when your season rolls around...

be ready to roll with a NUnes sod harvester

- With a NUnes Sod Harvester and three men you can lift, cut, roll and palletize up to 1200 square yards of sod per hour.

- The harvester, developed at Cal-Turf Farms in California, is designed to handle any length of rolled or slabbed sod.

- Field grading of sod is done by the tractor operator, who has clear visibility at all times.

- Hydraulic controls permit quick and easy adjustment for all conditions.

- The sod harvester travels alongside, never on the turf, during harvesting and can pick up and roll sod at any time your tractor can operate in your field.

- Sod can be cut with any type of sod cutter. The long ribbons can then be lifted and cut to any desired length from 24" to 90", size depending on thickness of sod.

- Loaded pallets can be spotted for later field removal and be clear of the next harvest run. If direct truck loading is desired, a conveyor extension is available.

- The basic power train is a Ford LLG-2110 wheel tractor. The sod harvester can travel at speeds up to 17 MPH for quick transportation between plots.

- 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.

For more information please contact:
THE JOHN NUNES MECHANICAL HARVESTING CO.
2006 Loquot Avenue, Patterson, California 95363, Phone (209) 892-4311

For More Details Circle (104) on Reply Card
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.

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.
merion
KENTUCKY BLUEGRASS
ca-da-bra!

the magic word for beautiful lawns

Say MERION and you almost talk magic, the way grass roots multiply. Whether you sell it—whether you use it—MERION grass seed or sod is preferred for good reasons: MERION Kentucky Bluegrass is uniformly dark green, thick and cushiony—a denser turf that crowds out weeds and crabgrass. Deeper roots mean less watering. Like magic, it comes right back after rough wear and tear.

THE "CRITICS" APPROVE—and so does the public. The men who know best have placed their continuing stamp of approval for many years on MERION: park and golf-course superintendents, scientists, growers and experimental stations—and most important, the guy who mows his own lawn, Mr. Public himself.

If you don't know MERION, get acquainted now. There's an information kit available for the asking.

MERION BLUEGRASS ASSOCIATION
101 Park Avenue
New York 10017

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 lightweight magnesium-aluminum engine delivers more cutting 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.
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 slowdown, especially during the expected period early in the year when the surcharge tax bite coupled with recent tight money takes its full effect. A slowdown in defense spending is also a distinct possibility if the Vietnam 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 summary 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.

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

<table>
<thead>
<tr>
<th></th>
<th>Increase</th>
<th>Decrease</th>
<th>Same</th>
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<tbody>
<tr>
<td></td>
<td>74.7%</td>
<td>2.7%</td>
<td>22.7%</td>
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*Percentage of non-crop horticultural operators reporting.

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

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Home Owner</td>
<td>50.8%</td>
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<tr>
<td>Industrial</td>
<td>16%</td>
</tr>
<tr>
<td>Weed Control</td>
<td>10.7%</td>
</tr>
<tr>
<td>Municipal</td>
<td>9.3%</td>
</tr>
<tr>
<td>County, State, Other Gov't.</td>
<td>10.7%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

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

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 contracts. 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

<table>
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<th>Income Range</th>
<th>Percentage</th>
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<tr>
<td>More than $1,000,000</td>
<td>3%</td>
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<tr>
<td>More than $500,000</td>
<td>1.5%</td>
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<td>$200,000 - $500,000</td>
<td>7.3%</td>
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<td>$200,000 or less</td>
<td>0%</td>
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<td>$100,000 or less</td>
<td>16.4%</td>
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<td>$80,000 or less</td>
<td>24%</td>
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<td>$40,000 or less</td>
<td>17.9%</td>
</tr>
<tr>
<td>$20,000 or less</td>
<td>13.4%</td>
</tr>
<tr>
<td>$10,000 or less</td>
<td>10.5%</td>
</tr>
</tbody>
</table>

* Percentage of operators reporting.

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 noncrop 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 Control Conference Report

In-House Vs. Custom Contracts

In 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 Industrial 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. Wooton 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 required. 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
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)

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

For effective control of weeds and brush that infest roadsides and utility rights-of-way, and choke ponds and drainage ditches, Visko-Rhap* herbicides are designed for use where conditions necessitate the utmost in drift control. Visko-Rhap invert emulsions as special formulations of 2,4-D; 2,4,5-T; and Silvex are compatible with other herbicides. They may be applied in a variety of ways to assure you a truly outstanding weed-control program.

- **EFFECTIVE**
  - Oil-coated droplets resist evaporation and wash off...
  - Because they are so drift-resistant, you control only the vegetation that you want to control.

- **ECONOMICAL**
  - Visko-Rhap requires no pre-mixing and eliminates product waste. It allows you full utilization of equipment, manpower, and chemicals.

- **EASY-TO-APPLY**
  - Thick streams make accurate placement of the herbicide easy, and with Visko-Rhap you see where you’ve sprayed.

Information and technical assistance on Visko-Rhap is available through any of the following offices: BOSTON, MASSACHUSETTS • CHICAGO (OAK BROOK), ILLINOIS • DALLAS, TEXAS • GREENVILLE, MISSISSIPPI • KANSAS CITY (OVERLAND PARK), KANSAS • LOUISIANA, MISSOURI • MINNEAPOLIS, MINNESOTA • MONTGOMERY, ALABAMA • ORLANDO, FLORIDA • PHOENIX, ARIZONA • PORTLAND, OREGON • RALEIGH, NORTH CAROLINA • SAN FRANCISCO, CALIFORNIA.

Or, write Agricultural Chemicals, Synthetics Department, Hercules Incorporated, Wilmington, Delaware 19899.
Weeds Trees and Turf presents below its annual Guide to Suppliers of vegetation control chemicals and equipment for use in urban/industrial areas. There is a mixture of common and registered trade names, unavoidable since usage and recommendations of researchers refer to a particular chemical by one or the other, depending upon the newness of the compound, whether its common name is easier to use, or industry acceptance. There will also be some differences of opinion over the inclusion or omission of certain chemicals under particular use categories. Here again confusion exists among reference sources. We have made our choices on the basis of most frequent mention in our surveys which preceded this compilation. Readers' comments and suggestions are invited to help us improve future editions. Keep this year's Guide handy for frequent use.

SOIL STERILANTS

AMIZINE
Amchem Products, Inc.
Nalco Chemical Co.

AMMONIUM SULFATE
The J. J. Dill Co.
Summers Fertilizers, Inc.

ASSULT
West Chemical Products Co.

ATRATOL
Geigy Agricultural Chemicals

ATRAZINE
The J. J. Dill Co.
Geigy Agricultural Chemicals
Great Lakes Chemical Div.
Nalco Chemical Co.

BORATE COMPOUNDS
American Potash & Chemical Corp.
Chipman Chemical Co., Inc.
The J. J. Dill Co.
Green Lawn Laboratories, Inc.
Nalco Chemical Co.
U.S. Borax & Chemical Corp.

BORATE MIXTURES
Chipman Chemical Co., Inc.
The J. J. Dill Co.
Green Lawn Laboratories, Inc.
Nalco Chemical Co.
U.S. Borax & Chemical Corp.

BO-RID
The R. H. Bogle Co.

BROMACIL (HYVAR X)
The J. J. Dill Co.
E. I. duPont de Nemours & Co., Inc.
Nalco Chemical Co.

CALCIUM CHLORIDE
Pittsburgh Plate Glass Co.

CHLOREA
Chipman Chemical Co., Inc.
The J. J. Dill Co.
Green Lawn Laboratories, Inc.

DALAPON
The J. J. Dill Co.
The Dow Chemical Co.
Nalco Chemical Co.

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

D-LETE
The J. J. Dill Co.

ERBON
The Dow Chemical Co.
Nalco Chemical Co.

FENAC
Amchem Products, Inc.
Nalco Chemical Co.

FENATROL
Amchem Products, Inc.

HCA
Allied Chemical Corp.

HIBOR
U.S. Borax & Chemical Corp.
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<td>Velsicol Chemical Corp.</td>
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<td>Mallinckrodt Chemical Works</td>
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<td>SIMAZINE</td>
<td>(See Soil Sterilants)</td>
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<td>SOLAN</td>
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<td>Niagara Chemical Div., FMC Corp.</td>
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For More Details Circle (111) on Reply Card
New International Cub 154 Lo-Boy tractor

Worth more—when you buy, use, trade
Under the sleek new look—a long-life engine and a 3-point hitch to quick-mount matched equipment . . . 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.

And at your fingertips, you’ll find panel-clustered controls and levers. Puts you in instant command of mowers, blades, harrows, brooms. Any kind of matched equipment you’ll want to use with the new independent power take-off or the optional new 3-point quick hitch.

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.

INDUSTRIAL EQUIPMENT
Wheel and crawler tractors • loaders • backhoes • dozers • forklifts • mowers • special duty tools

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The J. J. Dill Co.
E. I. duPont de Nemours & Co., Inc.
LINURON
(See Preemergence Herbicides)
MCPCA
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)
PARAQUAT
Chevron Chemical Co., Ortho Div.
PENTACHLOROPHENOL
The J. J. Dill Co.
The Dow Chemical Co.
Nalco Chemical Co.
DACAMINE 4D
Diamond Alkali Co.
The J. J. Dill Co.
Great Lakes Chemical Div.
DALAPON
(See Soil Sterilants)
DIAMONDE
Chevron Chemical Co., Ortho Div.
The Dow Chemical Co.
Niagara Chemical Div., FMC Corp.
DIURON
(See Soil Sterilants)
DMA (DSMA)
The Anslul Co.
Chapman Chemical Co.
Chevron Chemical Co., Ortho Div.
W. A. Cleary Corp.
The J. J. Dill Co.
The Diamond Alkali Co.
Nalco Chemical Co.
Vineland Chemical Co.
DOCPON
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
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E. I. duPont de Nemours & Co., Inc.
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MCPP
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DACAMINE 4D
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The J. J. Dill Co.
Great Lakes Chemical Div.
DALAPON
(See Soil Sterilants)
**DICHLONE**  
Allied Chemical Corp.  
The J. J. Dill Co.  
Naugatuck 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.

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

**MCPA**  
*See Postemergence Herbicides*

**ORTHOCHLOROBENZENE**  
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.

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**COMMERCIAL FERTILIZERS**

### NITROGEN SOURCES

- **Fast Release**
  - **AMMONIA, ANHYDROUS**  
    Allied Chemical Corp.  
    Best Fertilizers Co.  
    Chevron Chemical Co., Ortho Div.  
    Columbia Nitrogen Corp.  
    The Dow Chemical Co.  
    Hercules Incorporated  
    Green Lawn Laboratories, Inc.  
    Phillips Petroleum Co.  
    Sohio Chemical Co.  
    Vulcan Materials Co.

- **SODIUM NITRATE**  
  Summers Fertilizers, Inc.

- **SODIUM NITRITE**  
  Summers Fertilizers, Inc.

- **UREA**  
  Allied Chemical Corp.  
  Agrico Chemical Co.  
  Best Fertilizers Co.  
  Columbia Nitrogen Corp.  
  E.I. duPont de Nemours & Co., Inc.  
  Hercules Incorporated  
  International Minerals & Chem. Corp.  
  Phillips Petroleum Co.  
  Sohio Chemical Co.  
  Summers Fertilizers, Inc.

- **UREA-FORMALDEHYDE**  
  Best Fertilizers Co.  
  Columbia Nitrogen Corp.  
  E.I. duPont de Nemours & Co., Inc.  
  Hercules Incorporated  
  International Minerals & Chem. Corp.  
  Summers Fertilizers, Inc.

- **Organic Nitrogen**  

- **BONE MEAL, STEAMED**  
  Best Fertilizers Co.  
  Green Lawn Laboratories, Inc.  
  Summers Fertilizers, Inc.  
  Andrew Wilson, Inc.

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**COTTONSEED MEAL**  
Summers Fertilizers, Inc.  
Andrew Wilson, Inc.

**MANURE, CATTLE**  
Fertilla Co.

**MILOGANITE**  
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.  
Green Lawn Laboratories, Inc.  
Kalium Chemicals, Ltd.  
Phillips Petroleum Co.  
Southwest Potash Corp.  
Summers Fertilizers, Inc.  
U.S. Borax & Chemical Co.

**POTASSIUM NITRATE**  
Green Lawn Laboratories, Inc.  
Southwest Potash Div.  
Summers Fertilizers, Inc.
POTASSIUM SULFATE
American Potash & Chemical Corp.
Best Fertilizers Co.
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.
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

PHOSPHATE SOURCES

CONCENTRATED
Agrico Chemical Co.
Best Fertilizer Co.
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.
Chevron Chemical Co., Ortho Div.
Green Lawn Laboratories, Inc.
International Minerals & Chem. Corp.
Stauffer Chemical Co.

—Ammonium Phosphates—

AMMONIUM PHOSPHATE-NITRATE
Chevron Chemical Co., Ortho Div.
Green Lawn Laboratories, Inc.

AMMONIUM PHOSPHATE-SULFATE
Best Fertilizers Co.
Chevron Chemical Co., Ortho Div.

AMMONIUM PHOSPHATE-UREA
Green Lawn Laboratories, Inc.

DIAMMONIUM PHOSPHATE
Allied Chemical Corp.
Agrico Chemical Co.
Best Fertilizers Co.
Chevron Chemical Co., Ortho Div.
Columbia Nitrogen Corp.
Green Lawn Laboratories, Inc.
Hooker Chemical Co.
Phillips Petroleum Co.
Stauffer Chemical Co.
Summers Fertilizers, Inc.
Tennessee Corp.

MONOAMMONIUM PHOSPHATE
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.
Chevron Chemical Co., Ortho Div.
International Minerals & Chem. Corp.
Phillips Petroleum Co.
Stauffer Chemical Co.
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, BURNT
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.

DELOMITE
Best Fertilizers Co.
Summers Fertilizers, Inc.

GYPSUM (CALCIUM SULFATE)
Best Fertilizers Co.
Summers Fertilizers, Inc.

LIME, CONCENTRATE
Best Fertilizers Co.
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.
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
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.
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)
Are you winning the war against winter kill, summer scald and transplant shock? Thousands of growers, nurserymen, grounds maintenance men, landscapers and foresters minimize wilting losses with WILT PRUF. The world’s number one anti-desiccant, WILT PRUF was proved 40 to 50 times more effective in stopping excess water-loss than leading substitutes. Test details on request. Write on your letterhead for 50-page technical manual of applications.
### Vermiculite
*(See Soil Conditioners)*

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<th><strong>Iron Chelate</strong></th>
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<td>The J. J. Dill Co.</td>
<td>Tennessee Corp.</td>
</tr>
<tr>
<td><strong>Combination of Trace Elements</strong></td>
<td><strong>Surface Active Agents</strong></td>
</tr>
<tr>
<td>Green Lawn Laboratories, Inc.</td>
<td><strong>Ad-Kil</strong></td>
</tr>
<tr>
<td>Niagara Chemical Div., FMC Corp.</td>
<td>R. H. Bogle Co.</td>
</tr>
<tr>
<td><strong>Surface Actives</strong></td>
<td><strong>Detergents, General</strong></td>
</tr>
<tr>
<td>Armour Industrial Chemical Co.</td>
<td>Armour Industrial Chemical Co.</td>
</tr>
<tr>
<td>Cloro-Spray Corp.</td>
<td>Cloro-Spray Corp.</td>
</tr>
</tbody>
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**CarrIERS**

| **Celatom** | **AD-Kil** |
| Eagle-Picher Industries, Inc. | R. H. Bogle Co. |

**AD-KIL**

**Detergents, General**

| Armour Industrial Chemical Co. | Cloro-Spray Corp. |

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**Surface Active Agents**

**Ad-Kil**

**Detergents, General**

| Armour Industrial Chemical Co. | Cloro-Spray Corp. |
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.
Champion 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.

SPRAY THICKENING AGENTS
ATTAGELS
Englehard Minerals & Chemicals Co.
DACAGIN
Diamond Alkali Co.
Great Lakes Chemical Div.
INVERT EMULSION ADJUVANTS
(See Emulsifiers)

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.

GROWTH RETARDANTS
B-NINE
Uniroyal, 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.

STREPTOMYCCIN
Metasol Products, Merck & Co.

SOIL FUMIGANTS & NEMATOCIDES
BEDRENCH
Niagara Chemical Div., FMC Corp.

CROWNVETCH
Controls Erosion and Greatly Enhances Hillside Beauty

ZERO MAINTENANCE! NO MOWING! NO WEEDING!

NOW! FASTER, SURER, EASIER WITH PLANTS IN PEAT POTS

Write for Price Information and Attractive Brochure

THE STANFORD SEED CO. has over fifty years experience as seed merchants. We have Warehouses located at Buffalo, Pittsburgh, Binghamton and Philadelphia to serve your needs on all turfgrass items. Your inquiries will have our immediate attention.

SOLUBLE FERTILIZERS
Completely chelated all purpose feeds
Contain all necessary trace elements in a completely available form. - - Contain very effective color tracers - - Contain effective penetrating agents. - -
Ideal for all types of foliar, turf and root feeding.
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The finest soluble fertilizers ever made! Try them and see!
Inquire from your jobber or write direct to us for further information.

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For More Details Circle (102) on Reply Card
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.

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 & 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.

ARENA
Chemagro Corp.

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.

DDT
Allied Chemical Corp.

DDD (TDE)
Allied Chemical Corp.

DTD
Allied Chemical Corp.

ERIN
Bacillus thuringiensis

ETHION
The J. J. Dill Co.

FOSSON
New Jersey Zinc Corp.

FRONDS (THIOPHOS)
American Cyanamid Co.
The J. J. Dill Co.

FUNGICIDES

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.

BROMOPROPYL COMPOUNDS
The Dow Chemical Co.

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

DIMETHOATE
The J. J. Dill Co.

ETHION
The J. J. Dill Co.

ETHION-TEX
The J. J. Dill Co.

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ETHION-TEX
The J. J. Dill Co.

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

DIBROM
(See Miticides)

DIELDRIN
Armour Agricultural Chemical Co.
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
Chamagro Corp.
The J. J. Dill Co.

DI-SYSTON
Chamagro Corp.
The J. J. Dill Co.
The Dow Chemical Co.

DNOC
Niagara Chemical Div., FMC Corp.

DRINOX
Morton Chemical Co.

DYLOX
Chamagro 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
Chamagro Corp.
The J. J. Dill Co.

HEPTACHLOR
Armour Agricultural Chemical Co.
Chipman Chemical Co., Inc.
The J. J. Dill Co.

HEPTACHLOR
Armour Agricultural Chemical 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.
Millar Chemical & Fertilizer Corp.

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

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

MORESTAN
Chamagro Corp.

OILS, DORMANT
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.

PENTACHLORPHENOL
The J. J. Dill Co.
The Dow Chemical Co.
PHENOTHIAZINE
Prentiss Drug & Chemical Co. Vineland Laboratories, Inc.

PHORATE (THIMET)
American Cyanamid Co.

PHOSDRIN

PHOSPHAMIDON (DIMECRON)
Chevron Chemical Co., Ortho Div. Great Lakes Chemical Div.

PYRETHRINS

PYRETHRUM-RYANIA
S. B. Penick & Co.

PYRETHRUM-RYANIA
The J. J. Dill Co. S. B. Penick & Co.

SEVIN (CARBARYL)

SINOX
Niagara Chemical Div., FMC Corp.

SINOCALO-CLOR
Mallinckrodt Chemical Works

SINOCALO-GRAN
Mallinckrodt Chemical Works

SINOCALOMEL
Mallinckrodt Chemical Works

SINOCALORPET
Mallinckrodt Chemical Works

SINOCORROSIVE SUBLIMATE
The J. J. Dill Co. 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

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 Carbine Corp.

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

KROMA-CLOR
Mallinckrodt Chemical Works

KROMAD
Mallinckrodt Chemical Works

MannE-b (MANZATE)

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

MERCURY COMPOUNDS

MOROCIDE
Niagara Chemical Div., FMC
TUTANE
Elanco Products Co.

ULTRA-CLOR
Mallinckrodt Chemical Works

VELSICOL "2-1"
The J. J. Dill Co.

ZINEB
E. I. duPont de Nemours & Co., Inc.

ZIRAM
The J. J. Dill Co.

PHENMAD
Mallinckrodt Chemical Works

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 & Co., Inc.

SPRING-BAK
Mallinckrodt Chemical Works

SULFUR
Chevron Chemical Co., Ortho Div.

TUTANE
Elanco Products Co.

UNIVERSAL METAL PRODUCTS
Division Leigh Products, Inc., Saranac, Mich. 48881

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For Turf Care!

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

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

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Bartlett Mfg. Co.
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Fairmont Hydraulics
Halline Utility Equipment Co.
Heckendorf Mfg. Co., Inc.
Hoffco, Inc.
International Harvester Co.
McCabe-Powers Body Co.
McCulloch Corp.
Melroe Mfg. Co.
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Putman Mfg. Co.
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Stihl American, Inc.
Thor Power Tool Co.

AQUATIC SPRAY BOATS
Allied Biological Control Corp.
Aquatronics, Inc.

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.
Boles 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
Aquatronics, Inc.

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

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Harder Agricultural Supply Co.
Putman Mfg. Co.

CABLE SUPPLIES
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H. K. Porter, Inc.

CHEMICAL APPLICATORS, GRANULAR
John Bean Div., FMC Corp.
John Blue Co.
Buffalo Machine Works, Inc.
Buffalo Turbine Ag. Equip. Co.
Contree Sales, Inc.
The J. J. Dill 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.
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.

CHIPPERS
Aspeundh Chipper Co.
Fitchburg Engineering Corp.
H & G Tool Co.
Mitts & Merrill, Inc
Putman Mfg. Co.
Safety Test & Equipment Co., Inc.
Trailer 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.
Putman 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.
Fairmont Hydraulics
Hoffco, Inc.
Skil Corp.
Stihl American, Inc.
Thor Power Tool 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.
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
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.

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

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.
The Ben Meadows Co.
Root-Lowell Corp.
Solo Industries, Inc.
Universal Metal Products Div.
The Vandermolen 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 Co.  
Goodall Mfg. Corp.  
Gravely Tractors  
Heckendorf 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.  
Jari Corp.  
Massey-Ferguson, Inc.  
Simplicity Mfg. Co., Inc.

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 Air Supply Co.  
Hunt-Pierce Corp.  
Miller Robinson Co.  
Melor Industries, Inc.  
New World Products Co., Inc.  
Pitman Mfg. Co.  
H. K. Porter, Inc.  
Howco Mfg. Co., Inc.  
Sevignur 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 Brolyhill Co.

Century Engineering Corp.  
Contree Sales, Inc.  
Delavan Manufacturing Co.  
Devibiss 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.  
Hypro, Inc.  
Larson Machine, Inc.  
Marlow Pumps Div.  
Minnesota Warranty 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.  
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
Bartlett Mfg. Co.  
John Bacon Corp.  
W. M. Bashlin Co.  
The Fanno Saw Works  
John H. Graham & Co., Inc.  
Hardar Arborist Supply Co.  
Safety Test & Equipment Co., Inc.  
Seymour Smiley & Son, Inc.  
Wright Saw Div.

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

SAWS, POWER
American-Lincoln Corp.  
John Bacon Corp.  
The Black & Decker Mfg. Co.  
L. M. Cox Mfg. Co., Inc.  
Fairmount Hydraulics  
Fanno Saw Works  
Great Lakes Chemical Div.  
Halline Utility Equipment Co.  
Hoffco, Inc.  
Homelite Div., Textron, Inc.  
Pioneer Saws, Ltd.  
Remington Arms Co., Inc.

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.

SCHUTZEN
Hoffco, Inc.

SEEDERS, BELT TYPE
John Bean Div., FMC Corp.

SEEDERS, DISK TYPE
International Harvester Co.  
Vandermeer Seed Co., Inc.

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 Machinery Co.  
Rogers Mfg. Co., Inc.  
Schneider Metal Mfg. Co.  
Sunnyhill Research & Mfg. Co.

SEEDERS, HYDRAULIC
Reinco Inc.

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WEEDS TREES AND TURF, December, 1968
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<th>Category</th>
<th>Companies</th>
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<td>Seymour Smith &amp; Son, Inc.</td>
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<td>Sickle bar mowers</td>
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<td>Ford Motor Co., Tractor Div.</td>
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<td>Sod cutters</td>
<td>Finland Turf Cut Div.</td>
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<td>James-Way Equipment Co.</td>
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**Weeds Trees and Turf, December, 1968**
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.
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. Water-proof 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.

One of Elanco's dependable weed-control crew.

Balan (Balan™—benefin, Elanco)
Your first
100 sq. feet
are on Elanco!

Free sample! A 4 1/2 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.

DYMID®—versatile pre-emergence herbicide to control weeds and grasses in ornamentals, dichondra, or ice plant ground covers. Particularly effective against certain winter-germinating weeds.
SPRAYERS, COMPLETE POWER UNIT
Ag-King (Div. of TAGS)
Ampulco (Hardie)
John Bean Div., FMC Corp.
Besler, Div. of C-C Industries
John Blue Co., Inc.
R. H. Bogle Co.
Bowie Machinery Works, Inc.
The Brohyll Co.
Buffalo Turbine Ag. Equip. Co.
Century Engineering Corp.
Champion Sprayer Co.
R. E. Chapin Mfg. Works, Inc.
Cushman Motors
Deere & Co.
The J. J. Dill Co.
Dobbins Div.
Farmrite Sprayer, Inc.
Friend Manufacturing Corp.
Gravelly Tractors
Great Lakes Chemical Div.
Green Lawn Laboratories, Inc.
Hanson Equipment 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.
Trayco Mfg. Co.
The Thompson Manufacturing Co.
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Viking Mfg. Co., P.O. Box 68, Manhattan, Kans. 66502

Viking Pump Co., 4th & Shuttle 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

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

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

Walker Mfg. Co., Fowler, Kans. 67844

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

“Water-In.” P.O. Box 421, Altadena, Calif.

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


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, Va.

Western Peat Co., 50,000 Monroe St., Sylvania, Ohio

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

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

Winney 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.


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.


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

Yazoo Mfg. Co., Inc., P.O. Box 4207, Jackson, Miss. 34921

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

Zonolite Div., W. R. Grace & Co., 133 S. LaSalle St., Chicago, Ill. 60654

38 WEEDS TREES AND TURF, December, 1968
An alphabetical reference to subjects and titles of all major feature articles, feature columns, news stories, letters published in *Weeds Trees and Turf* in 1968. A list of authors of this year’s articles follows the Directory.

**KEY**

- (fa) feature article
- (nf) news feature
- (ns) news story
- (c) feature column
- (L) letter
- (cr) conference report

### Issue Pg.

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- Agricultural Research Service Aids Herbicide Evaluation (ns) Sept. 34
- Algae Control in Inland Water by S. J. Toth and D. N. Riemer (fa) Jan. 14
- (Alligator Weed), State Imports Flea Beetle Pest Control (ns) Apr. 28
- (Alligator Weed), Visko-Rhap Clears Adams Bayou (fa) Nov. 6
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WEEDS TREES AND TURF, December, 1968
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 general 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. Robinson, brush control range scientist at the 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.

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

Multi-use ground spray rig using F. E. Myers & Bros. Co., equipment led off Industrial Weed Conference field event.
The BIG BRUTE is for the professional who demands maximum efficiency for greater production. It is the latest advance in turf cutter engineering for high production performance in any soil conditions. Proven in the fields since 1963 by professionals. The BIG-BRUTE is the fastest turf cutter machine in production. The cutter is driven by a three point hitch tractor and its P.T.O., at speeds of low, second, and third, depending on soil conditions. This cutter has yield 33 1/4 sq. yards a minute in second gear, and 3 to 4 acres in a 8 hour day. The average blade life will give you from 6 to 15 acres, and the side coulters will yield 25 to 35 acres, all blades and side cutting coulters are guaranteed never to break under any turf cutting conditions.

For More Details Circle (118) on Reply Card

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 Croftts 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:

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilfrid Wheeler, Jr.</td>
<td>24 Rutledge Rd., Belmont, Massachusetts 02178 (617) 484-4057</td>
<td></td>
</tr>
<tr>
<td>Rex Wilkinson</td>
<td>P. O. Box 2008, Muncie, Indiana 47305 (317) 288-4493</td>
<td></td>
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</tbody>
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Weeds Trees and Turf, December, 1968
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.

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, manager 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 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.

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 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 more details write FRIEND MFG. CORP.

GASPORT, NEW YORK

For More Details Circle (117) on Reply Card

Suppliers Staff Changes

American Cyanamid has also announced the appointment of A. C. Gilleland as Training Supervisor 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 midwestern and western accounts.

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

The Agricultural Chemicals Division of Geigy Chemical Corp., Ardsley, N. Y., has recently announced several personnel changes. Ralph W. Toltbert, 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.
Wintertime Safety Check

**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.
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 handheld 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 superintendents, highway and park departments and nurserymen is maintenance-free Fuerst Flexible Tine Harrow from Fuerst Bros., Rhinebeck, N. Y. It harrows, smooths, floats, drops and works in fertilizer, says Fuerst. Available in 6 or 24-ft. widths. For more details circle (709) on reply card.
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 Fontainebleau 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 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

American Sod Producers Assn.
2nd Annual Meeting
Date: January 22, 1969
Time: 9:00 a.m.
Place: Fontainebleau Hotel
Miami Beach, Fla.
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
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's 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 preemergence 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 Bonnickson, 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) 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 herbicides 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 retreated 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.
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, professional buyers it in a concentrated soluble paste form in 50 pound pails and 55 gallon drums. When this concentrate 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, ammonical 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 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.

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

For More Details Circle (119) on Reply Card

WEEDS TREES AND TURF, December, 1968
Insect Report

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 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 WHITEFLY
(Aleurocybotus occiduus)
Arizona: Controls in progress in Bermudagrass seed fields at Yuma, Yuma County.

TRIMMINGS

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.

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

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.

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 APPICATOR 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 ¾ 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 found 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.
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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Make sure your fertilization program is based on a Blue Chip® fertilizer containing Nitroform® organic nitrogen. Nitroform nitrogen goes further and does a better job than other organics... gives you best for less.

Proof of Nitroform's effectiveness and economy, as compared with conventional organics, is demonstrated in our new 8-page brochure, "Specify Nitroform Plant Food." Ask your Hercules representative for copies, or write to Turf & Horticultural Products, Synthetics Department, Hercules Incorporated, Wilmington, Delaware 19899.

For More Details Circle (110) on Reply Card