and tree areas of the business are well organized and their state and national organizations are serving them well. These organizations have done an excellent job in providing forums for ironing out mutual problems of legislation, labor shortages, rising costs, and general management. The new year offers the first opportunity for other groups to do likewise.

WEEDS TREES AND TURF is the national monthly magazine of urban/industrial vegetation maintenance, including turf management, weed and brush control, and tree care. Readers include "contract applicators," arborists, nurserymen, sod growers, and supervisory personnel with highway departments, railways, utilities, golf courses, and similar areas where vegetation must be enhanced or controlled.



## Introducing McCulloch's new Power Mac 6. The world's lightest chain saw. It weighs only 6½ pounds.\*

Here's a chain saw you can lift easily with your little finger. A saw so light, so compact it's not much bigger than an electric knife. Notice how the "Master Grip" handle is located directly over the center of gravity? That means you can use just one hand to move the Power Mac 6 safely and easily between cuts. The grip is padded for comfort and all controls are grouped underneath just a finger's reach away. Squeeze the trigger and the light-weight magnesium-aluminum engine delivers more cut-

ting power than most chain saws weighing twice as much. You can cut enough firewood in an hour to last all winter. Zip through an 8-inch log in 6 seconds. Fell trees up to 2 feet in diameter. Use it to clear land, prune limbs, even build small buildings. The Power Mac 6 is big news. And there's lots more news from McCulloch this year, including the amazing "Quiet Line"—with the "Sound Silencer" muffler that reduces noise impulses up to 75%.† Ask your McCulloch dealer. He's in the Yellow Pages.

\*weight less bar and chain †Compared to standard cavity-type mufflers.

### McCulloch

6101 West Century Blvd., Los Angeles, Calif. 90045

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WEEDS TREES AND TURF magazine's

# 1969 Business Forecast

VEGETATION care and control businesses continue to grow. A poll of WEEDS TREES AND TURF magazine readers reflects optimism among operators of service type businesses in the non-crop horticultural field.

As a rule, operators expect their business to increase in 1969. Three-fourths of the first 200 returning WTT business forecast questionnaires were optimistic. Another 22.7 percent look for their business to stay about the same. Less than 3 percent expect a decrease this coming year in their volume of business.

This thinking by WTT readers is closely aligned with that

of economic forecasts for the nation as a whole. Now that the election is over and the Nixon administration is due to take office, economists are flooding news media with outlook material which reflects their thinking regarding the effect of the new administration on business.

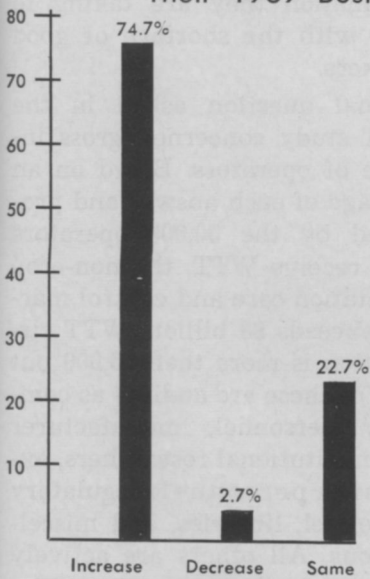
In short, the information boils down to what might be termed cautious optimism. Economic forecasters believe business will generally be more friendly with the Nixon group than has been true of the previous administration. They expect some slowing down of inflation, but not enough to completely stem the profit squeeze which businesses

have been feeling as a result of rising costs.

Business may suffer a slow-down, especially during the expected period early in the year when the surcharge tax bite coupled with recent tight money takes its full effect. A slow-down in defense spending is also a distinct possibility if the Viet Nam war slackens or comes to a halt. However, economists feel the general feeling of relief at the war's end will serve to boost the economy. Some stock brokers expect such an event would trigger an upsurge in the stock market. Economists also expect that housing starts would increase even more than expected and the general business upturn would boost the economy rather than foretell any significant recession.

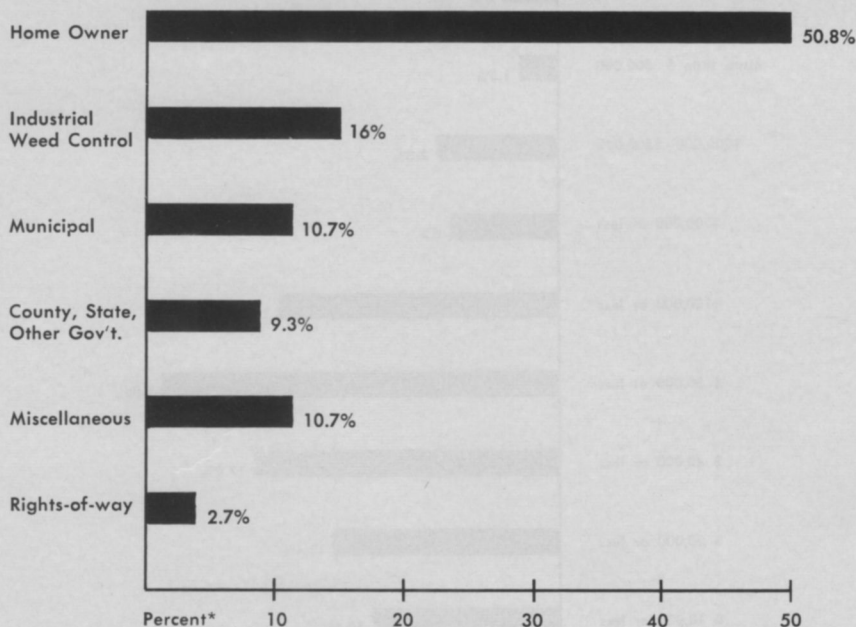
In general, the economists predict an increase of almost 6 percent in total spending in the U.S. Consumer incomes are expected to be up well over 5 percent. Home building and construction industries are also expecting an increased pace of between 5- and 6 percent. A sum-

Table 1. How Vegetation Care and Control Operators Forecast Their 1969 Business



\* Percentage of non-crop horticultural operators reporting.

Table 2. Service Contracts in the non-crop horticultural field showing most rapid growth



\* Percentage of vegetation care and control operators who reported these as fastest growing type of service contract.

mary of the collective thinking of economists is that 1969 bodes well for business. Big problem will continue to be inflation and the increased costs of doing business.

#### Net Profit Margins:

In the WTT survey, readers who operate businesses were asked to estimate their profits for this past year. Practically all reported being in the black, the average being a 14 percent net profit margin. Reports varied greatly, however, ranging from a number of 5 percent lows to 50 percent. This range which was more general than expected would indicate that service charges vary considerably in the industry. Many operators apparently have not increased their service call charges to cover down shop time or the increased costs which they must carry in doing business. Another possibility for the difference in profits might be competition for con-

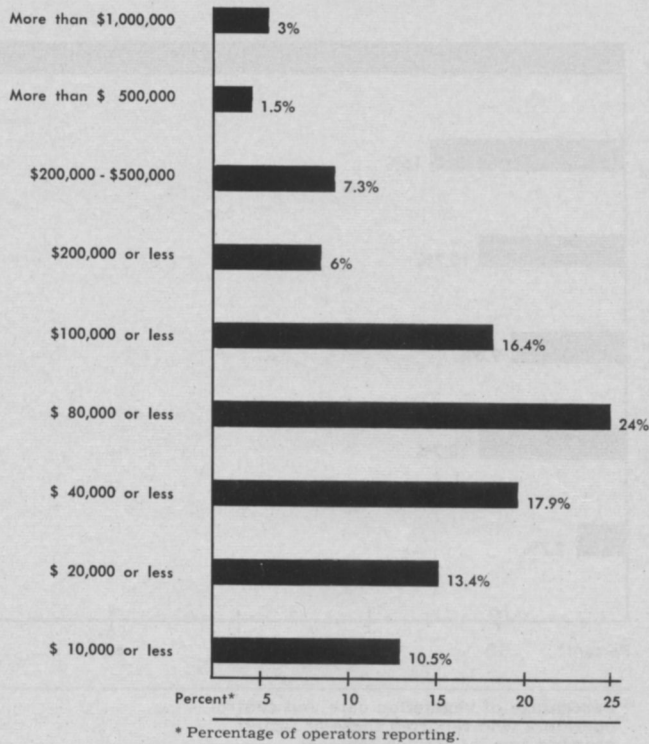
tracts. Generally, most operators who commented on business indicated that more business was available than they were equipped to handle.

#### The Industry Today:

A number of types of service are growing in popularity. More than half, 50.6 percent, of the operators reported that home owner service contracts were the fastest growing segments of their business. Sixteen percent reported that their industrial weed control business was showing the greatest increase. Government work such as municipal contracts (10.7 percent) and county, state, and federal contracts (9.3 percent) was indicated as showing most growth by one in every five operators. About 3 percent indicated that utility rights-of-way business was the fastest growing, and 10 percent listed miscellaneous types of contract work as pushing ahead.

Based on this random sample

Table 3. Gross Income for 1968 Reported By Operators Participating In WTT Business Forecast Survey



of WTT readers, 61.3 percent (about 18,000 businesses on a projected basis) gain half their business income from contract pesticide application. Tree care operators get only about one-third (34 percent) of their gross income from tree maintenance and planting. Big end of their business is contract application of pesticides.

Almost 6 percent of all operators are doing some type of aquatic weed control work. Of those working in the area of aquatic weed control, 16 percent of their total gross income is derived from this source. A whopping 34 percent said they planned to move into some new phase of the non-crop horticultural field in 1969. Among the new fields listed most often were irrigation installation, aquatic weed control, retail nursery stock and turf supplies, custom spraying, fertilizer application, equipment rental, and landscaping. Listed less often and somewhat unique were homeowner fence installation, dry rot and

fungus control, stump removal, and aerial seeding and fertilizing.

#### More Chemicals:

Pesticides will be used even more in 1969 in the non-crop field. The average dollar value to be spent next year by WTT readers will average \$6840 per operator. Based on the 30,000 WTT readers who make some use of pesticides, this projects to an astounding \$205,200,000. Almost 75 percent of those reporting said this would be more than they used in 1968. Only 9 percent said they would use less, the balance planning to about match their '68 purchases.

To apply these chemicals, operators in the business will make major purchases of vehicles and equipment. More than 60 percent said they plan to expand. One in every three operators plans to add more employees and one in every four will add more equipment as part of expansion plans.

Among those responding to the survey, three of every four will buy some type of truck, and one of every six plans to buy a car as a part of their business operation. Most significant is the fact that the group reporting indicated that they will, on a nationwide basis, purchase 1500 fixed wing planes or helicopters for aerial spray applications. Total expenditures for vehicles and aircraft will approach \$140 million in 1969 based on WTT survey answers.

Further purchases will include spray equipment, tractors, mowers, irrigation systems, tree spades, stump machines, power rakes, tillers, chain saws, golf course equipment, and a variety of other types used in the non-crop horticultural field. Operators plan to spend an average of \$2300 per business on these items. Projected to all WTT operators, size of business expenditures for these items in 1969 will exceed \$69 million.

Generally, operators expect a good year in 1969. Several commented on the increased costs of doing business, but at the same time a number of these are planning to expand during the coming year. Besides increasing costs, operators stressed the problem of recruiting labor and steps such as equipment and automation they are taking to cope with the shortage of good workers.

Final question asked in the WTT study concerned gross income of operators. Based on an average of each answer and projected by the 30,000 operators who receive WTT, the non-crop vegetation care and control market exceeds \$3 billion. WTT circulation is more than 35,000 but 5000 of these are audited as company personnel, manufacturer and institutional researchers, extension personnel, regulatory personnel, libraries, and miscellaneous. All others are actively engaged in the non-crop vegetation care and control field.





Stull Chemical Company's bifluid spray system is demonstrated by Marvin L. Kolberg of Stull. Kolberg is using the John Bean Roto-Mist unit for benefit of spraymen attending the Texas A & M sponsored Industrial Weed control Conference.

## Texas Industrial Weed Conference Report

# *In-House Vs. Custom Contracts*

**I**N TERMS of business volume, industrial weed control is big business. Not only is it a growing segment of the industry, it is probably the fastest growing nationwide.

Non-crop weed control has always been a major operation, but in time past it has largely been done one way or another by a company's own work crews.

Today, the picture is different. Companies in many cases find it pays to hire a custom contractor to assume responsibility for this area of company operations. Other companies still feel they can do the job with in-plant help and equipment.

The pluses and minuses of contracting weed control work or of using company help were discussed at length at the recent In-

dustrial Weed Control Conference at Texas A & M University, College Station, Texas.

Dr. C. V. Wootan of Texas Transportation Institute at the University listed the advantages and disadvantages of each system. "Whether you use the services of a contractor or your own forces for weed control," he said, "depends on conditions existing in your individual company."

In favor of a company using a contract applicator for weed control, Dr. Wootan listed three big advantages. These are: (1) Known cost, since a good contract operation will be done at a given price. It may not be more expensive, but it will be known, and Wootan believes this is a distinct advantage to a company; (2) No company resources are re-

quired. Neither company labor nor equipment is committed to the operation; and (3) Proper scheduling. A good contract operation permits work to be done at the proper time without affecting the company's regular operations. Since a contractor may be able to provide the service with less disruption to the company's own operation, the contract may prove lower in cost.

### Disadvantages

There are also disadvantages to the system of using a contract operation. Dr. Wootan listed five as follows: (1) A contractor may not be quality conscious. This naturally depends on the contractor but is extremely important to the company; (2) Scheduling may be difficult for the



Dr. Wayne G. McCully, left, chairman of the Industrial Weed Control Conference, and with the Texas A & M Range Science Department, visits during field demonstration with George D. Bucher, John Bean regional sales manager at Denton, Tex., center, and Victor M. Jouffray, John Bean district sales manager at San Antonio, Tex.

contractor; (3) Contract costs may be high. Despite the fact that all costs must be paid and thus included in a contract, it may prove lower in cost than the company's own cost; (4) Company image may not be favorably reflected by the contractor. This is important since outsiders usually consider anyone working on company property to be a company employee; and (5) Contract performance is a factor. The possibility of non-performance is the risk which companies assume when they contract for work. Though legally binding, before the problem is resolved the season may be long past when the work can be done.

Dr. Wootan also listed the pros and cons of using in-house labor and equipment to handle the weed control operation. In favor of the in-plant system, he listed such factors as: (1) Use of company labor. This is feasible when underemployment of the company force coincides with the

weed control work season; (2) Close quality control. When company help is used, the firm has control over the quality of work performed; (3) Improved control over scheduling. A company can do the job exactly when needed, even though its own

Servis Flex rotary cutter is demonstrated by Al Scifres, Servis Equipment Company, Dallas, Tex., during field event.



regular company work schedule may be disrupted.

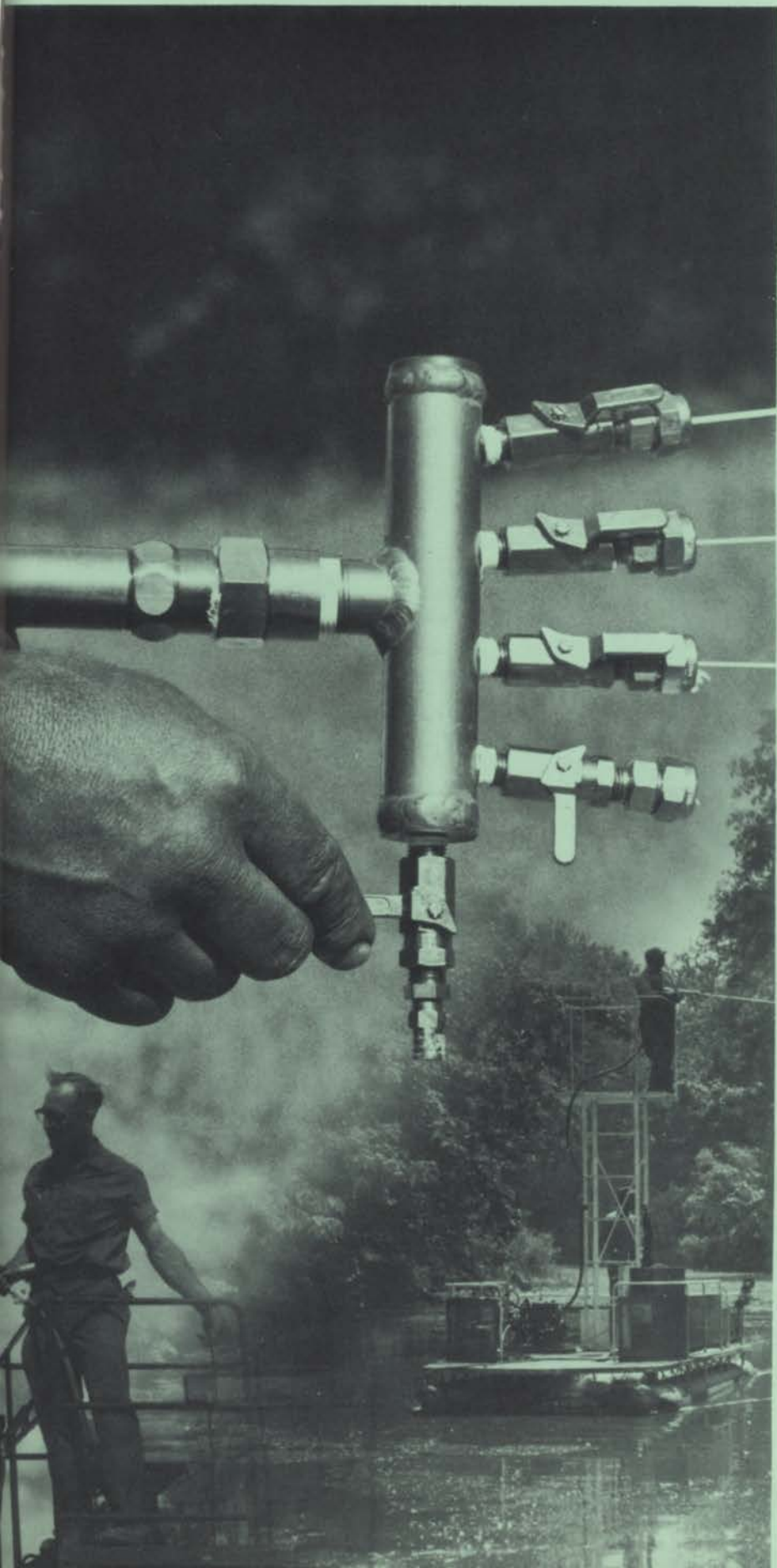
#### In-House Minuses

Disadvantages of using the in-plant system were also listed as follows by Wootan: (1) Capital is required. A company has to tie up capital which might better be used in the company's primary business activity; (2) Extra labor is required. Except for very small weed control operations, extra labor must be added to the work force. This may create the problem of unneeded labor during the off-season; (3) Supervision. An in-house labor force must be properly supervised to be effective and this requires more supervisory personnel or increased work load on that already available; (4) Extra plant cost. Warehouse and storage space is needed for machinery and chemicals; and (5) Extra overhead cost. Any activity which increases labor, equipment and supplies creates overhead. Such an operation must pay for its portion of purchasing, payroll, accounting, utility, and management costs.

In making the decision as to choice of in-plant or contractor,

*(Continued on page 42)*

# VERSATILE VISKO-RHAP\*



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**Sure, it's smartly done—in appearance, in performance. Notice how much smoother the 15-hp water-cooled engine purrs along with its aluminum pistons and exhaust valve rotators. So quiet you can barely hear it idle.**

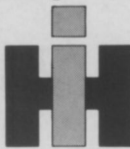
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Throttle-up to rated rpm. Shift into any gear. You cut up to 15 acres of grass a day with the hydraulic lift-controlled 60-inch

mower. Do it in more comfort in the padded, contour seat that adjusts fore and aft.

Want more? There's auto-type steering with tie-rods fully protected behind the oscillating I-beam front axle. Big diameter high-flotation rear tires (shown above). An 8-gallon fuel tank for a full day's work—and an efficient, self-cleaning, dry-type air cleaner.

See your International dealer. Test drive the most advanced all-purpose power package offered anywhere! His IHCC financing plans are scaled to fit almost any man's budget.

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dozers • forklifts • mowers • special duty tools  
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Pennsalt Chemical Corp.  
The Sherwin-Williams Co.

**ATRAZINE**

(See Soil Sterilants)

**BANVEL-D (DICAMBA)**

The J. J. Dill Co.  
Velsicol Chemical Corp.

**BETASAN**

The J. J. Dill Co.

**BORATE COMPOUNDS**

(See Soil Sterilants)

**BROMACIL**

(See Soil Sterilants)

**BRONATE**

Chipman Chemical Co., Inc.

**BUCTRIL**

Chipman Chemical Co., Inc.

**CACODYLIC ACID**

The Ansul Co.  
Nalco Chemical Co.

**CALCIUM ACID  
METHYL ARSENATE**

The J. J. Dill Co.  
Nalco Chemical Co.  
Vineland Chemical Co.

**CALCIUM PROPYL ARSENATE**

(See Preemergence Herbicides)

**CYTROL**

The J. J. Dill Co.

**DACAMINE**

Diamond Alkali Co.  
The J. J. Dill Co.  
Great Lakes Chemical Div.

**DACONATE**

The Diamond Alkali Co.

**DALAPON**

(See Soil Sterilants)

**DINITRO COMPOUNDS**

Chevron Chemical Co., Ortho Div.  
The Dow Chemical Co.  
Niagara Chemical Div., FMC Corp.

**DIURON**

(See Soil Sterilants)

**DMA (DSMA)**

The Ansul Co.  
Chapman Chemical Co.  
Chevron Chemical Co., Ortho Div.  
W. A. Cleary Corp.  
The Diamond Alkali Co.  
The J. J. Dill Co.  
Nalco Chemical Co.  
Vineland Chemical Co.

**DOWPON**

The Dow Chemical Co.

**ENDOTHAL**

(See Preemergence Herbicides)

**EPTAM**

(See Preemergence Herbicides)

**FENAC**

(See Soil Sterilants)

**FENURON**

The J. J. Dill Co.  
E. I. duPont de Nemours & Co., Inc.  
Nalco Chemical Co.

**HCA**

(See Soil Sterilants)

**HYVAR X BROMACIL**

The J. J. Dill Co.  
E. I. duPont de Nemours & Co., Inc.

**LINURON**

(See Preemergence Herbicides)

**MCPA**

Chipman Chemical Co., Inc.  
Great Lakes Chemical Div.  
Nalco Chemical Co.

**MCPP**

Chipman Chemical Co., Inc.  
W. A. Cleary Corp.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Shepard Chemical Industries, Inc.  
Vineland Chemical Co.

**MILOGARD (PROPAZINE)**

The J. J. Dill Co.  
Geigy Agricultural Chemicals

**MONURON**

(See Soil Sterilants)

**MSMA**

Allied Chemical Corp.  
The Ansul Co.  
Chapman Chemical Co.  
Diamond Alkali Co.  
Great Lakes Chemical Div.  
Nalco Chemical Co.  
Vineland Chemical Co.

**PARAQUAT**

Chevron Chemical Co., Ortho Div.

**PENTACHLOROPHENOL**

The J. J. Dill Co.  
The Dow Chemical Co.  
Nalco Chemical Co.  
Reichhold Chemicals, Inc.  
Thompson-Hayward Chemical Co.  
Vulcan Materials Co.

**PHENYLMERCURIC ACETATE (PMA)**

Chemley Products  
W. A. Cleary Corp.  
The J. J. Dill Co.  
Green Lawn Laboratories, Inc.  
Mallinckrodt Chemical Works  
Vineland Chemical Co.

**PRAMITOL**

(See Soil Sterilants)

**PROPAZINE**

The J. J. Dill Co.

**PYRAMIN 80-W**

(See Preemergence Herbicides)

**SILVEX**

Chipman Chemical Co., Inc.  
The J. J. Dill Co.  
The Dow Chemical Co.  
Green Lawn Laboratories, Inc.  
Hercules Incorporated  
Nalco Chemical Co.

**SODIUM ARSENITE**

(See Soil Sterilants)

**SODIUM CACODYLATE**

The Ansul Co.  
Nalco Chemical Co.

**TCA**

(See Soil Sterilants)

**THISTROL**

Amchem Products, Inc.

**TORDON**

The Dow Chemical Co.

**TRYSBEN (TBA)**

The J. J. Dill Co.  
E. I. duPont de Nemours & Co., Inc.  
Nalco Chemical Co.

**2,4-D**

Amchem Products, Inc.  
Chevron Chemical Co., Ortho Div.  
Chipman Chemical Co., Inc.  
Diamond Alkali Co.  
The J. J. Dill Co.  
The Dow Chemical Co.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Hercules Incorporated  
Nalco Chemical Co.  
Pennsalt Chemical Corp.  
Stauffer Chemical Co.  
Stull Chemical Co.  
Summers Fertilizers, Inc.  
Thompson-Hayward Chemical Co.

**2,4,5-T**

Amchem Products, Inc.  
Central Solvents & Chemicals Co.  
Chevron Chemical Co., Ortho Div.  
Chipman Chemical Co., Inc.  
Diamond Alkali Co.  
The J. J. Dill Co.  
The Dow Chemical Co.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Hercules Incorporated  
Nalco Chemical Co.  
Stauffer Chemical Co.  
Thompson-Hayward Chemical Co.

**UROX**

(See Soil Sterilants)

**AQUATIC HERBICIDES**

**AMITROLE**

Amchem Products, Inc.  
American Cyanamid Co.  
The J. J. Dill Co.  
Great Lakes Chemical Div.

**AMITROLE-T**

(See Preemergence Herbicides)

**AMMONIUM SULFAMATE**

(See Preemergence Herbicides)

**AQUATHOL**

The J. J. Dill Co.  
Pennsalt Chemicals Corp.

**AQUATHOL PLUS**

The J. J. Dill Co.  
Pennsalt Chemicals Corp.

**CALCIUM HYPOCHLORITE**

Pennsalt Chemicals Corp.  
Pittsburgh Plate Glass Co.  
Robeco Chemicals, Inc.

**CASORON**

(See Preemergence Herbicides)

**COPPER SULFATE**

Chevron Chemical Co., Ortho Div.  
The J. J. Dill Co.  
Green Lawn Laboratories, Inc.  
Phelps Dodge Refining Corp.  
Robeco Chemicals, Inc.  
Vineland Laboratories, Inc.

**DACAMINE 4D**

Diamond Alkali Co.  
The J. J. Dill Co.  
Great Lakes Chemical Div.

**DALAPON**

(See Soil Sterilants)



**DICHLONE**

Allied Chemical Corp.  
The J. J. Dill Co.  
Naukatuck Chemical Div.

**DIQUAT**

Chevron Chemical Co., Ortho Div.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.

**DIURON**

The J. J. Dill Co.

**ERBON**

The Dow Chemical Co.

**FENAC**

Amchem Products, Inc.

**HYDRQTHOL**

The J. J. Dill Co.  
Pennsalt Chemicals Corp.

**MCPA**

(See Postemergence Herbicides)

**ORTHODICHLOROBENZENE**

Pittsburgh Plate Glass Co.  
Robeco Chemicals, Inc.

**POTASSIUM ENDOTHAL**

The J. J. Dill Co.  
Pennsalt Chemicals Corp.

**PHYGON XL**

The J. J. Dill Co.

**SILVEX**

(See Postemergence Herbicides)

**SODIUM ARSENITE**

(See Soil Sterilants)

**2,4-D**

(See Postemergence Herbicides)

**2,4,5-T**

(See Postemergence Herbicides)

**2-(2,4-DB)**

Amchem Products, Inc.  
Chipman Chemical Co., Inc.  
Thompson-Hayward Chemical Co.

**COMMERCIAL FERTILIZERS****NITROGEN SOURCES**

—Fast Release—

**AMMONIA, ANHYDROUS**

Allied Chemical Corp.  
Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
Columbia Nitrogen Corp.  
The Dow Chemical Co.  
E. I. duPont de Nemours & Co., Inc.  
Hercules Incorporated  
Phillips Petroleum Co.  
Pittsburgh Plate Glass Co.  
Sohio Chemical Co.  
Vulcan Materials Co.

**AMMONIUM NITRATE**

Allied Chemical Corp.  
Agrico Chemical Co.  
Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
Columbia Nitrogen Corp.  
Green Lawn Laboratories, Inc.  
Hercules Incorporated  
International Minerals & Chem. Corp.

Phillips Petroleum Co.  
Sohio Chemical Co.  
Summers Fertilizers, Inc.

**AMMONIUM PHOSPHATE**

Allied Chemical Corp.  
Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
Fertilla Co.  
Green Lawn Laboratories, Inc.  
Phillips Petroleum Co.  
Stauffer Chemical Co.  
Summers Fertilizers, Inc.

**AMMONIUM SULFATE**

Allied Chemical Corp.  
Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
Columbia Nitrogen Corp.  
The Dow Chemical Co.  
Fertilla Co.  
Green Lawn Laboratories, Inc.  
Phillips Petroleum Co.  
Rohm and Haas Co.  
Summers Fertilizers, Inc.

**AQUA AMMONIA**

Allied Chemical Corp.  
Best Fertilizers Co.  
Chevron Chemical Co., Ortho Div.  
Columbia Nitrogen Corp.  
The Dow Chemical Co.  
Green Lawn Laboratories, Inc.  
Hercules Incorporated  
Pennsalt Chemicals Corp.  
Sohio Chemical Co.

**CALCIUM NITRATE**

Best Fertilizers Co.  
Green Lawn Laboratories, Inc.

**SODIUM NITRATE**

Summers Fertilizers, Inc.

**UREA**

Allied Chemical Corp.  
Agrico Chemical Co.  
Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
Columbia Nitrogen Corp.  
E. I. duPont de Nemours & Co., Inc.  
Fertilla Co.  
Green Lawn Laboratories, Inc.  
Hercules Incorporated  
International Minerals & Chem. Corp.  
Phillips Petroleum Co.  
Sohio Chemical Co.  
Summers Fertilizers, Inc.

—Slow Release—

**UREA-FORMALDEHYDE**

Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
E. I. duPont de Nemours & Co., Inc.  
Green Lawn Laboratories, Inc.  
Hercules Incorporated  
International Minerals & Chem. Corp.  
Summers Fertilizers, Inc.

—Organic Nitrogen—

**BONE MEAL, STEAMED**

Best Fertilizers Co.  
Borden Chem., Smith-Douglas Div.  
Green Lawn Laboratories, Inc.  
Summers Fertilizers, Inc.  
Andrew Wilson, Inc.

**COTTONSEED MEAL**

Borden Chem., Smith-Douglass Div.  
Summers Fertilizers, Inc.  
Andrew Wilson, Inc.

**MANURE, CATTLE**

Fertilla Co.

**MILORGANITE**

Sewerage Commission of Milwaukee

**NITRO-GANO**

Wilbur-Ellis Co.

**PROCESSED SLUDGE**

Summers Fertilizers, Inc.

**POTASH SOURCES****POTASSIUM CARBONATE**

Hooker Chemical Corp.

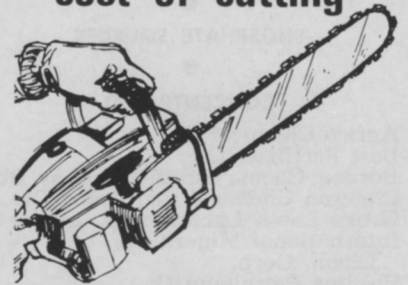
**POTASSIUM CHLORIDE**

American Potash & Chemical Corp.  
Borden Chem., Smith-Douglass Div.  
Green Lawn Laboratories, Inc.  
Kalium Chemicals, Ltd.  
Phillips Petroleum Co.  
Southwest Potash Corp.  
Summers Fertilizers, Inc.  
U.S. Borax & Chemical Co.

**POTASSIUM NITRATE**

Borden Chem., Smith-Douglass Div.  
Green Lawn Laboratories, Inc.  
Southwest Potash Div.  
Summers Fertilizers, Inc.

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## POTASSIUM SULFATE

American Potash & Chemical Corp.  
Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
Green Lawn Laboratories, Inc.  
Mallinckrodt Chemical Works  
Summers Fertilizers, Inc.

## MIXED N-P-K TYPES

### MAG AMP

W. R. Grace & Co.

### SOLID

Agrico Chemical Co.  
Agriform International Chemicals Inc.  
Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
Columbia Nitrogen Corp.  
Davison Chemical Div.  
Green Lawn Laboratories, Inc.  
International Minerals & Chem. Corp.  
Loamite Corp.  
Northrup, King & Co.  
Robert B. Peters Co., Inc.  
Phillips Petroleum Co.  
Plant Marvel Laboratories  
Ra-Pid-Grow Corp.  
Summers Fertilizers, Inc.  
Wilbur-Ellis Co.

### LIQUID

Best Fertilizers Co.  
Chevron Chemical Co. Ortho Div.  
Cloro-Spray Corp.  
Columbia Nitrogen Corp.  
Green Lawn Laboratories, Inc.  
Hydroponic Chemical Co., Inc.  
Phillips Petroleum Co.  
Wilbur-Ellis Co.

### PLASTIC COATED

Borden Chem., Smith-Douglass Div.

## PHOSPHATE SOURCES

### CONCENTRATED

Agrico Chemical Co.  
Best Fertilizer Co.  
Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
Green Lawn Laboratories, Inc.  
International Minerals & Chem. Corp.  
Phillips Petroleum Co.  
Stauffer Chemical Co.  
Tennessee Corp.

### ROCK PHOSPHATES

Agrico Chemical Co.  
Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
International Minerals & Chem. Corp.  
Stauffer Chemical Co.

### —Ammonium Phosphates—

### AMMONIUM PHOSPHATE-NITRATE

Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
Green Lawn Laboratories, Inc.

### AMMONIUM PHOSPHATE-SULFATE

Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.

Chevron Chemical Co., Ortho Div.  
Phillips Petroleum Co.

## AMMONIUM PHOSPHATE-UREA

Borden Chem., Smith-Douglass Div.  
Green Lawn Laboratories, Inc.

## DIAMMONIUM PHOSPHATE

Allied Chemical Corp.  
Agrico Chemical Co.  
Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
Columbia Nitrogen Corp.  
Green Lawn Laboratories, Inc.  
Hooker Chemical Co.  
International Minerals & Chem. Co.  
Phillips Petroleum Co.  
Stauffer Chemical Co.  
Summers Fertilizers, Inc.  
Tennessee Corp.

## MONOAMMONIUM PHOSPHATE

Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
Green Lawn Laboratories, Inc.  
Stauffer Chemical Co.  
Summers Fertilizers, Inc.  
Tennessee Corp.

## PHOSPHORIC ACID

Allied Chemical Corp.  
Agrico Chemical Co.  
Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
Columbia Nitrogen Corp.  
Green Lawn Laboratories, Inc.  
International Minerals & Chem. Corp.  
Phillips Petroleum Co.  
Stauffer Chemical Co.  
Tennessee Corp.  
U.S. Industrial Chemicals Co.

## pH CONTROLLERS

### ALUMINUM SULFATE

International Minerals & Chem. Corp.  
Andrew Wilson, Inc.

### AMMONIUM POLYSULFIDE

Allied Chemical Corp.

### AMTHIO

Allied Chemical Corp.

### CALCITE, BURNED

Engelhard Minerals & Chemicals Co.

### CALCITE, HYDRATED

Engelhard Minerals & Chemicals Co.

### CALCIUM CARBONATE

Diamond Alkali Co.  
Engelhard Minerals & Chemicals Co.  
Green Lawn Laboratories, Inc.  
Pittsburgh Plate Glass Co.

### DOLOMITE

Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
Summers Fertilizers, Inc.

### GYPNUM (CALCIUM SULFATE)

Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
Summers Fertilizers, Inc.

### LIME, CONCENTRATE

Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
Engelhard Minerals & Chemicals Co.

### LIMESTONE

Engelhard Minerals & Chemicals Co.  
Summers Fertilizers, Inc.

## LIQUID FISH

Best Fertilizers Co.  
Chevron Chemical Co., Ortho Div.

## SULFUR

Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
Wilbur-Ellis Co.

## SOIL CONDITIONERS

### BARK

Best Fertilizers Co.  
Weyerhaeuser Co.

### CALCINED CLAY

Engelhard Minerals & Chemicals Co.  
Floridin Co.  
Oil-Dri Corp. of America  
Waverly Petroleum Products Co.  
Wyandotte Chemicals Corp.

### CANE

Fertilla Co.

### CELATOM

Eagle-Picher Industries, Inc.

### CORN COBS

Borden Chem., Smith-Douglass Div.  
Green Lawn Laboratories, Inc.

### DIATOMITE

Eagle-Picher Industries, Inc.

### LOAMITE

Loamite Corp.

### PEAT-HUMUS

Premier Peat Moss Corp.  
Western Peat Co.

### PEAT MOSS

Best Fertilizers Co.  
Premier Peat Moss Corp.

### PERLITE

Zonolite Div., W. R. Grace & Co.

### VERMICULITE

American Vermiculite Corp.  
Borden Chem., Smith-Douglass Div.  
Zonolite Div., W. R. Grace & Co.

### WOOD CHIPS

Fitchburg Engineering Corp.

## MULCHES

### CALCINED ABSORBENT CLAY

(See Soil Conditioners)

### EROSION CONTROL MULCHES

American Excelsior Corp.  
Engelhard Minerals & Chemicals Co.  
Weyerhaeuser Co.

### LANDSCAPE MULCHES

American Excelsior Corp.  
Best Fertilizers Co.  
Fitchburg Engineering Corp.  
Premier Peat Moss Corp.  
Weyerhaeuser Co.

### SEEDING MULCHES

American Excelsior Corp.  
International Paper Co.  
Troy Blanket Mills  
Weyerhaeuser Co.

### PERLITE

(See Soil Conditioners)

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## VERMICULITE

(See Soil Conditioners)

## MISCELLANEOUS COMPOUNDS

### ANTICAKING CONDITIONERS

Armour Industrial Chemicals Co.  
Eagle-Picher Industries, Inc.  
Engelhard Minerals & Chemicals Co.  
Pittsburgh Plate Glass Co.  
Waverly Petroleum Products Co.  
Zonolite Div., W. R. Grace & Co.

### ANTIDESICCANT SPRAYS

Aquatrols Corp. of America  
W. A. Cleary Corp.  
The J. J. Dill Co.  
Nursery Specialty Products, Inc.  
Andrew Wilson, Inc.

### CHRISTMAS TREE PAINT

Niagara Chemical Div., FMC Corp.

### REPELLENTS

Sudbury Laboratory, Inc.

### SEED; GRASS, COVERS & PLANT MATERIALS

Asgrow Seed Co.  
Chandlerin Seed Co.  
Cole Nursery Co.  
Ferry Morse Seed Co.  
Green Lawn Laboratories, Inc.  
Jacklin Seed Co.  
McGovern Sod Farms  
Mock Seed Co.  
Nunes Turfgrass Nurseries  
Northrup, King & Co.  
Oregon Fine Leaf Fescue Commission  
O. M. Scott & Sons Co.  
South Dakota Kentucky Bluegrass Assn.  
Stanford Seed Co.  
Vaughan's Seed Co.  
Whitney Seed Co.

### STUMP REMOVAL COMPOUNDS

Bartlett Manufacturing Co.

### TREE WOUND PAINT

Asplundh  
John Bacon Corp.  
Bartlett Manufacturing Co.  
Borden Chem., Smith-Douglass Div.  
Samuel Cabot, Inc.  
B. G. Pratt Co.  
Seymour Smith & Son, Inc.  
Andrew Wilson, Inc.

### TREE KILLERS

The Ansul Co. (Silvisar 510)  
The J. J. Dill Co.  
The Dow Chemical Co.  
Green Lawn Laboratories, Inc.

### TURF COLORING COMPOUNDS

W. A. Cleary Corp.  
The J. J. Dill Co.  
Green Lawn Laboratories, Inc.  
The Gregg Co.  
O. F. Linck Div., Walco-Linck Corp.  
Mallinckrodt Chemical Works  
Verde Lawn, Inc.

### WETTING AGENTS

W. A. Cleary Corp.

## CARRIERS

### CELATOM

Eagle-Picher Industries, Inc.

## DUSTS, NATURAL

Engelhard Minerals & Chemicals Co.  
Floridin Co.  
Green Lawn Laboratories, Inc.  
Pittsburgh Plate Glass Co.

### GRANULES, NATURAL

American Talc Co.  
American Vermiculite Corp.  
Engelhard Minerals & Chemicals Co.  
Floridin Co.  
Waverly Petroleum Products Co.

### LIQUID (SOLVENTS)

American Oil Co.  
Green Lawn Laboratories, Inc.  
Gulf Oil Corp.  
Humble Oil & Refining Co.  
Signal Oil & Gas Co.  
Tenneco Oil Co.  
Vulcan Materials Co.

## VERMICULITE

(See Soil Conditioners)

## DILUENTS

### CALCIUM CARBONATE

Engelhard Minerals & Chemicals Co.

### DIATOMACEOUS EARTH

Eagle-Picher Industries, Inc.  
Johns-Manville Corp.

### FULLERS EARTH

Engelhard Minerals & Chemicals Co.  
Floridin Co.  
Waverly Petroleum Products Co.

### GRANULES, GENERAL

Engelhard Minerals & Chemicals Co.  
Green Lawn Laboratories, Inc.

### KAOLINS (CLAY)

Engelhard Minerals & Chemicals Co.

### TALC

American Talc Co.  
Bonide Chemical Co., Inc.  
Engelhard Minerals & Chemicals Co.

## VERMICULITE

(See Soil Conditioners)

## TRACE ELEMENTS

### BORAX

American Potash & Chemical Corp.  
Borden Chem., Smith-Douglass Div.  
Green Lawn Laboratories, Inc.  
U.S. Borax & Chemical Corp.

### BORO-SPRAY

American Potash & Chemical Corp.

### COPPER CHELATE

Borden Chem., Smith-Douglass Div.  
The J. J. Dill Co.  
Geigy Agricultural Chemicals  
Green Lawn Laboratories, Inc.  
Niagara Chemical Div., FMC Corp.

### COPPER SULFATE

Borden Chem., Smith-Douglass Div.  
The J. J. Dill Co.  
Green Lawn Laboratories, Inc.  
Phelps Dodge Refining Corp.

Robeco Chemicals, Inc.  
Tennessee Corp.  
Vineland Laboratories, Inc.

### GRANULAR ORGANIC IRON COMPLEX

Eagle-Picher Industries, Inc.

## IRON CHELATE

Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
The J. J. Dill Co.  
Geigy Agricultural Chemicals  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Niagara Chemical Div., FMC Corp.  
Tennessee Corp.  
Vineland Laboratories, Inc.

### IRON, MICRONIZED

The J. J. Dill Co.  
Green Lawn Laboratories, Inc.

### IRON SULFATE

Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
The J. J. Dill Co.  
Eagle-Picher Industries, Inc.  
Green Lawn Laboratories, Inc.  
Mallinckrodt Chemical Works  
Phillips Petroleum Co.  
Tennessee Corp.

### MAGNESIUM CARBONATE

Borden Chem., Smith-Douglass Div.

### MAGNESIUM-SULFATE

The J. J. Dill Co.

### MANGANESE CHELATE

Borden Chem., Smith-Douglass Div.  
The J. J. Dill Co.  
Geigy Agricultural Chemicals  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.

### MANGANESE SULFATE

The J. J. Dill Co.  
Eagle-Picher Industries, Inc.  
Eastman Chemical Products, Inc.  
Green Lawn Laboratories, Inc.  
Tennessee Corp.

### MANGANOUS OXIDE

Green Lawn Laboratories, Inc.  
Tennessee Corp.

### MOLYBDENUM

Borden Chem., Smith-Douglass Div.  
Green Lawn Laboratories, Inc.

### MULTI-KEMIN

Niagara Chemical Div., FMC Corp.

### ZINC CHELATE

Best Fertilizers Co.  
Borden Chem., Smith-Douglass Div.  
The J. J. Dill Co.  
Geigy Agricultural Chemicals  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Niagara Chemical Div., FMC Corp.

### ZINC SULFATE

Allied Chemical Corp.  
The J. J. Dill Co.  
Eagle-Picher Industries, Inc.  
Green Lawn Laboratories, Inc.  
Phillips Petroleum Co.  
The Sherwin-Williams Co.  
Tennessee Corp.

### COMBINATION OF TRACE ELEMENTS

Green Lawn Laboratories, Inc.  
Niagara Chemical Div., FMC Corp.

## SURFACE ACTIVE AGENTS

### AD-KIL

R. H. Bogle Co.

### DETERGENTS, GENERAL

Armour Industrial Chemical Co.  
Cloro-Spray Corp.

Emery Industries, Inc.  
General Aniline & Film Corp.  
Rohm and Haas Co.  
Stepan Chemical Co.  
Thompson-Hayward Chemical Co.

#### EMULSIFIERS

Armour Industrial Chemical Co.  
Atlas Chemical Industries, Inc.  
Cloro-Spray Corp.  
The J. J. Dill Co.  
Emery Industries, Inc.  
General Aniline & Film Corp.  
Great Lakes Chemical Div.  
Rohm and Haas Co.  
Stepan Chemical Co.  
Thompson-Hayward Chemical Co.

#### INVERT EMULSION ADJUVANTS

Stull Chemical Co.

#### PLYAC

Allied Chemical Corp.  
Aquatrols Corp. of America

#### SPREADER-STICKERS

Allied Chemical Corp.  
Chipman Chemical Co., Inc.  
Colloidal Products Corp.  
The J. J. Dill Co.  
E. I. duPont de Nemours & Co., Inc.  
Emery Industries, Inc.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
B. G. Pratt Co.  
Rohm and Haas Co.  
Stepan Chemical Co.  
Thompson-Hayward Chemical Co.  
Thuron Industries, Inc.  
Wilbur-Ellis Co.  
Andrew Wilson, Inc.

#### STABILIZERS

Armour Industrial Chemical Co.  
Emery Industries, Inc.  
General Aniline & Film Corp.  
Rohm and Haas Co.

#### WETTING AGENTS

American Cyanamid Co.  
Aquatrols Corp. of America  
Armour Industrial Chemical Co.  
Cloro-Spray Corp.  
Colloidal Products Corp.  
The J. J. Dill Co.  
Emery Industries, Inc.  
General Aniline & Film Corp.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Roberts Chemicals, Inc.  
Rohm and Haas Co.  
Stepan Chemical Co.  
Thompson-Hayward Chemical Co.  
Thuron Industries, Inc.  
Vineland Chemical Co.  
"Water In," Inc.

#### SPRAY THICKENING AGENTS

#### ATTAGELS

Englehard Minerals & Chemicals Co.

#### DACAGIN

Diamond Alkali Co.  
Great Lakes Chemical Div.

#### INVERT EMULSION ADJUVANTS

(See Emulsifiers)

#### NORBAK

The Dow Chemical Co.

#### VISTIK

Hercules Incorporated

#### GROWTH RETARDANTS

#### B-NINE

Uniroyal Chemical, Div. of Uniroyal, Inc.

#### GIBREL

Metasol Products, Merck & Co.

#### MALEIC HYDRAZIDE

Naugatuck Chemical Div.  
Uniroyal Chemical, Div. of Uniroyal, Inc.

#### PHOSFON

Mobil Chemical Co.

#### RETARD

The Ansul Co.

#### STREPTOMYCIN

Metasol Products, Merck & Co.

#### SOIL FUMIGANTS & NEMATOCIDES

#### BEDRENCH

Niagara Chemical Div., FMC Corp.

#### BROMIDE

Great Lakes Chemical Div.

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**BROM-O-GAS**

Great Lakes Chemical Div.

**CHLOROPICRIN**The J. J. Dill Co.  
The Dow Chemical Co.  
Great Lakes Chemical Div.  
Morton Chemical Co.**DASINIT**

Chemagro Corp.

**D-D (VIDDEN-D)**The Dow Chemical Co.  
Great Lakes Chemical Div.  
Shell Chemical Co.,  
Ag. Chem. Div.  
Stauffer Chemical Co.**DICHLOROPROPENE COMPOUNDS**

The Dow Chemical Co.

**DOWFUME**The J. J. Dill Co.  
The Dow Chemical Co.**ETHYLENE DIBROMIDE**The J. J. Dill Co.  
The Dow Chemical Co.  
Great Lakes Chemical Div.  
Niagara Chemical Div., FMC Corp.  
Velsicol Chem. Corp.**FUMAZONE (NEMAGON)**The J. J. Dill Co.  
The Dow Chemical Co.**METHYL BROMIDE**The J. J. Dill Co.  
The Dow Chemical Co.  
Great Lakes Chemical Div.  
Velsicol Chemical Corp.  
Vulcan Materials Co.**MYLONE**

Union Carbide Corp.

**SOILBROM-85**

Great Lakes Chemical Div.

**SAROLEX**Armour Agricultural Chemical Co.  
Geigy Agricultural Chemicals**TELONE**

The Dow Chemical Co.

**TERR-O-GAS**

Great Lakes Chemical Div.

**VAPAM (VPM)**The J. J. Dill Co.  
E. I. duPont de Nemours & Co., Inc.  
Stauffer Chemical Co.**VORLEX**Great Lakes Chemical Div.  
Morton Chemical Co.**VPM**

E. I. duPont de Nemours &amp; Co., Inc.

**MITICIDES****ARAMITE**The J. J. Dill Co.  
Naugatuck Chemical Div.**BIDRIN**Shell Chemical Co.,  
Ag. Chem. Div.**BINAPACRYL**

Niagara Chemical Div., FMC Corp.

**CHLOROBENZILATE**

The J. J. Dill Co.

**CYGON**The J. J. Dill Co.  
Thompson-Hayward Chemical Co.**DELNAV**Great Lakes Chemical Div.  
Hercules Incorporated  
Thompson-Hayward Chemical Co.**DIBROM**Chevron Chemical Co., Ortho Div.  
Chipman Chemical Co.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Stauffer Chemical Co.**DIMITE**

The Sherwin-Williams Co.

**ETHION**The J. J. Dill Co.  
Niagara Chemical Div., FMC Corp.**GENITE**

Allied Chemical Corp.

**KARATHANE***(See Fungicides)***KELTHANE**The J. J. Dill Co.  
Rohm and Haas Co.**MORESTAN**Chemagro Corp.  
The J. J. Dill Co.**MOROCIDE (BINAPACRYL)**

Niagara Chemical Div., FMC Corp.

**PENTAC**Great Lakes Chemical Div.  
Hooker Chemical Corp.**SYSTOX**Chemagro Corp.  
The J. J. Dill Co.**TEDION**The J. J. Dill Co.  
Great Lakes Chemical Div.  
Niagara Chemical  
Thompson-Hayward Chemical Co.**TOXAPHENE**Chipman Chemical Co., Inc.  
Thompson-Hayward Chemical Co.**TRITHION**The J. J. Dill Co.  
Stauffer Chemical Co.**INSECTICIDES****ABATE**American Cyanamid Co.  
The J. J. Dill Co.**ALDRIN**Chipman Chemical Co., Inc.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Shell Chemical Co.,  
Ag. Chem. Div.  
Summers Fertilizers, Inc.  
Thompson-Hayward Chemical Co.**ARSENICAL COMPOUNDS**Allied Chemical Corp.  
Chipman Chemical Co., Inc.  
Green Lawn Laboratories, Inc.  
The J. J. Dill Co.  
Niagara Chemical Div., FMC Corp.  
Pennsalt Chemicals Corp.  
The Sherwin-Williams Co.**ASPON**

Stauffer Chemical Co.

**AZINPHOSMETHYL (GUTHION\*)**Chemagro Corp.  
The J. J. Dill Co.**BACILLUS THURINGIENSIS**Bioferm Corp.  
Pennsalt Chemical Corp.**BAYGON (BAYER (39007))**Chemagro Corp.  
The J. J. Dill Co.  
Thompson-Hayward Chemical Co.**BAYTEX**Chemagro Corp.  
The J. J. Dill Co.**BETANAPHTHOL**The Sherwin-Williams Co.  
Allied Chemical Corp.  
Chipman Chemical Co., Inc.  
Diamond Alkali Co.  
The J. J. Dill Co.**BHC**

Hooker Chemical Corp.

**BIDRIN***(See Miticides)***CHLORDANE***(See Preemergence Herbicides)***COPPER ARSENATE, BASIC**The J. J. Dill Co.  
The Sherwin-Williams Co.**CRYOLITE**

Pennsalt Chemicals Corp.

**CYGON (DIMETHOATE)**American Cyanamid Co.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Thompson-Hayward Chemical Co.**DDD (TDE)**Allied Chemical Corp.  
Rohm and Haas Co.**DDT**Allied Chemical Corp.  
Bonide Chemical Co., Inc.  
Chevron Chemical Co., Ortho Div.  
Chipman Chemical Co., Inc.  
Diamond Alkali Co.  
The J. J. Dill Co.  
Faesy & Besthoff, Inc.  
Gabriel Chemicals, Ltd.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Montrose Chemical Co.  
S. B. Penick & Co.  
Pennsalt Chemicals Corp.  
B. G. Pratt Co.  
Thompson-Hayward Chemical Co.**DDVP (VAPONA)**The J. J. Dill Co.  
Great Lakes Chemical Div.  
S. B. Penick & Co.  
Shell Chemical Co.,  
Ag. Chem. Div.  
Thompson-Hayward Chemical Co.**DEF**

Chemagro Corp.

**DELNAV***(See Miticides)***DIAZINON**Armour Agricultural Chemical Co.  
The J. J. Dill Co.  
Geigy Agricultural Chemicals

Great Lakes Chemical Div.  
S. B. Penick & Co.

**DIBROM**

(See Miticides)

**DIELDRIN**

Armour Agricultural Chemical Co.  
Borden Chem., Smith-Douglass Div.  
Chipman Chemical Co., Inc.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
S. B. Penick & Co.  
Pennsalt Chemicals Corp.  
Shell Chemical Co.,  
Ag. Chem. Div.  
Thompson-Hayward Chemical Co.

**DIMETHRIN**

McLaughlin Gormley King Co.

**DIPTEREX**

Chemagro Corp.  
The J. J. Dill Co.

**DI-SYSTON**

Borden Chem., Smith-Douglass Div.  
Chemagro Corp.  
The J. J. Dill Co.  
The Dow Chemical Co.

**DNOC**

Niagara Chemical Div., FMC Corp.

**DRINOX**

Morton Chemical Co.

**DYLOX**

Chemagro Corp.  
The J. J. Dill Co.

**ENDOSULFAN (THIODAN)**

Niagara Chemical Div., FMC Corp.  
Chipman Chemical Co., Inc.  
The J. J. Dill Co.

**ENDRIN**

Great Lakes Chemical Div.  
Shell Chemical Co.,  
Ag. Chem. Div.  
Thompson-Hayward Chemical Co.  
Velsicol Chemical Corp.

**ETHION**

(See Miticides)

**GUTHION**

Chemagro Corp.  
The J. J. Dill Co.

**HEPTACHLOR**

Armour Agricultural Chemical Co.  
Chipman Chemical Co., Inc.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Pennsalt Chemicals Corp.  
Thompson-Hayward Chemical Co.  
Velsicol Chemical Corp.

**KORLAN**

The J. J. Dill Co.  
The Dow Chemical Co.

**LEAD ARSENATE**

(See Preemergence Herbicides)

**LETHANE**

The J. J. Dill Co.  
Rohm and Haas Co.

**LIME SULFUR**

Allied Chemical Corp.  
The J. J. Dill Co.  
Miller Chemical & Fertilizer Corp.

**LINDANE**

Chevron Chemical Co., Ortho Div.  
Chipman Chemical Co., Inc.  
The J. J. Dill Co.

Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Hooker Chemical Corp.  
S. B. Penick & Co.  
Pennsalt Chemicals Corp.  
Robeco Chemicals Inc.  
Thompson-Hayward Chemical Co.  
Vineland Laboratories, Inc.

**MALATHION**

American Cyanamid Co.  
Armour Agricultural Chemical Co.  
Borden Chem., Smith-Douglass Div.  
Chipman Chemical Co., Inc.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
S. B. Penick & Co.  
Pennsalt Chemicals Corp.  
Thompson-Hayward Chemical Co.  
Vineland Laboratories, Inc.

**MATACIL**

Chemagro Corp.

**METALDEHYDE**

Commercial Solvents Corp.  
Great Lakes Chemical Div.

**META-SYSTOX-R**

Borden Chem., Smith-Douglass Div.  
Chemagro Corp.  
The J. J. Dill Co.

**METHOXYCHLOR**

Allied Chemical Corp.  
Armour Agricultural Chemical Co.  
The J. J. Dill Co.  
E. I. duPont de Nemours & Co., Inc.  
Great Lakes Chemical Div.

**METHYL PARATHION**

American Cyanamid Co.  
Great Lakes Chemical Div.  
Pennsalt Chemicals Corp.  
Stauffer Chemical Co.  
Velsicol Chemical Corp.

**MORESTAN**

Chemagro Corp.

**OILS, DORMANT**

Borden Chem., Smith-Douglass Div.  
Chevron Chemical Co., Ortho Div.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
B. G. Pratt Co.

**OILS, SUMMER**

The J. J. Dill Co.  
Great Lakes Chemical Div.  
B. G. Pratt Co.

**PARATHION**

American Cyanamid Co.  
American Potash & Chemical Corp.  
Chevron Chemical Co., Ortho Div.  
Chipman Chemical Co., Inc.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Pennsalt Chemicals Corp.  
Velsicol Chemical Corp.

**PARIS GREEN**

Chipman Chemical Co., Inc.

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Shell Chemical Co.,  
Ag. Chem. Div.

**PHOSPHAMIDON (DIMECRON)**

Chevron Chemical Co., Ortho Div.  
Great Lakes Chemical Div.

**PYRETHRINS**

The J. J. Dill Co.  
Great Lakes Chemical Div.  
McLaughlin Gormley King Co.  
Niagara Chemical Div., FMC Corp.  
S. B. Penick & Co.  
Prentiss Drug & Chemical Co.

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S. B. Penick & Co.

**RYANIA**

The J. J. Dill Co.  
S. B. Penick & Co.

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Armour Agricultural Chemical Co.  
Borden Chem., Smith-Douglass Div.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Stauffer Chemical Co.  
Thompson-Hayward Chemical Co.  
Union Carbide Corp.  
Vineland Laboratories, Inc.

**SINOX**

Niagara Chemical Div., FMC Corp.

**STROBANE**

The J. J. Dill Co.  
McLaughlin Gormley King Co.  
Thompson-Hayward Chemical Co.

**SYSTOX**

(See Miticides)

**TEPP**

Great Lakes Chemical Div.

**THANITE**

The J. J. Dill Co.  
Hercules Incorporated

**TOXAPHENE**

Chipman Chemical Co., Inc.  
Great Lakes Chemical Div.  
Hercules Incorporated  
Thompson-Hayward Chemical Co.

**TRICHLORFON (DYLOX, DIPTEREX)**

Chemagro Corp.  
The J. J. Dill Co.

**TRITHION**

(See Miticides)

**V-C 13**

Mobil Chemical Co.  
Pennsalt Chemicals Corp.

**ZECTRAN**

Dow Chemical Co.  
Great Lakes Chemical Div.

**ZINOPHOS**

American Cyanamid Co.

**FUNGICIDES****ACTI-DIONE**

The J. J. Dill Co.  
Green Lawn Laboratories, Inc.  
TUCO Products Co.

**AGROX**

Chipman Chemical Co., Inc.

**BOTRAN**

TUCO Products Co.

**CADMINATE**

Mallinckrodt Chemical Works

**CADMIUM CARBONATE**

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Green Lawn Laboratories, Inc.  
Mallinckrodt Chemical Works

**CADMIUM CHLORIDE**

Armour Agricultural Chemical Co.  
W. A. Cleary Corp.  
The J. J. Dill Co.  
Green Lawn Laboratories, Inc.  
Mallinckrodt Chemical Works  
Metasol Products, Merck & Co.  
Vineland Chemical Co.

**CADMIUM SEBACATE (KROMAD)**

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Mallinckrodt Chemical Works

**CADMIUM SUCCINATE (CADMINATE)**

Armour Agricultural Chemical Co.  
The J. J. Dill Co.  
Mallinckrodt Chemical Works

**CALO-CLOR**

Mallinckrodt Chemical Works

**CALOCURE**

Mallinckrodt Chemical Works

**CALO-GRAN**

Mallinckrodt Chemical Works

**CALOMEL**

The J. J. Dill Co.  
Mallinckrodt Chemical Works  
Metasol Products, Merck & Co.

**CAPTAN**

Chevron Chemical Co., Ortho Div.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Stauffer Chemical Co.

**CERESAN**

E. I. duPont de Nemours & Co., Inc.  
Great Lakes Chemical Div.

**CHIPCOTE**

Chipman Chemical Co., Inc.

**CHLORANIL**

Naugatuck Chemical Div.

**COPPER SULFATE**

(See Aquatic Herbicides)

**COPPER SULFATE, TRI-BASIC**

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Mallinckrodt Chemical Works  
Phelps Dodge Refining Corp.  
Tennessee Corp.

**COPPER ZINC CHROMATE**

Miller Chemical & Fertilizer Corp.

**CORROSIVE SUBLIMATE**

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Green Lawn Laboratories, Inc.  
Mallinckrodt Chemical Works

**CYCLOHEXIMIDE**

Green Lawn Laboratories, Inc.

**CYPREX**

American Cyanamid Co.  
The J. J. Dill Co.

**DACONIL 2787**

Armour Agricultural Chemical Co.  
Diamond Alkali Co.  
The J. J. Dill Co.  
Great Lakes Chemical Div.

**DEXON**

Chemagro Corp.  
The J. J. Dill Co.

**DICHLONE**

(See Aquatic Herbicides)

**DITHANE**

Rohm and Haas Co.

**DYRENE**

Armour Agricultural Chemical Co.  
Chemagro Corp.  
The J. J. Dill Co.

**FERBAM**

The J. J. Dill Co.  
E. I. duPont de Nemours & Co., Inc.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Niagara Chemical Div., FMC Corp.  
Pennsalt Chemical Corp.  
Shepard Chemical Industries, Inc.  
Velsicol Chemical Corp.

**FOLPET**

Chevron Chemical Co., Ortho Div.  
Green Lawn Laboratories, Inc.

**FORE**

The J. J. Dill Co.  
Green Lawn Laboratories, Inc.  
Rohm and Haas Co.

**GLYODIN**

Union Carbide Corp.

**KARATHANE**

The J. J. Dill Co.  
Rohm and Haas Co.

**KROMA-CLOR**

Mallinckrodt Chemical Works

**KROMAD**

Mallinckrodt Chemical Works

**MANEB (MANZATE)**

The J. J. Dill Co.  
E. I. duPont de Nemours & Co., Inc.  
Great Lakes Chemical Div.  
Pennsalt Chemicals Corp.  
Rohm and Haas Co.

**MEMMI**

The J. J. Dill Co.  
Velsicol Chemical Corp.

**MERCURY COMPOUNDS**

Armour Agricultural Chemical Co.  
Chipman Chemical Co., Inc.  
W. A. Cleary Corp.  
The J. J. Dill Co.  
Green Lawn Laboratories, Inc.  
Mallinckrodt Chemical Works  
Metasol Products, Merck & Co.  
Niagara Chemical Div., FMC Corp.  
Robeco Chemicals, Inc.  
Shepard Chemical Industries, Inc.  
Summers Fertilizers, Inc.  
Thompson-Hayward Chemical Co.  
Velsicol Chemical Co.

**MOROCIDE**

Niagara Chemical Div., FMC



**MORSODREN**

Morton Chemical Co.

**NABAM**

E. I. duPont de Nemours & Co., Inc.  
Great Lakes Chemical Div.  
Niagara Chemical Div., FMC Corp.  
Rohm and Haas Co.

**NO BUNT**

Chipman Chemical Co., Inc.

**PANOGEN**

Armour Agricultural Chemical Co.  
Great Lakes Chemical Div.  
Morton Chemical Co.

**PENTACHLORONITROBENZENE**

Olin Mathieson Chemical Corp.  
Shepard Chemical Industries, Inc.  
Velsicol Chemical Corp.

**PHENMAD**

Mallinckrodt Chemical Works

**PHENYLMERCURIC ACETATE**

Armour Agricultural Chemical Co.  
Chemley Products Co.  
W. A. Cleary Corp.  
The J. J. Dill Co.  
Green Lawn Laboratories, Inc.  
Mallinckrodt Chemical Works  
Metasol Products, Merck & Co.  
Velsicol Chemical Corp.  
Vineland Chemical Co.

**PIPERALIN**

Elanco Products Co.

**PIPRON**

Elanco Products Co.

**POLYRAM**

Niagara Chemical Div., FMC Corp.

**PURATIZED AG. SPRAY**

Niagara Chemical Div., FMC Corp.

**SEMESAN**

E. I. duPont de Nemours &amp; Co., Inc.

**SPRING-BAK**

Mallinckrodt Chemical Works

**SULFUR**

Chevron Chemical Co., Ortho Div.  
Green Lawn Laboratories, Inc.  
Niagara Chemical Div., FMC Corp.  
B. G. Pratt Co.  
The Sherwin-Williams Co.

**TERSAN OM**

E. I. duPont de Nemours &amp; Co., Inc.

**THIMER**

W. A. Cleary Corp.

**THIRAM**

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W. A. Cleary Corp.  
The J. J. Dill Co.  
E. I. duPont de Nemours & Co., Inc.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Mallinckrodt Chemical Works  
Metasol Products, Merck & Co.  
Niagara Chemical Div., FMC Corp.  
Pennsalt Chemicals Corp.  
Robeco Chemicals, Inc.  
Roussel Corp.  
Summers Fertilizers, Inc.  
Velsicol Chemical Corp.

**THIRAMAD**

Mallinckrodt Chemical Works

**THIRAMAD-PLUS**

Mallinckrodt Chemical Works

**WEEDS TREES AND TURF, December, 1968****TUTANE**

Elanco Products Co.

**ULTRA-CLOR**

Mallinckrodt Chemical Works

**VELSICOL "2-1"**

The J. J. Dill Co.  
Velsicol Chemical Corp.

**ZINEB**

E. I. duPont de Nemours & Co., Inc.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Niagara Chemical Div., FMC Corp.  
Pennsalt Chemicals Corp.  
Rohm and Haas Co.

**ZIRAM**

The J. J. Dill Co.  
E. I. duPont de Nemours & Co., Inc.  
Great Lakes Chemical Div.  
Green Lawn Laboratories, Inc.  
Niagara Chemical Div., FMC Corp.  
Pennsalt Chemicals Corp.  
Velsicol Chemical Corp.

**2-AMINO BUTANE**

Elanco Products Co.

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Parker Sweeper Co.  
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Royer Foundry & Machine Co.  
Ryan Equipment Co.  
Viking Mfg. Co.  
West Point Products Corp.

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Asplundh Chipper Co.  
Deere & Co.  
Halline Utility Equipment Co.  
Hunt-Pierce Corp.  
McCabe-Powers Body Co.  
Mobile Aerial Towers, Inc.  
Pitman Mfg. Co.  
Skyworker Div., Transair Co., Inc.

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Mine Safety Appliances Co.  
Safety Test & Equipment Co., Inc.

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Aquanautics, Inc.  
John Bean Div., FMC Corp.  
Buffalo Turbine Ag. Equip. Co.  
Friend Manufacturing Corp.  
F. E. Myers & Bro. Co.  
Root-Lowell Corp.  
Solo Industries

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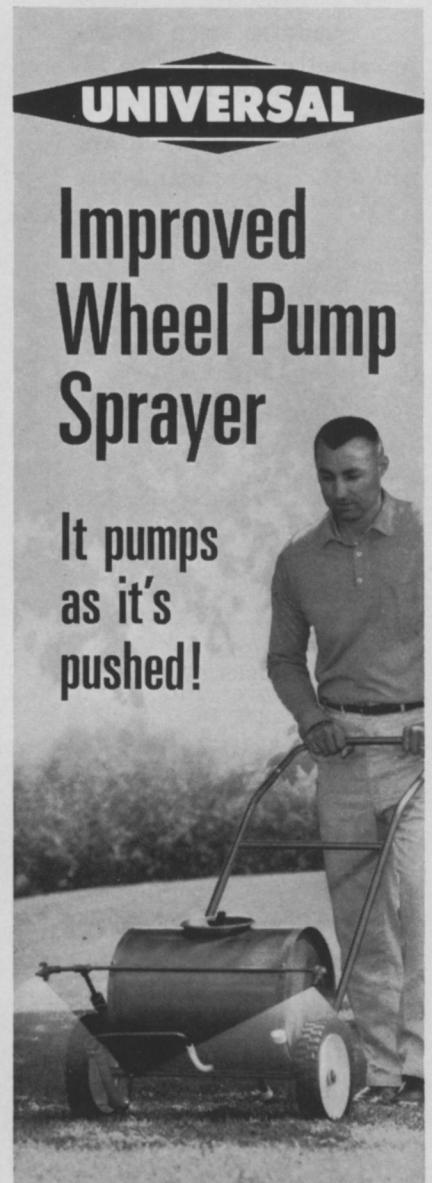
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Imco, Inc.  
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Snow Aeronautical Corp.

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Gyrodyne Co. of America  
Hiller Aircraft Corp.  
Republic Aviation Corp.  
Sikorsky Aviation Div.

**ALTERNATORS**

New World Products Co., Inc.



# UNIVERSAL

## Improved Wheel Pump Sprayer

It pumps  
as it's  
pushed!

**For Turf Care!**

One of the handiest sprayers a professional can own. Ideal for jobs too small or too irregular for power equipment. Sprays either a 48" wide or 24" wide swath. Unique rubber wheel-pump "milks" out solution as you push the sprayer. Improved model reduces pulsations for smoother spray pattern. Lays down a heavy residual spray. For killing weeds. Fungus control. Insect control. Turf grubs. For fertilizers, too. Safe. Sure.

*Write for new catalog*



*New low cost kit adapts late model wheel pump sprayers for towing behind small tractor.*

**UNIVERSAL METAL PRODUCTS**

Division Leigh Products, Inc., Saranac, Mich. 48881  
For More Details Circle (107) on Reply Card

**AQUATIC WEED MOWER**

Aquanautics, Inc.  
 Aquatic Controls Corp.  
 Jari Corp.

**AQUATIC SPRAY BOATS**

Allied Biological Control Corp.  
 Aquanautics, Inc.

**AUGERS, EARTH**

Allis-Chalmers Mfg. Co.  
 Bartlett Mfg. Co.  
 Contree Sales, Inc.  
 Fairmont Hydraulics  
 Halline Utility Equipment Co.  
 Heckendorn Mfg. Co., Inc.  
 Hoffco, Inc.  
 International Harvester Co.  
 McCabe-Powers Body Co.  
 McCulloch Corp.  
 Melroe Mfg. Co.  
 New World Products Co., Inc.  
 Pitman Mfg. Co.  
 Rear's Mfg. Co.  
 Stihl American, Inc.  
 Thor Power Tool Co.

**BARRELS, PLASTIC-LINED**

The Broyhill Co.  
 Century Engineering Corp.  
 Farmrite Sprayer, Inc.  
 Larson Machine, Inc.

**BARRELS, STEEL**

The Broyhill Co.  
 Larson Machine, Inc.

**BINS, PORTABLE**

Contree Sales, Inc.  
 Royer Foundry & Machine Co.

**BLADES, DOZER SCRAPER**

Arps Corp.  
 Bolens Div., FMC Corp.  
 J. I. Case Co.  
 Deere & Co.  
 Gravely Tractors  
 International Harvester Co.  
 Jacobsen Mfg. Co.  
 Massey-Ferguson, Inc.  
 Melroe Mfg. Co.  
 MinnTurf Equipment Designs Corp.  
 Simplicity Mfg. Co., Inc.

**BOATS, AIR**

Aquanautics, Inc.

**BRUSHCUTTER, POWER**

John Bacon Corp.  
 Brillion Iron Works, Inc.  
 Hoffco, Inc.  
 Homelite Div., Textron, Inc.  
 Locke Manufacturing Cos., Inc.  
 McCulloch Corp.  
 Pitman Mfg. Co.  
 Rowco Mfg. Co., Inc.  
 Stihl American, Inc.  
 The Vandermolen Co.

**BRUSH HOOKS**

Bartlett Mfg. Co.  
 Harder Arborist Supply Co.  
 Pitman Mfg. Co.

**CABLE SUPPLIES**

Bartlett Mfg. Co.  
 H. K. Porter, Inc.

**CHEMICAL APPLICATORS, GRANULAR**

John Bean Div., FMC Corp.  
 John Blue Co.  
 Borden Chem., Smith-Douglas Div.  
 Bowie Machine Works, Inc.  
 Buffalo Turbine Ag. Equip. Co.  
 Contree Sales, Inc.  
 The J. J. Dill Co.  
 Gandy Co.  
 International Harvester Co.

Jacobsen Mfg. Co.  
 Larson Machine, Inc.  
 Solo Industries, Inc.  
 Tarrant Mfg. Co.  
 Tryco Mfg. Co., Inc.  
 Walsh Manufacturing Co.

**CHEMICAL APPLICATORS, LIQUID**

Ag-King (Div. of TAGS)  
 Amchem Products, Inc.  
 John Bacon Corp.  
 John Bean Div., FMC Corp.  
 John Blue Co.  
 Bowie Machine Works, Inc.  
 The Broyhill Co.  
 Buffalo Turbine Ag. Equip. Co.  
 Century Engineering Corp.  
 Contree Sales, Inc.  
 Deere & Co.  
 The J. J. Dill Co.  
 Farmrite Sprayer, Inc.  
 Great Lakes Chemical Div.  
 Green Lawn Laboratories, Inc.  
 Hanson Equipment Co.  
 H. D. Hudson Mfg. Co.  
 International Harvester Co.  
 Jacobsen Mfg. Co.  
 Lakes Supply Co., Inc.  
 Larson Machine, Inc.  
 Melnor Industries, Inc.  
 F. E. Myers & Bro. Co.  
 Root-Lowell Corp.  
 Solo Industries, Inc.  
 Tarrant Mfg. Co.  
 Tryco Mfg. Co., Inc.  
 Universal Metal Products Div.  
 The Vandermolen Co.  
 Walsh Manufacturing Co.

**CHIPPERS**

Aspeundh Chipper Co.  
 Fitchburg Engineering Corp.  
 H & G Tool Co.  
 Mitts & Merrill, Inc.  
 Pitman Mfg. Co.  
 Safety Test & Equipment Co., Inc.  
 Trailevator Div., Magline, Inc.  
 Wayne Manufacturing Co.

**CLIMBERS' SPURS**

Bartlett Mfg. Co.  
 W. M. Bashlin Co.

**COMBS, TURF**

Parker Sweeper Co.  
 Rental Equipment Mfg. Co.  
 Ryan Equipment Mfg. Co.

**CRANES**

Arlo Industries, Inc.  
 Deere & Co.  
 Halline Utility Equipment Co.  
 Ideal Crane Div.  
 International Harvester Co.  
 Pitman Mfg. Co.

**DISKS, CULTIVATING**

Allis-Chalmers Mfg. Co.  
 J. I. Case Co.  
 Deere & Co.  
 International Harvester Co.  
 Massey-Ferguson, Inc.

**DRILLS (Field)**

Deere & Co.  
 Gandy Co.  
 International Harvester Co.  
 Massey-Ferguson, Inc.

**DRILLS (Hand & Power Tool)**

Bartlett Mfg. Co.  
 Black & Decker Mfg. Co.  
 Fairmont Hydraulics  
 Hoffco, Inc.  
 Skil Corp.  
 Stihl American, Inc.  
 Thor Power Tool Co.

**DUSTERS**

John Bean Div., FMC Corp.  
 John Blue Co., Inc.  
 Buffalo Turbine Ag. Equip. Co.  
 Champion Sprayer Co.  
 R. E. Chapin Mfg. Works, Inc.  
 DeVilbiss Co.  
 The J. J. Dill Co.  
 Great Lakes Chemical Div.  
 H. D. Hudson Mfg. Co.  
 The Ben Meadows Co.  
 Root-Lowell Corp.  
 Solo Industries, Inc.  
 Universal Metal Products Div.  
 The Vandermolen Co.

**FIRST-AID KITS**

American Optical Co.  
 Mine Safety Appliances Co.  
 Pulmosan Safety Equipment Corp.

**FLAMETHROWERS**

John Bean Div., FMC Corp.  
 Cranco Co.  
 Gotcher Engineering & Mfg. Co.  
 H. D. Hudson Mfg. Co.  
 Solo Industries, Inc.  
 Tree-Ject Co.  
 Universal Metal Products Div.  
 The Vandermolen Co.

**FORK LIFTS**

Allis-Chalmers Mfg. Co.  
 International Harvester Co.

**FORK LIFT (Attachment for Tractors)**

Century Engineering Corp.

**FUMIGANT APPLICATORS**

John Blue Co., Inc.  
 The J. J. Dill Co.  
 Great Lakes Chemical Div.

**FUMIGANT COVERS (Plastic Sheets)**

Great Lakes Chemical Div.

**GENERATORS**

Allis-Chalmers Mfg. Co.  
 John Bacon Corp.  
 International Harvester Co.  
 New World Products Co., Inc.

**GRADERS**

The John M. Adt Co.  
 Allis-Chalmers Mfg. Co.  
 Simplicity Mfg. Co., Inc.  
 Viking Mfg. Co.

**HARROW, SPRING-TOOTHED**

Allis-Chalmers Mfg. Co.  
 Brillion Iron Works, Inc.  
 The Broyhill Co.  
 J. I. Case Co.  
 Deere & Co.  
 Ford Motor Co.  
 International Harvester Co.  
 Massey-Ferguson, Inc.  
 Melroe Mfg. Co.  
 Oliver Corp.  
 Simplicity Mfg. Co., Inc.

**HARROW, SPIKE-TOOTHED**

The Broyhill Co.  
 J. I. Case Co.  
 Deere & Co.  
 John H. Graham & Co., Inc.  
 International Harvester Co.  
 Oliver Corp.

**HELMETS**

American Optical Co.  
 Great Lakes Chemical Div.  
 Mine Safety Appliances Co.  
 Pulmosan Safety Equipment Corp.  
 Willson Products Div.

## HOSE

Ampulco (Hardie)  
John Bacon Corp.  
The Broyhill Co.  
Century Engineering Corp.  
Contree Sales, Inc.  
DeVilbiss Co.  
The J. J. Dill Co.  
Friend Manufacturing Corp.  
Great Lakes Chemical Div.  
Larson Machine, Inc.  
F. E. Myers & Bro. Co.

## HYDRAULIC & AIR POWERED TOOLS

Ackley Mfg. Co.  
Fairmont Hydraulics  
New World Products, Inc.

## HYDRAULIC DUMPING HOISTS

Collins Associates, Inc.

## HYDRAULIC SEEDING & MULCHING MACHINES

Bowie Machine Works, Inc.  
Finn Equipment Co.  
Reinco, Inc.

## IRRIGATION CANAL HARVESTER

Aquatic Controls Corp.

## IRRIGATION PIPE

John Bean Div., FMC Corp.  
Certain-teed Products Corp.  
Johns-Manville Corp.  
Reynolds Metals Co.  
R. M. Wade & Co.

## IRRIGATION SPRINKLER HEADS

W. D. Allen Mfg. Co.  
John Bean Div., FMC Corp.  
Buckner Industries, Inc.  
Irrigation Accessories, Inc.  
Melnor Industries, Inc.  
Rain Bird Sprinkler  
Rain-O-Mat Sprinklers  
Toro Mfg. Corp.  
R. M. Wade & Co.

## IRRIGATION SYSTEMS, COMPLETE

Adamson Sprinkler Co.  
John Bean Div., FMC Corp.  
Buckner Industries, Inc.  
Irrigation Accessories Co.  
Rain-O-Mat Sprinklers  
Telsco Industries  
The Thompson Manufacturing Co.  
Toro Manufacturing Corp.  
Vermeer Manufacturing Co.  
R. M. Wade & Co.

## KNIVES, INJECTOR

Contree Sales, Inc.

## BLOWERS

American-Lincoln Corp.  
Clipper Mfg. Co.  
The J. J. Dill Co.  
Finn Equipment Co.  
F. E. Myers & Bro. Co.  
Parker Sweeper Co.  
Rogers Mfg. Co., Inc.  
Solo Industries, Inc.  
The Vandermolen Co.

## LEVELERS

Deere & Co.  
International Harvester Co.  
MinnTurf Equipment Designs Corp.  
Viking Mfg. Co.  
York Modern Corp.

## LOADERS, BOOM

Pitman Mfg. Co.  
Side-O-Matic Unloader Corp.

## LOADERS, TRACTOR MOUNTED

Allis-Chalmers Mfg. Co.  
Arps Corp.

Danuser Machine Works  
Deere & Co.  
Engineering Products Co.  
Ford Motor Co.  
International Harvester Co.  
Koyker Mfg. Co.  
Massey-Ferguson, Inc.  
Melroe Mfg. Co.  
Oliver Corp.  
The Sun-Mastr Corp.  
Vermeer Manufacturing Co.

## LOG SPLITTERS

Piqua Engineering, Inc.  
Waco Lickity Log Splitter Div.

## MASKS, DUST

Acme Protection Equipment Corp.  
American Optical Co.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Martindale Electric Co.  
Mine Safety Appliances Co.  
Pulmosan Safety Equipment Corp.  
Scott Aviation Corp.  
The Vandermolen Co.  
Willson Products Div.

## MASKS, GAS

Acme Protection Equipment Corp.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Mine Safety Appliances Co.  
Pulmosan Safety Equipment Corp.  
Scott Aviation Corp.  
Willson Products Div.

## MEASURING WHEEL

Gandy Co.  
Great Lakes Chemical Div.  
B. G. Reilly Co.  
Rolatape, Inc.

## MISCELLANEOUS

### CONVEYORS, PORTABLE, BELT

Stone Conveyor Co., Inc.

### DIFFERENTIALS

Tecumseh Products Co.

### FLOTATION TIRES & WHEELS

Martin Tire & Supply, Inc.

### GASOLINE ENGINE

Rudd Manufacturing, Inc.

### GEARED ANGLE DRIVES

Tecumseh Products Co.

### HYP0-HATCHET INJECTOR

The Ansul Co.

### ROTARY LAWN MOWER BLADES

The Whitaker Manufacturing Co.

### SICKLE BAR MOWER REPAIRS

The Whitaker Manufacturing Co.

### STORAGE TENDER UNIT

Rudd Manufacturing Co.

### TRANSAXLES

Tecumseh Products Co.

### TRANSMISSIONS

MinnTurf Equipment Designs Corp.  
Tecumseh Products Co.  
Turf Racks

### MISTBLOWERS, BACKPACK

Buffalo Turbine Ag. Equip. Co.  
Burton Supply Co., Inc.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
Hanson Equipment Co.  
H. D. Hudson Mfg. Co.

Silver Creek Precision Corp.  
Solo Industries, Inc.  
The Vandermolen Co.

## MISTBLOWERS, TRUCK-MOUNTED

Ag King (Div. of TAGS)  
Ampulco (Hardie)  
Aquanautics, Inc.  
John Bean Div., FMC Corp.  
Besler, A Div. of C-C Industries  
The Broyhill Co.  
Buffalo Turbine Ag. Equip. Co.  
The J. J. Dill Co.  
F. E. Myers & Bro. Co.  
Silver Creek Precision Corp.  
Solo Industries, Inc.  
The Vandermolen Co.

## MISTBLOWERS, NOZZLE PARTS

Ag King (Div. of TAGS)  
John Bean Div., FMC Corp.  
The Broyhill Co.  
Buffalo Turbine Equipment Co.  
Century Engineering Corp.  
The J. J. Dill Co.  
Great Lakes Chemical Div.  
H. D. Hudson Mfg. Co.  
F. E. Myers & Bro. Co.  
Solo Industries, Inc.

## MOTORS

L. M. Cox Mfg. Co.  
International Harvester Co.  
Tecumseh Products Co.  
The Vandermolen Co.  
Waukesha Motor Co.

## MOWERS, BLADES & CUTTING PARTS

The Whitaker Manufacturing Co.

## MOWERS, FLAIL

John Bean Div., FMC Corp.  
J. I. Case Co.  
Deere & Co.  
Excel Industries, Inc.  
Ford Motor Co.  
Gravely Tractors  
Henderson Mfg. Co.  
International Harvester Co.  
Massey-Ferguson, Inc.  
Mott Corp.  
The Sun-Mastr Corp.

## MOWERS, GANG

Allis-Chalmers Mfg. Co.  
Bolens Div., FMC Corp.  
J. I. Case Co.  
Gravely Tractors  
International Harvester Co.  
Jacobsen Mfg. Co.  
Roseman Mower Corp.  
Roxy-Bonner, Inc.  
Simplicity Mfg. Co., Inc.  
The Sun-Mastr Corp.  
Toro Manufacturing Corp.

## MOWERS, REEL

Bolens Div., FMC Corp.  
J. I. Case Co.  
Devere-Locke Div., Locke Mfg. Co.  
Gravely Tractors  
International Harvester Co.  
Jacobsen Mfg. Co.  
Jari Corp.  
Locke Mfg. Co., Inc.  
Roseman Mower Corp.  
Roxy-Bonner, Inc.  
Simplicity Mfg. Co., Inc.  
The Sun-Mastr Corp.  
Toro Mfg. Corp.

## MOWERS, ROTARY

Allis-Chalmers Mfg. Co.  
Ariens Co.  
Bachtold Bros.  
John Bean Division, FMC Corp.  
The Black & Decker Mfg. Co.  
BMB Co.

Bolens Div., FMC Corp.  
Brillion Iron Works, Inc.  
J. I. Case Co.  
Deere & Co.  
Engineering Products Co.  
Excel Industries, Inc.  
Ford Motor Co.  
Gale Products  
Goodall Mfg. Corp.  
Gravely Tractors  
Heckendorn Mfg. Co., Inc.  
Homelite Div., Textron, Inc.  
International Harvester Co.  
Jacobsen Mfg. Co.  
Jari Corp.  
Locke Mfg. Co., Inc.  
Massey-Ferguson, Inc.  
Oliver Corp.  
Pennington Mfg. Co.  
Quick Manufacturing, Inc.  
Rear's Mfg. Co.  
Simplicity Mfg. Co., Inc.  
Speedex Tractor Co.  
Solo Industries, Inc.  
The Sun-Mastr Corp.  
Thor Power Tool Co.  
Toro Manufacturing Corp.  
Triumph Machinery Co.  
Yazoo Mfg. Co., Inc.

#### **MOWERS, SICKLE BAR**

Allis-Chalmers Mfg. Co.  
Deere & Co.  
Gravely Tractors  
International Harvester Co.  
Jacobsen Mfg. Co.  
Jari Corp.  
Massey-Ferguson, Inc.  
Simplicity Mfg. Co., Inc.

#### **MOWERS, VERTICAL (De-Thatchers)**

Allis-Chalmers Mfg. Co.  
International Harvester Co.  
Jacobsen Mfg. Co.  
Rental Equipment Mfg. Co.  
Rogers Mfg. Co., Inc.  
Ryan Equipment Co.  
Triumph Machinery Co.  
West Point Products Corp.

#### **PASTEURIZERS, SOIL**

Tarrant Mfg. Co.

#### **PROPORTIONING SYSTEMS**

Contree Sales, Inc.  
Vineland Laboratories, Inc.

#### **PROTECTIVE CLOTHING**

American Optical Co.  
Charleston Rubber Co.  
Mine Safety Appliances Co.

#### **PRUNERS**

John Bacon Corp.  
Bartlett Mfg. Co.  
Fairmont Hydraulics  
Fanno Saw Works  
John H. Graham & Co., Inc.  
Halline Utility Equipment Co.  
Harder Arborist Supply Co.  
Hunt-Pierce Corp.  
Miller Robinson Co.  
Melnor Industries, Inc.  
New World Products Co., Inc.  
Pitman Mfg. Co.  
H. K. Porter, Inc.  
Rowco Mfg. Co., Inc.  
Seymour Smith & Son, Inc.  
Stihl American, Inc.

#### **PUMPS**

Ace Pump Corp.  
Ampulco (Hardie)  
Aurora Pump Div.  
John Bacon Corp.  
John Bean Div., FMC Corp.  
Bowie Machine Works, Inc.  
The Broyhill Co.

Century Engineering Corp.  
Contree Sales, Inc.  
Delavan Manufacturing Co.  
DeVilbiss Co.  
Dempster Industries, Inc.  
The J. J. Dill Co.  
Farmrite Sprayer, Inc.  
Farris Chemical Co.  
Friend Manufacturing Corp.  
Gotcher Engineering & Mfg. Co.  
Hanson Equipment Co.  
Homelite Div., Textron, Inc.  
H. D. Hudson Mfg. Co.  
Hypro, Inc.  
Larson Machine, Inc.  
Marlow Pumps Div.  
Minnesota Wanner Co.  
F. E. Myers & Bro. Co.  
Oberdorfer Pump Div.  
Solo Industries, Inc.  
Thor Power Tool Co.  
Tryco Mfg. Co., Inc.  
Universal Motor Co.  
Viking Pump Co.

#### **RAKES**

Arps Corp.  
Bartlett Mfg. Co.  
Deere & Co.  
International Harvester Co.  
Jari Corp.  
Rental Equipment Mfg. Co.  
Roseman Mower Corp.  
Triumph Machinery Co.  
York Modern Corp.

#### **REELS, HOSE**

Clifford B. Hannay & Son, Inc.  
Melnor Industries, Inc.

#### **RESPIRATORS**

Acme Protection Equipment Corp.  
American Optical Co.  
John Bacon Corp.  
The J. J. Dill Co.  
Glendale Optical Co., Inc.  
Great Lakes Chemical Div.  
Martindale Electric Co.  
Mine Safety Appliances Co.  
Pulmosan Safety Equipment Corp.  
Scott Aviation Corp.  
The Vandermolen Co.  
Willson Products Div.

#### **ROLLER-SPRAYERS**

Lakes Supply Co., Inc.

#### **ROLLERS, TURF**

Brillion Iron Works, Inc.  
John H. Graham & Co., Inc.  
Gravely Tractors  
International Harvester Co.  
Rogers Mfg. Co., Inc.  
Rosco Manufacturing Co.  
Ryan Equipment Co.  
Simplicity Mfg. Co., Inc.  
Sun Industry, Inc.

#### **ROOT-FEEDING RODS**

John Bean Div., FMC Corp.  
The J. J. Dill Co.  
Dobbins Div., Chamberlain Mfg. Corp.  
Hydroponic Chemical Co., Inc.  
Minnesota Wanner Co.

#### **SAFETY BELTS AND SADDLES, TREE CLIMBERS**

Bartlett Mfg. Co.  
W. M. Bashlin Co.  
Mine Safety Appliances Co.  
Safety Test & Equipment Co., Inc.

#### **SAFETY EQUIPMENT**

Acme Protection Equipment Corp.  
American Optical Co.  
Bartlett Mfg. Co.  
John Bean Div., FMC Corp.  
Charleston Rubber Co.

Glendale Optical Co.  
Great Lakes Chemical Div.  
Harder Arborist Supply Co.  
Mine Safety Appliances Co.  
Pulmosan Safety Equipment Corp.  
Safety Test & Equipment Co., Inc.  
Scott Aviation Corp.

#### **SAWS, CHAIN**

Homelite Div., Textron Inc.  
New World Products Co., Inc.

#### **SAWS, MANUAL**

Bartlett Mfg. Co.  
John Bacon Corp.  
W. M. Bashlin Co.  
The Fanno Saw Works  
John H. Graham & Co., Inc.  
Harder Arborist Supply Co.  
Safety Test & Equipment Co., Inc.  
Seymour Smith & Son, Inc.  
Wright Saw Div.

#### **SAWS, POWER**

American-Lincoln Corp.  
John Bacon Corp.  
The Black & Decker Mfg. Co.  
L. M. Cox Mfg. Co., Inc.  
Fairmont Hydraulics  
Fanno Saw Works  
Great Lakes Chemical Div.  
Halline Utility Equipment Co.  
Hoffco, Inc.  
Homelite Div., Textron, Inc.  
Hunt-Pierce Corp.  
McCulloch Corp.  
Miller-Robinson Co.  
New World Products Co., Inc.  
Pioneer Saws, Ltd.  
Pitman Mfg. Co.  
Remington Arms Co., Inc.  
Rowco Mfg. Co., Inc.  
Solo Industries, Inc.  
Stihl American, Inc.  
The Sun-Mastr Corp.  
Thor Power Tool Co.  
Wright Saw Div.

#### **SAWS, CHAIN, PARTS**

Omark Industries, Inc.  
Pioneer Saws, Ltd.  
Sabre Saw Chain, Inc.

#### **SCRAPERS**

BMB Company  
Deere & Co.  
Gravely Tractors  
International Harvester Co.

#### **SCREENERS, SOIL**

Lindig Manufacturing, Inc.

#### **SCYTHES**

Hoffco, Inc.

#### **SEEDERS, BELT TYPE**

John Bean Div., FMC Corp.

#### **SEEDERS, DISK TYPE**

International Harvester Co.  
Vandermolen Export Co.

#### **SEEDERS, HOPPER TYPE**

Brettrager Manufacturing  
Brillion Iron Works, Inc.  
The Cyclone Seeder Co., Inc.  
Deere & Co.  
The J. J. Dill Co.  
Gandy Co.  
Garber Seeders, Inc.  
Gravely Tractors  
International Harvester Co.  
Larson Machine, Inc.  
Rogers Mfg. Co., Inc.  
Schneider Metal Mfg. Co.  
Sunnyhill Research & Mfg. Co.

#### **SEEDERS, HYDRAULIC**

Reinco Inc.

**SEEDERS, SOD**

Brillion Iron Works, Inc.

**SHEARS**

John Bacon Corp.  
 Bartlett Mfg. Co.  
 John H. Graham & Co., Inc.  
 Melnor Industries, Inc.  
 H. K. Porter, Inc.  
 Seymour Smith & Son, Inc.

**SHREDDERS, SOIL**

Kemp Mfg. Co.  
 Lindig Manufacturing, Inc.  
 Royer Foundry & Machine Co.  
 W-W Grinder Corp.

**SICKLE BAR MOWER**

Deere & Co.  
 Engineering Products Co.  
 Ford Motor Co., Tractor Div.  
 Gravely Tractors  
 International Harvester Co.  
 Solo Industries, Inc.

**SOD CUTTERS**

Finland Turf Cut Div.  
 James-Way Equipment Co.  
 Ryan Equipment Co.  
 Sodmaster

**SOD HARVESTERS**

John Nunes Mechanical  
 Harvesting Co.

**SOD PLUGGER**

Beck Mfg. Co.  
 James-Way Equipment Co.  
 West Point Products Corp.

**SOD ROLLER**

Daymon Mfg. Co.  
 Hadfield Sod Roller Co.  
 Ryan Equipment Co.

**SOIL TESTERS**

Contree Sales, Inc.  
 Hydroponic Chemical Co., Inc.  
 Kel Instruments Co., Inc.  
 LaMotte Chemical Products Co.  
 Sudbury Laboratory

**SPIKERS**

John H. Graham & Co., Inc.  
 Rogers Mfg. Co., Inc.  
 Ryan Equipment Co.  
 West Point Products Corp.

**SPRAY BOOMS**

Ampulco (Hardie)  
 John Bacon Corp.  
 John Bean Div., FMC Corp.  
 The Broyhill Co.  
 Century Engineering Corp.  
 Contree Sales, Inc.  
 Custom Spray Equipment Corp.  
 Dempster Industries, Inc.  
 The J. J. Dill Co.  
 Farmrite Sprayer, Inc.  
 Friend Manufacturing Corp.  
 Great Lakes Chemical Div.  
 Green Lawn Laboratories, Inc.  
 Hanson Equipment Co.  
 H. D. Hudson Mfg. Co.  
 Larson Machine, Inc.  
 Mallinckrodt Chemical Works  
 Master Sprayers, Inc.  
 F. E. Myers & Bro. Co.  
 Oakes Mfg. Co., FMC Corp.  
 Rear's Mfg. Co.  
 Root-Lowell Corp.  
 Thuron Sprayer Mfg. Co.  
 Tote Systems Div.  
 Tryco Mfg. Co., Inc.  
 Walsh Manufacturing Co.

**SPRAY GUNS**

Ampulco (Hardie)  
 John Bacon Corp.

John Bean Div., FMC Corp.  
 The Broyhill Co.  
 Century Engineering Corp.  
 Contree Sales, Inc.  
 Delavan Manufacturing Co.  
 DeVilbiss Co.  
 The J. J. Dill Co.  
 Farmrite Sprayer, Inc.  
 Friend Manufacturing Corp.  
 Gotcher Engineering & Mfg. Co.  
 Great Lakes Chemical Div.  
 Green Lawn Laboratories, Inc.  
 Hanson Equipment Co.  
 H. D. Hudson Mfg. Co.  
 Hydroponic Chemical Co., Inc.  
 Larson Machine, Inc.  
 Master Sprayers, Inc.  
 Melnor Industries, Inc.  
 F. E. Myers & Bro. Co.  
 Oakes Mfg. Co., FMC Corp.  
 Root-Lowell Corp.  
 Silver Creek Precision Corp.  
 Spraying Systems Co.  
 Wm. Steinen Mfg. Co.  
 The Thompson Manufacturing Co.  
 Thuron Sprayer Mfg. Co.  
 Tryco Mfg. Co., Inc.  
 Universal Metal Products Div.  
 Walsh Manufacturing Co.

**SPRAY NOZZLES, COMPLETE**

W. D. Allen Mfg. Co.  
 John Bacon Corp.  
 John Bean Div., FMC Corp.  
 The Broyhill Co.  
 Buffalo Turbine Equipment Co.  
 Century Engineering Corp.  
 Contree Sales, Inc.  
 Delavan Manufacturing Co.  
 DeVilbiss Co.  
 The J. J. Dill Co.  
 Farmrite Sprayer, Inc.  
 Friend Manufacturing Corp.  
 Gotcher Engineering & Mfg. Co.  
 Great Lakes Chemical Div.  
 Green Lawn Laboratories, Inc.  
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 H. D. Hudson Mfg. Co.  
 Larson Machine, Inc.  
 Master Sprayers, Inc.  
 Monarch Mfg. Works, Inc.  
 F. E. Myers & Bro. Co.  
 Oakes Mfg. Co., FMC Corp.  
 Root-Lowell Corp.  
 Spraying Systems Co.  
 Wm. Steinen Mfg. Co.  
 The Thompson Manufacturing Co.  
 Thuron Sprayer Mfg. Co.  
 Tryco Mfg. Co., Inc.  
 Walsh Manufacturing Co.

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W. D. Allen Mfg. Co.  
 John Bacon Corp.  
 John Bean Div., FMC Corp.  
 The Broyhill Co.  
 Century Engineering Corp.  
 Delavan Manufacturing Co.  
 The J. J. Dill Co.  
 Farmrite Sprayer, Inc.  
 Friend Manufacturing Corp.  
 Gotcher Engineering & Mfg. Co.  
 Green Lawn Laboratories, Inc.  
 Hanson Equipment Co.  
 Larson Machine, Inc.  
 Master Sprayers, Inc.  
 F. E. Myers & Bro. Co.  
 Oakes Mfg. Co., FMC Corp.  
 Spraying Systems Co.  
 Wm. Steinen Mfg. Co.  
 Thuron Sprayer Mfg. Co.  
 The Vandemolen Co.  
 Walsh Manufacturing Co.

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W. D. Allen Mfg. Co.  
 John Bacon Corp.  
 John Bean Div., FMC Corp.  
 The Broyhill Co.  
 Century Engineering Corp.

The J. J. Dill Co.  
 Farmrite Sprayer, Inc.  
 Friend Manufacturing Corp.  
 Great Lakes Chemical Div.  
 Green Lawn Laboratories, Inc.  
 Larson Machine, Inc.  
 Master Sprayers, Inc.  
 F. E. Myers & Bro. Co.  
 Oakes Mfg. Co., FMC Corp.  
 Spraying Systems Co.  
 Walsh Manufacturing Co.

**SPRAY PUMPS**

Hypco, Inc.  
 Master Sprayers, Inc.

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 Great Lakes Chemical Div.  
 Green Lawn Laboratories, Inc.  
 H. D. Hudson Mfg. Co.

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 The Broyhill Co.  
 Buffalo Turbine Equipment Co.  
 Dobbins Div., Chamberlain Mfg. Corp.  
 Farmrite Sprayer, Inc.  
 Finn Equipment Co.  
 Great Lakes Chemical Div.  
 Minnesota Wanner Co.  
 Stull Chemical Co.

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Ag-King (Div. of TAGS)  
 Ampulco (Hardie)  
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 John Bacon Corp.  
 John Bean Div., FMC Corp.  
 John Blue Co., Inc.  
 The Broyhill Co.  
 Century Engineering Corp.  
 Contree Sales  
 Cushman Motors  
 Deere & Co.  
 Dempster Industries, Inc.  
 The J. J. Dill Co.  
 Dobbins Div., Chamberlain Mfg. Corp.  
 Farmrite Sprayer, Inc.  
 Friend Manufacturing Corp.  
 Gotcher Engineering & Mfg. Co.  
 Great Lakes Chemical Div.  
 Green Lawn Laboratories, Inc.  
 Hanson Equipment Co.  
 Heckendorn Mfg. Co., Inc.  
 H. D. Hudson Mfg. Co.  
 Larson Machine, Inc.  
 Master Sprayers, Inc.  
 F. E. Myers & Bro. Co.  
 Rear's Mfg. Co.  
 Root-Lowell Corp.  
 Sun Industry, Inc.  
 Thuron Sprayer Mfg. Co.  
 Tryco Mfg. Co., Inc.  
 Walsh Manufacturing Co.

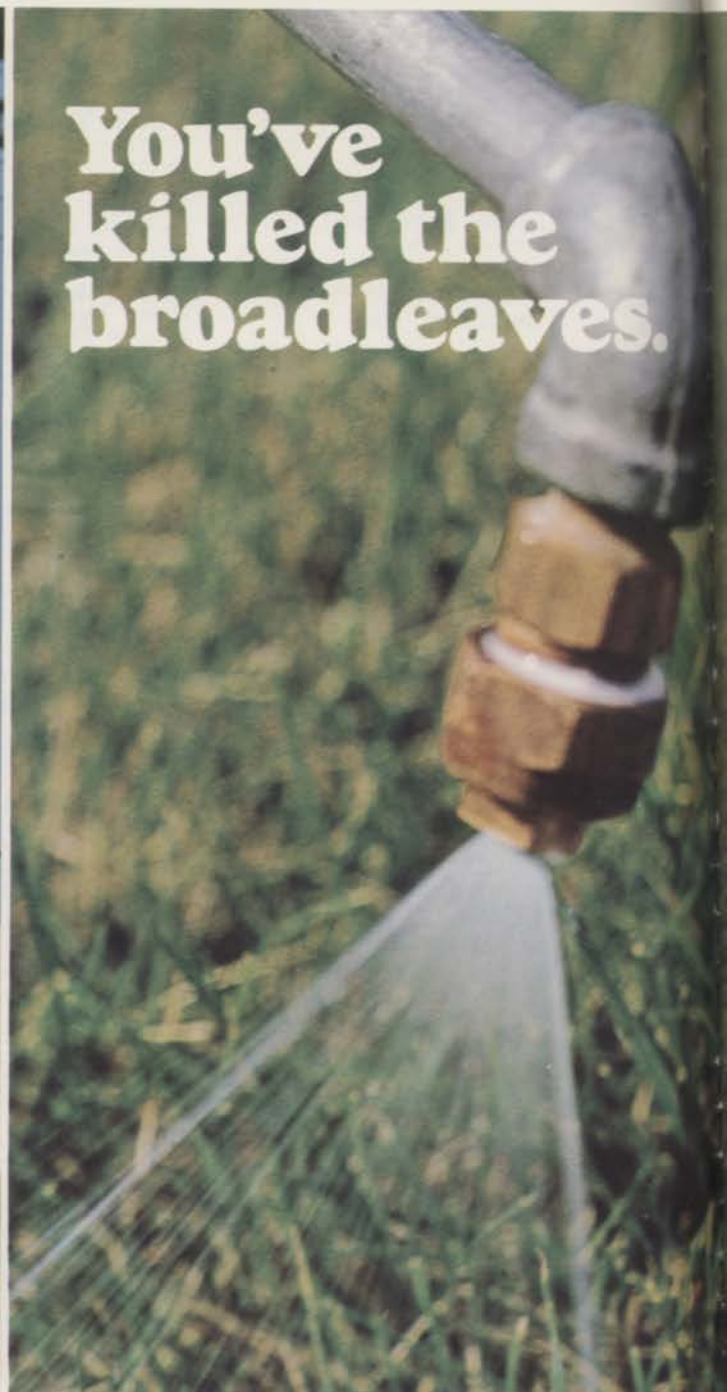
**SPRAYERS, CART OR WHEELBARROW TYPE**

Ampulco (Hardie)  
 John Bean Div., FMC Corp.  
 The Broyhill Co.  
 Champion Sprayer Co.  
 R. E. Chapin Mfg. Works, Inc.  
 Deere & Co.  
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 Dobbins Div.  
 Farmrite Sprayer, Inc.  
 Great Lakes Chemical Div.  
 Hanson Equipment Co.  
 H. D. Hudson Mfg. Co.  
 Larson Machine, Inc.  
 F. E. Myers & Bro. Co.  
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**You've  
fertilized.**



**You've  
killed the  
broadleaves.**



**Include Balan pre-emergence crabgrass killer  
in your program. You're spending time  
and money to get good turf. It won't require  
much more to take the third key  
step in turf care.**

# Now eliminate crabgrass.



**THE CRABGRASS PROBLEM.** Crabgrass and other annual weedgrasses just don't belong in your desirable turf. They'll ruin its appearance. Even close mowing won't keep crabgrass from looking uneven and being an unsightly summer problem. Worse yet, it browns out and dies come fall. This leaves bare spots next spring to be filled in by more crabgrass. It's a vicious circle.

**THE CRABGRASS SOLUTION.** You're ready for the third step in professional turf management. Complete your turf care program with pre-emergence Balan Granular. Applied to established turf in the spring, anytime before annual weedgrasses sprout, it kills the seeds as they germinate. Weedgrasses can't brown out, can't leave bare spots. Because they don't show up, to begin with.

**REASONABLY PRICED.** With Balan, all-season annual weedgrass control costs as little as

\$15-\$30 an acre, depending on your climatic zone. (For southern, warm season turfs, two applications may be required because of the longer growing season.) Balan's economy fits even a modest grounds maintenance budget.

**DEPENDABLE PERFORMANCE.** Balan can be counted on to control crabgrass and other annual weedgrasses even when there are heavy rains or repeated irrigations. Waterproof Balan clings to soil particles and stays put to do its job for you. More than likely your local university has tested Balan and recommends it. Top golf courses in your area know Balan. (And who'd have a greater appreciation of its performance?)

You'll like Balan's convenient granular formulation, too. It's easy to handle and easy to apply with your present equipment. Ask your turf supply and equipment distributor about Balan this week.



(Balan™—benefin, Elanco)

One of Elanco's  
dependable  
weed-control  
crew.

# Your first 100 sq. feet are on Elanco!



**Free sample! A 4½ ounce shaker tube of Balan Granular. Enough to keep 100 square feet of turf clean of weedgrasses for months.**

Return the postage-paid card for full details on Balan, along with the name of your nearest distributor, plus your free sample. Then shake out the sample evenly over an area approximately 10' x 10'. Do this shortly before crabgrass and other weedgrasses germinate. Or weeks before. See how your turf grows thicker, healthier without having to compete with weedgrasses for sunlight and moisture. Balan makes the difference.

OTHER MEMBERS OF ELANCO'S DEPENDABLE WEED CONTROL CREW:

TREFLAN®—dependable, long-lasting pre-emergence herbicide to control weeds and grasses in nursery stock or established ornamental shrubbery and flower beds.

DYDID®—versatile pre-emergence herbicide to control weeds and grasses in ornamentals, dichondra, or ice plant ground covers. Particularly effective against certain winter-germinating weeds.



(BALAN™—benefin, Elanco)



ELANCO PRODUCTS COMPANY  
A division of Eli Lilly and Company  
Indianapolis, Ind. 46206, U.S.A.



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 Deere & Co.  
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 Dobbins Div.  
 Farmrite Sprayer, Inc.  
 Friend Manufacturing Corp.  
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 Great Lakes Chemical Div.  
 Green Lawn Laboratories, Inc.  
 Hanson Equipment Co.  
 H. D. Hudson Mfg. Co.  
 Larson Machine, Inc.  
 Marlow Pumps Div.  
 Master Sprayers, Inc.  
 Minnesota Wanner Co.  
 F. E. Myers & Bro. Co.  
 Oakes Mfg. Co., FMC Corp.  
 Rear's Mfg. Co.  
 Root-Lowell Corp.  
 Silver Creek Precision Corp.  
 Solo Industries, Inc.  
 Sun Industry, Inc.  
 Tarrant Mfg. Co.  
 The Thompson Manufacturing Co.  
 Thuron Sprayer Mfg. Co.  
 Tryco Mfg. Co., Inc.  
 Universal Metal Products Div.  
 The Vandermolen Co.  
 Walsh Mfg. Co.

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 DeVilbiss Co.  
 The J. J. Dill Co.  
 The C. B. Dolge Co.  
 Great Lakes Chemical Div.  
 H. D. Hudson Mfg. Co.  
 Larson Machine, Inc.  
 Oakes Mfg. Co., FMC Corp.  
 Root-Lowell Corp.  
 D. B. Smith & Co.  
 Solo Industries Co., Inc.  
 Tryco Mfg. Co., Inc.  
 Universal Metal Products Div.

**SPRAYERS, HAND**

Ag King (Div. of TAGS)  
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 Borden Chem., Smith-Douglass Div.  
 Buffalo Turbine Ag. Equip. Co.  
 Century Engineering  
 Champion Sprayer Co.  
 R. E. Chapin Mfg. Works, Inc.  
 The J. J. Dill Co.  
 Deere & Co.  
 The C. B. Dolge Co.  
 Great Lakes Chemical Div.  
 Green Lawn Laboratories, Inc.  
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 Larson Machine, Inc.  
 Melnor Industries, Inc.  
 Oakes Mfg. Co., FMC Corp.  
 Root-Lowell Corp.  
 Silver Creek Precision Corp.  
 D. B. Smith & Co.  
 Solo Industries, Inc.  
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 Tradewinds, Inc.  
 Tryco Mfg. Co., Inc.  
 Universal Metal Products Div.

The Vandemolen Co.  
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 The J. J. Dill Co.  
 Great Lakes Chemical Div.  
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 Master Sprayers, Inc.  
 Melnor Industries, Inc.  
 Thuron Sprayer Mfg. Co.  
 Tryco Mfg. Co., Inc.  
 Universal Metal Products Div.  
 Walsh Mfg. Co.

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 Schneider Metal Mfg. Co.  
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 Tarrant Mfg. Co.  
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 Contree Sales  
 The J. J. Dill Co.  
 Farmrite Sprayer, Inc.  
 Friend Manufacturing Corp.  
 Gotcher Engineering & Mfg. Co.  
 Green Lawn Laboratories, Inc.  
 Hanson Equipment Co.  
 H. D. Hudson Mfg. Co.  
 Larson Machine, Inc.  
 F. E. Myers & Bro. Co.  
 Rear's Mfg. Co.  
 Thuron Sprayer Mfg. Co.  
 Tryco Mfg. Co., Inc.  
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 Simplicity Mfg. Co., Inc.  
 Solo Industries, Inc.  
 Yazoo Mfg. Co., Inc.

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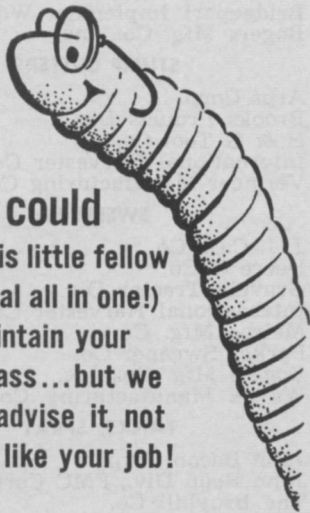
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use this little fellow  
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turfgrass...but we  
don't advise it, not  
if you like your job!**

The fact is... earthworms alone can't do the job of maintaining your turfgrass area in tip-top shape. The only way you can be sure you are doing the best possible job is to use WEST POINT PRODUCTS turfgrass equipment... the BEST you can buy for fast, trouble-free turfgrass care and renovation. After all, WEST POINT has been designing and building the BEST for over twenty years!

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- Aquatrols Corp. of America, 217  
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- Ariens Co., 655 W. Ryan  
 Brillion, Wis. 54110

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**John Bean Div., FMC Corp.**, 1305 S.  
 Cedar St., Lansing, Mich. 48910  
**John Bean Div., FMC Corp.**, P.O. Box  
 145, San Jose, Calif. 95103  
**John Bean Div., FMC Corp.**  
 516 Dearborn, Tipton, Ind. 46072  
**Beck Manufacturing Co.**, Box 752,  
 Auburn, Ala. 36830  
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 1459 3rd St., Oakland, Calif.  
 Bioferm Corp., Wasco, Calif.  
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 The R. H. Bogle Co., P.O. Box 588,  
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 Brillion, Wis. 54110  
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 The Broyhill Co.,  
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 Burton Supply Co., Inc.,  
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 Somerville, N.J. 08876  
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 Peoria, Ill.  
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 Certain-teed Products Corp., 25  
 Skippack Pike, Ambler Pa. 19002  
 Central Solvents & Chemicals Co.,  
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 Cessna Aircraft Co., Wichita, Kans.  
 Champion Sprayer Co., 6509  
 Heintz Ave., Detroit, Mich.  
 Chandlerlin Seed Co., Chimney Rock  
 Rd., Bound Brook, N.J.  
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 Chapman Chemical Co., 416 Brooks  
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#### D

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DEFECO, P.O. Box 1209,  
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The C. B. Dolge Co.,  
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**E. I. duPont de Nemours & Co., Inc.,**  
Industrial & Biochemical Div., 1007  
Market St., Wilmington, Del. 19898

#### E

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Eastman Chemical Products, Inc.,  
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**Elanco Products Co.,** 740 S. Alabama  
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Ind. 46205  
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Fairmont Hydraulics, Div. of Fair-  
mont Railway Motors, Inc., 415 N.  
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Farris Chemical Co., 7213 Kingston  
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ment Div., 2500 E. Maple,  
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pect St., Gasport, N.Y. 14067

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Gale Products, Monmouth Blvd.,  
Galesburg, Ill. 61401  
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47906  
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wood, Oxford, Mich. 48051

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Gabriel Blvd., Pasadena, Calif.  
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Houston Chemical Corp.,  
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P.O. Box 100, Harvard, Ill. 60033  
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Hub States Chemical and Equipment,  
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Indianapolis, Ind. 46202  
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#### I

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**Jacklin Seed Co., Inc.,** Dishman,  
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P.O. Box 101, Dundee, Ill. 60118  
LaMotte Chemical Products Co.,  
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1234 State Highway 46, Clifton,  
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Lindig Manufacturing, Inc., 1875 W.  
County Rd. "C," St. Paul, Minn.  
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San Francisco, Calif.  
Lobel Chemical Corp., 100 Church  
St., New York, N.Y. 10007  
**Locke Manufacturing Companies**  
Inc., P.O. Box 9175, South Charles-  
ton, W. Va. 25309

**M**

**Mallinckrodt Chemical Works**, 3600  
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Marlow Pumps Div., ITT Bell &  
Gossett, Inc., P.O. Box 200,  
Midland Park, N.J. 07432  
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Martindale Electric Co., 1375 Hird  
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**Master Sprayers, Inc.**, 1511 West 2nd  
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Rahway, N.J. 07065  
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Baltimore, Md. 21215  
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Ave. S., Minneapolis, Minn. 55436

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**Mitts & Merrill, Inc.**, 109 McCoskry  
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**Mobile Aerial Towers, Inc.**,  
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46803  
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Chemicals Div., 401 East Main  
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Morton Chemical Co., 110 N. Wacker  
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**Mott Corp.**, 500 Shawmut Ave.,  
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MTD Products, Inc., 5389 W. 130th  
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**Co.**, 2518 Loquot Ave., Patterson,  
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Loquot Ave., Patterson, Calif.  
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Conn. 06830

**O**

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**Oregon Fine Leaf Rescue Commis-**  
**sion**, 605 Weatherly Bldg., Port-  
land, Ore. 97214

**P**

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Parker Sweeper Co.,  
91 Bechtle Ave., Springfield, Ohio  
Parco Products Co., Pottstown Ave.  
& Dotts St., Pottsville, Pa. 18073  
**S. B. Penick & Co.**, 100 Church St.,  
New York, N.Y. 10007  
Pennington Mfg. Co.,  
136 Commercial Rd., Addison, Ill.  
Pennsalt Chemicals Corp., 2901 Tay-  
lor Way, Tacoma, Wash. 98401

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Phelps Dodge Refining Corp.,  
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Phillips Petroleum Co.,  
Bartlesville, Okla.  
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Rd., Peterborough, Ontario  
Piper Aircraft Corp.,  
Bald Eagle St., Lock Haven, Pa.  
Pitman Mfg. Co., P.O. Box 605,  
Grandview, Mo. 64030  
Pittsburgh Plate Glass Co., Chemical  
Div., One Gateway Center,  
Pittsburgh, Pa. 15222  
Plant Marvel Laboratories,  
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H. K. Porter, Inc., 74 Foley St.,  
Somerville, Mass. 02143  
**B. G. Pratt Co.**,  
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Premier Peat Moss Corp., 25 W.  
45 St., New York, N.Y. 10036  
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101 W. 31 St., New York, N.Y.  
Pulmosan Safety Equipment Corp.,  
30-48 Linden Pl., Flushing N.Y.  
11354

**Q**

Quick Manufacturing, Inc.,  
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**R**

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Whittier, Calif. 90602  
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P.O. Box 3347, Eugene, Ore.  
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Broadway, White Plains, N.Y.  
Reinco Inc., P.O. Box 584  
Plainfield, N.J. 07061  
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P.O. Box 231, N. Scituate, R.I.  
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Western Ave., Park Forest, Ill.  
60466  
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Tejon, Englewood, Colo. 80110  
Republic Aviation Corp., Helicopter  
Div., Farmingdale, L.I., N.Y.  
Residex Corp., 225 Terminal Ave.,  
Clark, N.J. 07066  
Reynolds Metals Co., 6601 W. Broad  
St., Richmond, Va. 23218  
**Robeco Chemicals, Inc.**,  
51 Madison Ave., New York, N.Y.  
Roberts Chemicals, Inc.,  
P.O. Box 546, Nitro, W. Va.  
Rockland Chemical Co., P.O. Box  
204, West Caldwell, N.J. 07006  
Rogers Mfg. Co., 220 N.  
Mahaffie St., Olathe, Kans. 66061  
Rohm and Haas Co., Independence  
Mall West, Philadelphia, Pa. 19105  
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Santa Monica, Calif.  
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Snelling Ave., Minneapolis, Minn.  
Roseman Mower Corp., 2300 W. Lake  
Ave., Glenview, Ill. 60025  
Roussel Corp.,  
155 E. 44 St. New York, N.Y.  
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Keene, N.H. 03431

Roxy-Bonner, Inc., 2000 Pioneer Rd.,  
Huntingdon Valley, Pa. 19006  
**Royer Foundry & Machine Co.**, 158  
Pringle St., Kingston, Pa. 18704  
Rudd Manufacturing, Inc., P.O. Box  
537, Ripon, Calif. 95366  
**Ryan Equipment Co.**, 2055 White  
Bear Ave., St. Paul, Minn. 55109

### S

**Sabre Saw Chain, Inc.**, P.O. Box 341,  
Lewiston, N.Y. 14092  
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P.O. Box 898, Shelby, N.C.  
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The O. M. Scott & Sons Co.,  
160 Main St., Marysville, Ohio

**S & D Products**, 216 S. Minnesota St.,  
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Sewerage Commission of Milwaukee,  
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Shell Chemical Co.,  
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Shepard Chemical Industries, Inc.,  
595 Madison Ave., New York, N.Y.

The Sherwin-Williams Co.,  
101 Prospect Ave., Cleveland, Ohio

Side-O-Matic Unloader Corp.,  
P.O. Box 429, York, Pa.

Signal Oil & Gas Co., Houston Div.,  
P.O. Box 5008, Houston, Texas

Sikorsky Aviation Div., United  
Aircraft Corp., Stratford, Conn.

Silver Creek Precision Corp., 282  
Central Ave., Silver Creek, N.Y.

Simplicity Mfg. Co., Inc., Spring St.,  
Port Washington, Wis. 53074

Skil Corp.,  
5033 Elston Ave., Chicago, Ill.

Skyworker Div., Transair Co., Inc.,  
P.O. Box 360, Delaware, Ohio

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414 Main St., Utica, N.Y.

Seymour Smith & Son, Inc., 900 Main  
St., Oakville, Conn. 06779

Smith-Douglass Div., Borden Chemi-  
cal Co., 5100 E. Virginia Beach  
Blvd., Norfolk, Va.

Snow Aeronautical Corp.,  
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Sodmaster, 3456 N. Washington Ave.,  
Minneapolis, Minn. 55412

Sohio Chemical Co.,  
P.O. Box 628 Lima, Ohio

Solo Industries, Inc., 5100 Chestnut  
Ave., Newport News, Va. 23605

**South Dakota Kentucky Bluegrass  
Assn.**, P.O. Box 823, Huron, So.  
Dak. 57350

Southern Mill Creek Products, Inc.,  
P.O. Box 1096, Tampa, Fla. 33601

Southwest Potash Div., American  
Metal Climax, Inc., 1270 Ave. of  
the Americas, New York, N.Y.  
10020

Speedex Tractor Co.,  
367 N. Freedom St., Ravenna, Ohio  
Spraying Systems Co., 3201 Randolph  
St., Bellwood, Ill. 60104

**Stanford Seed Co.**, P.O. Box 230  
Plymouth Meeting, Pa. 19462

Stauffer Chemical Co., Fertilizer  
Div., 636 California St.,  
San Francisco, Calif.

Stauffer Chemical Co., Agricultural  
Chemical Div., 380 Madison Ave.,  
New York, N.Y. 10017

Wm. Steinen Mfg. Co., 29 E. Halsey  
Rd., Parsippany, N.J. 07054

Stapan Chemical Co., Edens &  
Winnetka, Northfield, Ill. 60093

Stihl American, Inc., 194 Greenwood  
Ave., Midland Park, N.J.

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Honeoye, N.Y. 14471

**Stull Chemical Co.**, P.O. Box 6386,  
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Summers Fertilizers, Inc., Kapco  
Div., P.O. Box 487, Somerset, Pa.  
15501

Sun Industry, Inc., 12418 W.  
Rosemary, New Berlin, Wis.

The Sun-Mastr Corp.,  
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Sunnyhill Research & Mfg. Co.,  
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### T

Tarrant Mfg. Co., 27-29 Jumel Pl.,  
Saratoga Springs, N.Y.

Tecumseh Products Co., 900 North  
St., Grafton, Wis. 53024

Telsco Industries,  
P.O. Box 18205, Dallas, Tex.

Tenneco Oil Co.,  
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30301

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Thompson-Hayward Chemical Co.,  
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Kans. 66110

The Thompson Manufacturing Co.,  
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Thor Power Tool Co., 175 N. State  
St., Aurora, Ill. 60507

Thuron Sprayer Mfg. Co., 12200  
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Toro Manufacturing Corp.,  
8111 Lyndale Ave., S.,  
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TUCO Products Co., Div. of Upjohn  
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### U

U.S. Borax & Chemical Corp.,  
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Los Angeles, Calif. 90005

U.S. Industrial Chemicals Co.,  
99 Park Ave., New York, N.Y.

Union Carbide Corp.,  
Agricultural Products, 270 Park  
Ave., New York, N.Y. 10017

Uniroyal Chemical, Div., of Uniroyal,  
Inc., Elm Street Naugatuck, Conn.  
06770

**Universal Metal Products Div.**,  
Leigh Products, Inc.  
460 Main St., Saranac, Mich. 48881

Universal Motor Co.,  
1552 Harrison St., Oshkosh, Wis.

Utility Chemical Co., 145 Peel St.,  
Paterson, N.J. 07524

### V

The Vandermolen Co., 378 Mountain  
Ave., N. Caldwell, N.J. 07006

Vaughan's Seed Co., Chimney Rock  
Rd., Bound Brook, N.J.

**Velsicol Chemical Corp.**,  
341 E. Ohio St., Chicago, Ill. 60611

Verde Lawn, Inc., P.O. Box 11157,  
Tucson, Ariz. 85706

Vermeer Manufacturing Co.,  
P.O. Box 190, Pella, Iowa 50219

Viking Mfg. Co., P.O. Box 68,  
Manhattan, Kans. 66502

Viking Pump Co., 4th & Shutte Sts.,  
Cedar Falls, Iowa

Vineland Laboratories, Inc., 2285 E.  
Landis Ave., Vineland, N.J. 08360

Vulcan Materials Co., P.O. Box 545  
Wichita, Kans. 67203

### W-X-Y-Z

Waco Lickity Log Splitter Div.,  
Piqua Engineering, Inc.,  
234 1st St., Piqua, Ohio

R. M. Wade & Co., 1919 N.W.  
Thurman St., Portland, Oreg.  
97209

Walker Mfg. Co., Fowler, Kans.  
67844

Walsh Manufacturing Co., 1200  
Fisher St., Charles City, Ia. 50616

"Water-In," Inc.  
P.O. Box 421, Altadena, Calif.

Waukesha Motor Co.,  
W. St. Paul Ave., Waukesha, Wis.

Waverly Petroleum Products Co.,  
3018 Market St., Phila., Pa.

Wayne Manufacturing Co., 1201 E.  
Lexington St., Pomona, Calif.

H. N. Webster Mfg.,  
P.O. Box 623, Sebring, Fla.

**West Chemical Products Co.**, 42-16  
West St., Long Island City, N.Y.  
11101

**West Point Products Corp.**,  
West Point Pike, West Point, Pa.

Western Peat Co.,  
5800 Monroe St., Sylvania, Ohio

Weyerhaeuser Co.,  
Tacoma Bldg., Tacoma, Wash.

The Whitaker Manufacturing Co.,  
5719 W. 65 St., Chicago, Ill. 60638

**Whitney Seed, Div., W. R. Grace &  
Co.**, P.O. Box 250, Buffalo, N.Y.  
14240

Wichita Equipment Co., Inc.,  
P.O. Box 1329, Wichita Falls, Tex.

Wilbur-Ellis Co., 970 S. Goodrich  
Blvd., Los Angeles, Calif.

Willson Products Div., Ray-O-Vac  
Co., 2nd & Washington Aves.,  
Reading, Pa.

Andrew Wilson, Inc.,  
Baltusrol Way, Springfield, N.J.

Wood Treating Chemicals Co.,  
5137 Southwest Ave.,  
St. Louis, Mo. 63110

Wright Saw Div., Thomas Industries,  
207 E. Broadway, Louisville, Ky.

W-W Grinder Corp.,  
2957 N. Market, Wichita, Kans.

Wyandotte Chemicals Corp., 1532  
Biddle Ave., Wyandotte, Mich.  
48192

Yazoo Mfg. Co., Inc.  
P.O. Box 4207, Jackson, Miss.  
39216

York Modern Corp., Mill & Watson  
St., Unadilla, N.Y. 13849

Zonolite Div., W. R. Grace & Co.,  
135 S. LaSalle St., Chicago, Ill.  
60654



## G

Fylking Puts Hex On Artificial Grasses	Oct. 28
GE and URI Join Forces In Turf Heating Studies (ns)	July 30
Golf Course Designed for Senior Citizens (fs)	June 10
Golf Course Superintendents Association of America (cr)	Apr. 24
Golf Green Construction by Charles Calhoun (fa)	Oct. 10
Good Year Predicted for Wisconsin Sod Producers (ns)	June 28
Grass Identification Is Key to Proper Care (ns)	Sept. 26
Grass Is Best Organic Soil Conditioner (ns)	Sept. 27
Greater Drift of Spray With Small Droplets (ns)	Apr. 30
(Greenleaf Manzanita), Know Your Species (c)	July 31
Green Valley Turf Company Integrates Both Production and Marketing In 400-Acre Farm (fa)	Feb. 33
(Dr. Grosvenor Heads 1968 Landscape Awards Program (ns)	June 24
Growth for International Shade Tree Conference by Freeman L. Parr (fa)	Aug. 12
Gypsy Moth Tree Damage (fa)	Nov. 15

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Heavy Water, Fertilizer May Cause Grass Wilt (ns)	June 26
Helicopter Is Versatile Tool (fs)	May 16
(Helicopter Spraying), Industry's Stake In (fa)	Sept. 6
Herbicide Buildup Not Serious In Nurseries (ns)	Apr. 30
Herbicide Incorporation Requirements Vary (ns)	Aug. 29
(Herbicide), New Broad Spectrum (ns)	Oct. 16
Herbicide Persistence Varies by Soil Type (ns)	May 38
Herbicides Offer Practical Weed Control for Industrial Site (ns)	Jan. 18
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How Seedlings Respond to Phosphorus by George McVey (fa)	June 18
Hyacinth Control Society Hold 8th Annual Meeting In July At Winter Park, Florida (cr)	Aug. 17
Hydro-Mulching Booklet Available	Apr. 31

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Index, Articles and Authors (fa)	Dec. 36
Industry's Stake In Helicopter Spraying (fa)	Sept. 6
In-House vs. Custom Contracts, Texas Industrial Weed Conference (cr)	Dec. 9
Inland Water Management Creates Demand for Aquatic Consultants by Francis H. Bezdek (fa)	June 14
Inland Water Use Demands Aquatic Weed Control (cr)	Aug. 17
International Shade Tree Conference, 44th Annual (cr)	Sept. 14
Irrigation Roundup, Tip from Specialists In the Field to 3000 Golf Course Superintendents At the GCSA 39th International Turfgrass Conference and Show by Garold M. Murphy (cr)	Apr. 13
(Irrigation Systems), Small Area by J. R. Watson (fa)	May 10

## J

Jacklin Seed Co., Inc. (fa)	Feb. 10
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## K

Kellogg Receives Plaque from GCSA (ns)	Aug. 33
(Kentucky Bluegrass), Identification Is Key to Proper Care (ns)	Sept. 26
Koval Says There's More Than One Way to Skin A Bug (ns)	Oct. 33

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Lawn Establishment Tips, Rieke, MSU (fs)	Sept. 27
Lawns Need Air Circulation and Nitrogen Says MSU (ns)	Oct. 27
Leafspot and Foot Rot In Bluegrass Lawns (ns)	June 26

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Merion Bluegrass Meeting Drew Large Attendance (ns)	Sept. 33
(Merion Bluegrass), New Seal Identifies Seed (ns)	Sept. 37
Michigan State University's First Turf Class Is Graduated, Placed (ns)	June 27
Michigan State University Making Progress In Red Fescue Research (ns)	June 28
Michigan State University Tips On Sodding for Rapid Rooting (ns)	June 32

Michigan Turf Conference (cr)	May 32
Minnesota, (University of) Offers Landscape Horticulture Program (ns)	Aug. 36
MinnTurf Corp., Lawn Sod Handling Equipment (fs)	May 30
Mississippi River Flood Channels (fa)	July 20
Mobile Soil Conditioners for Golf Course Balding (ns)	June 34
Modern Irrigation System On 850 Acres Aids Quality Sod Production At Emerald Valley (fa)	Apr. 32
Modesto, California, Project Trees (fa)	Feb. 15
(Moth) Gypsy, Tree Damage (fa)	Nov. 15
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National Arborists Meet At Chicago (cr)	July 25
National Arborists Stage Winter Meeting At Tampa (cr)	Feb. 38
National Golf Group Has Headquarters In North Carolina (ns)	July 34
NLNA to Publish New Landscape Directory (ns) (New Jersey Blue Grass Lawn Farms), High Flotation Tires Solve Problems At (fs)	June 24
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New Jersey Promotes Certified Seed Program	Aug. 37
New York State University's Agricultural and Technical College Honored by AAN Award (ns)	June 20
New Zealand Whirly-birds Aid Pine Regeneration (ns)	July 30
(Niagara Chemical Div., FMC), New Broad Spectrum Herbicide (ns)	Oct. 16
(Nimbleweed), Identification Is Key to Proper Care (ns)	Sept. 27
(Nitrogen), Determine Use Carefully In Tree Care (ns)	Apr. 27
Northrup, King & Co. Develops New Fescue Northwest Spraymen's Association, New Officers (cr)	Nov. 20
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N-TRIPLE-A Fly In (cr)	Jan. 20
Numerous Agencies Battle Florida's Aquatic Weeds (ns)	June 20
Nurserymen Promote Trees At California Exposition (ns)	May 28

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Open Burning Vs. Pollution by William H. Bartles (nf)	Apr. 7
Owen, General Spray Service, Clackamas, Ore., is Panel Moderator At Spray-O-Rama (cr)	Nov. 19
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Pinpoint Your Sod Harvesting Costs James Q. Aylsworth (fa)	Feb. 8
(Plant Procurement), Effective by Theodore J. Haskell	Nov. 10
(Poa Annua), Annual Bluegrass, Identification Is Key to Proper Care (ns)	Sept. 26
Poa Annua, Turf Enemy No. 1 by Cecil F. Kerr (fa)	Mar. 13
(Poison Oak), Know Your Species (c)	Jan. 29
Project Trees by Marietta Gunn (fa)	Feb. 15
Proper Weed Control Aids Shelterbelt Tree Growth (ns)	Oct. 22
Purdue Engineers Evaluate Electric Turf Heating (ns)	Nov. 22

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Quality of Water Important In Irrigation (ns)	Mar. 36



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Key for Sod Producers Across the Country (fa)	June 30
Real or Imaginary, Claims Call for Care In Handling by William D. Ditman	Mar. 18
Red Alert by Spraymen (fs)	May 8
Reflector Landing System, New for Unlighted Landing Strips (nf)	Jan. 19
Renovation Is Severe Method for Improving Turf by Dr. Robert W. Miller	Mar. 31
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Sales Savvy Is Business Management Key for Sod Producers Across the Country (fa)	June 30
(Salt Cedar), Know Your Species (c)	Nov. 28
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(Sellogen NS 50 and Sellogen NS 96) Prevent Fertilizer Caking (ns)	Feb. 38
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Sex Attractant Found for Western Pine Beetle (ns)	May 28
Shade Tree Symposium Set for Penn State University (cr)	Jan. 31
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Snail May Help Control Fresh-Water Weeds (ns)	Oct. 28
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(Sod) Green Valley Turf Company Integrates Both Production and Marketing in 400-Acre Farm (fa)	Feb. 33
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(Soil Tests), How and When to Make Suggest University of Minn. (ns)	Nov. 30
Southern Cal Turf Council Elects New Officers (cr)	Feb. 32
South Dakota Growers Are Now Marketing Own State Certified Seed (ns)	Jan. 27
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State Imports Flea Beetle for Alligatorweed Control (ns)	Apr. 28
Stripe Smut Is Difficult to Control, Says Partyka (ns)	Sept. 29
Stull Chemical Company Puts New Spray Adjuvants On the Market (ns)	Mar. 33
Suppliers Guide, 1968	Dec. 12
System of Management Underway. At Summit Hall to Protect Sod Root Zone and Eliminate Reseeding (fa)	Jan. 25

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Tall Fescue, Orchardgrass, and Timothy, Identification Is Key to Proper Care (ns)	Sept. 26
(Tandex®), New Broad Spectrum Herbicide (ns)	Oct. 16
(Tanoak), Know Your Species (c)	Sept. 36
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Texas Turfgrass Conference Features 3-Day Technical Training (cr)	Jan. 23
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Turf Care Now Ranks 2nd in Pennsylvania Agricultural Business (ns)	Apr. 27
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Turfgrass Industry Hears Congressman MacMathias (ns)	June 25
(Turf), Purdue Engineers Evaluate Electric Heating (ns)	Nov. 22
Turf Quality Begins At the Farm Level (fa)	Sept. 10
Turf Stand Density Up With Fall Fertilization (ns)	Jan. 28

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Union Carbide Wins Plaudits for Production of New Fertilizer Bag (ns)	Feb. 38
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Veteran Arborists Organize National Consulting Service (ns)	May 27
Visko-Rhap Clears Aquatics from Adams Bayou (fa)	Nov. 6

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Washington State Finds Dacthal Effective In Postemergence Trail (fs)	Mar. 34
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We Are Happy to Oblige (L)	Jan. 5
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Weed Science Society of America Meets At New Orleans (cr)	Mar. 26
WEEDS TREES AND TURF, Business Forecast for 1969 (fa)	Dec. 6
Wilson Receives Safety Award from NAA (cr)	Oct. 22

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<b>Y</b>	
Youths Cannot Be Used On Hazardous Jobs (ns)	Feb. 19

## AUTHORS

Aylsworth, James Q., "Pinpoint Your Sod Harvesting Costs"	Feb. 8
Bartles, William H., "Open Burning Vs. Pollution"	Apr. 7
Bezdek, Francis H., "Aquatic Consultants"	June 14
Brinkman, Grover, "Death of A Forest Giant"	Aug. 28
Buckley, John R., "Automation, Modern Tree Trimmers Ride to Work . . . All the Way to the Tree Top"	July 7
Calhoun, Charles, "Golf Green Construction"	Oct. 10
Campana, Dr. Richard J., "Dutch Elm Disease: A Matter of Priorities"	Aug. 6
Campbell, R. L., "Control of Pit Scales On Oak" with C. S. Koehler and C. S. Davis	Mar. 20
Caplan, Ira, "Some Chinch Bugs Aren't"	Aug. 31
Davis, C. S., "Control of Pit Scales On Oak" with R. L. Campbell, and C. S. Koehler	Mar. 20
Ditman, William D., "Real or Imaginary Claims Call for Care In Handling"	Mar. 18
Gunn, Marietta "Project Trees"	Feb. 15
Haskell, Theodore J., "Effective Plant Procurement"	Nov. 10
"Efficiency Equation for Tree Crews"	June 7
Hill, Herb P., "Calibrate Sprayers Often"	Mar. 7
Kerr, Cecil F., "Turf Enemy No. 1 Poa Annua"	Mar. 13
Koehler, C. S., "Control of Pit Scales On Oak," with R. L. Campbell and C. S. Davis	Mar. 20
Leonard, Dr. A. O., "Know Your Species"	Monthly
McVey, George, "How Seedlings Respond to Phosphorus"	June 18
Miller, Dr. Robert W., "Renovation Is Severe Method for Improving Turf"	Mar. 31
Paar, Freeman L., "Growth for ISTC"	Aug. 12
Petersen, David P., "Bifluid Spray System Helps Place Herbicides On Target"	Jan. 7
Riemer, D. N., "Algae Control In Inland Water" with S. J. Toth	Jan. 14
Schery, Dr. Robert, "Fylking and Tifdwarf Bermuda" "One Method for Upgrading Turf"	Nov. 23
Swartz, Evan, "For Improved Spray Drift Control"	Apr. 21
Toth, S. J., "Algae Control In Inland Water" with D. N. Riemer	Mar. 32
Watson, J. R., "Small Area Irrigation Systems"	Jan. 14
	May 10



Panel members who discussed weed control and turf management as practiced by utility and pipeline companies are, left to right: A. E. Sebastian, Southwestern Bell Telephone Co., Tyler, Tex.; N. A. Tate, Sun Pipe Line Co., Beaumont, Tex.; Dan W. Crofts, Texas Power and Light Co., Dallas, Tex.; and E. D. Robison, panel moderator, Texas A & M Research Station, Spur, Tex.

### Industrial Weed Conference

(from page 10)

Wootan said that as an economist he would consider what he called "opportunity cost." In brief, Wootan said, this is one way of asking, "What could I have done with the resources devoted to this operation (those of in-house weed control operations) if they had been available for use in another part of the business?"

Dr. Wootan also stressed that the dollar cost for weed control is not the only criteria for deciding how the job will be handled or how well weed control needs to be done. He pointed out that a company weed control program is generally instituted, at least in part, as a public relations or image building activity of the firm. In short, beautification of company property and specifically weed control becomes part of an overall effort by the company to present a view of the company to those it seeks to influence whether they be the gen-

eral citizenry, customers, clients, or others.

### Rights-of-way Programs

Vegetation control programs on pipeline and utility line rights-of-way were examined by representatives of each in panel discussions. E. D. Robison, brush control range scientist at the

Ground spray rig with Stull bifluid system and John Bean equipment was used for weed and brush control demonstration.



Spur, Tex., University research station and moderator said that public acceptance is important in the total program carried out by industry. This factor was also mentioned by each company speaker.

Speaking for electric utility programs was Dan W. Crofts of the Texas Power and Light Company, Dallas, Tex.

In serving almost one-half million customers, Crofts said Texas Power and Light maintains 26,000 miles of lines. These interconnect seven major generating stations with four other utility companies and involve more than 500 substations. In all, the company has to maintain some 60,000 acres of rights-of-way.

Budget for this operation ranges to more than \$750,000 yearly. About 20 percent of this total goes for clearing new rights-of-way. The balance of \$600,000 is spent as follows: 8% for reclearing and mowing rights-of-way by contract and 7% for the same type work by company crews; more than half, 57%, for tree trimming operations by contract and by company crews; chemical right-of-way control by contract applicators account for 3% of this expense and another 1% is expended by using company crews; 2% is spent for soil sterilization

by contract applicators and an equal amount for the same practice by company personnel.

Being a cost-conscious industry, Crofts said that the company will generally choose the most economical method consistent with good operating practices. But above all, he said, is assurance of good relations with the company's customers.

His company, like others in the field, has a keen interest in further development of growth retardant chemicals. These can increase the time between trimming operations or possibly retard growth to the extent that trimming may not be needed.

For controlling undergrowth Texas Power and Light uses a number of practices and combinations of these. Listed by Crofts were hand clearing, bulldozing of timber and brush, root plowing chemical spraying with tordon, 2,4-D, 2,4,5-T and ammate mixtures, pellets of tordon, dybar, and hyvar, selective weeding and brush control with DSMA and residual Karmex, and mowing or shredding.

Cost of using the company's own shredder and mowers with company labor runs \$13 to \$17 per acre. With 3- to 4-year mowing intervals, annual costs range from \$3.25 to \$5.50 per acre. Contract mowing, Crofts said, is somewhat higher. Fence rows and areas inaccessible by mowers are treated by personnel during regular patrols or mowing operations by scattering pelletized dybar, tordon, or hyvar.

Some contact spray and basal treatments have been used, Crofts reported. Initial cost has varied from \$20 to \$220 per acre depending on density. Retreatment intervals are not defined and annual costs are not as yet available. Stump treatment when used to supplement clearing operations accounts for 10% to 30% of the clearing cost.

#### Selective Herbicide Use

Proper use of selective chemi-

cal weed control promises to eliminate mowing in some residential areas. The company, Crofts stated, has been investigating the use of selective weed control to kill Johnson grass and other tall weeds and to allow the bermuda grass to remain.

Substation areas account for 450 acres of land which requires varying degrees of vegetation control. How these areas are treated depends on cost and the degree of esthetics desired. Some

company recommended rates of chemicals.

Nahum A. Tate, Sun Pipe Line Co., Beaumont, Tex., discussed a number of unique uses of chemicals in his industry. Asphalt berms or aprons are used around the bases of oil storage tanks. These aprons handle rain runoff and help maintain low soil moisture areas beneath tanks. Prior to spraying these with herbicides, aprons were recoated with asphalt every three to four



Multi-use ground spray rig using F. E. Myers & Bros. Co., equipment led off Industrial Weed Conference field event.

150 acres is sterilized each year. About half is handled by contract on an annual, guaranteed basis using Karmex and Telvar as the sterilant. The contractor determines the dosage rates and applies the sterilant based on his past experience. Regrowth is retarded at no cost to the company. The contractor assumes liability for runoff. Crofts said that this system has proved to be satisfactory to the company and contract costs are less than use of company labor and chemical

years because the sealing capacity had been destroyed by grass and weeds growing up through the asphalt. Herbicides are now applied heavily two to four weeks prior to recoating of berms. Though this practice has been used only six years, Tate said that results indicate that the cost will prove to be an excellent investment.

A very similar practice by Sun Pipe Company, Tate said, is to use herbicides along asphalt roadsides. A yearly application

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of preemergence herbicide in a one-foot strip along the road edge prevents breakup of the road by grass and weed growth. The company uses this practice along roads which do not have enough traffic to keep weed growth beat down.

Tate reported that his company has used soil sterilant type herbicides for many years under above-ground tank lines, along fence lines, in railroad ballast, and under manifolds and pipe racks. High cost of labor coupled with competitive prices for chemicals has made hand cutting of any weed areas obsolete, he said.

Cross-country pipelines are visually checked by aerial inspections twice each week. This is a safety practice to detect leaks before they can become a major problem. Thus, visibility is necessary and vegetation insofar as practical must be controlled. All pipeline rights-of-way are mowed once yearly and those

with high capacities twice yearly. Mowing is done on a contract basis. Tree trimming is also a major practice and the company has been experimenting with chemical methods. Both hormone and contact herbicides are being tested and though much remains to be done in this area, Tate feels that spraying offers possibilities.

A third panel member, A. E. Sebastian, Southwestern Bell Telephone Company, said he could second the experiences of both Crofts and Tate. Most important, Sebastian said, is the quality of application from a cost standpoint. Many of the poor experiences in chemical weed control, he said, have stemmed from a lack of know-how and neglect in application. Public relations both with the general public and with customers is important he stated. Thus, he believes it most important that contractors understand this area of public relations when treating company

property. Southwestern Bell, Sebastian said, uses contractors almost exclusively in its vegetation control program.

About 150 equipment and chemical suppliers and pesticide applicators attended this Texas A & M sponsored Conference, Oct. 20-22. This was the third annual event of this type staged on the University campus.

## *Membership Directory Additions:*

*WTT inadvertently failed to include two members in its October listing of members of the American Society of Consulting Arborists. Consultants to be added and who will be included in future directories are:*

**Wilfrid Wheeler, Jr.**

24 Rutledge Rd.  
Belmont, Massachusetts 02178  
(617) 484-4057

**Rex Wilkinson**

P. O. Box 2008  
Muncie, Indiana 47305  
(317) 288-4493



Timothy J. Miles, left, senior horticultural major at the University of Missouri, Columbia, Mo., accepts the Golf Course Superintendents Association of America certificate of scholarship award at the recent 9th annual lawn and turf conference at the University. In the center is MU horticultural professor John H. Dunn, and making the presentation is Robert V. Mitchell, superintendent of Sunset Country Club, St. Louis, Mo.

color lasts through only a few mowings.

The new product is available through more than 100 distributors, coast to coast, according to Frederiksen.

## Niagara Chemical Issues Growers Guide to Ethion

Complete information on the use of ethion insecticide-miticide to control mites, scales and insects is given in a guide recently published by the Fairfield Chemical unit of Niagara Chemical Division, FMC Corporation.

The pocket-size guide, which folds out into a chart, covers recommended amounts and application data for protecting ornamentals and other plants.

For your copy write Department A, Niagara Chemical Div., FMC Corp., Middleport, N. Y. 14105.

## New Colorant For Turf Marketed By Mallinckrodt

Mallinckrodt Chemical Works, St. Louis, Mo., is now selling a new colorant for turf and ornamentals. Known as Vitalon™, the product is a method of keeping turf green throughout the winter.

Vitalon is a vinyl-acrylic foliar colorant which is dispersible in water. Stan Frederiksen, man-

ager of turf products for Mallinckrodt, reports that one gallon will disperse well in up to 70 gallons of water. The resulting spray will then cover up to 12,000 square feet of turf.

Potential uses are for golf courses, institutional turfs, home lawns, athletic fields, and generally on shrubs and ornamentals. The spray is non-toxic and non-flammable. Once the growing season begins, the Vitalon

## Winter Turf School Accepting Applicants

A turfgrass technician program is being introduced this winter at the Eastern Montgomery County Area Vocational-Technical School, 175 Terwood Road, Willow Grove, Pa.

Kenneth B. Rhodes, turfgrass coordinator, reports that dates for the program this year is as follows: First semester (10

## Better Roadside Maintenance with



## HY-RIDE SENIOR

(HY-RIDE JUNIOR, too, for front-mounting)

HY-RIDE delivers an effective 50-ft. spray pattern for thorough coverage of shoulders, thruway interchanges, back-slopes, etc. The only triple-arm, fully articulated roadside boom, it's hydraulically operated, and its construction allows for easy clearance of signs, posts, and railings.

Also a Complete Line of Roadside Sprayers Available.

For further details write

**FRIEND MFG. CORP.**  
GASPORT, NEW YORK

For More Details Circle (117) on Reply Card

weeks), Jan. 6-Mar. 14; Intern Training Period, Mar. 17-Oct. 3; and the second semester, Oct. 6-Dec. 12. Graduation will be Dec. 13, 1969. Details are available directly from Rhodes.

### Suppliers Staff Changes

American Cyanamid has also announced the appointment of A. C. Gilleland as Training Su-

pervisor in its Agricultural Division.

Nalco Chemical Co., Chicago, has announced the recent appointment of James A. Rush as Executive Account Manager. Mr. Rush will coordinate Nalco sales and service programs for mid-western and western accounts.

Drs. Arne E. Carlson and Dale E. Wolf have been appointed as-

sistant sales directors of the Du Pont Agrichemicals Sales Division of E. I. du Pont de Nemours and Company. Dr. Carlson will handle foreign sales and new products development activities; Dr. Wolf will be responsible for domestic sales.

Thomas G. Baroth has recently been named Manager, Industrial Design for the Aero Commander Division of North American Rockwell Corp., Pittsburgh, Pa.

A. Dale Chapman, a pioneer in the field of chemical wood preservation, has resumed the presidency of Chapman Chemical Co. of Memphis. He succeeds Frederic W. Lyndon, who has resigned to return to the management consulting field. Robert E. Branch, executive vice president since 1966, has been named general manager of the company.

Allis-Chalmers, Milwaukee, Wis., has announced that Robert H. Brethen has joined the company as general manager of its outdoor products department. In this newly created position, Mr. Brethen will be responsible for the financial, engineering, manufacturing and marketing functions of the company's line of lawn and garden tractors, mowers and similar equipment. designated manager of the Allis-Chalmers Industrial Tractor and Equipment department's Minneapolis zone, headquartered in Bloomington, Minn.

The Agricultural Chemicals Division of Geigy Chemical Corp., Ardsley, N. Y., has recently announced several personnel changes. Ralph W. Tolbert, formerly Sales Manager of the division's Middle Atlantic district, has been named Manager, Sales Training. Dr. John P. Hartnett has joined the division as a Research Specialist; James D. Russell has been designated a Sales Service Coordinator, Northeast Region.

National In Scope—Staged for the Professional

## The Ohio Turfgrass Foundation Conference and Show

DECEMBER 9 - 11, 1968

### EXHIBITS:

80 suppliers are exhibiting equipment and needs which you buy daily. You'll see mowers, blowers, spray equipment, fertilizer materials, chemicals, sod, golf carts, irrigation equipment, seeds, aeration equipment and more.

### PROGRAM:

Industry personnel and research men from all sections of the nation. Program includes irrigation and plant-water relationships by 4 major research and commercial men in the field; grass breeding and varieties by 4 others; turfgrass pest information by 4 additional specialists; plus a general session.

Registration fee is only \$10

Headquarters along with both program and exhibit area at the Sheraton Cleveland, Hotel, Public Square, Cleveland, Ohio  
Tel. 216-881-2700

**YOU ARE INVITED**

**THE OHIO TURFGRASS FOUNDATION**

For details, call or write:

Dr. Robert Miller

The Ohio Turfgrass Foundation

1827 Neil Ave.

Columbus, Ohio 43210 Tel. 614-293-2592

## Spray Rigs:

Being familiar with the following storage techniques will help assure that your spray equipment will be in good shape next spring:

- Select a ground site where harmful residues will not affect land use, either at cleaning location or by run-off.

- Flush and drain pump, then fill with permanent anti-freeze and plug to keep filled. (Follow storage directions recommended by pump manufacturer.)

- Flush and drain all parts (tank, lines, nozzles) with solution recommended by your county agent, depending upon the last-used pesticide substance.

- Rinse thoroughly with water to remove cleaning solution.

- Hang hoses until drained dry. Coil neatly and place on flat surface (no NOT hang) in dark, cool area.

- Drain tanks and leave vented until dry; close.

- Inspect nozzles, then store according to size. Store metal nozzles in clean, light oil. Discard worn nozzles.

- Support boom so it won't be damaged by other machinery. Don't leave aluminum boom material in contact with soil or manure accumulations.

## Pesticide Storage:

Bedding down your pesticide supply for that "long winter's nap" requires adhering to a number of safety guidelines. To do the job safely and wisely, follow these pointers from experts:

- Store all pesticides in original containers, following storage directions on labels. If labels are hard to read, request new ones from your dealer; if they are missing, dispose of the chemical.

- Don't allow pesticides to freeze, as they may "salt out" and become useless. Also, don't store liquid chemicals in glass containers in unheated rooms, as the container may break if the liquid freezes.

- Store all dry material on shelves off the floor so they won't become moist and "cake."

- Store pesticides away from areas where fires may be present.

- Keep pesticides stored under lock and key, out of reach of children, irresponsible adults or

pets. Storage area should be marked as such to warn firemen in case of fires.

- Store herbicides and insecticides separately so they can be easily distinguished from each other.

- Check containers for cracks and make certain containers are sealed tightly before storing.

- Analyze your pesticide supply and think about what you'll need for next year's planting.

Following are tips on safe disposal of waste pesticides:

- Drain remaining pesticides into an 18-inch hole dug in sandy soil, preferably. Be sure the area is away from wells, buildings, streams, crops and livestock. Follow label instructions for reducing poisonous effect of the pesticide.

- Rinse glass or smaller metal containers several times, then store in a locked area until they can be disposed of safely.

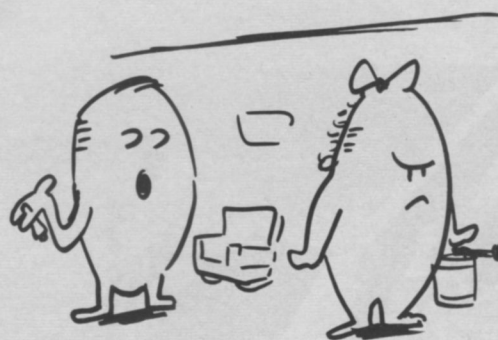
- Large metal drums can be properly disposed of by returning them to the supplier or selling them to a cooperage firm equipped to handle toxic materials. Empty containers can also be safely disposed of locally at public dumps. However, first notify the person in charge so that he can take any necessary precautions.

- If suitable public disposal facilities are not available, select an area away from homes, crops and streams that will be used specifically for pesticide and container disposal.

- Burn combustible containers, but be sure the smoke won't drift over nearby homes, people or livestock.

- Metal and glass containers may be decontaminated by burning. Remove lids and punch holes in metal containers before burning.

- Do NOT burn weed containers. They will volatilize and produce dangerous vapors that may explode. Instead, bury them, using the same precautions as with liquids.



GOING TO KILL SOME WEEDS, EH?  
JUST BLOW YOUR BREATH ON THEM.  
THAT ALONE WILL KILL 'EM."

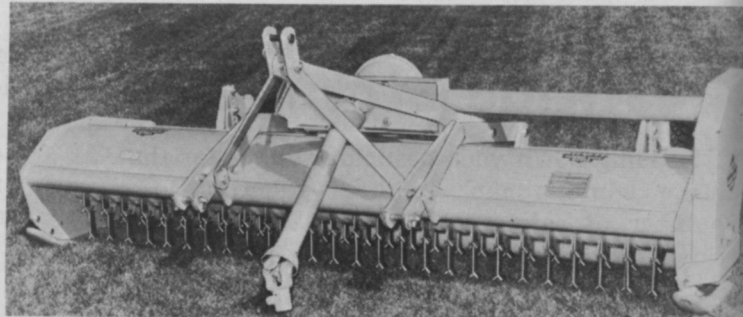
# New Products . . .

## Designed for the Vegetation Care Industry



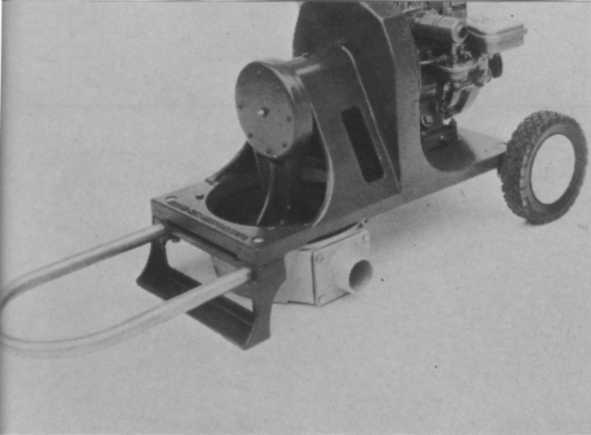
The Hughes Impactor—a self-contained, hydraulically powered device that interchanges with the industrial tractor backhoe bucket—is being marketed by Ford Motor Co's U.S. Tractor and Implement Operations. In addition to demolishing pavement and reinforced concrete above or below ground, the new unit developed by Hughes Tool Co. can break rocks, tamp backfill and drive posts or pilings. Requiring no air compressor or jackhammer device, it can reach into areas previously inaccessible for such operations with hand-held equipment, according to Hughes. The combination impactor and tractor-backhoe-loader enables a single operator to not only demolish material but to pick up and carry it to a loading point, says the company. The impactor's suggested retail list price is about \$1800. For more details circle (701) on reply card.

Mott Corp., La Grange, Ill., offers 2 new flail type "Hammer-Knife" mowers—Models 60 and 72—designed with heavy-duty sealed bearings and unitized frame for continuous mowing even under adverse conditions, says Mott. Completely guarded, the units feature paired edge-cutting knives for easy field servicing, according to Mott. For more details circle (702) on reply card.

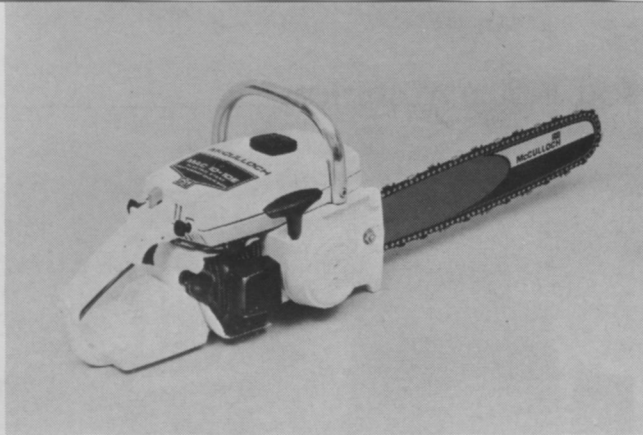


Maryland's Cambridge Wire Cloth Co. now offers a unit for controlling aquatic weeds. An amphibious paddle wheel-propelled barge with special conveyor and cutting rig can clear an acre of underwater weeds per hour, says the company. Adjustable cutting head snips off growth; submersible sicklebar cuts off plants at roots. Via series of belt systems, weeds are dumped onto second barge, which transports them to shore. Conveyors are designed to combat abuse from sand, stones and debris. For more details circle (703) on reply card.

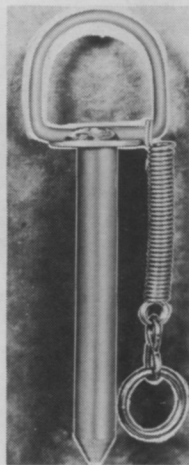




Edson Corp., New Bedford, Mass., says that anything able to pass through a 2" suction hose can be pumped safely by its new "BONE DRY" model. The self-priming unit pumps up to 2600 G.P.H.; ideal for dewatering of low spots on lawns and fairways, cleaning leaves and silt from pools, lagoons. For more details circle (704) on reply card.



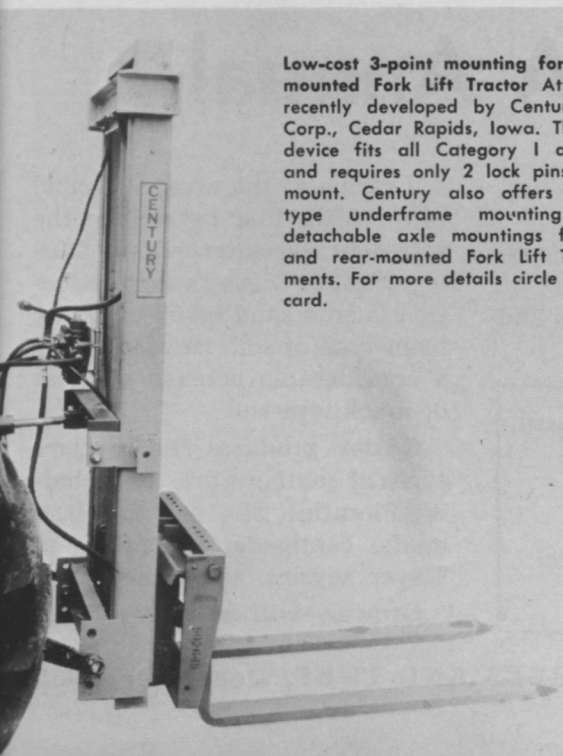
Los Angeles' McCulloch Corp. now offers MAC 10-10E, a self-contained electric starting chain saw. Batteries in handle supply starting power and are recharged automatically by alternator/generator while saw is on. 15-lb. unit offers fingertip chain oiling, noise muffler. For more details circle (705) on reply card.



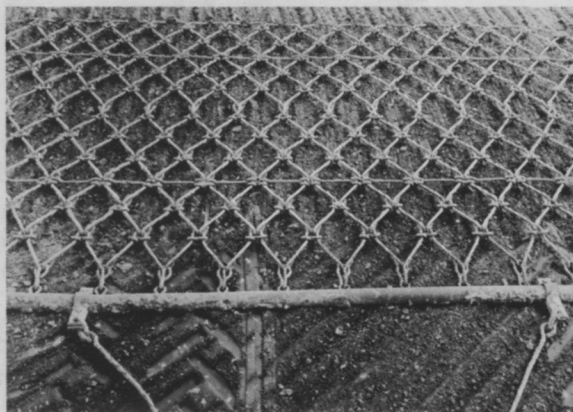
New safety-lock Hitch Pin recently introduced by Ag-Tronic, Inc., Hastings, Neb., features "Slip-Ring" lock. Even under rough conditions the device holds extra-heavy equipment locked to drawbar, says Ag-Tronic. Of high-grade steel, the pin is treated to resist abrasion and wear. For more details circle (707) on reply card.



Mitts & Merrill, Inc., Saginaw, Mich., has made available 10 new Brush Chipper models that feature folding feed chutes for maneuvering ease and protection of cutting chamber. Staggered knife pattern on rotating cylinder provides smooth cutting action, shaves material into chips suitable for mulch. For more details circle (706) on reply card.



Low-cost 3-point mounting for Century rear-mounted Fork Lift Tractor Attachments was recently developed by Century Engineering Corp., Cedar Rapids, Iowa. The heavy steel device fits all Category I and II tractors and requires only 2 lock pins and bolts to mount. Century also offers an industrial-type underframe mounting and quick-detachable axle mountings for their front and rear-mounted Fork Lift Tractor Attachments. For more details circle (708) on reply card.



Of interest to landscape contractors, golf course superes, highway and park departments and nurserymen is maintenance-free Fuerst Flexible Tine Harrow from Fuerst Bros., Rhinebeck, N. Y. It harrows, smooths, floats, drags and works in fertilizer, says Fuerst. Available in 6 or 24-ft. widths. For more details circle (709) on reply card.



James Ousley, Sr., president of Ousley Sod Co., Pompano Beach, Fla., and Doyle Watkins, farm superintendent for Ousley, discuss delivery schedule. Ousley is serving as host for the coming 2nd national meeting of the ASPA on Jan. 22.



Attractive office operation of Ousley Sod Company will be on tour schedule.

## All Sod Growers Invited To Attend ASPA Annual

James E. Ousley, Sr., veteran Florida sod producer, will serve as host at the second annual meeting of the American Sod Producers Association next month.

Growers will meet Jan. 22 in an all-day educational and business session at the Fountainebleau Hotel, Miami Beach, Fla. The ASPA annual is being held in conjunction with the 40th International Turfgrass Conference and Show of the Golf Course

Superintendents Association, Jan. 19-24.

Besides the Jan. 22 educational formal session, growers will be invited to tour turf research and

*American Sod Producers Assn.  
2nd Annual Meeting  
Date: January 22, 1969  
Time: 9:00 a.m.  
Place: Fountainebleau Hotel  
Miami Beach, Fla.*

sod farms in the area. Principal farm on the tour list will be the 2100-acre sod enterprise of Ousley. Most of Ousley's sod production is on a sand based or sandy loam type of soil. He also grows a considerable acreage on peat or muck type soil.

Ousley produces the major types of southern grasses including Floratine, St. Augustine, bermuda, centipede, Emerald and Mayer zoysias, and some bahia.

Growers will be interested in



Like many progressive growers, Ousley has designed and built equipment to handle sod. This trailer unit equipped with airplane tires permits sod to be moved efficiently to heavy trucks on hard surfaced roads. The practice eliminates compaction in the field.

the broad variety of equipment employed by Ousley in keeping his operation efficient on his big volume production. He automates wherever possible but because of sand soil, sod is folded and hand loaded on pallets. All further handling is done by forklifts. He has 11 in use on the various segments of his operation.

Salesmen, personal contact by Ousley himself, and several forms of advertising are used in marketing. Ousley sells to contractors, homeowners, landscapers, garden centers and others. About 35 percent of his total sales are delivered in his own trucks direct to the installation site. He maintains 12 trucks in the total operation.

As Ousley told growers who attended the San Francisco annual meeting of the ASPA last February, increasing production costs remain the greatest problem for growers in his area. Competent help is also difficult to obtain and to hold. Coupled with increasing land values in the normal sod growing areas of Florida, Ousley believes that

growers must continue to improve their efficiency to remain in business on a profitable basis.

All growers, whether members of the National Sod Growers Association or not, are being invited to attend the Florida session. President Ben O. Warren of Warren's Turf Nursery, Palos Park, Ill., and George B. Hammond, executive-secretary of the group and operator of the Paint

Valley Bluegrass Farm at Columbus, are contacting as many growers as possible regarding attendance. Goal of this meeting is to continue to enroll growers in the association.

Hammond (71 E. State St., Columbus, Ohio) reports that he will be happy to supply additional meeting details to those growers who wish to attend. He feels the educational program

Selective herbicide being sprayed on new sod crop on Ousley farm.





Forklifts are used in a pallet operation. All sod is folded and hand-loaded on pallets.

which has been planned for this year will be extremely helpful to the group.

Hammond reports that Ousley has devoted a great amount of time and effort in putting together a program which will fit the individual grower.

Opening the first session at 9:00 a.m. Wednesday will be Dr. G. C. Horn, turf technologist of the University of Florida, Gainesville. Dr. Horn's subject will be on sales and water management. Dr. Eliot Roberts, nationally noted turf researcher, who is now chairman of the University of Florida's department of ornamental horticulture will discuss research. He will be followed by Drs. Vernon Perry on nematodes and Thomas Stringfellow on insects. Dr. T. E. Freeman, plant pathologist, will complete the cycle with a discussion on turf diseases.

The afternoon session will feature weed control. Presenting this phase of the program will be Dr. Evert O. Burt, turf technologist at the Plantation Laboratory, Fort Lauderdale, Fla. Arthur Edwards, editor of Weeds Trees and Turf magazine, will present the results of a nationwide survey of sod producers which has just been completed. This extensive study among growers by WTT will give a

good indication of the total scope of the sod industry, management practices, and collective thinking of growers regarding problems and outlook for the industry. This industry survey is the most comprehensive in the industry to date and should be of value to growers.

Dr. Gene C. Nutter, editor-publisher of Turf-Grass Times, will discuss the future of artificial turf.

More than 70 growers and industry representatives attended the initial session of the ASPA on the West Coast. More are expected for the '69 annual session.

### **Diamonds' Dacthal W-75 Now Available for Turf**

A new turf formulation, package and pricing structure for Dacthal, Diamond Chemicals' premium preemergence herbicide, promises to save growers at least a dollar an acre in herbicide costs.

The new Dacthal W-75 for turf is a 75 percent wettable powder formulation of Diamond's pre-emergence herbicide packaged in a new 24-pound green box and labeled especially for the turf and ornamentals market.

With its revised pricing structure the new, more concentrated

Dacthal W-75 makes it possible for growers of turf and ornamentals to get preemergence weed control at a lower cost. DACTHAL W-75 FOR TURF is a safe herbicide, and is specifically recommended on the label for use on 123 species. It has been long proven as a crabgrass killer, and is also recommended for control of such annual weeds as chickweed, foxtail, lambsquarters, purslane, poa annua and goosegrass.

### **White Is President of N.W. Bluegrass Assn.**

Gordon White, Jenks-White Seed Co., Salem, Oregon, has been elected president of the Pacific Northwest Bluegrass Association. He succeeds J. L. Carnes, W. R. Grace & Co., Halsey, Oregon. New Vice-President is Arnie Bonnicksen, Western Farmers Association, Seattle, Washington. Ted Freeman, Pacific Supply Coop of Madras, Oregon was elected Secretary-Treasurer.

White said the Association's principle activities in the coming year will be to encourage an increasing emphasis on field burning research. He said that support of the Better Lawn & Turf Institute would be continued.

## MOUNTAIN MISERY

(*Chamaebatia foliolosa*)



Drawing from: California Range Brushlands and Browse Plants, by Arthur W. Sampson and Beryl S. Jespersen. Calif. Agric. Expt. Sta. Ext. Ser. Manual 33.

Prepared by: O. A. Leonard, Botanist, assisted by J. B. McCaskill, Senior Herbarium Botanist, Botany Department, University of California, Davis, California.

Mountain misery (*Chamaebatia foliolosa*) belongs to the Rose Family (Rosaceae) and is one of two species native to California and Lower California. Present in open stands of ponderosa pine and mixed forests of the Sierra Nevada of California, where it occurs as an extensive ground cover, its most characteristic trait is its unusual odor. Early settlers, finding it disagreeable, aptly labeled it "mountain misery."

This 2 to 4-foot tall plant is a densely branched

shrub with thin, pliable branches. Its evergreen leaves are fern-like, fragrant (especially annoying on hot days) and covered by a sticky substance that coats everything with which it comes in contact. They are ½ to 3 inches long, several times pinnately dissected into tiny crowded segments, each usually tipped with a somewhat yellowish resin gland. The young branches are glandular-pubescent and later exfoliate, leaving a smooth bluish to brown bark. The plant's flowers are white, ½ inch wide and structured in loose terminal clusters. Flowering occurs in May and June.

Mountain misery is not detrimental except during growth periods following severe logging or forest fires or when conversion of land into grass is preferred. It may be detrimental to older trees by reducing growth rates, especially where soil is shallow and water storage is limited. However, it forms a good ground cover that protects the soil against erosion. Mountain misery is essentially valueless as a browse plant for domestic livestock but does furnish some food for deer.

After a fire, this plant sprouts from underground stems that appear to be extensive. This is an ideal time to begin control because, under post-fire conditions, it is most sensitive to the phenoxy herbicides. In addition, fire removes the dense tangle of stems and other material that make planting of forest seedlings difficult and impractical.

When it is desirable to convert these areas into grass, the land must first be burned or mechanically worked or the seedlings will fail. The time to spray is after most of the underground stems have developed sprouts, which is usually in late June or early July following a fire of the previous year. Good kills can be obtained through early August by increasing the dosage; fairly good kills can be obtained in the autumn after fall rains have occurred. Some grass does develop naturally in the burned areas and competes with the planted conifers. Therefore, it is best to spray as soon as possible after a fire and then to plant the seedling trees the following fall, winter or spring.

Mountain misery is sensitive to 2,4-D, 2,4,5-T and silvex, so it is possible to use any of these herbicides. Although the plant seems to be most sensitive to 2,4-D, mixtures of the phenoxy's are often used because of the variety of brush species to be controlled. Esters are preferable; dosages of 3 or 4 pounds per acre are recommended when selective control is not required.

Old or mature mountain misery is difficult to kill, at least without retreating it once or twice. However, an annual dosage of 4 pounds of 2,4-D, 2,4,5-T or silvex applied in June or July for 2 or 3 years is often sufficient for its eradication.

# Tree Plant Food



**Gordon H. Knowles**  
Knowles Tree Service  
San Leandro, Calif.

Gordon H. Knowles, a veteran arborist, now spends almost full time marketing a plant food which he has been using on trees in his own business for 19 years.

Knowles, known among tree men almost as well for his testimony about Heller-Gro\* as for his acumen as a career arborist, first tried this product as a liquid plant food in 1950. He had moved to Colorado Springs, Colorado for family health reasons after operating a successful tree business in Essex County, New Jersey. Noting that some nursery stock had extremely good color, he inquired about the cultural practices used in production.

Knowles found that Heller-Gro had been used and he immediately contacted Mrs. Mary K. Heller who with her husband had formulated this product and then started using it on his own tree feeding work. He says that at that time it was being sold to the "house trade" as a liquid packed in 5-gallon jugs, while sales to the consumer were in ½-ounce bottles through retail outlets. Today's professional buys it in a concentrated soluble paste form in 50 pound pails and 55 gallon drums. When this con-

centrate is mixed the contents of the 50 pound pail makes 2,500 gallons and the contents of the drum makes 25,000 gallons with a cost of roughly two cents per gallon and 8/10's cents per gallon in these sizes.

Heller-Gro's analysis is 15-15-15 with trace elements added. It contains three nitrogen sources including nitrates which are immediately taken up by the plant, ammoniacal nitrogen which provides a sustained source of nitrogen and nitrogen from urea which releases gradually. Knowles says the product serves well for home owners, professional arborists, greenhouse and landscape contractors, as well as for large turf areas, fruit and field crops.

Normally, any standard hydraulic compression type of tank sprayer with compression gauge plus hose and feeding needles can be used for applying the material. Heller-Gro, according to Knowles, is compatible with most insecticides and is practical for foliar application. He suggests mixing it with "Wilt-Pruf" during transplanting in order to nourish leaves during this period of shock.

Results from a thorough root feeding will enhance tree growth

and health for two or three years according to Knowles. However, he suggests jet feeding every year to eighteen months. Foliar feeding must be made more often, and Knowles reports good success by using foliar feeding via a spray gun as a supplement to the jet feeding. Main advantages, he says of Heller-Gro, are complete solubility and the fact that it builds up no residues. It has proven equally valuable on greenhouse plants and for flowers and ornamental shrubs.

Heller-Gro is now owned by the Boyle-Midway Division of American Home Products Corporation and the professional sizes are being distributed solely by Knowles for them.

Now headquartering in San Leandro, California, Knowles proudly reports that 35 California cities are using the product exclusively in all phases of plant feeding, and that this is true with a number of leading tree care companies around the country.

Knowles distribution of Heller-Gro is national in scope and he attends many of the arborist oriented meetings throughout the country.

\* Registered Trade Mark

## Classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

Rates: "Position Wanted" 10c per word, minimum \$3.00. All other classifications 20c per word, minimum \$4.00. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment. Bold-face rule box: \$25.00 per column inch, two inch minimum.

### BUSINESS OPPORTUNITIES

**FIVE HUNDRED Acre farm ideally suited for sod production.** Seek farmer with sod growing experience and equipment or capital to participate. David deGraff, Williams-town, New York 13493. Phone 315 964-2214.

### State Regulations Vary on Landscape Contracting

A recent survey by the Associated Landscape Contractors of America, Inc. has indicated that few states regulate their landscape contracting business.

Some states have registration requirements for all types of contractors but do not pinpoint

the *landscape contractor*.

In those states that do require licenses for contractors, regulations run the gamut from almost non-existent to somewhat strict, according to the ALCA survey. Most states, however, do not ask for special qualifications or deem it necessary for applicants to pass examinations.

In Texas, for example, contractors must have certificates, according to the state nursery law; but no tests or specific requirements are needed. In Minnesota licenses are required for spraying and dusting plants. California, however, requires four years of experience in landscape contracting before the issuing of a license; an examination is also necessary.

Arizona's newly enacted law requires a license. Applicants must pass an examination, be of good reputation, have not been refused a license or have had one

## Advertisers

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revoked, have not gone bankrupt within the preceding year and must show eligibility for workmen's compensation insurance.



# Another Asplundh first... aerosol inhibitor tree paint.

For fast year-round applications try Asplundh's inhibitor fortified tree paint. Using the newly developed one percent NAA formulation, it is now packaged in a proven all-weather aerosol applicator. This spray method will greatly increase production compared to old fashioned brush-on applications thus reducing unit cost. So when you look for reliability, economy and beauty look to Asplundh.

## ASPLUNDH



ASPLUNDH TREE EXPERT CO.  
505 YORK ROAD, JENKINTOWN, PENNSYLVANIA 19046

For More Details Circle (119) on Reply Card

# Insect Report

WTT's compilation of insect problems occurring in turfgrasses, trees, and ornamentals throughout the country.

## Turf Insects

### APHIDS

(*Capitophorus* spp.)  
(*Aphis* spp.)

Utah: Extremely numerous on rabbitbrush at Bountiful, Davis County, and Logan Green Canyon, Cache County.

### SUGARCANE BORER

(*Diatraea saccharalis*)

Florida: Damage heavy on pampasgrass at Samsula, Volusia County, in early October. Healthy plants reduced from 180,000 to 60,000 in 30-acre field during one year; 50 percent of reduction due to "knocking back" of plumes.

### HAIRY CINCH BUG

(*Blissus hirtus*)

Pennsylvania: Some damage to Greene County lawns; adults averaged about 2 per square foot.

### SOUTHERN CINCH BUG

(*Blissus insularis*)

Texas: Heavy in lawns in Bastrop, Travis, Guadalupe, Comal, and Bexar Counties week ending October 11.

### VAGABOND CRAMBUS

(*Crambus vulvivagellus*)

Tennessee: Moths first collected in light traps September 19 in Knox County; very common around lights.

### A WHITEFLY

(*Aleurocybotus occiduus*)

Arizona: Controls in progress in Bermudagrass seed fields at Yuma, Yuma County.

## Insects of Ornamentals

### MEXICAN MEALYBUG

(*Phenacoccus-gossypii*)

California: Heavy on pelargonium and fuschia nursery stock in Grass Valley, Nevada County.

### AN ERIOPHYID MITE

(*Eriophyes gardeniella*)

Florida: Collected on gardenia in nursery at Monticello, Jefferson County, October 3. This is a new Florida Department of Plant Industry county record.

### A PIT SCALE

(*Cerococcus deklei*)

Florida: All stages general and moderate on all 2,275 nursery hibiscus plants at Coral Gables, Dade County.

## Tree Insects

### A CONIFER APHID

(*Cinara pinea*)

Maryland: Collected on Scotch pine in nursery at Westminster. Carroll County, May 27, 1968. This is a new State record.

## BLACK TURPENTINE BEETLE

(*Dendroctonus terebrans*)

Texas: Outbreak resulted from following in descending order: Logging, lightning, road building, and fire. Outbreaks reported in Houston, Montgomery, Orange, Panola, San Jacinto, Shelby, Trinity, and Walker Counties. Treated over 1,000 trees and salvaged many others.

## FALL CANKERWORM

(*Alsophila pometaria*)

North Dakota: Males and females evident on forest and shade trees in Fargo area, Cass County.

## A CECIDOMYIID MIDGE

(*Cecidomyia* sp.)

Colorado: Damage severe on ponderosa pine windbreaks in areas of Yuma, Yuma County, Platner, Washington County, and Rush, El Paso County.

## EUROPEAN PINE SHOOT MOTH

(*Rhyacionia buoliana*)

Oregon: Results of fall survey in Umatilla County as follows: Hermiston and vicinity—2,315 trees inspected, 373 infested, 377 suspected; Umatilla—239 trees inspected, 3 infested; McNary Dam—130 infested. Infested mostly Scotch or mugho pines. Ohio: Severe damage found on 8-foot red pines in Warren County October 4; infested 30-40 percent of terminals.

## NANTUCKET PINE TIP MOTH

(*Rhyacionia frustrana*)

Texas: Extensive damage to shortleaf and loblolly pine saplings in northeast area during summer. Mined nearly all tips over much of 2,000-acre block near Clarksville, Red River County. Heavy infestations and loss of growth on naturally reseeded pine on old fields. Heavy damage also in Gregg, Shelby, and Upshur Counties.

## Dow Chemical Cuts Price of Dowpon Grass Killer

Dow Chemical Co., Midland, Mich., recently announced a reduction in the price of Dowpon Grass Killer—also known as dalapon, a 2,2-dichloropropionic acid generally applied by air or ground spray equipment.

The price cut, totaling about 27 percent, is the result of production costs due to new technological methods and increased plant capacities, according to Dow.

Plans for additional production efficiencies suggest the possibility of further savings on Dowpon in future years, Dow officials revealed.

## Trimmings

**Gypsy Moth Joy Killer.** Spread of gypsy moth infestation via Christmas trees is an ever present threat on the Eastern Seaboard. Federal and state quarantines are in effect and pretty well thwart spread by commercial trees. But noncommercial movement remains a hazard. Better for all concerned that private individuals be prohibited from moving trees across state lines without a permit. Thousands of shade trees are defoliated annually and many killed by gyp caterpillars. Hunters carrying home souvenir trees need to be made aware that Christmas closely follows the gyp egg-laying season and that a single egg mass contains from 100 to 1000 pests.

\* \* \*

**Aerial Applicator Students.** We read that Vincennes University will start a new aerial applicator training program this fall. Bill Spence of the University reports that the course will cover five semesters and is being offered in cooperation with the National Aerial Applicators Association. This has been one of the goals of the N-Triple-A for some time and points up the value of coordinated efforts through an organized association. Students will get on-the-job training along with classroom work. Primary flight courses and classes will feature the first year of instruction. Students will work in the industry during the summer and then continue formal training until completion of the course. Classes include chemicals and their use along with primary flight training.

\* \* \*

**In the News.** Synthetic grass continues to get rave notices where it is being used for football fields. Most recent we've read are statements regarding the University of Tennessee's Tartan turf, a 3M product. Coaches say the main advantages of the \$200,000 installation are fewer injuries (probably because only quarter-inch cleats are used rather than the 3/4 inch cleats used on regular turf) and the fact that heavy rain does not particularly affect the field.

\* \* \*

**Repels Rabbits.** Elton M. Smith of the Ohio State University reports a liquid formulation of thiram sold as Arasan 42-S has been very effective as a rabbit repellent. It can be brushed or sprayed on trees and plants. The U.S. Fish and Wildlife Service also recommends Z.I.P. for the same purpose. The latter also discourages deer.



## Meeting Dates



**Ohio Turfgrass Conference.** Ohio Turfgrass Association, Sheraton Hotel, Cleveland, Ohio, Dec. 9-10.

**Northeastern Weed Control Conference, Annual.** Hotel Commodore, New York City, N.Y., Jan. 8-10.

**Helicopter Association, Annual Meeting.** Diplomat Hotel, Hollywood, Fla., Jan. 8-11.

**New York State Arborists Association, Annual Meeting.** Grossinger's, Grossinger, N. Y., Jan. 19-22.

**40th International Turfgrass Conference and Show, Golf Course Superintendents Association of America, Fountainebleau Hotel, Miami Beach, Fla., Jan. 19-24.**

**Southern Weed Conference, Annual Meeting.** Statler Hotel, Dallas, Tex., Jan. 21-23.

**American Sod Producers Association Annual Meeting.** Fountainebleau Hotel, Miami Beach, Fla., Jan. 22.

**Associated Landscape Contractors of America, Annual Meeting.** Half Moon Inn, Shelter Island, San Diego Bay, Calif., Jan. 22-25.

**National Arborist Association, Annual Convention.** Sheraton Hotel, Fort Lauderdale Beach, Fla., Feb. 8-13.

**Weed Science Society of America Annual Meeting.** Caesars Palace, Las Vegas, Nev., Feb. 10-14.

**Lawn and Utility Turf Growers Course.** Rutgers University, College of Agriculture and Environmental Science Campus, New Brunswick, N.J., Feb. 17-19.

**Golf and Fine Turf Growers Course.** Rutgers University, College of Agricultural and Environmental Science Campus, New Brunswick, N.J., Feb. 19-21.

**Southern Turfgrass Association, Annual Conference.** Sheraton-Peabody Hotel, Memphis, Tenn., Mar. 3-4.

**Annual Fine Turf Conference.** University of Massachusetts, High Point Motor Inn, Chicopee, Mass., Mar. 5-7.

**Michigan Turfgrass Conference, 39th Annual.** Kellogg Center, Michigan State University, East Lansing, Mich., March 12-13.

## Ohio Scientist Discusses Home Lawn Care Fallacies

Fallacies concerning maintenance of home lawns were recently brought to light by Dr. R. R. Davis, associate chairman of the Department of Agronomy at the Ohio Agricultural Research and Development Center, Wooster.

Contrary to common belief, Davis said, close mowing in spring does not make grass spread. In fact, he revealed, close mowing reduces grass vigor and thereby decreases its ability to spread. Best mowing height, according to Research Center trials, is 2 inches for the average lawn, he said.

Another fallacy Davis attacked was the idea that grass should be left long for best winter survival. Long grass, he cautioned, actually increases thatch and may even increase disease problems. Center research indicates it's best to mow until growth stops, Davis said.

On lawn fertilization, Davis pointed out that slightly acid soil (pH 6 to 7) produces the best bluegrass. Both organic and inorganic fertilizers, used properly, foster improved growth, he said. Best time to fertilize is in the fall, although fertilizer should be applied whenever grass needs it, even during the summer.

Davis said that lawns should be watered as needed, anytime during the day that is convenient.

Fall is the best time to get rid of dandelions, according to Davis. Fall herbicide applications kill both old and new dandelions, done so at a time when desirable shrubs and trees are less susceptible to damage from herbicide drift. Spaces left by dandelions killed in the fall fill in quickly with grass the following spring, Davis said.

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