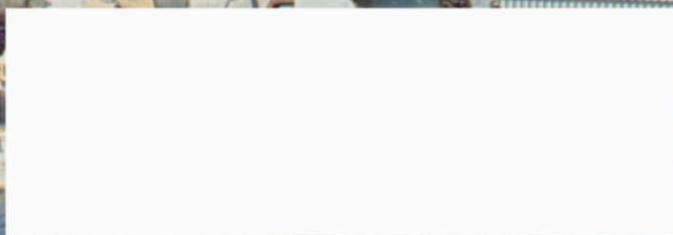


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DECEMBER 1973



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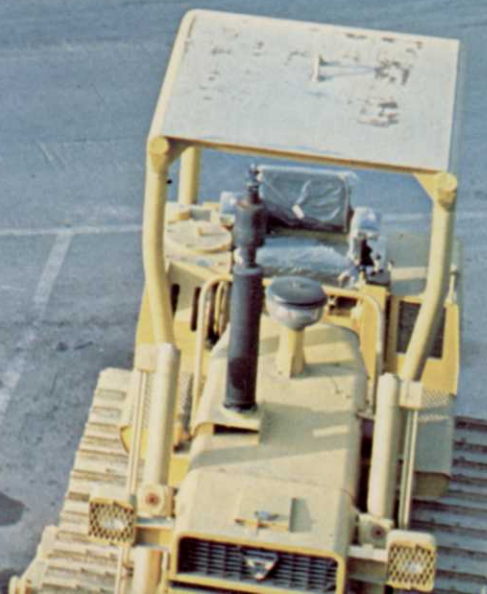
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WEEDS TREES and TURF®

Volume 12, No. 12 December, 1973

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"Serving The Green Industry"

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The Cover

A.M. Panic Hour is the time when equipment managers learn the true meaning of preventive maintenance. Our cover shows the North Hollywood maintenance facility of the Bureau of Transportation, City of Los Angeles. The article on Fleet Management begins on page 12 in this issue.

THE COVER — Managers Guide

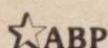
Equipment and supplies for the Green Industry are highly complex. The 1974 Managers Guide To Equipment And Supplies captures some of the action in this montage. Included are: a section of Certain-Teed pipe, Edwards sprayer mounted on a Jeep; Ford skid-steer loader with sod; Toro Whirlwind rotary mower; International Harvester flail and bell-mounted sickle cutters; and Stihl chain saw.

WEEDS TREES and TURF is published monthly by The Harvest Publishing Company, subsidiary of Harcourt Brace Jovanovich, Inc. Executive, editorial headquarters: 9800 Detroit Ave., Cleveland, Ohio 44102.

Single Copy Price: \$1.00 for current and all back issues. Foreign \$1.50.

Subscription Rates: WEEDS TREES AND TURF is mailed free, within the U.S. and possessions and Canada, to qualified persons engaged in the vegetation care industry and related fields in controlled circulation categories. Non-qualified subscriptions in the U.S. and Canada are \$10.00 per year; other countries, \$12.00 per year. Controlled circulation postage paid at Fostoria, Ohio 44830.

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FIRST PLACE WINNER

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OFFICIAL PENNCROSS STORY CONTEST ENTRY FORM

On May 22, 1972, we started construction of a new 8000 sq. ft. sod nursery here at Rancho Bernardo. It was completed on June 20, and given the final touches before seeding. Penn-cross Bent was chosen for several reasons, one being the success our new Executive course was having with it. The nursery was seeded on June 30, 1972, at a heavy $2\frac{1}{2}$ pounds per 1000 square feet.

We watched until there was a very even green cast on the complete nursery and then, on July 11, we used a starter fertilizer. When the Penncross reached approximately $\frac{3}{4}$ of an inch we made our first cut with a $\frac{1}{2}$ " bench setting and continued on a daily mowing schedule until putting green height was reached.

Unbeknownst to me, some Japanese people had been watching the operation very closely. It came on with amazing speed, and sixty days from seeding we had a very good putting surface and about 4" depth on our root system. Before the sod was 90 days old we had cut and moved most of the 8000 sq. ft. to some problem greens.

This brought to my office the Japanese who had been watching the sod nursery since its conception. They asked what I had done in construction and what grass was used. They also asked if I thought I could repeat the nursery operation in Osaka, Japan? Sounds good! The only catches being: they wanted the recommendations by phone and mail and the greens had to be ready for play in early November for an American Pro Tournament. It was now August 10, 1972. I contacted my friend who had supplied the fertilizers and seed, and work began.

Fertilizer samples were sent to Japan to be inspected by the Japanese government. Fertilizer spreaders were shipped air freight, the government approved shipment of fertilizers and the move was on. The greens had already been roughed in and were ready for mix, final grade, and seeding.

After numerous meetings, letters, and phone calls to Osaka, the greens were seeded at 2 pounds per 1000 sq. ft. on September 1. The Penncross came up as predicted, was fertilized as planned, cut as soon as it was ready and progress was almost identical to our nursery here at Rancho Bernardo. They were ready by tournament time in mid-November 1972, and I'm told "better than any of the other greens at Ikeda Country Club." My new friends are very happy that they went with Penncross and claim to have the "Showplace" of Osaka, Japan.

This was all done gratis, but it was a very fulfilling experiment. Mr. Araki, President of Ikeda Country Club, flew to San Diego to give his personal thanks to my friend and myself. They favored us with some small gifts, took us out for a lovely dinner and we talked of our success with their new greens and their plans for more.

They are a very grateful people and I'm satisfied that my choice of Penncross is not only working for me in Rancho Bernardo, California, but also for my new friends in Osaka, Japan.

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CHAMPIONSHIP TURF GUIDE

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Editorial

Meeting the issues confronting the Green Industry continues as the greatest challenge facing every reader of this magazine. Issues such as FEPCA, OSHA, pollutions of noise, air, water, and energy drains must become centerstage in the thinking of Green Industry leaders. Indeed, solutions to these issues can only be found through concentrated cooperation by every individual.

Will we sit idly by while uninformed politicians decide who in the industry may spray environmental protection chemicals and which ones and when? Will we have to justify to a judge the need to operate a chain saw or a chipper in a residential area during a specific hour of the day? Have we as an industry blindly accepted the Occupational Safety and Health Act as being too big, too all encompassing and too dominant as a law to lobby, legislate and change into a workable, acceptable body of rules?

Not caring, not being concerned enough in plotting the course of the Green Industry in the future denotes only our interest in the material things of the present.

On the positive side, certain accomplishments by Green Industry organizations must be recognized as significant achievements. In this issue,

The Line Of Scrimmage

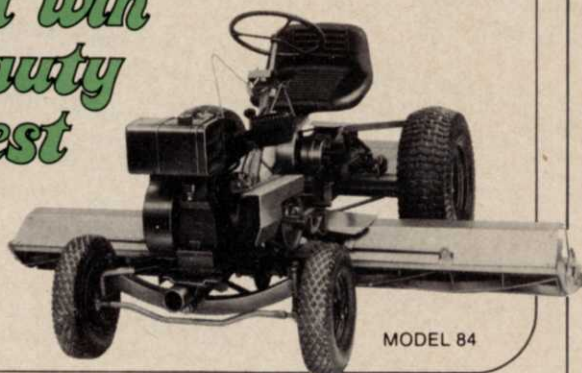
for example, leading organizations and associations have listed three major objectives met by their members this year. They have also published what they consider as goals to achieve in 1974.

Likewise, in November, leaders representing major Green Industry organizations met in Cleveland to discuss formation of a Green Industry Council. This group would act as the united voice for the industry in matters concerning the Federal Environmental Pesticide Control Act and other Federal legislation which has industry-wide implications.

We believe that efforts by Green Industry organizations have been worthy. Their action denotes action. Member involvement has created a magnetic attraction to involve the non-doer. But in a larger sense, the prime goal of every organization in this dynamic industry must be towards increased participation in meeting the great issues confronting the industry as a whole.

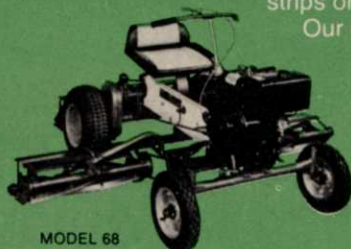
We are a cohesive industry, built out of the needs and wants of individuals. The issues of 1974 demand more attention by every individual. Complacency must be replaced by effective action. Our strength in the future will derive from a closer identification of what we may lose should our tools be taken away.

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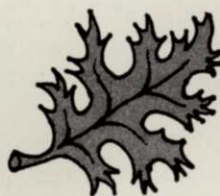
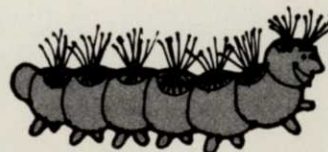
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Government News / Business

If you've been caught by the breath of OSHA and can't cough up money to pay the fine, take heart. An interagency agreement between OSHA and the Small Business Administration (SBA) has been set up. Purpose is to provide long-term loans to small businesses for compliance with OSHA.

Further word on Agrico Chemical Company. Sale by The Williams Companies, Tulsa, Okla. of Agrico to Lebanon Chemical Corporation, Lebanon, Pa. included only the Turf and Garden Products Division. The entire Agrico Company was not sold, as erroneously reported in the October issue of WTT. According to R. L. Balser of Agrico, the sale amounted to about a \$3 million deal, less than one percent of the total Agrico operation. Included in the purchase was the Turf and Garden Products plant at Danville, Ill. This brings to two the number of manufacturing plants operated by Lebanon Chemical and the result will be faster service to dealers. Added Note: Lebanon Chemical has now farmed out the operation to a newly created subsidiary, The Bishop Company. It too is based in Lebanon, Pa.

The noose of the Federal Environmental Pesticide Control Act (FEPCA) is starting to tighten. Provisions built into the time-release act have already begun to take affect. Now it is the pesticide producers. A producer who ships environmental protection chemicals in interstate commerce must register with EPA by December 24, 1973. This pre-Christmas present requires companies to submit annual reports on production, distribution and sales. For intrastate producers, the registration date is October 21, 1974.

Secretary of Agriculture Earl L. Butz may be given the legal machinery necessary to authorize use of DDT. A bill which would require EPA to clear DDT for use in cases where the Secretary declares that a temporary emergency exists has now passed the House Agricultural Committee. A number of additional approvals are needed yet, but it is conceivable that use of DDT on gypsy moth and tussock moth as well as other pest infestations could be in order in 1974.

Claims of insufficient fuel supply response in the natural gas, coal, nuclear power and petroleum industry as the cause of the energy crisis have been refuted by Robert L. Sansom, EPA assistant administrator for air and water programs. Nay, he says. The chief obstacles "appear to have been overreliance on foreign crude, poor oil industry planning, the restrictive quota system, and overly controlled natural gas prices." He said the American consumer is the true culprit in the energy crisis. Sansom spoke to the Arlington (Va.) Rotary Club in November. He said that EPA has already granted temporary variances to emission standards for power plants. However, he stressed that no general lifting of environmental regulations are in order. EPA will not be subjected to "energy blackmail" by suppliers who are not willing to come forward and explain why they cannot meet standards, he said.

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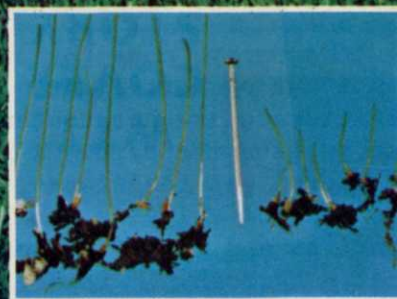


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The Fertilizer Outlook

Allocation, price controls, foreign demand, availability of components, tight supply, and capacity to produce have drastically changed the fertilizer market in the past 18 months. The forecast for 1974 is not overly encouraging. USDA economists predict a shortage of 1.7 million tons of nitrogen and phosphate fertilizer; other sources closer to the problem forecast the shortage closer to 4 million tons.

A number of factors are responsible for the current situation. 1. About 25 million of 40 million set-aside acres were turned back into crop production this past year. Even more is scheduled for the plow in 1974. 2. Fertilizer manufacturers experienced strong foreign demand. This came about by devaluation of the U. S. dollar and Phase IV price controls. Foreign purchasers realized a comparative advantage and scooped up ton after ton at relative "bargain barn" prices.

3. Capacity to produce phosphoric acid has fallen short of realized demands for the past year or two. New production facilities have not come on-stream as expected. Raw phosphate supplies appear to be adequate to meet anticipated needs; the problem is in manufacturing the end products of ammonium phosphate and concentrated superphosphate. 4. Ammonia production has a funeral outlook. Domestic production has been at near capacity for more than a year. To complicate the situation, curtailments of natural gas, a major component, has forced producers to limit production. This failure to provide the fertilizer industry with an ample supply of natural gas will result in profound effects on our nation's food supply, comments John J. Clarke of Collier Carbon and Chemical Corp.

The single most important factor is natural gas. Whether the Washington political machine will give fertilizer producers the needed allocation is still much in the air. Says George Osburn, sales manager, turf products, Hercules Inc., "Supply of all nitrogen products will revolve around the availability of natural gas and the availability of production capacity for ammonia as well as other nitrogens."

Currently, action is taking place on several fronts. A recent decision by the Cost of Living Council has exempted sale of fertilizer and nutrient materials in producing fertilizer from Phase IV controls. This should help. Additionally, small bulk plants, which previously had terminated fertilizer production capabilities, are being asked by Washington to start up again. Also, with the U. S. dollar stronger abroad, predictions of foot-dragging in foreign markets are to be expected.

The tendency in the past has been to bargain hunt. It's a whole new ballgame now. If it is not already too late, establish an association with a supplier; he may be your best friend in the months to come. Review what your fertilizer needs were for the past few years. Note when you ordered. Could one order made right now take care of the year's requirements? Plan your inventory, but don't stockpile in anticipation of a disaster.

A special word to commercial turfgrass managers. Plan fertilizer programs for the short-range objective. Add as your turf needs it. Split applications of nitrogen fertilizer where potential for loss is high. Irrigate carefully, to prevent excessive losses of nitrogen by leaching.

In summary, many factors have been responsible for the current situation. We are not out of fertilizer. We are short, perhaps critically short. Fertilizer manufacturers are not content with the state of affairs. Efforts have already been taken to ease the pain. A government task force is seeking to raise the priorities for natural gas feedstocks to ammonia producers. The Department of Transportation is working on shipping bottlenecks, particularly rail. Sane thinking by politicians, executives and managers plus identifying needs by planning ahead will see the Green Industry through.

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Editor's Note: Robert F. Smith is one of three equipment superintendents within the Bureau of Transportation, City of Los Angeles. He is responsible for five maintenance facilities which maintain over 2,900 pieces of equipment. Included in the fleet are cars, trucks, construction equipment, aerial buckets, boats, helicopters, tractors and other vehicles needed by Los Angeles. Many of the management concepts contained in this article may be used by firms within the Green Industry. We would hope that these concepts will provide insight into solving individual equipment problems.

ONE OF THE MOST important and difficult tasks we all have today, is the preparation of our annual budgets. This is particularly true as it relates to replacements of vehicles and equipment.

Everyone who owns an automobile or any other type vehicle today is a transportation specialist. With the little visual change in the appearance of our specialized equipment over the past few years, we as "transportation experts," tend to believe our equipment can run forever with just another set of spark plugs and tires.

Recognizing this as a problem, we must then become more "people-oriented." Our systems, charts and proposals must be aimed at those individuals who can see only the expenditure of funds to purchase the same thing we already have, not considering new designs or more efficient equipment.

The first important factor we must know is the **most economic replacement cycle**.

To demonstrate how you can program vehicle or equipment re-

placements, we must define and outline the situation in terms of basics. For example, 1. We need to determine what the cost of a new vehicle would be. 2. Maintenance cost of parts, labor, and overhead on a per hour basis. 3. Inflation is not a factor to be considered in determining the optimum vehicle retirement age. 4. Vehicle downtime due to equipment malfunction increases linearly with vehicle age. 5. Maintenance requirements increase linearly with vehicle age. 6. All units are working a single shift. We must take into consideration the percentage of time the vehicle is available by age of vehicle. It is a fact that as the vehicle reaches an age of five to seven years of service, a decrease in availability could occur due to the need for a major refurbishing of the unit.

Take into consideration what occurs by defining the vehicle downtime as a function of vehicle age. It is good to recognize that your maintenance staff may be able to perform a large portion of the repairs to units during off hours. But once the downtime exceeds the available man-hours you are in trouble.

Costs records portray the maintenance hours required according to the vehicle age. As each unit in your fleet increases in age, the maintenance requirements also increase proportionally. Your staffing should be compatible with your fleet size and age of equipment.

The most economical replacement cycle must be based on three main factors:

1. Replacement cost.
2. Maintenance cost.
3. Out of service cost.

The out of service cost is that portion of time for which stand-by vehicles must be provided to meet the requested availability. Consider-

ing the vehicle out of service days per year can give you a numeric ratio of stand-by units needed to provide for the out-of-service requirements depending upon the vehicle age.

Once the above data is available, it can be combined. Based on information provided, we can utilize a mathematical formula to determine vehicle replacement.

One system of replacement used by some large fleet owners today is the Formula Basis Replacement System. It is an attempt to integrate several major vehicle costs and usage data into a mathematical formula which will approximately reproduce the cost of the vehicle operation over a constant period.

Thus, two formulas, one for the vehicle under consideration for replacement and another for a comparable replacement vehicle, can lead to a meaningful comparison of actual costs involved. As an example, if the cost per mile (or per hour) to continue operating the old vehicle is greater than the cost per mile (or per hour) to buy and operate a new vehicle, then you should sell the old vehicle. This can be expressed in a mathematical equation as:

$$\text{If } A + B - C \text{ is greater than } A + E - D - W$$

X

Y

then Sell

The designation of the various letters stands for:

- A — Original cost of vehicle
- B — Cost of repairs needed to continue service
- C — Salvage value of the vehicle after completion of service life.
- D — Salvage value of new vehicle after it has reached the end of its expected service life
- E — New vehicle cost
- W — Current sale value of old vehicle

MANAGEMENT

By ROBERT F. SMITH

X — Total life of old vehicle after repairs needed to continue service (life to date plus extension of life due to repairs — this may at times extend life beyond average replacement expectations).

Y — Total life of old and new vehicle (old to date plus estimated life of new vehicle)

Note: Life can be expressed in miles, hours, months or years for X and Y, but must be the same factor in both formulas.

The second important factor to know is **balancing budget replacement**. With a large fleet one of the most difficult problems faced by managers is the continued fluctuation to our budget requests resulting from differences in vehicle acquisition schedules. One year we may replace thirty units at one time and the next two years, none.

Some smaller fleets have experience and prefer a straight line depreciation so they can plan their replacements ahead.

The last factor to determine is the **most acceptable replacement costs**. Most of us have moaned for years about the fact that we had to install a new engine, a new transmission, or some other costly component just prior to ordering a new unit. Or, conversely, we have deadlined a unit rather than replace one of these major components.

I want to suggest that we have not given full consideration to our total vehicle management responsibilities by following these practices. How many man-hours could you have saved and how many additional hours of usable service could you have obtained had you replaced an engine, transmission or some other single component? Why not capture this cost savings and further reduce

your budget by replacing only those items which are generally in need of replacement. For example, records indicate almost no rear-end failures. Most of the body work performed is related to the tailgate assembly. And as engine and transmission replacements are almost a routine item, why worry about them? I would suggest review of your repair records and then consider retention of those items which are routine in nature of those which have an indefinite life.

When is it best to lease rather than

buy and what type lease arrangement is the most satisfactory? What is the best way to get service for small fleets (5 or 6 vehicles) if the company does not have a full time maintenance facility? These and other questions confront people in our business regularly. It would seem that one of the ways to accomplish this end would be to lease or rent. Let's look at this in some detail.

There are mainly two types of
(continued on page 84)



Equipment management means keeping abreast of new changes in Federal and state regulations. Superintendent Smith points out the new height of this chipper from the ground. OSHA and other laws have increased the safety around machines such as this.

THE METRIC SYSTEM

Its Impact On The Small Engine Industry

By E. L. FISHER
Director of Service
Kohler Company

If you are 5 foot 10 in your stocking feet this morning, you won't be 5 foot 10 very long.

In five years, ten years, or slightly more, you will be 1 meter 78. When someone asks you how tall you are, you will answer "1 meter 78" — just as easily as you say "5 foot 10" now. On your driver's license, it will be the same — 1 meter, 78 centimeters. If you are elected President of the United States or picked up for vagrancy, the official records will show your height as 1 meter 78.

What I am really saying is the metric system is on the way.

Back in 1795 after the Revolutionary War, the United States considered breaking away from the English system of measurements. We were breaking away from England in many other respects. The French, our allies, were promoting a radical new system based on multiples of ten. We had already adopted a decimal coinage system, so there was strong support for the new decimal measurements referred to as the metric system.

Congress failed to act, however; and so we have drifted along using the comparatively complicated English system. How much simpler it would have been if the right decision had been made then. Metric system legislation was introduced in Congress in 1866, 1896, 1901, and many times since. Bills are now being introduced every year, and we can expect passage soon.

Actually, there is no single metric system. France originated the system in the late 1700's, but it has been modified in Germany, in Italy, in Japan, and in other countries to the point that each country has its own metric system — similar to the others but different enough to create problems.

We in this country are working with the metric countries to establish a uniform metric system called the Systeme International, or SI for

short. This uniform system is basically metric, it is the one we expect to adopt, and we shall refer to it here simply as the metric system.

Probably not one of us can talk easily in terms of meters, liters, and grams. We have heard the terms. But the metric system is still a bit strange and foreign to us. In fact, it's rather disconcerting to realize that in a few years our Miss America with her "perfect 36" will be gone forever. She will be Miss America with a "perfect 91." But before your imagination starts taking off on that one, let me hasten to add that by that time we will be so metric-oriented that we will think of a "perfect 91" as wonderful, and she will not have changed one centimeter!

Within the small engine industry, we want to know how our transition to the metric system will affect us as manufacturers and distributors and how it will affect our dealers. Will the conversion be costly? Will it be difficult? Will it take much effort on our part to educate our service distributors and dealers?

Let's review the metric system briefly to see how the metric system will affect each of us in our daily lives.

Figure 1 shows some of the basic units of measurement, with comparable metric and English system designations.

Figure 1. Basic Units

UNIT	ENGLISH	METRIC
Length	Inch	Meter
Weight	Ounce	Gram
Temperature	F.	Celsius
Liquid	Quart	Liter
Pressure	PSI	Pascal

Figure 2 shows some of the conversion factors between English and metric linear measurements. This illustrates the difficult part of changing to the metric system. The conversion factors are variable because of the different multiples between inches and feet, feet and yards, etc., in our English system. The diffi-

culty, therefore, is generated by the characteristics of our English system rather than the metric multiples.

Figure 2. Linear Relationships

ENGLISH	METRIC	CONV. FACTOR*
Inch	Millimeter	25.4
Foot	Centimeter	30.5
Yard	Meter	0.914
Mile	Kilometer	1.61

* English To Metric

Figure 3 shows how simple the metric system really is, with various multiples of ten being used whether measurement is lengths, weights, or volume. Some of the multiples are not in common usage but prefixes have been established and are, therefore, part of the system. In the case of the basic unit of length, which is the meter, the other multiples in common usage are the millimeter, centimeter, and kilometer. In the case of weights, with the gram as the basic unit, the milligram and kilogram are the other multiples in common usage.

Figure 3. Metric Multiples

Meter Basic Unit = 1		
PREFIX	SYMBOL	UNITS (meters)
Kilo	K	1,000
Hecto	H	100
Deca	DA	10
Meter	(basic)	1
Deci	D	.1
Centi	C	.01
Milli	M	.001

How does the metric system affect our daily lives?

Assume that it's 20 years from now and a new day is dawning. The alarm rings, you bounce out of bed, and the first thing you do is check the thermometer. That's when you enter the metric world. The thermometer reads 10 degrees. That's 10 degrees Celsius. On the old Fahrenheit thermometers it would have been an invigorating 50 degrees.

Perhaps you are familiar with the Centigrade scale from your school

(continued on page 30)

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**ART EDWARDS
PUBLISHER**

Pennfine...

Other
fine-leaved
ryegrass

These two fine-leaved perennial ryegrasses were cut with the same mower. The one on the right shows the fibrous "paint brush" top which is characteristic of ryegrasses. Pennfine, on the left, took a smooth, even cut because it was bred for softer, easier to cut fibers.

Pennfine: the clean-cut perennial ryegrass.

All the new fine-leaved perennial ryegrasses are beautiful. Until the mower comes along. That's the moment of truth for ryegrass. And Pennfine is the fine-leaved perennial ryegrass bred specifically for mowability. You can see the clean-cut look of Pennfine in the photo above. You'll see it in your turf, too.

Pennfine vs. other fine-leaved ryegrasses

Developed and released by Pennsylvania State University, Pennfine is the best of the fine-leaved perennial ryegrasses. That's

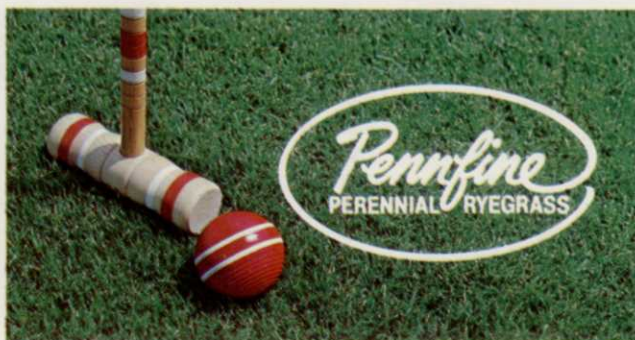
the finding of the trials at University Park, Pennsylvania. Among nine cultivars, Pennfine ranked first in texture, first in density, first in decumbency (low growth), first in tolerance to snowmold and leaf spot. And, of course, first in mowability.

Pennfine mows 'em down

The remarkable mowability of Pennfine — the result of breeding specifically for soft fibers — is demonstrated in the above photograph. It was also proven by the University Park trials. Over a five-year period, Pennfine

averaged 8.3 (of a possible 10) in mowability. The next best score was 7.3, and the other cultivars rated considerably lower.

With the finest blade of all the fine-leaved ryegrasses tested, Pennfine is beautiful to begin with. And, because of superior mowability, it stays beautiful. It's also highly compatible with Kentucky Bluegrass, both in terms of appearance and management requirements. If you'd like more information on this clean-cut perennial ryegrass, just send in the coupon.



TO: **Pennfine Perennial Ryegrass**
P.O. Box 923, Minneapolis, Minnesota 55440

Please send me technical information on Pennfine Perennial Ryegrass. ☐ Names of Distributors. ☐

Name _____

Club or Company _____

Address _____

City _____ State _____ Zip _____

Pit Stop For Professionals

Texas Industrial Weed Control Conference Report

TRAINING in equipment use and chemical application procedures continues to be the number one need among commercial applicators. Ask any applicator or spray man, from the most sophisticated to the novice, to rank the items most desired by him in the performance of his job and the overwhelming majority will list training at the top.

Why? No one answer will suffice. The best theory is a combination of factors. Changing laws relating to application of environmental protection chemicals, new applicators coming on the scene, new chemicals on the market, growing awareness of a growing market, more up-to-date application equipment — these and others contribute as reasons applicators give. But in a larger sense, this thirst for training is indicative of an industry poised on the springboard of a newly emerged, highly technical science that demands considerably more qualification and knowledge of its people than what we've had up to now.

Commercial application of environmental protection chemicals is a prescription science where knowledge and experience command attention and where training is a prerequisite to success. Few custom applicators today would attempt to prescribe materials for vegetation control without knowing first the area to be treated and second the effect or end result of each chemical used.

Problem identification and analysis and specific treatment have been emphasized at weed conferences, applicator meetings, by university extension personnel and by chemical and equipment manufacturers. The thrust of all has been more toward specificity with a good deal of actual case study and field demonstrations.

The 8th annual Industrial Weed

Control Conference held at Texas A&M University in mid-October was no exception. In two days, delegates were exposed to a barrage of topics, papers, demonstrations and panels the likes of which would educate and train a neophyte to a professional, if he could assimilate all the information.

Sponsored by the Texas Agricultural Experiment Station and the Texas Transportation Institute, this conference represents probably the only one of its kind devoted entirely to industrial weed control. This year's meeting covered the Federal Environmental Pesticide Control Act (FEPCA), aquatic weed control in Florida, OSHA, problem analysis, vegetation control on rights-of-ways, parks and lawns, brush, trees and vines, and total vegetation control.

Conference chairman Dr. Wayne G. McCully, department of range science at Texas A&M, opened the session saying that conferences of this type give us a chance to make headway in weed and brush control.

One of the early speakers was James Pumola of Region VI, Environmental Protection Agency. He reviewed the history of pesticide legislation and outlined the need for the present FEPCA. "This is the first law in which applicators must be licensed in order to apply chemicals," he said.

Pumola carefully reviewed several sections of FEPCA as they apply to applicators. "Pesticides must be classified according to restricted or general use," he said. Scheduling on licensing of applicators for the state of Texas will be established after the regulations are published on December 21. He concluded by saying that it is the intention of EPA to turn over the administration of FEPCA to the states.

Looking at a model program for

Texas, Harry Whitworth of the Texas Agricultural Chemical Association told delegates that the primary program is the certification of commercial and private applicators. He said that the tests to be developed for certification "must be of sufficiency to demonstrate the ability of the person to properly apply the product for which he will be licensed."

Whitworth mentioned that currently the authority of FEPCA is at the Federal level. "Enforcement is placed at the state level," he said. "It is incumbent that the state pass an act in the next legislature." He said that help is needed in implementing this bill because environmentalists will bring much pressure on legislators.

Dr. Alva P. Burkhalter, coordinator, aquatic plant research and control, Florida Department of Natural Resources, enlightened those present with Florida's program for aquatic vegetation control. "The department has these functions:" Burkhalter said, "1. control of offenders, 2. training programs for certification of applicators, 3. regulation of plant movement, 4. research — in house and with Federal and state agencies. . . ."

He said that the state's major aquatic problems have been weed species which were introduced into Florida's waters. Water hyacinth, hydrilla, Eurasian watermilfoil, Brazilian elodea and alligatorweed were brought into the state.

Burkhalter pointed out that his state had taken decisive measures to control these aquatic weeds. Use of herbicides, mechanical weed harvesters, biological controls (insects), and herbaceous fish have been used to keep weed growth under control. He explained that a combination of biological and chemical methods appears to be better than either alone. This means that when several factors attack weed growth, the resulting damage is greater than one factor by itself. Thus, where chemicals are used to treat water hyacinth, the addition of the flea beetle enhances the weed killing action.

The opening session dealing with regulatory and legislative action pertaining to the user closed with a discussion of the Occupational Safety and Health Act by Jim Powell, assistant director, OSHA, San Antonio. OSHA deals strictly with an employee/employer relationship. It affects any employer who employs and works in interstate commerce, he said.

Powell said that in simple terms the act requires the employer to

provide a safe environment for the employee. There is no penalty for the employee, he said, only the employer. It allows the employee to make a complaint directly to OSHA without going to the employer first. Noticeably missing from the discussion was specific points as to what OSHA looks for in the no notice inspections. Powell tended to hang his speech entirely on explaining what the law was rather than telling applicators what they should do. More than one applicator commented that many of the important points that might affect his business were glossed over. It might be safe to conclude that those applicators present were given no new facts about how OSHA affects the industrial herbicide applicator.

New products were next on the program. Delegates showed much interest in Spike, an experimental herbicide from Elanco Products Company. When registration is approved by EPA, this product will be available in four and fifty pound packages. It is non-corrosive and has an LD₅₀ rating of about 500 mg/kg. The product can be applied pre- or postemergence and it is active against herbaceous and woody plant species. Delegates were able to see demonstration plots of this material at the Texas A&M research annex.

Vic Jouffrey, FMC Corporation, told delegates about the John Bean highway boom. It's a boom powered by a hydraulic cylinder which can be adjusted from inside the truck. Jouffrey said that it is made with two movable sections and can be used in conjunction with any sprayer.

Another interesting approach to weed control was the Weed Zapper, a kind of giant micro-wave unit that super cooks weeds from the inside out. Larry Benson of Oceanography International Corporation, College Station, Texas described the process as one method of weed control that leaves no residual. "When the Zapper passes over, weed tissue is destroyed," he said. There has also been research conducted with the Zapper in nematode, fungus and insect control.

Field demonstration and displays of equipment and chemicals were an integral part of the conference. One product which caught the attention of delegates was Lo Drift, a spray additive which reduces the drift potential. Jack Thompson of Amchem said that it could be used in nearly every application of herbicides to reduce drift and keep the herbicide

(continued on page 20)



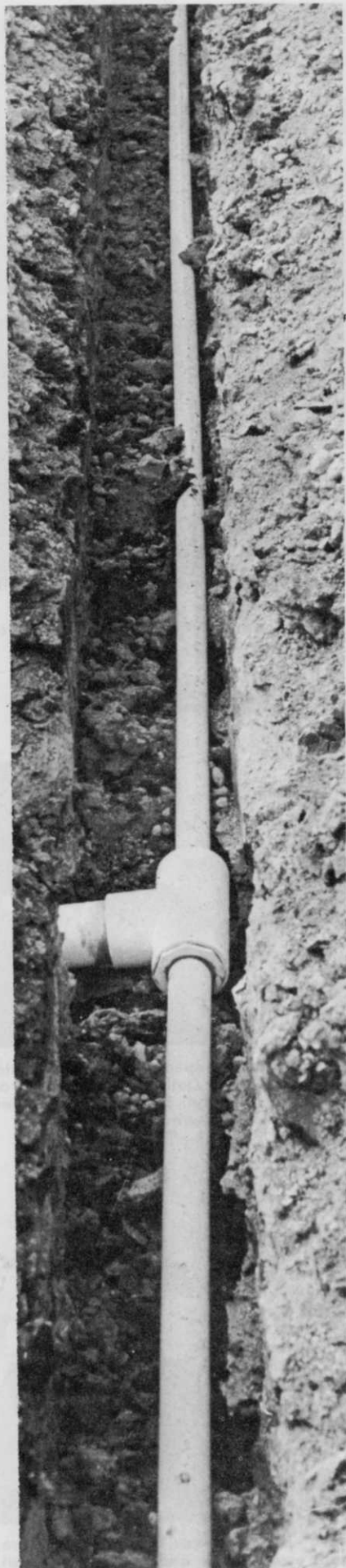
Field demonstrations of sprayers such as this John Bean unit caught the eye of delegates. New equipment is an essential part of any training program. Applicators respond positively to even slight equipment modifications.



During the split session portion of the program, three speakers discussed total vegetation control. Bevan Cates, Van-Waters and Rogers, Dallas, Tex. reported on abatement control, Dr. Allen F. Wiese discussed sterilization, and Robert P. Carter, dept. of soil and crop sciences, Texas A&M spoke on growth regulators.



Lo Drift, a spray additive used to reduce drift potential was demonstrated here. Amchem's Jack Thompson showed applicators how to mix and use the material.



About 65 miles of trenching were accomplished. The Dallas/Fort Worth Airport lays claim to the world's largest non-ag irrigation system.

Irrigation Trenching Texas Style

TEXANS, everyone knows, like to do things big!

So it really wasn't much of a surprise when Dallas and Fort Worth announced plans to construct the world's biggest airport.

Located between the two cities, the Dallas/Fort Worth Airport opened in the fall. Covering 17,500 acres, it is larger than New York's Manhattan Island. In 1975, there should be 8 million enplanements. The figure will rise to 24 million by 1985. Including about 18,500 employees, along with passengers, service personnel and visitors, the airport will have a daily population of 100,000 by 1975.

Dallas/Fort Worth Airport is hailed as the best-planned airport facility ever built. And the planning did not neglect beauty. The world's largest airport will have the world's largest non-agricultural irrigation system.

More than \$2 million is being spent on the system. Eagle-Formost of Fort Worth is one of the two contractors doing the irrigation job. Eagle-Formost is doing the irrigation work for the airport's spine road system.

Project Manager Dale Ousley says his company's contract comprises half of the total irrigation network. It includes about 65 miles of PVC pipe, ranging from ½- to 4-inches, and 6 million feet of control wire. The pipe is buried from 12 to 18 inches beneath the ground.

All of the work is being trenched, Ousley says.

"We are not doing any vibratory plowing because of the topography.

There are no extremely long runs and we need to have the pipe and control wiring in an open trench for inspection purposes."

Ousley's crews are using four different size trenchers, all made by Ditch Witch.

"We have two Ditch Witch C-Model trenchers. They are compact, handlebar units and we use them mostly on traffic islands and other tight areas.

"For the other trenching we are using an 18-horsepower J20, two 30-horsepower V30 and a 65-horsepower R65.

"When we purchased our trenchers, we based our decision on speed, durability, dealer service and potential resale value."

Ousley said another important factor in his selection of equipment was the capability of working on slopes. Ditch Witch, built on a rigid frame, was able to work on extremely steep slopes around the many interchanges. The R65 worked on 3 to 1 slopes.

Ousley says the irrigation system is the most sophisticated, workable system in the world. Eventually, its master controllers will be tied in to a computer system.

To whisk people around the sprawling complex, the airport has its own rapid transit system—Airtrans. Electric, 40-passenger rubber-tire cars move through concrete guideways. The average ride to any point is only 8 to 10 minutes.

And as passengers look out of Airtrans, the grass will be a little greener because of a \$2 million irrigation system. □

"If you make your living taking care of trees, Jobe's Tree Food Spikes save you time and help your profit."

Ray Kalwara
Ray's Tree Service
Virginia Beach, Va.

"Increment borings have proven to me that you get significant growth with Jobe's Tree Food Spikes. And they're a lot faster than using a drill. My men like them, my customers like them. I like the time they save and the extra money they make for me."

Jobe's® Tree Food Spikes are quicker, easier and more profitable than drilling. Here's proof:

Drilling Method¹

Bulk 16-8-8 fertilizer—\$70/ton
(Example price throughout U.S.)

2 lbs./in. of trunk diameter

= 10 lbs. x 3.5¢/lb. \$.35

½ hr. labor @ \$4/hr. 2.00

Labor and materials \$2.35

$\$2.35 \div 5'' \text{ tree} = 47¢/\text{in. of diameter}$

No allowance made for depreciation, amortization, breakage of auger, mistakes, etc.

¹ Using electric auger

Jobe's Tree Food Spikes Method²

5 spikes 16-8-8 fertilizer—22¢/spike

1 spike/in. of trunk diameter \$1.10

5 min. labor @ \$4/hr. .33

Labor and materials \$1.43

$\$1.43 \div 5'' \text{ tree} = 29¢/\text{in. of diameter, based on 20 case order.}$

² Based on results of university field tests and recommendations.

Give Jobe's Tree Food Spikes a try. Contact your local supplier or write direct.

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on target.

Other displays from manufacturers include sprayers from John Bean and Red Ewald. Chemical suppliers represented were Du Pont, the Agricultural Chemical Division of FMC Corporation and Amchem Products, Inc.

The second day of the conference was designed as a workshop for delegates. Keynote speaker for the session was Turney Hernandez, industrial herbicides product manager, E. I. Du Pont de Nemours & Co., Inc.

Hernandez spoke on "Vegetation Problem Analysis." "As custom applicators you need to decide what your customers needs are," he said. "Does he need bareground, short term control (abatement), selective weeding, chemical trimming, or brush control? Perhaps it is a combination of these types of vegetation control."

He pointed out that there are many different types of herbicides and each is designed to give a different response. The key is to know how each product performs so that selection will give the desired results, Hernandez said.

Hernandez then pointed out the

needs of various markets. "For railroads, there's a need to control vegetation in yards, around tressels, in between tracks, and along rights-of-ways," he said. "It has been determined that the efficiency in making track inspections has been increased between 50 and 75 percent when tracks are clear of vegetation." In the case of track components, poor weed control contributes to a general downgrading of the railroad in short order.

The product manager said that plant sites of utilities and rights-of-ways were excellent markets for herbicide usage. Other markets include highways, drainage and irrigation ditches, aquatic weeds, chemical trimming around valuable plantings and ranges.

Using slides to illustrate his points, Hernandez also touched on spray volumes, timing of application and equipment needed in getting the job done. "Keeping the material on the target is an absolute necessity," he said.

He listed these factors as those which affect performance of a herbicide: 1. types of plants; 2. soil type; 3. rainfall; 4. the applicator; 5. temperature; and 6. surfactant. He said that some of the reasons for poor

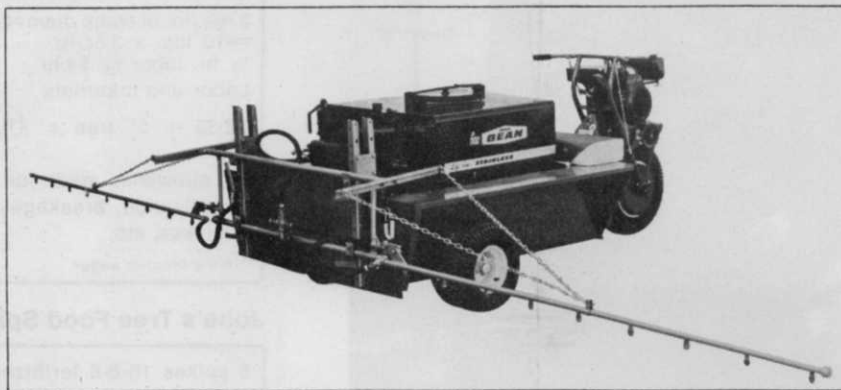
control of weeds are rates being too low, poor agitation, poor selection of nozzles, degraded atmospheric conditions, too little or too much rain, and improper calibration of equipment.

How big is the custom application market? Hernandez said that 80 percent of the non crop weed control chemicals are applied by custom applicators. He concluded by saying that the four principles to successful custom weed control are: 1. measure right; 2. price right; 3. apply right; and 4. follow up right.

Delegates then formed three groups to hear panels discuss selective vegetation control, aquatic control and total vegetation control.

Aquatic Vegetation Control: This panel, chaired by John Gallagher, Amchem Products, Inc., reviewed worked being accomplished in Florida and Texas in the control of aquatic weeds. L. V. Guerra, Texas Parks & Wildlife Department, discussed the control of weeds at Cato Lake. Bill Hogan, Ortho-Chevron Chemical Co., said that there are four approaches to weed control in flowing water. They are: mechanical, biological, chemical and natural. He

(continued on page 22)



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With its 100-gallon stainless steel tank, lightweight 15-foot boom (with 5-foot foldaway wings) and 10-gallon a minute spray rate, BEAN'S new Turfkeeper 1010GE is the low-cost answer to golf course spraying. Easy to mount and remove from utility vehicles, Turfkeeper is self-contained with gasoline engine drive, mechanical agitation and Royale pump. ☐ Using a PTO vehicle? Turfkeeper MF-100-G is for you. Specially designed to maintain desired application rate despite changing PTO RPM'S, this model is extremely lightweight for maximum capacity for any ground condition. ☐ Also available is engine drive Model MF-100-GE for utility vehicles not having PTO drives. Both models have BEAN BONDED tanks with fibre-

glass centrifugal pumps for pressures up to 60 psi. All Turfkeeper models have outlets for optional hose and gun spraying chores on greens, and shrubs. Turfkeepers keep your costs down, your spray program tops. ☐ Get the full story on all the BEAN spray equipment for golf course use.

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PIT STOP (from page 20)

said that chemical control is the main line of defense today.

Hogan said that where water hyacinths are present, applicators usually use 2, 4-D. "But you can use Diquat around areas of valuable plantings," he said. "Diquat plus copper complex or ion at the rate of two gallons per surface acre (placed in the pater) will also control hydrilla."

Andy Price, Asgrow, Plant City, Fla. said that stream banks can be kept free of weeds by 1. determining the area to be treated, identifying the weed species and solving the problem with the available equipment and chemicals. He pointed out that one reason for the problem in the beginning is a lack of care.

Selective Vegetation Control: Rights-of-ways, parks and lawns, and brush trees and vines were topics discussed in this panel. O. M. Pourciau, Louisiana Department of Highways, outlined where weed control is needed and how to achieve results on rights-of-ways. Dean Bottlinger, Chemical and Turf Specialties, Inc., Dallas, reported on his work in controlling vegetation in parks and lawns. Michael W. King, Louisiana Power & Light discussed

vegetation control of brush and trees.

Total Vegetation Control: Dr. Allen F. Wiese, Bushland, Texas presided over this panel and also spoke on bareground weed control. He said that there are two types of soil sterilants, the fumigants with no soil residual and the soil active herbicides which provide long soil residual. The latter group generally upset the metabolism of the plant, leach to about six feet, and are mostly absorbed by roots. Wiese pointed out that one of the problems associated with soil active herbicides is the control of desirable vegetation and herbicide "shift."

Robert P. Carter, department of soil and crop sciences, Texas A&M showed delegates how growth regulators can be used. He discussed how to use Maintain CF 125 a product of U. S. Borax and Sutar, a new experimental growth regulator. For regulation of growth of turfgrass on lawns, he said it was important to get uniform coverage. He suggested that the applicator double the amount of water needed and cross spray (two directions) to achieve maximum coverage.

Delegates to this year's meeting were asked to state their desires as to meeting location, program and the


possibility of establishing an Industrial Vegetation Management Association. It was decided that next year's meeting will again be held on the Texas A&M campus. Delegates felt that the program format should include additional training, Federal and state laws, roadside maintenance, and a greater amount of demonstrations of equipment and chemicals. There was keen interest in starting an association which would focus on the needs of industrial weed control applicators in Texas. □

Training Schools For Mauget Products Announced


About 20 meetings to teach arborists, golf and park superintendents, and others the uses and techniques of Mauget Tree Injection products will be held in 1974, according to an announcement by Del Kennedy, vice president, J. J. Mauget Co., Burbank, Calif.

The meetings will be scheduled in metropolitan centers with easy access to airports and interstate highways. Last year about 2000 people attended the Mauget schools, representing every state.

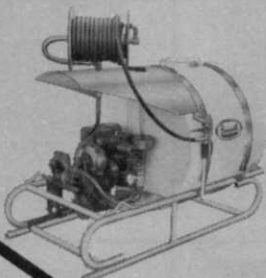
100/150/200 gal. 1950 Series



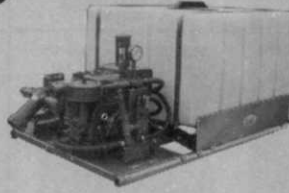
12½ gal. Handgun Sprayer



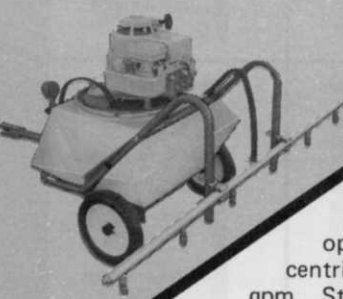
12½ gal. 1760 Series



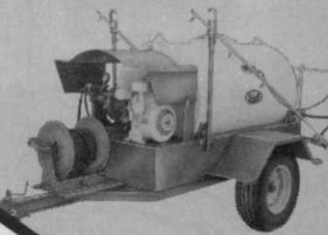
50/100 gal. 2000 Series




12½ gal. Boom Sprayer



230/300/400 gal. 960 Series





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Cutter**

BOMBARDIER LIMITED
Industrial Division, Valcourt, P.Q. Canada



Green Industry Council Forms In Cleveland

Fourteen men, all spokesmen for various organizations within the Green Industry, met in Cleveland, Ohio in mid-November to form the nucleus of a newly organized Green Industry Council.

Purpose of the meeting was to discuss ways for better coordination of and communication between all Green Industry organizations in dealing with aspects of the current environmental situation. Particularly important to the discussion was use of environmental protection chemicals by commercial applicators as it relates to the Federal Environmental Pesticide Control Act (FEPCA).

Those attending included: John J. Spodnik, Golf Course Superintendents Association of America; F. Farrell Higbee, National Agricultural Aviation Association; Philip J. Spear, National Pest Control Association; Hyland R. Johns, International Shade Tree Conference; Leo D. Creed, Public Utility Arborists Association; F. Raymond Brush, American Association of Nurserymen; William P. Lanphear, National

Arborist Association; Edwin E. Irish, National Arborist Association; Albert W. Ray, Michigan Pesticide Applicators Association, Lewis F. Sefton, International Pesticide Applicators Association; Charles Beckwith, Ag. Organic Sales; James A. Sample, WEEDS TREES AND TURF; Arthur V. Edwards, WEEDS TREES AND TURF. Moderator for the meeting was William L. Owen, International Pesticide Applicators Association.

Each man reviewed for the group the activities in which his organization is engaged. In addition, Hyland Johns, who has been active in compiling and assembling information about FEPCA, reported on the current status of pending legislation.

The group summarily agreed that there is a need for more effective lobbying at state and Federal levels. The voice of the Green Industry is generally not being taken into account in matters concerning pesticide use, noise control, air and water programs and other environmental concerns. Also mentioned was the Occupational Safety and Health Act (OSHA).

Additionally, it was brought out that communications between members needs to be improved within organizations as well as externally. Members of some organizations have had few educational sessions of Federal laws and little or no knowledge of state laws and their impact on the member. Federal legislation adopted and enforced by states could have far-reaching effects on members and their businesses.

Another fact presented was that no one organization was large enough to act as spokesman for the entire Green Industry at this time. Yet, it was pointed out that the tie that binds all organizations together is that nearly everyone uses environmental protection chemicals to one degree or another in his business. The concern about environmental legislation, and specifically pesticides, touches everyone who owns a sprayer.

Thus, the consensus was to form a Green Industry Council which would act as the umbrella organization for all Green Industry associations and organizations. Its function would be advisory, both to the organizations represented — and thus the members—and to those needs affected by current and proposed state and Federal legislation.

The pilot group of 14 proposed a number of ideas to meet the objective of a united Green Industry voice. Better alignment of committee duties within member organizations, contact persons who actively work with state legislative groups, pesticide user conferences at the state level, a formal lobbying organization in Washington D. C. which represents the Green Industry, a challenging public relations program aimed at the consumer, more direct lobbying by Green Industry organizations at the state level, and others were suggestions to accomplish the objective.

Of particular note was a discussion of the Pesticide User Conference (PUC) by F. Farrell Higbee. He said that this informal gathering came about to increase the understanding of pesticide legislation among concerned manufacturers of environmental protection chemicals and member organizations.

It was decided that the Green Industry Council attend a working meeting of the PUC, if possible, to gain a better appreciation of this group. The Council would then meet separately and elect permanent officers and appoint committees.

Temporary chairman of the Green Industry Council is Bill Owen, General Spray Service, Clackamas, Ore.

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Material will be presented on an "Eye to Eye" basis. No complex terms. No knowledge of Chemistry, Physics, Botany, Math or any other technical background required. Everything will be presented so that all attending can readily understand the subject matter. The sole purpose is to give the facts and present everything necessary for the participant to use professionally, immediately and directly in his job.

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Total Cost	\$250.00

Space at clinics previously announced for Chicago, Columbus, Washington, Atlanta, Denver and Portland during January through April 1974 has been entirely booked. Reservations are now being accepted for following clinics:

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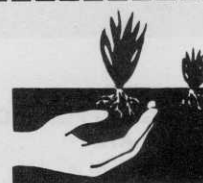
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A permanent plaque has been placed on this specimen bur oak. Present are: (l-r) Ralph Mudrack, city arborist, Ft. Wayne; Ralph Husten, VP of Indianapolis Power & Light Co.; and Carl N. Pryor, Indianapolis Power & Light Co. and chairman of Ind. Arborist Assoc.

Indianapolis Bur Oak Saved From Destruction

Indiana Arborist Association members paid tribute to a specimen Bur Oak tree in October with a ceremony and plaque presentation.

The oak was on the property owned by the Kyles and was scheduled for destruction. Through the

efforts of the Indiana Arborist Association and the auspices of the Lilly Foundation, who donated money to purchase the oak and the property, the tree will be saved.

Today the oak is one of the historical landmarks.

Present for the ceremony was Ralph Mudrack, city arborist, Ft. Wayne; Ralph Husted, executive vice



A plaque presentation ceremony took place under the giant tree. It attracted many neighbors and members of the Indiana Arborist Association.

president of Indianapolis Power and Light Co. and former pres. of the Irvington Historical Landmarks Foundation; Carl N. Pryor, Indianapolis Power and Light Co. and pres. of the Indiana Arborist Assoc.; John Duling, president-elect, International Shade Tree Conference; and other members of the Indiana Arborist Assn. □

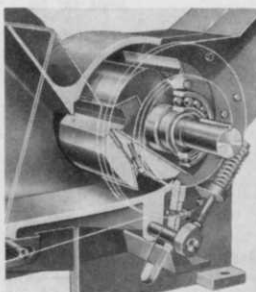


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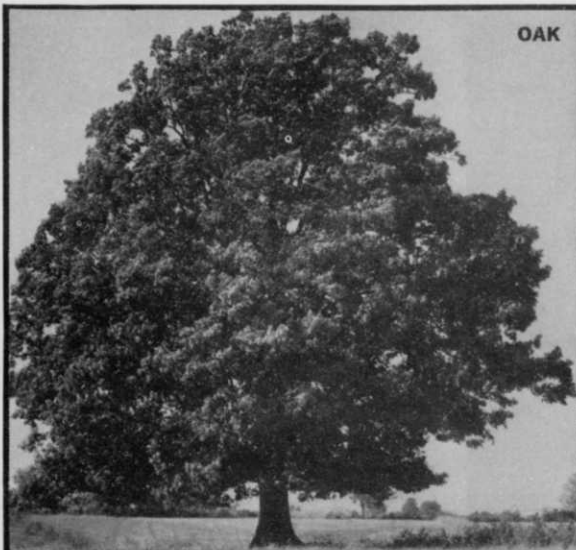
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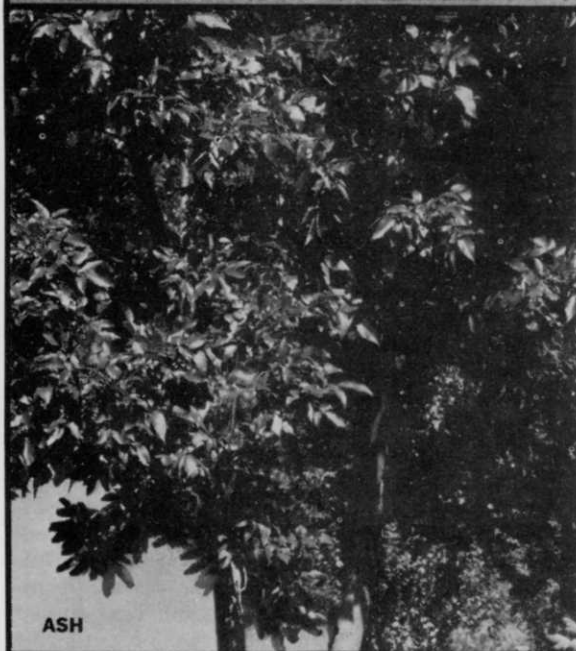
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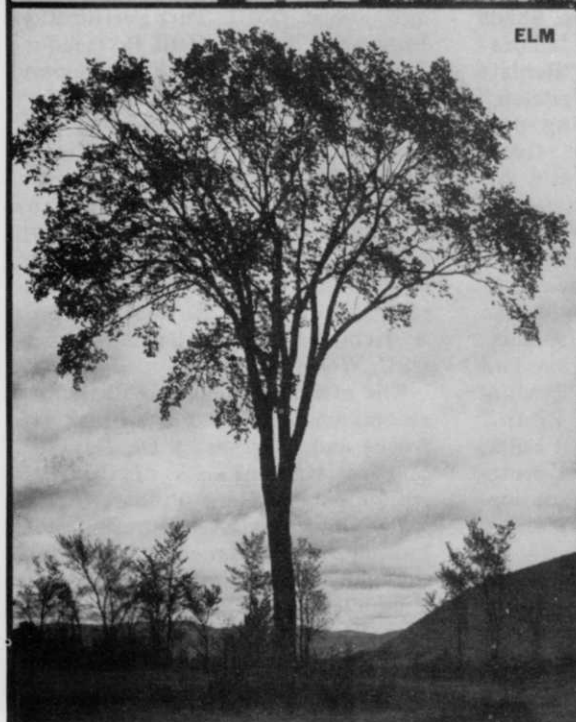
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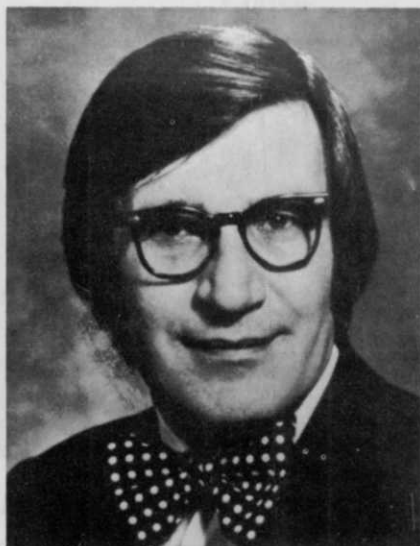
EVERGREENS



HICKORY



William N. (Bill) Ossian, Shenandoah, Ia. will speak Jan. 29 on Shipping Nursery Stock.



Joseph Hudak, vice president of Olmsted Associates, Inc., Brookline, Mass., is a landscape architect. He will speak on Jan. 31 on Approaches To Home Landscaping.



Ira Hayes, asst. vice president, National Cash Register Co., Dayton, Ohio, will speak Jan. 30 on Keeping Pace With Tomorrow.

65 Speakers, 5 Business Areas, 5 Days Ohio State University Short Course

A short course for arborists, turf management specialists, landscape contractors, garden center operators and nurserymen has been scheduled by Ohio State University for Jan. 27-31.

Site for the course is the Sheraton-Columbus Hotel, Columbus, Ohio. Each day's speakers will center their discussions around the overall topic of the day. Thus, individuals wanting to attend only that portion of the meeting pertaining to their particular business may come on a specific day.

The program dealing with commercial arboriculture encompasses two days. Following registration on Sunday, Jan. 27, delegates will hear a panel discussion on "Trees Under Stress" chaired by Dr. L. C. Chadwick, secretary, Ohio Chapter, International Shade Tree Conference, Columbus, Ohio. Panel members and topics include: Dr. Henry Cathey, Chief, Ornamentals Laboratory, ARS, USDA speaking on "Perspective — Nature of Urban Stress;" Dr. Bruce R. Roberts, Shade Tree and Ornamental Plants Laboratory, USDA, Delaware, Ohio and his topic, "Water Stress;" Dr. Spencer H. Davis, Jr., department of plant pathology, Rutgers, "Air Pollutants And Gas Injury;" Dr. Elton M. Smith, landscape horticulture extension specialist, Ohio State University, "Salts and Herbicides;" Dr. Henry M. Cathey, "Stress from Mercury Vapor Lamps;" and H. M. Van

Wormer, Van Wormer Tree Service, Inc., Richmond, Va., "Alleviating Stress Below Ground."

Speakers for the next day's session are: Dr. Philip C. Kozel and Raymond R. Chapin, department of horticulture, Ohio State University who will review "Shade Tree Evaluation Studies — OARDC;" and Prof. Clarence E. Lewis, professor emeritus, Michigan State University, whose topic will be "Trees, Shrubs and Evergreens Tolerant to Urban Stress." Dr. Charles L. Wilson, Shade Tree and Ornamental Plants Laboratory, USDA, will discuss "Benlate and Injection Systems — Updated." Last speaker on the morning program is John Mixon, forester, Georgia Forestry Commission, and his topic "Urban and City Street Tree Programs and Problems."

Arborists and others attending the afternoon session will hear two well-known speakers and then split into workshop sessions. F. Lewis Dinsmore, Dinsmore Tree Service and ISTC president will discuss "Bidding and Pricing Tree Work for Profit." He will be followed by Robert Felix, Harder Services, Inc. and past president National Arborist Association. Felix will speak on "How to Manage an Arborists Business."

The split sessions will concern commercial arboriculture, utility arboriculture and Municipal arboriculture and park management. The sessions will permit time for speakers and questions and answers.

Evening speaker is Prof. Ron Taven, University of Missouri. His topic is "Can't See The Trees For The Forest."

Concurrent with the second day of the arborist program will be a day devoted to turf management specialists. Moderator for the morning session is Dr. David P. Martin, extension agronomist, Ohio State University. Topic to be discussed include. "Soil Testing for Turf Areas" by Dr. John F. Trierweiler, extension agronomist, OSU; "Turf Fertilization Programs" by Dr. Paul R. Henderlong, department of agronomy, OARDC, Columbus, Ohio; "Turf Renovation and Overseeding" by Ned Brinkman, sales engineer, Jacobsen Manufacturing, Racine, Wisc.; "Turfgrass Shade Culture" by Dr. James F. Wilkinson, department of Agronomy, OARDC, Columbus, Ohio; and "Planning For Turf Maintenance" by Fred K. Buscher, area horticulture agent, extension service, OSU, Wooster, Ohio.

The afternoon session will include recommendations for bluegrass, fescue and ryegrass by Dr. David P. Martin; efficient use of turfgrass equipment by Gene Probasco, Central Ohio Sales Representative, Lakeshore Equipment & Supply Company, Cleveland; "Selling Turf Products" by William Weagly, manager, Scotts Training Institute, O. M. Scott & Sons, Marysville, Ohio; and "What's Bugging You?" by Dr. Richard Miller, extension entomologist,

OSU and Dr. Robert Partyka, extension pathologist, OSU.

Nursery day is planned for January 29. Moderator for the morning session will be Dr. Ken Reisch, associate dean, college of agriculture, Ohio State University. Speakers are: Prof. Ron Taven who will discuss "Techniques of Using the Camera Effectively;" William Ossian, Shenandoah, Ia. whose topic is "Shipping Nursery Stock;" Dr. Jack Gartner, horticulture department, University of Illinois, "Hardwood Bark As A Growing Medium;" and Al Fordham, Arnold Arboretum, Cambridge, Mass. who will speak on "Dwarf And Abnormal Conifers And How They Originate."

Following a discussion on new plants by Prof. Clancey Lewis, Michigan State University, delegates will adjourn to split sessions. Topics this year are: Propagating Softwood Cuttings; Medias For Container Nursery Stock; Pest Control — Wildlife, Diseases, and Insects; and Weed Control — Keys To Success.

Of interest to many will be a day devoted to garden centers. Prof. Ransom Blakely, horticulture department, Purdue University will discuss a case study of how advertising helps the garden center business. Loren Bloom, Franks Nursery Sales Inc., Detroit, Mich. will present a discussion on "Trends In Consumer Demands For Plants." "Merchandising Bedding Plants" is the topic of Dr. Will Carlson, horticulture department, Michigan State University.

Again, split sessions will highlight the afternoon. Three workshops have been announced: Foliage plants For Garden Centers; New Ideas For Sales; and Garden Center Layout And Display.



F. Lewis Dinsmore is president, Dinsmore Tree Service, Inc., St. Louis, Mo. and president, International Shade Tree Conference. He will speak Jan. 28 on Bidding And Pricing Tree Work For Profit.

In addition, Robert Tuinstra, Fruit Basket Gardens Inc., Comstock Park, Mich. will discuss "Coordinating The Advertising Program" when the delegates reconvene. He will be joined by Ira Hayes, assistant vice president, National Cash Register Co., Dayton, Ohio, who will discuss "Keeping Pace With Tomorrow."

The last day of the short course will concern landscape contractors. Dr. Davis Sydnor, assistant professor, horticulture, Ohio State University will be moderator in the morning; Dr. James Aylsworth, extension horticulture agent, Ohio State University will be moderator in the afternoon.

Joe Hudak, Olmsted Associates, Inc., Brookline, Mass. will discuss "Approaches To Home Landscaping." He will be followed by a speech "Combining Plant Materials And Design In The Residential Landscape" by William Heard, Heard Gardens, Des Moines, Ia. Last speaker in the morning will be Dr. Roy Mecklenburg, horticulture department, Michigan State University. His topic is "An Analysis of Landscape Bidding Practices."

Of particular note this year will be a speech by Dr. Jot Carpenter, chairman, landscape architecture, Ohio State University. His speech title is "Landscape Design Critique."

In the split sessions that follow, delegates will be able to choose between three topics to further their knowledge in landscaping: Practical Bidding Systems; New and Improved Plant Materials; and Landscaping For Simplified Maintenance. A panel of four landscape professionals will head the first session. Topics covered in the plant materials sessions include ground covers, perennials and



Dr. Jack Gartner is head of the division of ornamental horticulture, University of Illinois. He will discuss Hardwood Bark As A Growing Medium on Jan. 29.

trees and shrubs. The last session will deal with making maintenance simpler in commercial and residential landscaping. Products to accomplish this job will be discussed.

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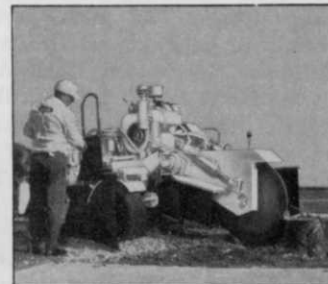
630 Stump Cutter ... 30 hp model.



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For More Details Circle (121) on Reply Card

THE METRIC SYSTEM

(from page 14)

days. This is now known as the Celsius scale. It is identical to the old Centigrade scale; it has simply been renamed to honor the scientist who originated the idea. Zero on the Celsius scale is the freezing point. 100 degrees Celsius is the boiling point of water.

After you have checked the temperature on this morning 20 years from now, you shower and shave and sit down to breakfast. Instead of taking a quart of milk from the refrigerator, you take a liter of milk — just a fraction more than a quart. If you have a bowl of cereal, the box gives the net weight in grams, not in ounces.

After you finish breakfast, you kiss your "perfect 91" good-by and hop into the car for the drive to your office. The office is no longer 10 miles away but, instead, 16 kilometers away. And you don't drive 60 miles an hour. You drive 96 kilometers an hour.

On the way you stop for gas and tell the attendant to "fill it up." He puts in 60 liters — about 16 gallons. At today's gasoline prices, the attendant would charge you between 10 and 12 cents a liter. I have a suspicion the price may be higher by that time!

So far, except for the Celsius temperature scale, the metric terms we have used are familiar — liter, gram, kilometer. But if you ask the gas station attendant to check your tires, he won't inflate them to 30 pounds per square inch but, rather,

to 200 kilopascals. The "Pascal" is a unit of pressure, and to most of us it is a new term that we will learn to use when we convert to the metric system.

In our daily life, we will use the metric system in many other ways. When we mow our lawns, we will set the mower for 5 centimeters, not 2 inches. When we buy a belt, it will be so many centimeters long. When we order lumber, we won't order 2 by 4's. And when we step on the bathroom scale, it won't read 200 pounds. It will read 91 kilograms.

We and our parents and grandparents have been happy with our Fahrenheit thermometers, our 12-inch rulers, and our quarts of milk. Why should we change to the metric system?

One, it is a better system than our English system. It is simpler, more coherent, more logical, and easier to work with.

Two, we have no choice. *The entire world is going metric.* Even England, where our system of weights and measures originated, has adopted the metric system and, over a period of 12 years, is phasing out the old system of inches, feet, and yards; ounces, pounds, and tons; pints, quarts, and gallons. Mexico is metric. Canada has committed itself to going metric.

We are almost alone in the world in sticking to the English system. There are only 11 other countries that haven't taken steps to go metric, Trinidad, Barbados, Jamaica, Guyana, Gambia, Sierra Leone, Southern Yemen, Muscat, and Oman and Burma. In addition to these, there

are two small island countries in the Pacific, Tonga and Nauru, which have still not committed themselves to the metric system.

This is a ridiculous situation for the United States. We are in step with 11 countries which have a combined population less than the state of Texas and a combined area just slightly larger than the state of Texas. We are out of step with the rest of the world.

Obviously, the United States has to go metric. Is it a big step? Of course it is. But it isn't as big as we might think.

There will be a period of transition. You and I have a period of years in which to learn to use the metric system.

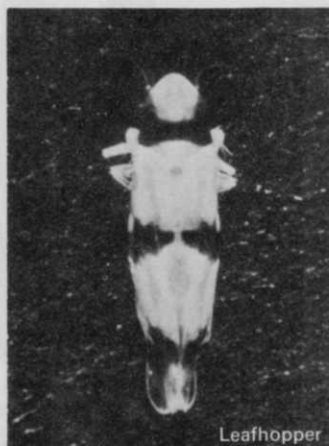
Secondly, that transition period has already begun.

In our daily life, we are accustomed to buying 8 mm, 16 mm, and 35 mm film for our cameras. Your druggist measures your prescription in grams and milligrams. Many of our packages today are expressed in weight by both ounces and grams.

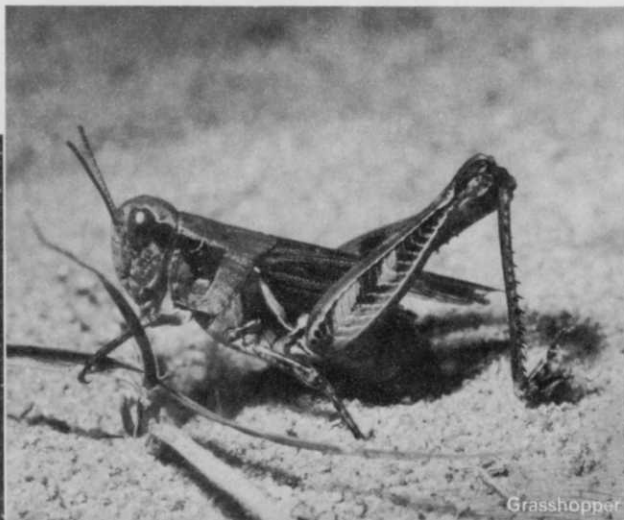
Some of us may be counting calories. Others perhaps should be. A calorie is the amount of heat required to increase the temperature of one gram of water one degree Celsius, and is therefore a metric unit. So keep on counting calories. They won't change.

In our business life, that transition period has begun also. The real effort and the actual dollar costs of converting to the metric system fall most heavily on business and in-

(continued on page 86)



Leafhopper



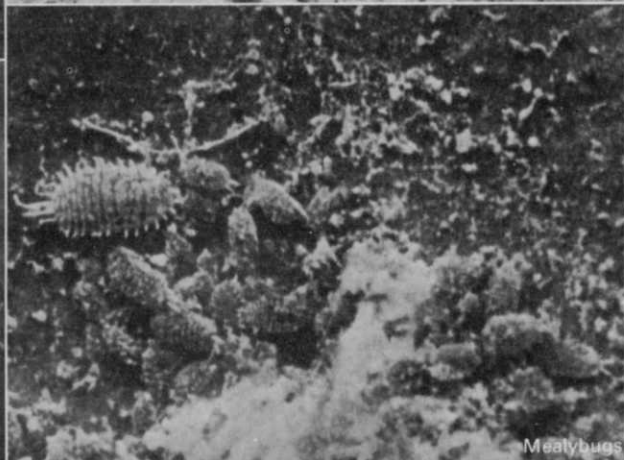
Grasshopper



Hairy chinch bug



Cutworm



Mealybugs



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These are only seven of the turf and ornamental pests Dursban controls.

If we had more space, we could show you another seven. Like sod webworms, brown dog ticks, earwigs and *Hyperodes* weevils in turf. Or ornamental plant pests like mites, spittlebugs, exposed thrips, white flies and many more. But our point is, DURSBAN* insecticide is the choice of professional lawn spraymen when they need to get the job done. DURSBAN insecticide is effective on a wide variety of insects—including resistant strains. And it's effective in a wide variety of applications. It's economical because a little goes a long way. It's non-phytotoxic, and it is biodegradable. So, if you haven't tried it yet, it's about time you did. Just remember to read the directions for use and follow the precautions for safe handling on the product label.

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For More Details Circle (158) on Reply Card



Gabe Eros (l) president and general manager of Oseco Ltd. receives the World Championship award for the variety Highlight Chewings Fescue at the Royal Winter Fair in Toronto, Can. At right is Paul King, chairman of the Canadian Seed Trade Assn. public relations committee. The seed, judged best in the pedigree forage seed class, was grown for Oseco by Walter Hafner of Sublimity, Ore., by arrangement with International Seeds of Halsey, Ore.

Green Industry Newsmakers

PEOPLE PLACES EVENTS



This is Midwest, a new variety of crabapple just released by the USDA Soil Conservation Service Plant Materials Center, Mismarck, N. D. It is disease resistant, winter hardy — even in Nodak country — propagates well from seed, grows fairly rapidly and makes good growth shape. It bears small apples, about 1/4 inch in diameter. The fruit remains on the tree and forms "raisins" that stay on until spring or until harvested by wildlife.



New to New England is a growing sod industry. It has grown from a few dozen acres in 1963 to several thousand in 1973. These are sod producers who are members of the New England Sod Producers Assoc. They toured turfgrass research plots at the U of R. I. in September. Professor Dick Skogley has been working closely with this group.

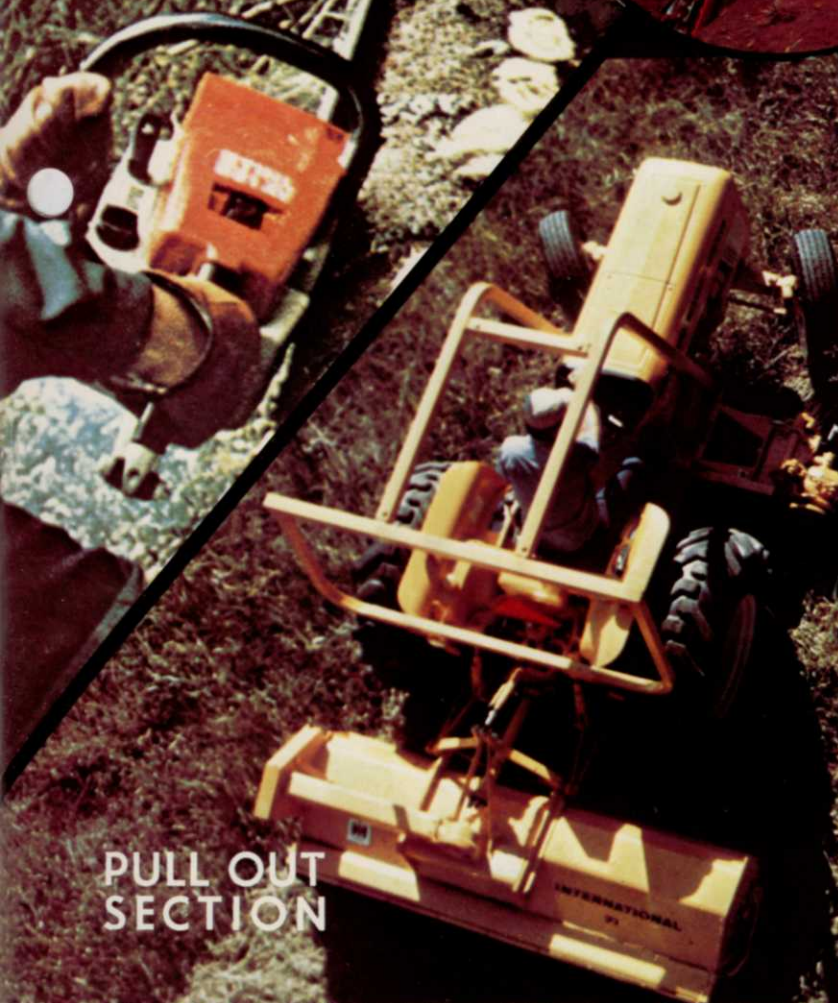


An Honorary Certificate of Merit from the University of Maryland has been awarded to L. Robert Shields, golf superintendent, Woodmont Country Club, Rockville, Md. He has helped establish college-level scholarships in turfgrass and golf course management. In fact, Glenn S. Shields (r) is one of three U. of Md. 4-year students to receive the scholarship for 1973-74. Mrs. Shields (l) joined son Glenn and Bob for the presentation.



The executive committee of the Horticultural Research Institute has recommended that HRI serve as a pipeline of information from all segments doing research related to the industry. Committee members shown here are: (1-4) Donald Murray, Stoffel Seals Corp., N. Y.; R. E. "Ed" Brown, Goochland Nurseries, Inc., Fla.; Don McConnell, McConnell Nursery Co., Ltd., Canada; Robert Siebenthaler, The Siebenthaler Co., Ohio; Evert Asjes, III, Rosehill Gardens, Inc., Mo., HRI pres.; Patrick, HRI administrator; Albert "Bud" Cartwright, Jr., Cartwright Nursery Co., Tenn.

WEEDS TREES and TURF



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TO EQUIPMENT AND SUPPLIES

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Not even the Red Baron could out-maneuver a HUSTLER!



Dual Hydro MOWERS

*for commercial, institutional
and governmental groundskeeping*

NEW—for Dikes, Cloverleaf or Slope Maintenance

HILLSIDE MODEL 360 has all the HUSTLER features plus an operator platform that is self-leveling. Even on a 30° slope both drive wheels have equal weight distribution for increased side-hill stability. A separate hydraulic mechanism keeps engine, canopy and rider level. Besides the flail mower, a six-foot rotary and other options are available.



For More Details Circle (144) on Reply Card

You may already be aware of our HUSTLER mower—how it practically eliminates hand trimming because of its outstanding maneuvering ability. But you need more facts about this unique machine in order to judge its possibilities for the work you have to do.

In this brochure you can see the machine mowing around trees, under bushes and along walls. You can study a diagram showing how our dual hydro transmission gives independent control to each drive wheel. We tell you a HUSTLER can do the work of three mowers. We say it takes one-third the time you may now be spending with more pieces of equipment.

But all we hope is that this brochure will help you make the decision for a demonstration. You have to experience the sensation of operating a HUSTLER and test its capabilities. See how its mowing deck works up close to obstacles. You can convince yourself it will outperform any other equipment you may be considering.



So take the first step. Send now for this brochure, especially if you're faced with a bigger work load or a smaller work force. We'll send along the name of your nearest distributor who will be glad to arrange a demonstration. HUSTLER approved under Federal GSA contract (GS-OOS-05347).

For More Details Circle (145) on Reply Card

Phone 316-327-4911

EXCEL INDUSTRIES, INC.

Box 385, Hesston, Kansas 67062

1974 Managers Guide To Equipment And Supplies

Making the right decision in selection of equipment and supplies is one of the most important jobs of a manager in the Green Industry. Besides being an important item on an investment budget, equipment must also be maintained. This calls for wise initial selection, correct accounting procedures for depreciation, effective preventive maintenance and proper major maintenance when needed.

Perhaps the most important step is in selection. It is with this in mind that WEEDS TREES AND TURF presents this 1974 Green Industry Managers Guide To Equipment And Supplies.

The Guide is in two parts. Manufacturers and their equipment and supplies are listed first. **Advertisers are in bold face type.** Product groupings and manufacturers of a particular item are listed second. Because manufacturers add and delete product lines, change names and generally never remain static, omissions of certain manufacturers and/or product lines are unavoidable. Your comments and suggestions are invited to help improve future editions.

A

AMF Western Tool Division, 3811 McDonald Ave., Des

Moines, Iowa 50313
Mowers, rotary
Tractors, AMF 1281 and AMF 1293
Riding mowers, rotary

A.O.A. Research & Development, Inc. (P.O. Box 6081C) 608 Virginia Dr., Orlando, Fla. 32803

Underwater weed cutter, manually operated, spring steel, serrated, doubleaction blades cuts weeds with forward and backward stroke

Ace Pump Corp., 1650 Channel Ave., Memphis, Tenn. 38113
Pumps, centrifugal
Pumps, nylon roller
Pumps, diaphragm

Ackley Mfg. Co., 13770 S.E. Ambler, Clackamas, Oreg. 97015
Ackley, pole circle saw, hydraulically powered; pole chain saw, hydraulic; chain saw, hydraulic; pruners, hydraulic; alternator, hydraulic; sump pump, hydraulic

ADS—Advanced Drainage Systems, 1880 MacKenzie Dr., Columbus, Ohio 43220

Corrugated Plastic Drainage Tubing, sizes of tubing and fittings from 4 inches to 18 inches in diameter

Adventure Line Mfg. Co., 3333 Main St., Parsons, Kansas 67357

Astro Hook, crane/ladder, truck mtd., hydraulic
Highworker, platform lift, truck mtd., hydraulic
Tailgate, 1,000 lb. cap. pickup mtd. tailgate, all of our equipment is designed for use on pickup trucks

Aeroquip Corporation, 300 S. East Ave., Jackson, Michigan 49203

Hose and fittings, hydraulic, fuel, air, oil, water; pressure from low to super high

An Asplundh Chipper makes you more money than you bargained for.

Drop us a note for more detailed literature and specifications. Asplundh Chipper Company
50 E. Hamilton Street, Chalfont, Pa. 18914

ASPLUNDH



AgTronics Mfg. Co., 1560 State St., Barstow, Calif. 92311
Soil moisture meter

Air-Lec Industries, Inc., 3306 Commercial Ave., Madison, Wisconsin 53714

Air-Lec, aquatic weed cutter

Air-Lec, aquatic weed rake

Air Rake Mfg. Corp., 5 Springfield St., Chicopee, Mass. 01013
Blowers, leaf

Alcoa Aluminum Co. of America, Alcoa Building, Pittsburgh, Pa. 15219

Irrigation pipe

Allis-Chalmers, 1205 S. 70 Street, Milwaukee, Wisconsin 53211

Model 620 tractor, 19½ hp with tires rear 34.0"

Model 615 backhoe-loader, Allis-Chalmers 56 hp gasoline engine

Model 816 backhoe-loader, Perkins diesel engine 83 hp

Model 918 backhoe-loader, Allis-Chalmers diesel 84 hp engine

Mower (sickle bar), length 56" tractor (620) mounted

Rear mtd. Roto-Tiller, 48" size for 620 tractor

Rotary mower, 48" swath for 620 tractor

Amchem Products, Inc. Brookside Avenue, Ambler, Pennsylvania 19002

Meter Miser, liquid spreader gives precision application of Weedone liquid herbicide products without the need for calibration

Directa-Spra, sprayer end unit

American Arborist Supplies, Concord Industrial Park, Concordville, Pa. 19331

Arborist supplies

American Excelsior Corp., 850 Ave. H, East Arlington, Tex. 76010

Erosion Control Products

Soil Retention Products

American Hose & Reel Co., P.O. 639, Marland, Okla. 74644

Thermoplastic spray hose with working pressure of 250, 400 and 800 PSI; ¼, ⅜, ½, ¾-inch sizes

Fertilizer applicator tubing; ¼, ⅜, ½, ¾-inch sizes

Hose reels; small, 300 ft., ½-inch hose, 1000 P.W.P.; large, 300 ft., ¾-inch; adjustable drag

American Lincoln Corp., 518 S. St. Clair, Toledo, Ohio
Welders

American Optical Corp., 14 Mechanic St., Southbridge, Mass.

Respirators, protects against harmful, highly toxic sprays, dusts and vapors in pesticides, fertilizers, etc.

Eye protection goggles, protects against impact or dust & chemicals resulting from spraying, dusting, cutting, etc. Available with clear or sunglass lenses, plain or coated for anti-fogging.

Hard caps and hats, head protection against falling limbs or branches — Meets Amer. Nat'l Std. Z89.1-1970

Hearing protectors, protects hearing from damaging or irritating noises of tractors, sprayers, power saws, etc.

Ametek, Plymouth Plastics Division, 502 Indiana Ave., Sheboygan, Wisc. 53801

Superflexon plastic boxes, plastic irrigation valve boxes with turf green covers

Meter pits, plastic

Amoco Chemicals Corp., Industrial Products Div., 1530 Commerce Dr., Stow, Ohio 44224

Polyethylene pipe and fittings for irrigation

PUC pipe and fittings for irrigation

Corrugated plastic drainage tubing

Andrasko Engineering Co., P.O. Box 4633, Santa Barbara,

Calif. 93103

The Meter Matic, fertilizer injector for irrigation systems

Aqua-Dial, P.O. Box 1325 Newport Beach, Calif. 92624

Turf irrigation Equipment

Automatic valves, hydraulic and electric, remote control

Automatic controllers

Sprinklers, gear driven, pop up, vandal resistant, lawn and garden

Aquamarine Corp., Box 616, 1116 Adams, Waukesha, Wisc. 53186

The Aqua-Trio, 3-piece aquatic weed harvesting system (harvester, transport and shore conveyor)

The sawfish, an aquatic weed cutter and front end loader (for weed, trash and/or oil spill cleanup on water)

Aqua-Mech Co., 2609 Cedar Springs Rd., Dallas, Tex. 75201

Aqua Mech, conversion kit from manual valve and key to automatic timed heads

Aquanautics, Inc., 1246 Birchwood Dr., Sunnyvale Calif. 94086

Weedrake, underwater air boat

Aquatic Controls Corp., 1203 E. Main Waukesha, Wisc. 53186

Weedrake, underwater

Arctic Mizer Mfrs., Inc., 2116 E. Norse Ave., Cudahy, Wis. 53110

Arctic Mizer, spreader, self-powered; vacuum-thatcher, self-powered

Ariens Company, 655 W. Ryan Street, Brillion, Wis. 54110

Ariens Emperor, riding mower — 30" and 38" rotary; 8 hp

Ariens Fairway, riding mower — 26" rotary; 5 and 7 hp

Ariens S-8 Tractor, lawn tractor — 36" rotary; 8 hp

Ariens Lawn Vac, lawn vacuum

Ariens Trac-Team, 26" rotary mower, lawn vacuum, rotary broom on one 8 hp tractor

Armor Metal Products, P.O. Box 822, Helena, Montana 59601

Anderson Rock Picker, heavy-duty rock removal machine for use in seedbed preparation

Asplundh Chipper Co., Div. Asplundh Tree Expert Co., 50 East Hamilton St., Chalfont, Pa.

Chipper, high speed, tapered blade

Forestry truck, Models L-40, 42, 45, 50; dump body, 12-inch chipper, aerial bucket

Brush hooks

Arps Corp., 1711 Wisconsin Ave., New Holstein, Wis. 53061

Arps 728, backhoe, tractor-mounted

Arps 730, backhoe, tractor-mounted

Arps blades and rakes, landscaping rakes and utility blades

Johnson "Work-Horse", front-end loader, garden tractor-mounted

Johnson "Terra-Comb", combination thatcher and power-rake

Arps mini-blades and rakes, blades and rakes for garden tractors

Aurora Pump Div., N.Y. Air Brake, 800 Airport Rd., Aurora, Ill. 60542

Aurora pumps, irrigation pumps centrifugal and turbine pumps

Auto Hoe, Inc., S. 3rd St. De Pere, Wis. 54115

Auto Hoe, power hoeing machine

Avco New Idea, Farm Equip. Div., 420 S. First St., Coldwater, Ohio 45828

E650, tractor, electric driven, 14 hp

E6T-120, tractor, electric driven, 12 hp

The turf-care professionals.

Professional turf-care managers know the value of owning precision-built turf-care equipment.

Ryan equipment is made for those professionals. For those who insist on machines that perform efficiently; with a minimum of maintenance and a maximum service life.

If you'd like more information on any of these professional turf machines, send for your new, free, full-color catalog.

① **GREENSAIRE II***. Second generation of the Ryan coring aerator. Removes cores on 2" centers down to 3" depth.

② **CORE PROCESSOR***. Attaches to Greensaire II. Processes cores, picks up plant material and returns soil to green.

③ **SPIKEAIRE***. Disc spiker for aeration.

④ **MATAWAY***. Heavy-duty power rake, deep slicer and disc spiker.

⑤ **REN-O-THIN***. Removes thatch, grooves for seed, pulverizes aeration cores.

⑥ **TURF MINUTE-MISER***. Personnel transportation and towing ball pickers, Greensweep, utility trailer.

⑦ **GREENSWEEP***. Picks up cores, thatch, debris from greens, turf and pavement.

⑧ **SPREAD-RITE***. Top dresser, fertilizer spreader. Handles sand, too.

⑨ **TRACAIRE**. Three-point hitch turf aerator. Choice of 9 or 12 wheels.

⑩ **RENOVAIRE**. Contour design turf aerator. Interchangeable tines for coring, slicing, open spoon aerating.

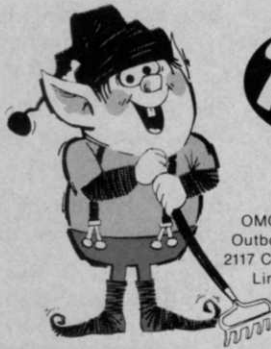
⑪ **PRO-EDGE***. Professional edger.

⑫ **ROLLAIRE***. All-purpose roller.

⑬ **GROUND'S GROOMER**. Large area thatch remover, turf sweeper.

⑭ **SOD CUTTERS***. Self-propelled heavy-duty and junior models.

*Self-powered and/or propelled.



Turf Equipment

OMC-Lincoln, A Division of
Outboard Marine Corporation
2117 Cushman Drive, Box 82409
Lincoln, Nebraska 68501



E6T-100, tractor, electric driven, 10 hp
E6T-80, tractor, electric driven, 8 hp
35 accessories available to work with all electric tractors

Avco Ezee Flow, Istand Sycamore, Coldwater, Ohio 45828
Spreaders, gravity drop, broadcast, fertilizer
Seeders, broadcast
Mowers, rotary
Applicators, granular, insecticide-herbicide

B

B.A.G. Corporation, 9443 Sherwood Glen, P.O. Box 28403,
Dallas, Texas 75228

Taicon Container, plastic, collapsible, reusable shipping
container for handling bulk shipments
Super sack container, one-ton disposable container

BMB Company, Inc., North Vermont at 9th, Holton, Kansas
66436

Utility, 5' tractor operated rotary mower
Special, 6' tractor operated rotary mower
XL and Brute, 5' and 6' tractor operated rotary mower
Fury, 7' tractor operated rotary mower
Twin Brute 120 and 144, 10, and 12, tractor operated
rotary mower
Twin Fury 144 and 160, 12 and 13'4" tractor operated
rotary mower
Mighty Mower, 15, 18' and 20' flexible tractor operated
rotary mower
Suburban 48, 48" trailing rotary mower w/ 8 hp gas
engine
BMB Flail Mowers, 72", 90", 144" and 180" tractor
operated

Baker Equipment Mfg. Co., 1710 High Point Ave., Richmond,
Va. 23230

Aerial towers, mobile equipment
Derricks, mobile equipment

Bartlett Mfg. Co., 3024 East Grand Blvd., Detroit, Mich.
48202

Saws, tree, combination pruner and saw
Saw, pruning, hand
Saw sheaths
Tree bracing materials

Bar-Way Mfg. Co., P.O. Box 640, Stamford, Conn., 06904
Spray guns, long-range, worm-gear control on end of
barrel

John Bean Div., FMC Corp., 1305 S. Cedar St. Lansing, Mich.
Sprayers, hydraulic, all-purpose, pull-type, stainless steel
tanks
Mistblowers, truck mounted, nozzle parts
Flamethrowers, (sprayers)

Beatty Trailers, Box 1027, Burlington, N.C., 27215
Beatty Trailers, self-contained, hydraulic dump;
capacities 2, 3, 5, 9, 13 yard; transport trailers, 6 to 30,000
lb. capacity; tag-a-long and goose neck

Beck Manufacturing Company, P.O. Box 752, Auburn,
Alabama 36830

Lawn-O-Matic, turf grass planter, plugger — sprigger
Sod-O-Matic sod cutter, sod cutter cuts 3 16" strips at one
time
Sod-O-Matic sod harvester, Beck's big roll — sod
harvesting and laying system

Beeco Products Co., Fort Washington, Pa.
Beeco-Mist, spray sleeve, Model 275 spray head

Bell Helicopter Co., P.O. Box 482, Fort Worth, Texas
Helicopters

Bemis Company, Inc., 800 Northstar Center, Box 215,
Minneapolis, Minn. 55402

Bags and liners, plastic
Bags, tree balling, litter, grass catcher
Twine, tying

Wm. Bergman Co., 1335 M-15, Reese, Mich. 48757
Service, stone picking, seeding, land preparation

Berkeley Pump Co., 829 Bancroft Way, Berkeley, Calif. 94702
Pumps, electric and gasoline; irrigation, one to forty hp,
higher hp available, centrifugal and turbine

Bermuda King, Inc., Rte. 1, Okarche, Okla. 73762
Sprig harvesters, 20", 28", 42", 30 to 60 hp, 500 to 1,000
watt an hour rating
Sprig planters, 1, 2, 3 and 4-row, large capacity
Fairway spriggers, 2 to 10' width, large capacity

Bete Fog Nozzle, Inc., Greenfield, Mass.
Stubbies, nozzles, mini-sized, three cone angles, flow rates
from 3 to 300 gpm

Big Brute Turf Cut, Div. of Finney Frocks, 18035 Georgia
Ave., Olney, Md. 20832
Big Brute turf cutter, sodcutter

Big "J" Products, Route 1, Hanna, Indiana 46340
Sod harvester, dual palleted

Billy Goat, P.O. Box 229, Grandview, Mo. 64030
Billy Goat, suction sweeper
Winro, leaf blowers Shred-N-Bag, shredder
Chippit, chippers, vacuums

Black & Decker 701 E. Joppa Road, Towson, Md. 21204
Lawn mowers, electric rotary
Grass shears, battery powered (re-chargeable)
Hedge trimmers, 13" to 22" Black Knight—both electric
and battery
Lawn edgers, electric
Patio vacs, 5 and 10 gallon dry and 8 gallon wet/dry
Garden hose connectors, complete line of hose fittings

John Blue Co., P.O. Box 1607, Huntsville, Ala. 35807
Spreaders, fertilizers (liquid, dry, bulk)
Tanks, spray and fertilizer
Sprayers, mounted and pull type, rights-of-way

Bombardier limited Valcourt, Quebec, Canada
Muskeg brush cutter, tracked vehicle (90 hp) equipped with
front-mounted hydraulic rotary brush cutter
Muskeg carrier, tracked vehicle (90 hp) with spraying
equipment

Bowie Industries P.O. Box 931, Bowie, Texas 76230
Hydro mulcher—used in sprigging, seeding, mulching,
fertilizing, insect control and weed control 350, 500, 800,
1,000, 1,500, 2,500 and 3,000 gallon tanks. Trailer or skid-
mounted
Agri-sprayer, multi-purpose low volume 400 gallon
sprayer, fiberglass tank trailer-mounted, remote hydraulic
operation. P.T.O.

Bridgeport Implement Works, Inc., 60 Rachel Drive, Strat-
ford, Conn. 06497
Pixtone, trailer-type—self-powered, picks stone ¾ to 9-
inch diameter

Briggs & Stratton Corp., P.O. Box 702, Milwaukee, Wis.
53502
Engines, 4-cycle, single cylinder, gasoline

Brillion Iron Works, 200 Park Ave., Brillion Wis. 54110
Mow-Safe, safety flail mowers (72" and 88")
Swing-Cut, rotary mower (60" and 72")
Turf-Maker, seeder for sod-growers
Sure-stand, landscape and agricultural seeders
Terra-Scraper, landscape rakes
Versa-Mower, 180" rotary cutters

Brinly Hardy Co., Inc., P.O. Box 1116, Louisville, Ky. 40201

Cut labor costs by 95% Save up to 30% on fertilizer . . .

*The METER MATIC fertilizes automatically
every time you water.*



Every professional golf course superintendent knows the advantages of automatic fertilization and watering systems. These systems save labor and material costs by watering and fertilizing your course in the same operation. Of the many liquid fertilizer injector systems on the market, the Andrasko Company Meter Matic is the only system with all the important features required by professional golf course superintendents: The Meter Matic is safe, accurate, and economical for all your fertilization and watering operations.

Regardless of water pressure or volume the proportion of fertilizer to water will remain constant. Meter Matic absolutely eliminates under or over feeding that may occur with other systems.

The steady use of the system will not only surface feed but will get down to the roots and constantly feed instead of delivering large amounts at one time.

Meter Matic is volume sensitive and will run as little as eight gallons of water per minute without reducing pipeline pressure. The Meter Matic is easily installed on 1" to 12" water lines and requires no by-pass plumbing, up-stream straining, or down-stream mixing.

The Meter Matic is easy to operate using a single control knob to select five mixture ratios of fertilizer to water at 98% accuracy and almost entirely eliminates labor costs.

Model	Pipe Size	Water Flow	
		Max.	Min.
1570	1"	40 GPM	3 GPM
3141	2"	150 GPM	5 GPM
7065	3"	325 GPM	10 GPM
12568	4"	550 GPM	20 GPM
28274	6"	1500 GPM	30 GPM
50240	8"	3000 GPM	40 GPM
113040	12"	9000 GPM	60 GPM

For additional information and price list please write or call us.

Andrasko Engineering Co.

P.O. Box 4633 • Santa Barbara, Ca. 93103
(805) 963-9413

Brinly attachments, gardening and landscape equipment for tractors equipped with sleeve type hitch
Brinly implements, gardening and landscape equipment for tractors equipped with Cat. "O" 3-pt. hitch
Brinly lawn maintenance equipment, pull behind equipment such as roller, aerators, broadcast spreaders

Brower Turf Equipment Limited R.R. No. 1, Keswick, Ontario, Canada

Sod harvester, attached to a 35-40 hp farm tractor

The Broyhill Company, No. Mkt. Sq., Dakota City, Nebr. 68731

Sprayer, skid-mounted, mechanical agitation
Sprayers, trailer mounted, mechanical agitation
Sprayer parts: pumps, hose, tanks, trailers, nozzles, handguns, spring boom

Buckner/Johns Manville Irrigation, Greenwood Plaza, Denver, Col. 80217

Full line irrigation, automatic electric controllers, impulse sprinklers, valve-in-head sprinklers, quick couplers, pop-up sprinklers, hydraulic controllers, valves

Buffalo Turbine Ag. Equipment Co., Industrial Place Gowanda, N.Y. 14070

Sprayer, mist blower, ULV hand carried, sonic ULV, mist blower, turntable
Sprayer-duster, mist duster, combination
Duster, dust only
Sprayer-duster, back pack, power take-off

Bunton Co., 4303 Poplar Level Rd., Louisville, Ky. 40213

Mowers, rotary
Lawn and turf equipment

C

E. L. Caldwell & Sons, Inc., 3204 Agnes St., P.O. Box 9316, Corpus Christi, Tex. 78408

Interstate, rotary mower, 15 ft.
Challenger, rotary mower
Manta Ray Interstate, rotary mower, 10 ft.
Brush Beaver, rotary mower, 5 ft. or 6 ft.
Manta Ray, Jr., rotary mower, 16 ft.
Contur Flail, heavy-duty, flexible flail, 15 ft., 3 sections
Shark-go, flail-type shredder, 90 inches
Barracuda, lift-type flail mower, 72-inch

CareTree Systems 7030 Huntley Rd., Worthington, Ohio 43085

CareTree transplanter, tree transplanter for installation on agricultural or industrial tractors or 4-wheel loaders

Cast Iron Pipe Res. Assoc., 1211 W. 22nd, Oakbrook Exec. Plaza, Suite 23, Oakbrook, Ill. 60521

Cast iron pipe for irrigation

Campbell-Hausfeld Co., Sales Ave., Harrison, Ohio 45030

CH "1000", Saw, chain, electric, 12-inch bar, 12 amps
CH "2000", saw, chain, gasoline, 12-inch bar, 6 1/2 lbs.
CH "00", saw, chain, gasoline, 16-inch bar
CH "3001", saw, chain, gasoline, 1/2 "anti-vibe", 16-inch bar, auto oiler
CH "3002", saw, chain, gasoline, 1/2 "anti-vibe", 20-inch bar, auto oiler
CH "3003", saw, chain, gasoline, full "anti-vibe", 20-inch bar, auto oiler

J I Case, 700 State St., Racine, Wisconsin 53404

Blades, tractor mounted, scraper and scarifier
Lawn carts
Tractors, 8 hp and up
Forklifts, tractor mounted
Loader, compact, self-propelled
Mowers, rotary

Snow blowers

Tractors, low center of gravity

Trenchers

Century Engineering Corporation, 221—4th Ave. S. E., Cedar Rapids, Iowa 52401

Sprayers, trailer, tractor, jet or mechanical agitation
Washers, high pressure
Heaters, portable oil and gas

Certain-Teed/Daymond Co. 230 Collingwood, Suite 150, Ann Arbor, Mich. 48103

Certa-Flex, corrugated plastic tubings of various diameters for land drainage and trickle — irrigation

Certain-teed Pipe & Plastics Group, Valley Forge, Pa. 19481

Certain-teed PVC pipe, irrigation; choice of Fluid-Tite™ double gasket joints or solvent-weld joints
Fittings, irrigation pipe

Champion Brass Mfg., 1460 N. Naud St., Los Angeles, Calif. 90012

Champion 466, 466P, anti syphon valves
Champion 17, 18, 19, lawn sprinklers, flush, popup, shrub
Champion E.A., C.E.A., electric adapters

The Champion Company, 400 Harrison St., Springfield, Ohio 4550

Doo-All Roll-Dump Trailer, 1 and 2 cu. yd. hopper capacities
Doo-All End-Dump Trailer, 3 cu. yd. hopper, hydraulic dump

Charles Machine Works, Inc., P.O. Box 66, Perry, Okla. 73077

Ditch Witch trenchers, 7 hp to 195 hp vibratory plows, backhoes, trencher mounted trailers, horizontal boring units

Clark Equipment Trailer Division, P.O. Box 410, Michigan City, Indiana 46360

Clark Equipment mini trailers, a 22 and 30 ft. flatbed trailer designed for use with 5th wheel connecting pick up trucks.

Clinton Engines Corporation, Clark & Maple Streets, Maquoketa, Iowa 52060

Engines, gasoline

Club Car, Inc., P.O. Box 897, Augusta, Georgia 30903

Caroche, four-wheel electric golf car (2 passengers)
Caroche Utility Truck, four-wheel electric utility truck (2 passenger and 500 lb. load)
Caroche Personnel Carrier, Four-wheel electric (4 passengers)
Caroche Islander, combination commuter & golf car

Container Development Corp., 424 Montgomery St., Watertown, Wisconsin 53094

Golf course equipment

Contree Sales, Inc., P.O. Box 129, Columbus, Wis. 53925

Rice Paddy Daddy, sprayer
Boom Dye-Marker, marks areas treated
Wat Sol Oil, lubrication, preservative, storage oil
Auger, Model S.S., 4-inch, 12 volt for materials handling

Conwed Corporation, 2200 Highcrest Road, St. Paul, Minn. 55113

Conwed Hydro T-M Mulch, a wood fiber mulch used in hydro seeding
Conwed Economy Erosion Control Netting, tough plastic net used over loose mulches in high erosion areas

Cooper Mfg. Co., 422 S. First Ave., Mardahltown, Iowa 50158

Edgers, gasoline powered
Mowers, reel, walking
Champion 21, greensmower

Corona Clipper Co., 14200 E. 6th, Corona, Calif. 91720
tree and ornamental care and pruning equipment

Correct Mfg., Hughes Keenan Div., P.O. Box 689, Delaware, Ohio 43015

Sky-Worker, aerial bucket—reaches up to 71 ft., horizontal to 45 ft.

Coursigns, Inc., 6500 N. Clark, Chicago, Ill. 60626

Stakes, Signs, Rope, plastic stakes and signs to direct golfers and golf carts, and to rope off repair areas of golf courses

Sand Trap Rake, specially designed for golf course use

Creative Sales, Inc., 200 South Main St., Fremont, Nebraska 68025

Tree systems—medicaps, systemic tree trunk injection

Cresline Plastic Pipe Co., Inc., 955 Diamond Ave., Evansville, Ind. 47717

Cres-line, PVC pipe and fittings

Curtis Dyna Products Corporation, P.O. Box 297, Westfield, Indiana 46074

Dyna Fogger, thermal fogger

BP-145, backpack sprayer, duster

Cushman, OMC-Lincoln, 1401 Cushman Drive, Lincoln, Nebraska 68512

Cushman turf care system, 12 hp and 18 hp gasoline vehicles for turf care

Cyclone Seeder Co., Inc., Urbana, Ind. 46990

Seeders

D

Dadco, P.O. Box 2086, Fresno, Calif. 93719

Dadco, battery clamps

Ross Daniels, Inc., 1720 Fuller Road, West Des Moines, Iowa
Ross Root Feeder, to feed as you water to the roots of trees and shrubs

Davey Tree Expert Co., Kent, Ohio 44240

Tree nursery, 150 varieties of shade and ornamentals

Tree service, nationwide and Canadian representation

Davis Mfg., Div. J. I. Case Co., 1500 S. McClean Blvd., Wichita, Kansas 67213

Fleetline, rubber tire trenchers, 7-65 hp

Task Force, track mounted trenchers

Road Run'r®, trencher 57 hp with backhoe attachment, boring and reaming attachments for trenchers. Also direct burial equipment

Mini-Sneaker®, 25 hp vibratory plow

scatback, 30 hp 4-wheel drive articulated loader

Deere and Co., John Deere Equipment, John Deere Administrative Center, John Deere Rd., Moline, Ill. 61265

JD 350 & 450, crawler; 42 and 65 hp; loader and log fork available

JD 760A & 860A, earth mover-scraper; 9.5 and 15 cu. yd.

JD 380 & 480A, forklifts; 4000-5000 lb. lift and 5000-6000 lb. lift

Mowers, rotary, flail; push, riding, self-propelled; side mounted cutter bar available

JD 70 & 170, skid steer loader; 25 and 37 hp

JD 820, grounds maintenance tractor, 31 hp; belly mounted mower, cuts 6 ft. swath

Tools, 237 different tools for shop, work and home

Roto Tillers

Lawn Sweepers

Blades

Snow Throwers

Chain Saws

JD301A, tractor, utility, 43 hp, utility loader, 43 hp

Our sprayers go un-noticed.

You'd never know they've been there. 'Til you see the spray results. Then you realize the performance capabilities of Myers TL10E2 Turf Sprayers. Plus their gentle nature. Standard equipped with dual "Pillows of Air" Terra Tires. For minimum ground compaction. Only 14.1 PSI. Standard 21' boom also. For turf maintenance in parks, golf courses, etc. Engine powered. Du-All 10 GPM, 20 to 500 PSI spray pump for full range chemical applications. Also available — skid model with live hose reel for insect, weed and sanitary operations.

Myers

The name that works for you.

THE F. E. MYERS & BRO. CO. 
400 ORANGE STREET • ASHLAND, OHIO 44801



JD 300B, loader, 43 hp, loader/backhoe, 43 hp
 JD 302, tractor, 50 hp, utility loader, 50 hp
 JD 302A, loader, 50 hp, loader/backhoe, 50 hp
 JD 401 B, tractor, utility loader
 JD 401 C, loader, loader/backhoe

Delavan Mfg. Co., 811—Fourth St., West Des Moines, Iowa 50265

Nozzles, all conceivable types, sizes and spray angles
 Accessories, boom control valves, pressure relief valves, strainers, agitators and spray guns
 Pumps, roller, turbine, piston

DESA Industries, Inc., 25000 S. Western Ave., Park Forest, Ill. 60466

Remington, gasoline chain saws, electric chain saws, pneumatic chain saws

Dico Co., Inc., P.O. Box 1344, Des Moines, Iowa 50305

Dico, Knuckle boom log loaders, trolley boom hoists

Digz-All Trencher Co., Div. Wing King Co., Merrill, Iowa 51038

Digz-All, trenchers

DriAll, Inc., P.O. Box 309, Attica, Ind. 47918

Air Curtain Destructor, pit incinerator for disposal of trees and wood products—air pollution approved
 Scarifier Levler, leveling device with scarifying teeth for landscapers, sod growers
 Yard Levler, leveling or grading drag

Dunlop Tire & Rubber Corp. Box 1109, Buffalo, N.Y. 14240
 Dunlop tires, for cars and trucks, tractors and implements

E

ESB Brands, Inc., Willard, Exide, Box 6949, Cleveland, Ohio 44101

Willard and Exide batteries, 6-volt electric golf car and golf utility vehicle batteries. Lead acid storage batteries for lawn and garden tractors
 ESB Battery Chargers

E-Z Go Car, Division of Textron, Augusta, Ga. 30903

E-Z Go Golf Car, X-440 electric 3-wheel, GX-440 gas 3-wheel, X-444 electric 4-wheel, GX-444 gas 4-wheel

E-Z Rake, Inc., 1001 S. Ransdell Road, Lebanon, Indiana 46052

E-Z Rake, Spring Tine Thatchers and power rakes, lawn vacuums that attach to garden tractors and riding mowers

Eagle Mfg. Co., 24th & Charles St., Wellsboro, W. Va. 26070

Eagle cans, gasoline cans manufactured to meet OSHA regulations

Echo Chain Saw Div., Kioritz Corp. of America, 350 Wainwright Ave., Northbrook, Ill. 60062

Echo Chain Saws, full range of chain saws from CS302, 3000 unit to CS100, 100cc unit
 Echo Power Blowers, compact, lightweight knapsack type blower, 40 cc engine
 Echo Duster/Mist Blower, compact, light weight knapsack type blower, 40cc engine
 Echo Swing Scythe, lightweight, shoulder type, 20cc engine

Engineering Products Co., P.O. Box 284, Waukesha, Wis. 53186

Economy, man-size all-gear tractor, 14 hp
 Mower, rotary, mounted under tractor, 60 inches

Edwards Manufacturing Company, Rte. No. Box 1275, Ponca City, Oklahoma 74601

Edwards Sprayers, power sprayers, 50, 100, 200, 300, 400, 500, 1,000 gallons; 3 to 50 hp engines

Erickson Corp., 211 St. Anthony Blvd., N.E., Minneapolis,

Minn. 55418

Erickson, hydrostatic drive compact front end loader

Eversman Mfg. Co., Curtis at Fifth St., Denver, Colo. 80204
 Eversman, land leveler

Excel Industries, Inc., P.O. Box 385, Hesston, Kansas 67062

Hustler, mower, rotary Model 272, 18 hp, dual hydrostatic transmission, 72-inch cut, winter attachments available

Hillside Hustler, mower, rotary, 24 hp, dual hydrostatic, Model 360, self-leveling for maximum safety and performance on hillsides and level ground; 60-inch flail, too

F

FMC Corporation—AMD, 5601 E. Highland Dr., Jonesboro, Arkansas 72401

Bean, Royalette—50 to 400 gallon tanks, 5 & 10 gpm, mechanical agitation, Royal—300 to 1,000 gallon tanks, 25 to 60 gpm, mechanical agitation, Turfkeeper—mounts in golf utility vehicle, Rotocast—sprays from rough to rough, Rotomist—Shade tree sprayer, jet agitation, 4 models to choose from

FMC Corporation, Municipal/Industrial Service Equipment Division, 1201 E. Lexington St., Pomona, Calif. 91773

Wayne Stump King and Wayne Brush Chipper

FMC Corporation, Outdoor Power Equipment Div., 215 South Park Street, Port Washington, Wis. 53074

HT-20, tractor, garden, hydrostatic, twin cylinder, 19.5 hp 54-inch rotary mower, 48-inch two-stage snow thrower
 QT-16, tractor, garden, hydrostatic drive, twin cylinder 16 hp, 48-inch rotary mower

QS-16, tractor, garden, hydrostatic drive, 48-inch rotary mower, 16 hp

H-14, tractor, garden, hydrostatic drive, 14 hp 42-inch rotary mower

G-14, tractor, garden, 14 hp, 42-inch rotary mower

G-10, tractor, garden, 10 hp, 38-inch rotary mower

G-8, tractor, lawn, 8 hp, 32-inch rotary mower

828,829, mower, riding, 8 hp, electric and recoil start, 28-inch rotary

Mowers, mulching type, rotary, two 22-inch self-propelled; 22-inch and 18-inch, hand propelled

Mulcher Baggers, two models, 6 hp and 3.5 hp, both equipped with safety interlocks and leaf ramp option

Tillers, horizontal shaft, 5 hp; vertical shaft, 3.5 hp

Attachments, to fit tractors

FMC Side-Winder, P.O. Box 818, Minden, Louisiana 71055

Side-winder rotary cutters, tractor drawn rotary cutters, lift and pull models, 4 ft. to 16 ft.

Side-winder flail mowers, tractor drawn flail mowers, 6 ft. and 7 ft. models

Fairmont Hydraulics, 415 N. Main St., Fairmont, Minn. 56031

The Powerfuls, drills (hydraulic powered), pruners (hydraulic powered), saws (chain-hydraulic powered), saws (circular-hydraulic powered)

Fanno Saw Works, Box 628, Chico, Calif.

Saws, pruning, manual

Fayette Division, Dayton-Walther Corporation, P.O. Box 8, Fayette, Ohio 43521

Haulette by Fayette, trailers, utility and light to medium heavy industrial

Ferti-Feeder, 3973 Eastlay, Des Moines, Iowa 50306

Ferti-Feeder, tree deep root fertilizer injector

Fibre Glass Products, Box 147, Swannanoa, N. C. 28778

Tool boxes—pickup truck, Fibre Glass construction, paddle locks, built to accommodate B & G sprayer, fits all size trucks

Chemical tanks—pickup truck, 55, 110, 180 gallons, Fibre Glass construction, with agitator, drain, and hose connections

Fimco, Inc., 1st & Court Streets, Sioux City, Iowa 51101
Big Butch, pressure washer, electric, portable
Dobbins, sprayer, lawn and garden, gas, mechanical agitation; sprayer, orchard and golf course, gas, mechanical agitation

Finn Equipment Company, 2525 Duck Creek Rd., Cincinnati, Ohio 45227

Finn mulch spreader, straw spreader
Finn Hydroseeder, seed and fertilizer spreader
Finn Klodbuster, slope harrow

Flintkote Co., The Pipe Products Div., Box 151, Ravenna, Ohio 44266
PVC pipe

Flymo, P.O. Box 939, Elkhart, Ind. 46514
Flymo, air-cushion rotary mower

Foamspray Chemicals, Inc., 10414 Harry Hines Blvd., Dallas, Texas 75220

Foamspray® sprayer nozzles, nozzles and handguns for foamspraying drift reduction system (5 types cover air, ground, orchard and roadside)

Foley Mfg. Co., 3300 Fifth St. N.E., Minneapolis, Minn. 55418

Reel Grinder, sharpens, reel type, lawnmowers
Bed knife grinder, sharpener, reel type, lawn mower bed knives
Lapping machine, Back laps reel type lawnmowers
Chain saw grinder, sharpen saw chains

Ford Motor Co., Tractor & Implement Operations (N.A.), 2500 E. Maple, Troy, Mich. 48084

Ford LCG Tractors, 37 to 63 hp
Ford all-purpose tractors, 23 to 131 hp
Ford flail mowers, 62, 74 and 88-inch widths
Ford rotary cutters, 60, 72, 84 and 100-inch widths
Ford sickle barmowers, 5, 6 or 7 ft. widths

Fore-Par, Inc., 7150 Fenwick Lane, Suite 106, Westminster, Calif. 92683

Fore-Par, tee markers, practice green markers, direction and rules signs, flags, greens, personalized, flags, greens, regulation, tee monuments

Fox Valley Marking Systems, 31W300 West Bartlett Rd., Bartlett, Ill. 60103

Easy Marker, aerosol paint cane type object to aide in layouts for landscapers, contractors, etc.

Friend Mfg. Corp., 441 Prospect St., Gasport, N.Y. 14067
Tractor (hp); mower (reel, sickle, rotary, flail); saw (gas, hydraulic, electric, chain, circular); sprayer (type of agitation); irrigation (type of head, etc.)

Friend Airmaster, air blast applicator
Friend Orchardkraft, alternators, power brushcutter
Friend Commander, chemical applicators, granular, chemical

Champion and Chapin, chemical applicators, dusters
Friend Orchardkraft, generators, hose, hydraulic and air-powered tools

Friend Parkkraft, litter receptacles
Wilson, dust masks

Friend, mistblowers, nozzle parts

Uniroyal, protective clothing

Friend Orchardkraft, pruners

Friend, pumps

Hannay, reels, hose

Wilson, respirators, safety equipment

New Draulics, saws, chain

Seymour Smith, saws, manual

Friend Orchardkraft, power saws, shears
Friend, spray booms, spray guns, spray nozzles, complete, disk whirls
Friend, spray pumps, sprayer, bifluid, boom
Friend Orchardkraft, sprayers, cart or wheelbarrow type, hand, knapsack
Friend, spray tanks, sprayers, hose end, complete power unit sprayers

Fruend Can Co., 143 W. 84th St., Chicago, Ill.
Gasoline cans to meet OSHA specifications

Fuerst Brothers, Inc., P.O. Box 271, Rhinebeck, New York 12572

Fuerst F-l-e-x-i-b-l-e tine harrows, turf maintenance equipment for seedbed preparations, scarifying, over-seeding preparation, golf course construction, general turf area and bridle path maintenance

G

G. & H. Products, Inc., St. Paris, Ohio 43072

Uni-Lift, motorized all-position stand for riding mowers, lifts up to 80 inches, 1,000 lb. loads, in less than 30 sec.

Game Time, Inc., The Toro Company, 903 Anderson Rd., Litchfield, Michigan 49252

Park and playground equipment, half-way houses for golf courses

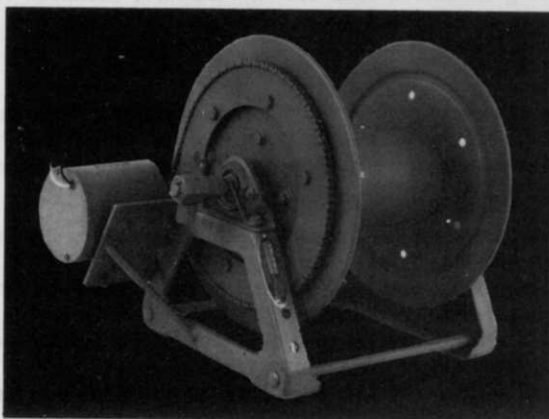
Gandy Company, 528 Gandrud Road, Oonna, Minnesota 55060

Gandy Turf Tender, for fertilizer, seed or granular chemical; 24 or 42-inch width

Gandy spreader 600 Series, for fertilizer, seed or granular chemical; 3, 4, or 5-foot width

Gandy Spreader 10A Series, for fertilizer, seed or

REELS to handle your spray hose



To handle hose faster and more efficiently for spraying pesticides, liquid fertilizers and other chemical products, specify Hannay reels. Available with air or electric powered rewind motors for fast, controlled rewinding of all hose lengths.

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 Gandy disk mount, granular applicator; 3 to 20 foot, hydraulic or mechanical drive
 Gandy Ro-Hi, high clearance granular applicator; 5 to 28-inch band
 Gandy Line Tender, granular applicator; 1 to 21-inch band, handle control
 Gandy Super/Junior, Granular applicator; 1 to 21-inch band, implement-mounted
 Gandy Measuring Wheel, one-man land measuring in feet or meters
- Garber Seeders, Inc., St. Paris, Ohio
 Seeders, hopper-type
- General Electric Co., Outdoor Power Equipment Operation, Corporations Park, Bldg. 702, Schnectady, N.Y. 12345
 Tractors, electric/battery-powered, full line of attachments
- General Scientific Equipment Co., Limekiln Pike & Williams Ave., Philadelphia, Pa. 19150
 Aprons
 Gloves
 First aid kits
 Aerosol burn spray
- Giant-Vac Mfg., Inc., Machine Shop Road, South Windham, Conn. 06266
 Giant-Vac, heavy-duty commercial vacuums
 Giant-Blo, heavy-duty commercial blowers
 Giant-Truck Loader, heavy-duty truck loaders, front or trailer mount from 12 through 68 horsepower
 Giant-Thatcher, 5 and 7 hp—thatching machines
- Glendale Optical Co., Inc., 130 Crossways Park Dr., Woodbury, L. I., N.Y. 11797
 Hard hats, head protection gear
- Goodall Div., 1405 Bunton Rd., Louisville, Ky. 40213
 Goodall, mower, rotary
- Granberg Industries, Inc., 200 So. Garrard, Richm-N-Trim, chainsaw pruning and hedge clipping attachment
 Grind-R-Guide, electric grinder for saw chains
 Break-N-Mend, hand-tool for repairing saw chain
- Grass Growers, Inc., P.O. Box 584, Plainfield, New Jersey 07061
 Terra Tack, for erosion control, straw/hay tack and mulch binder
- Gravely, Division Clarke-Gravely Corp., One Gravely Lane, Clemmons, N.C. 27012
 816 4-wheel tractor, 8-spd. trans., 16 hp, Onan 2-cylinder engine (rear mounted)
 812 4-wheel tractor, 8-spd. trans., 12 hp Kohler single cylinder engine (rear mounted)
 810 4-wheel tractor, 8-spd. trans., 10 hp Kohler single cylinder engine (rear mounted)
 408 lawn tractor, 34-inch rotary mower—8 hp Kohler engine
 7.6 hp custom 2-wheel tractor, 30" rotary mower, 40" rotary mower, 50" rotary mower
 7.6 hp 2-wheel tractor, rotary tiller, rotary plow, rotary cultivator
 C-10 hp commercial 2-wheel tractor, 44", 38", 36" snowblowers, front mount 48" scraper
 C-12 hp commercial 2-wheel tractor, blade, center-mount scraper blader, riding sulky for 2-wheel tractors
- Greenlawn Sprinkler Co., 2200 South Lipan, Denver, Colorado 80223
 Greenlawn, adjustable riser sprinkler heads, automatic and manual sprinkler valves, adjustable risers, greenhouse bench nozzles
- Griswold Controls, 124 E. Dyer Road, Santa Ana, Calif. 92707
 System control module, irrigation controller
 Station control module, irrigation controller
 Programmer, irrigation controller, check valve, flow control valve, solenoid control valve, pressure regulating valve, combination pressure regulating and solenoid control valve
- Ground Hog, Inc., 25010 E. 5th St., San Bernardino, Calif. 92410
 Ground Hog earth drills, 3 models (portable—gas powered)
 Ground Hog trencher, Model T-3M (for sprinkler systems)
- Grumman Aircraft Corp., S. Oyster Bay Rd., Bethpage, L.I., N.Y.
 Aircraft, fixed wing
- The Guildsman Co., Harrisburg, Pa.
 Sprayer, pneumatic-hydraulic, self-contained
- ## H
- HMC, 22131 S. Vermont, Torrance, Calif. 90502
 Jobber, utility vehicle—3-wheel
 Jobmaster, utility vehicle—3-wheel
 Diahatsu, utility vehicle—4-wheel
 Gro Gear, hedge trimmer—gas and electric
 Thompson, irrigation—gear driven
- Hadfield Sod Roller Co., 6443 Sherwood, Oxford, Mich. 48051
 Sod roller
- Hahn, Inc., 1625 N. Garvin St., Evansville, Indiana 47717
 Flex-A-Matic 140, five-gang reel mower
- W. L. Hamilton Co., Lenter St., Bangor, Mich.
 Spray guns
 Pressure relief valves
 Spray nozzles
- Hancor, Inc., P.O. Box 1047, Finlay, Ohio 45840
 Turf-Flow, drainage tubing, two-inch
 Agri-Flow, drainage tubing, 4-inch, 6-inch, 8-inch, 10-inch
- Clifford B. Hannay & Son, Inc., 422 Maple St., Westerlo, N.Y. 12193
 Hannay Reels, reels to handle all kinds of hose and electric cable
- Harvestall Industries, Inc., 3 North Walnut Ave., New Hampton, Iowa 50659
 Truckler, combination forklift trailer
- Hays Mfg. Div., Zurn Industries, Inc., 12th & Plum Sts., Erie, Pennsylvania 16501
 Marfaid, automatic solonoid valves
 Select-O-Rain, industrial controller
 Safe-T-Rain, impact and pop-up sprinklers
- Hays Spray Gun Co., 98 N. San Gabriel Blvd., Pasadena, Calif.
 Sprayers, hose end
- Hemco Corporation, P.O. Box 210/111 N. Powell Rd., Independence, Missouri 64051
 Tanks, fiberglass tanks for spraying or storage, 60 to 500 gallons
 Travelite tool box, fits all wide bed pick-up trucks
- Herd Seeder Company, Inc., P.O. Box 448, Logansport, In-

diana 46947

Herd Sure-Feed, broadcast seeders (or broadcasters) for spreading seeds, fertilizer and granular chemicals, as herbicides and insecticides)

Hesston Corp., Lawn Equipment Division, P.O. Box 39040, Indianapolis, Ind. 46239

Hesston Front-Runner—grounds maintenance tractors, Model 200, 19.8 hp—Model 180, 18 hp—Model 160, 16 hp; 48", 60" mowers and 80" batwing mower head, self-contained vacuum pick-up (fits 48" & 60" mower heads only). Other attachments: rotary broom, dozer, snow thrower and tillage equipment; features hydrostatic drive, articulated steering, "up-front", roomy operator cockpit Hesston stump cutter, 8 hp Briggs & Stratton engine, portable, replaceable

Hesston tractor, 16 hp, 18 hp, 20 hp; mower—rotary 48", 60", 80"; vacuum collector, snow-plow dozer blades, rotary broom, cultivators, 42" wide—disc harrow—29"-39" cutting width, aerator, 36" wide, stump cutter, stump removal to 8" below ground level

Highway Equipment Company, 616 D Ave. N.W., Cedar Rapids, Iowa 52405

Hi-Way Model P, utility, hopper-type spreader body that is simply set into a truck body to convert pickup, flatbed or dump body into spreader unit; spreads sand salt or cinders up to 40 ft; used too, to spread fertilizer and lime in landscape work

Hiller Aircraft Corp., 1350 Willow Rd., Palo Alto, Calif.
Aircraft, helicopter

Hoffco, Inc., 25 Washington Ave., Richmond, Ind. 47374
Hoffco, P8—power Scythe, MP—brush cutter, 973—one-man post hole drill, 1000—2-man (2 cycle) post hole drill, 1100—2-man (4 cycle) post hole drill
Comet Jac-Lift, 2000 lb. winch hoist

Homelite, 70 Riverdale Ave., Port Chester, N.Y. 10573
Saws, chain, 18 models; 8 3/4 -26 lbs. weight; 12-60 inch bar length; manual, automatic and dual system chain oiler

Hortiscape, Inc., 7866 Second St., Dexter, Michigan
Hortiscape Landscape Border Edging
Hortiscape Tree Guying units

Howard Rotavator Co., Inc., 343 S. Division, Box 100 Harvard, Ill. 60033

Howard Turf Quakers, turf aerification machines
Howard Rotavators, rotary tillage equipment
Howard Power Arms, 3-pt. linkage backhoes

Hub States Corporation, 2000 North Illinois Street, Indianapolis, Ind. 46202

520 sprayer, gas powered, high pressure
702 sprayer, electric powered, volume
730 sprayer, electric powered, high pressure
970 sprayer, gas powered, volume
810 sprayer, gas or electric, portable

H. D. Hudson Manufacturing Company, 154 E. Erie St., Chicago, Illinois 60611

Hudson manually-operated sprayers, compressed air, 1-1/3 to 4 gallons, steel and polyethylene tank; knapsack, 4 1/2 to 5 gallons; slide-pump; wheelbarrow, 17 1/2 gallons; barrel and bucket spray-pumps; intermittent and continuous plunger-operated, 5 oz. to 2-2/3 qts.

Hudson manually-operated dusters, plunger, 1-lb. capacity; crank-operated, 14-lb. capacity; knapsack, 17-lb. capacity

Hudson power sprayers, 12 1/2, 15, 30, 50, 100, 150, 200 and 300 gallons, 3, 5 and 10 GPM output, 100 to 300 lbs. pressure; on wheels and skids, PTO and self-powered, jet and mechanical agitation

Hudson power dusters, PTO and engine powered, 6, 4, 2 and 1 outlet; litter-types

Hudson power spray-pumps, 3, 5 and 10 GPM, piston pumps, 250 and 400 lbs. pressure

Hudson PTO pump kits, positive piston, roller

Hudson spray booms, 4, 20 and 30 feet long, for PTO and engine powered sprayers, fixed and adjustable nozzle, single nozzle broad-spray

Hudson spray guns, single, double, triple nozzle; adjustable

Hudson power sprayer accessories, guns, booms, trailers (fixed and adjustable tread), tanks, tractor barrel mounts, wheels, cab top, elevated operator platform, telescopic gun mast, nozzles, boom drops, boom control valves, hose, hose clamps, hose fittings, tank refiller, pressure gauges, hose reels, pressure regulators, root feeder, flower gun, 3-nozzle gun, lawn booms

Hudson flame sprayers, 1 1/2 pints, 1 1/2 to 4 gallons

Husqvarna, Inc., 151 New World Way, South Plainfield, New Jersey 07080

Chain saw

Hydraulic Products Co., Inc., 501 East 42nd, Lubbock, Texas 79404

HPC, submersible and vertical turbine pumps for deep wells and pressure booster applications for irrigation applications

Hydro-Turf, P.O. Box 3, Elk Grove, Ill. 60007

Hydro Turf, spraying equipment, sprinkler systems—above ground, seeders, portable pumps, portable generators, flexible hose and pipe, Hydro seeders and mulchers

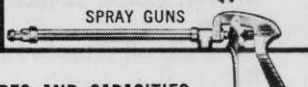
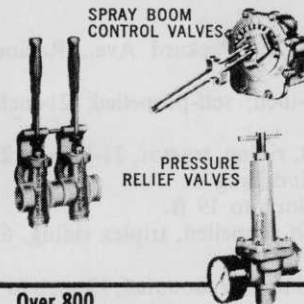
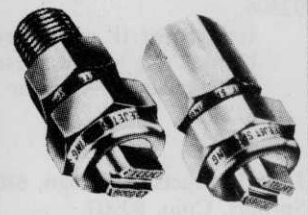
Hypro Division, Lear Siegler, Inc., 375 Fifth Ave. N.W., New Brighton, Minn. 55112

Hypro, sprayer pumps, sprayer pump accessories, transfer pumps

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INTERCHANGEABLE SPRAY TIP TYPES AND CAPACITIES...

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ITT Marlow, P.O. Box 200, Midland Park, N.J. 07432
Pumps, irrigation, portable, submersible

Ideal Crane Div., Bert Parkhurst, 15051 E. Admiral Pl., Tulsa, Okla. 74116

Ideal Crane, hydraulic truck crane (can be operated both electrically and by hand) very rugged; 3000 lb. capacity electrically-operated crane is \$513.00; 2500 lb. capacity hand-operated crane is \$215.00; barrel chain and nursery sling available

Imperial Underground Sprinkler, 705 E. 31st St., Kansas City, Mo. 64109

Irrigation, spray heads and controllers

Inject-O-Meter Mfg. Co., Inc., 820 Thornton, Clovis, New Mexico 88101

Fertilizer Injectors, for injection of fertilizer, herbicide or insecticide in irrigation stream (available with tanks)

International Harvester Co., 401 N. Michigan Ave., Chicago, Ill. 60611

International, tractors to 101 hp, crawlers 42 to 69 hp, mowers, rotary cutters; flail type; side mounted sickle; backhoes and loaders, all sizes 3-point hitch backhoe International 3200, compact loader, 30 hp

International Harvester (Consumer Products) 401 N. Michigan Ave., Chicago, Ill. 60611

International, lawn and garden tractor
Cub Cadet, Cadet 55 and 75, riding mower
Cadet 76, lawn and garden tractor
International 526, rotary tiller
International 95, electric riding mower
International 265 & 268, snowblower
International, rotary mowers 19 & 21-inch cuts

Irrrometer Company, Inc., P.O. Box 2424, Riverside Calif. 92506

Irrrometer, soil moisture measurement equipment, hermetically sealed pressure gauges for pumps & irrigation systems, automatic moisture sensing devices

J

JLM Products & Design, 6805 Boysenberry Way, Colorado, Springs, Colo. 80907

Soil moisture meter, tested to 12-inch depth, deeper depth units available

Jacobsen Manufacturing Co., 1721 Packard Ave., Racine, Wisconsin 53403

Mower, rotary, push, 20-inch; self-propelled, 21-inch; riding, 60-inch
Mower, reel, self-propelled, riding, tractor, 21-inch to 25 ft., mounted and pull behind gang
Mowing tractors, reel, 76-inch to 19 ft.
Mower, greens; 22-inch self-propelled, triplex riding, 62 inches
Aerators, self-propelled and tractor mounted, 18-inch to 7 ft.
Turf Sweeper, self-propelled and pull behind 48 inches and 60 inches
Seeders, self-propelled and tractor mounted, 21-inch and 48-inch
Top Dresser, self-propelled and truck mounted, 36-inch spreading width
Sod Cutter, 12-18 inch cutting width
Edgers
Utility truck, 12 and 14 hp
Tee mower, 26-inch self-propelled
Trailer, 6 ft. wide and 10 ft. long, tilt bed, single axle

Jacobsen Manufacturing Co., Sod-Master Division, 3456 N. Washington Ave., Minneapolis, Minn. 55412

Pipe Piper, 10, 14, 18 hp irrigation pipe pullers; bury the pipe without removing the earth—no trenching

Jameson Corporation, P.O. Box 15277, Charlotte, N.C. 28210
Fiberglass "Safe Stick", fiberglass pruner poles—single sections up to 12 ft. long; fiberglass pruner poles—sectional sections up to 12 ft. long which can be locked together for any desired combination of lengths. Poles will accommodate all pruner heads; "safety yellow"—color

Jeep Corporation, 14250 Plymouth Road, Detroit, Michigan 48232

Jeep 4-wheel drive vehicles, Jeep CJ-5/CJ-6 and Jeep Cherokee 4-wheel drive sport/utility vehicles, Jeep Wagoneer 4-wheel drive station wagons and Jeep 4-wheel drive pick-up trucks (light/medium duty)

Jisco, 1941 Karlin Dr., St. Louis, Mo. 63131

Jisco earth augers, the quick easy professional way for home owners to deep root feed their trees, bushes and shrubs

Jobu Chain Saws, P.O. Box 6023, Texarkana, Texas 75501
Chain saws

Johnson Hydraulic Equipment Co., 215 West 78 St., Minneapolis, Minn. 55420

Work Horse Loader, for compact tractors
Work Horse Terra-blade, for compact tractors
Work Horse Forklift, for compact tractors
Work Horse Terra-comb, for compact tractors

K

K-D Manufacturing Company, P.O. Box 4547, Waco, Texas 76705

K-D Kurb Dresser, edges streets, curbs and walks; mounts on tractor equipped with category 1, 3-point hitch; can be used to edge along concrete or asphalt
K-D Rough Terrain Lift Trucks, lift capacities, 5,000 to 8,000 lbs., lift heights to 30 feet, large flotation tires for soft ground and rough terrain, gas or diesel engines, manual or power reversing transmissions

F. D. Kees Mfg. Co., 700 Park Avenue, Beatrice, Nebraska 68310

Powerake®, thatcher, lawn
Powerslice®, aerator, lawn
Kom-pak, shredder
Kaster, spreader, broadcast, fertilizer, seed, lawn
Krawler, sprinkler, traveling, lawn

Kemp Shredder Co., 1027 E. 26th St., Erie, Pa. 16505
Shredders

Kinco Mfg., 2368 Territorial Road, St. Paul, Minnesota 55114
Kinco KMG 38, sickle bar mower
Henderson GPM, verti-cut and flail-type mower

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Flex-Riser®, flexible riser for sprinkler systems
Sta-Stake®, sprinkler riser support

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Preassembled pumping stations for irrigation systems

Knaack Manufacturing Co., 420 East Terra Cotta Ave., Crystal Lake, Ill. 60014

Storage and truck equipment tools and storage chests, ladder racks for pick-up trucks

Kohler Co., Kohler, Wis. 53044

Kohler, 4-cycle, air-cooled engines, 4 hp to 24 hp

Kubota Tractors, Inc., 6245 Grand Ave., Los Angeles, Calif. 90014

Tractors, up to 40 hp

Karl Kuemmerling, Inc., 4536 Lincoln Way, E., Massillon, Ohio 44646

Willson, safety hats
Mitts & Merrill, brush chipper (territory Ohio, Ky., Western Pa., Western N.Y.)
Solo, sprayers
Hodges, stump router (territory E. of Mississippi)
Seymour Smith, pruners
Fanno, saws
Greenlee, tools
Carhartt, uniforms
Little Wonder, pruners
Champion, pruners
Skod, saws and pruners
B.V.D., saws and pruners
Standard, brooms
Wall Rope Co., rope
Klein, tools
Whitlock—Plymouth, rope

L

Lakes Supply Co., Inc., P.O. Box 101 Dundee, Ill. 60118

Toro, landscape seeders and rollers
Lakes Supply Co., Inc. drip weed roller applicator
Western, snow plows
Toro, lawn mowers
Huffy, lawn mowers and riders
Hahn Eclipse, lawn mowers and riders
Jacobsen, lawn mowers and riders
Ariens, lawn mowers and riders

Lakeshore Equipment & Supply Co., 10237 Berea Rd., Cleveland, Ohio 44102

Replacement parts, mowers
Golf accessories, flags, cups, etc.

Lakeside Mfg. Company, Inc., 39 E. Main St., Honeoye, N.Y. 14471

Trailers, industrial, 6 to 15-ton rated capacity

Lancaster Pump & Mfg. Co., Inc., 1340 Manheim Pike, Lancaster, Pa. 17604

Saws, chain, five models, 8 1/2-15 lbs. weight, 12-24-inch bar lengths, manual and dual system chain oiler

L. L. Larson Machine, Inc., 1017 N. Santa Fe, P.O. Box 308, Princeville, Illinois 61559

Sprayer pump, piston, roller & centrifugal
Portable water pumps, centrifugal, roller & piston
Sprayer nozzles, broadcast & hi pressure
Sprayers for ground coverage, broadcast & spot application
Sprayers for trees, 20 ft. x 50 ft. application
Sprayers for turfs, broadcast & spot application
Sprayers, fertilizer-mounted, broadcast & spot application
Spreaders, fertilizer, pull-type, broadcast 40 ft. pattern

Lauson Power Products, Engine Div. Tecumseh Prod. Co., 900 North St., Grafton, Wis. 53024

Engines 2 to 16 hp, vertical and horizontal shaft, trans axles, transmissions, differentials, hydrostatic units

Lawn-Boy, OMC-Lincoln, P.O. Box 82409, Lincoln, Nebraska 68501

Lawn-Boy, solid state ignition rotary mowers, deluxe model rotary mowers

Lawn Medic, Inc., Manufacturing & Research, Gates Street, Bergen, New York 14416

Porto-Mixer, hand-operated small 1 c.y. portable tumbler

Lehara Equipment Co., Inc., 60 East 42nd St., New York, N.Y. 10017

Lehara Hy-Dro Flail, hydraulic extension mower—for mowing behind guard rails, up and down banks

The Lely Corporation, P.O. Box 1060, Wilson, N.C. 27893
Lely Broadcaster/Seeder, P.T.O. driven, lift and pull-type spreads fertilizer, seed, sand or chemicals
Lely Roterra, P.T.O. driven power harrow, prepares seedbed, incorporates chemicals, levels land

Levco Manufacturers, Inc., P.O. Box 72, Wynne, Arkansas 72396

Model HD50 Stump Grinder, a one-man stump removal system offering unequalled maneuverability and speed; operates behind a standard pickup truck (1/2-ton) or small tractor; features include industrial, water-cooled power unit and self-contained hydraulic system

Fred A. Lewis Company, 40 Belknap Rd., Medford, Oregon 97501

Lewis "Mole", post hole digger powered by chain saw motor

Lewis "Donkey" Winch, winch powered by your chain saw

Lewis Tractor "Mole", post hole digger attachment to small tractors (front end attachment)

Lifetime Career Schools, 2251 Barry Ave., Los Angeles, Calif. 90064

Landscape training, complete home study training in landscaping and ground care; free booklet describes training in detail

Lift-Quik Mfg. Co., South Main St., Evans Mills, N. Y. 13637

Lift-Quik, garden, golf cart, lift

Limb-Lopper Co., Inc., 11845 E. Burke, Santa Fe Springs, Calif. 90670

Limb-lopper, pruner, hydraulic and air, saw, chain hydraulic and air; saw, circular, hydraulic and air
Powerench, impact wrench, hydraulic
Powerbore, drill, Hydraulic; tamper, hydraulic

Lindell Industries, Div. of Lindell Pattern Works, 2689 So. 10th St., Fresno, Calif. 93725

Sweeper, vacuum; yard
Blower, leaf blower (wind-row)
Edger/trimmer, lawn

Lindig Manufacturing Corporation, 1875 West County Rd. C, St. Paul, Minnesota 55113

Lindig, shredders (soil and compost)—manual and tractor fed, capacity up to 200 yards/hour; screeners (powered) for soil and sand; brush chippers, 7 to 160 hp, compact and full size for branches up to 8" in diameter, also PTO drive; soil treating (sterilization) systems; leaf shredders and compost pulverizer/mixers
Lindig Kajon, compact brush chippers 7 to 10 hp
Lindig Concho, compost shredder/grinder
Lindig Apache, shredder/bagger for leaves and yard debris

Locke Mfg. Div. Stellar Lawn Care, 1085 Connecticut Ave., Bridgeport, Conn. 06607

Mowers, reel, self-propelled and riding, 30 inches to 87 inches; rotary

Lockwood Corporation, Box 160, Gering, Nebr. 69341

Lockwood Hardie Sprayers, airblast sprayer, 300 or 500 gallon stainless steel tank, trailer mount; utility (general purpose) 100 to 500 gallon stainless steel tanks. Truck trailer or skid mounted; shade tree—600 gallon stainless steel tank, truck mounted

Lombard Power Equipment, Sales Ave., Harrison, Ohio 45030

1500 electric, saw, chain, 12-inch bar; 12 amps
Pony, saw, chain, gasoline, 12-inch bar, 6 1/2 lbs.
Comango, saw, chain, gasoline, 16-inch bar
Super comango, saw, chain, gasoline, 1/2" anti-vibe, automatic oiler
Super Lightning, saw, chain, gasoline, 1/2" "anti-vibe,"

automatic oiler, 20-inch bar; saw, chain, gasoline, full "anti-vibe," automatic oiler

London Fog Company, Crystal Bay, Minnesota 55323
London Foggers, thermal foggers from 3 hp hand portable through 16 hp heavy-duty
London Aire, ULV insecticide dispersal equipment from 5 hp dolly mounted type through 9 hp extra heavy-duty for large area mosquito control

Lumenite Electric Co., 2331 N. 17th Ave., Franklin Park, Ill. 60131

Lumenite, lawn irrigation control and equipment

Lundin-Milner, Inc., Los Altos, California
Chipper, will handle up to 3-inch diameter material, pull-type, stationary, mounted, electric, gas, PTO powered

Lupton Enterprises, 32 Martha St., Tiffin, Ohio 44883
Log splitter, attachment to hackhoe, replaces bucket in minutes

M

M-B Company, New Holstein, Wis. 53061
Brush Chippers, trailer mounted—12" and 15" sizes 120-158 hp gasoline engines
Orchard Chipper, tractor 3-point hitch attached PTO driven (540 RPM), 12" wide chipper with feed apron and 180° discharge chute
1-10, 3-10, 5-10, line marker, hand operated
Fitchburg chipper, brush chipper 12 in. and 15 in.
Tractor Brooms, sweepers

Maasdam Pow'r Pull, Inc., P.O. Box 6130, Burbank, Calif. 91510

Maasdam Pow'r Pull, winch-puller

Magline, Inc., 503 S. Mercer, Pinconning, Mich. 48650
Trailevator®, trailer, hydraulic elevating

Mars Industries, Inc., 5209 West Broadway, Minneapolis, Minn. 55429

Mars Chem-Spray, turf sprayer, 5 gal. capacity
Surbuban Angle Broom, tractor attachable rotary sweepers
Suburban Pick-up sweepers, tow-type turf pick-up sweepers

Martindale Electric Co., 1375 Hird Ave., Cleveland, Ohio 44107

Martindale Protective Mask, respiratory protection against non-toxic dusts
Martindale Protective Eyeshield, one-piece eyeshield

Massey-Ferguson, Inc., (Industrial Products) 1901 Bell Ave., Des Moines, Iowa 50315

MF 20, industrial tractor, 38 hp
MF 30, industrial tractor, 52 hp
MF 40, industrial tractor, 38 hp
MF 20 Turf, industrial tractor, 38 hp
MF 30 Turf, industrial tractor, 52 hp
MF 20, 30, 40, 50A, 70, backhoe-loader; $\frac{5}{8}$ cu. yd., $\frac{3}{4}$ cu. yd., $\frac{1}{2}$ cu. yd. respectively; up to 16 ft. digging reach; all but MF 70 available separately
MF 711, skid steer loader
MF 2200, forklift
MF 2500, forklift
Box scraper, landscape

Massey-Ferguson, Inc., (farm equipment), 1901 Bell Ave., Des Moines, Iowa 50315

MF 135, tractor, 38 hp (PTO)
MF 165, tractor, 50 hp (PTO)
MF 175, tractor, 63 hp (PTO)
MF 180, tractor, 63 hp (PTO)
MF 1080, tractor, 80 hp (PTO)
MF 1105, tractor, 100 hp (PTO)

MF 1135, tractor, 120 hp (PTO)
MF 1155, tractor, 140 hp (PTO)
MF 1500, tractor, 150 hp (drawbar)
MF 1800, tractor, 180 hp (drawbar)

Massey-Ferguson, Inc., (consumer products), 1901 Bell Ave., Des Moines, Iowa 50315

MF 14, garden tractor, 14 hp
MF 126, garden tractor, 12 hp
MF 10, garden tractor, 10 hp
MF 310, self-propelled rotary mower, 3.5 hp
MF 210, push rotary mower, 3.5 hp
MF 58, 68, 61, 71, rotary cutters, cutting widths up to six feet

Mathews Company, P.O. Box 70, Crystal Lake, Ill. 60014
Lawn Genie, flail mower-sweeper-mulcher, 3 ft. and 6 ft. models

Maxey Manufacturing Co., Inc., P.O. Box 2001, Ft. Collins, Colo. 80521

Barela's Roller, turf seed bed prep—crushes, levels, compacts and finishes
Trailers, equipment trailers—medium duty
Truck Bodies, customized truck beds

McCabe-Powers Body Co., 8900 N. Frost, St. Louis, Mo. 63115

Buckets, aerial towers

McCulloch Corp., 6101 W. Century Blvd., Los Angeles, Calif. 90045

Chain saws, (15 models)
Hedge trimmer
Portable earth drill
Portable electric generators, 1500, 2000 and 3000 watt
Brush cutter

McDonough Power Equipment, Inc., McDonough, Georgia 30253

Mower, rotary, push-type and riding; reel, self-propelled

Melnor, Turf Irrigation Div., 1 Carol Place, Moonachie, New Jersey 07074

Shrub nozzle adapters
Stationary spray heads
Pop-up spray heads
Rotary spray heads
Pulsating spray heads
Solenoid valves
Time controls
Quick coupler valves
Pipe and fittings

Melroe Division, Gwinner, North Dakota 58040
Melroe Bobcat, skid turn front end loader

Metro-chipper, Vestor Div., Morbark Ind., Winn, Mich. 48996
Chippers, for large tree chipping

Miller Tilt top Trailer, Inc., 450 S. & 2 St., Milwaukee, Wis. 53214

Tilt Top®, machinery hauling trailer, changes quickly from between the wheel to over the wheel trailer
Ramp Champ®, over-the-wheel platform trailer; both trailers available with new gooseneck hitches

Mitts & Merrill, Inc., 109 McCoskry St., Saginaw, Michigan 48601

Chipper, brush, staggered knife pattern, swing away folding feed chute, positive safety lock pin

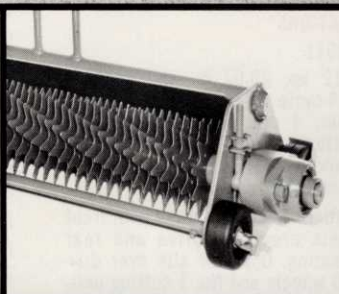
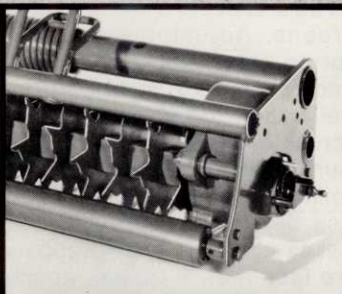
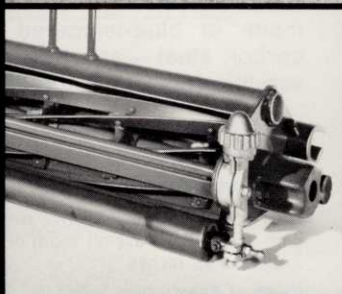
Mobile Aerial Towers, Inc., 2314 Bowser Avenue, Fort Wayne, Indiana 46803

Hi-Ranger, personnel platforms

Moody Sprinkler Co., Inc., 3020 Pullman St., Costa Mesa, Calif. 92626

**The great Greensmaster 3
still has no equal.**

**And now it's the best
spiker and thatcher, too.**



1 AS A GREENSMOWER, the high capacity Greensmaster 3 is the basic machine in the Toro greens-maintenance system. Exclusive features like the balanced, fully floating cutting heads—isolated from the traction unit and the grass baskets—give a uniform cutting height, appearance and playing characteristic to each and every green. Proven history of performance on fine greens all over the world lets you be confident of the real value of Greensmaster 3. (See back of page for complete features, benefits and specs.)

2 AS A SPIKER, the Greensmaster 3 is actually superior to specialty machines. Spiker units replace the three cutting units, penetrate turf up to 1 1/4 in. deep to relieve surface compaction, deliver water, fertilizer and chemicals quickly to root zones, and slice stolons and/or rhizomes—encouraging the production of new, young shoots. 57" working width makes spiking practical and efficient for the first time. Toro blade design doesn't ruffle turf. Greens are playable right after spiking.

3 AS A THATCHER, the Greensmaster 3, once again, does a better job than specialty or accessory units. Three thatching units easily replace cutting units. Tempered steel blades are arranged in a spiral pattern to do more work with less power. Variable blade spacing (as close as 1/2 inch) permits adjustment to meet varying turf conditions. 59" working width makes vertical mowing practical and efficient for the first time. Result: grain control and elimination of thatch buildup for healthier greens and more consistent playability.

GREENSMASTER 3[®]

TORO[®]

1 AS A GREENSMOWER, the features and benefits include:

Balanced, fully-floating cutting heads — isolated from the traction unit and grass baskets — give uniform cutting height from first green to the last (a Toro exclusive). Low pull point on all cutting units for straight, even tracking. 15-inch turning radius for greater maneuverability, faster handling. Low-noise fully-hydraulic drive is smooth and easy on the greens. Maximum operator visibility and ease of control. Exclusive interchangeable wheels, cutting units, baskets, reel drive motors save time, money invested in stocking parts. Customizing accessories for varying conditions — including a simply engineered and easy to install individual reel shut-off kit that controls the front two cutting units to give a variable track on the clean-up run. Optional reel roller scrapers minimize grass build-up for a beautiful appearance even on wet turf. Proven history of performance on fine greens all over the world lets you be confident of the real value of Greensmaster 3.

SPECIFICATIONS*

Model 04311

Engine: 12 hp, 29.07 cu. in., dynamic balance, 4-cycle with dry paper element air cleaner, 4 pint lubrication system, electric starting with 12 volt lead-acid battery, and 5 gallon fuel capacity. Hour meter is standard equipment.

Configuration: Tricycle vehicle with front two wheels providing drive and rear wheel steering. Operator sits over driving (front) wheels and No. 1 cutting unit, with No. 2 and 3 cutting units in front of vehicle.

Traction Drive: Direct driven hydraulic pump through stack valve to orbital gear motors which directly drive wheels.

Cutting Unit Drive: Belt driven hydraulic triple pump through stack valve to gear motors which directly drive reels.

Speeds: (approx.) (3300 RPM Engine) 1st — 3.7 m.p.h. 2nd — 7.0 m.p.h. Rev. — 3.7 m.p.h. Reels — 1800 RPM.

Clip: .27 approx.

Brakes: Two 6" drum type mechanical with pawl and ratchet lock for parking.

Tires: (3) 18 x 9.50 x 8, 2-ply pneumatic tubeless demountable and interchangeable.

Tire Pressure: 8 psi front; 12 psi rear.

Oil Reservoir: 6 gal. capacity with diagonal baffle to separate suction side from return side.

Wheel Bearings: Drive Wheels: needle bearings provided in wheel motors. Caster wheels: Timken tapered-roller.

Cutting Units: Reel diameter: 5". Height of cut: $\frac{3}{16}$ " to $\frac{1}{4}$ ". ($\frac{1}{8}$ " with thin bed knife.)

Reel Construction: 8 blades riveted to 5 cast spiders. **Power:** Hydraulic motor splined to reel shaft. **Bearings:** Timken tapered-roller. **Bedknife Adjustment:** Opposed screw. **Roller Adjustment:** Front: micrometer hand adjustment with bolted clamp lock (1 turn = .025" H.O.C. change). Rear: pivot-arm quick change with spring actuated tapered-pin lock (.21" H.O.C. change). Slotted plate with locking screw for roller/reel parallelism.

General Specifications: Width of cut: 59". Wheel tread: 49 $\frac{1}{2}$ ". Wheel base: 45 $\frac{1}{2}$ ". Turning radius: 15" uncut radius. Overall length: 87 $\frac{1}{2}$ ". Overall width: 69 $\frac{3}{4}$ ". Overall height: 50 $\frac{1}{4}$ ". Net weight (with all fluids): 1080 lbs.

Optional Equipment: Full Roller Kit (Model 04412), Wiehle Roller Kit (Model 04413), Swedged Roller Kit (Model 04414), Rear Roller Cleaners (Model 04417), $\frac{1}{8}$ " Height of Cut Bedknives, Individual Reel Shut-Off (2 reels only).

2 AS A SPIKER, the features and benefits include:

Special Toro profile-tooth spike blade that spikes cleanly without ruffling turf (greens are playable immediately after spiking — no rolling or cutting needed). Power driven reels with one-way slip clutch give added traction on sloping greens. Adjustable transfer spring transfers weight from traction unit to spiking reels. Delivers up to 650 lbs. of weight across 57 inch width for maximum $\frac{1}{4}$ inch penetration. Wide spiking area gets more done in less time — you can spike as fast as you mow. And the spikes are less than 2 inches apart. A depth measuring tool is included with each set of spiker units to insure effectiveness of treatment under varying conditions.

SPECIFICATIONS*

Model 04420

Unit Working Width: Effective width per unit — 19 inches; overall width of set of 3 units — 57 inches.

Downward Force: Basic unit weighs 84 lbs. per unit (252 lbs. for set of 3). Available override spring transfers weight from basic traction unit to spiker head. Min. downward force: 84 lbs./unit (8.4 lbs./blade)

Max. downward force: 220 lbs./unit (22.0 lbs./blade)

Performance: Spiker penetration — up to $\frac{1}{4}$ inch; gauged by supporting rollers.

Number of spike holes — 26 $\frac{1}{2}$ holes/ft. sq.

Spiker Blades: Blades high carbon steel — .105 inch thick. Special profile design for minimum disturbance of soil surface when spiking.

8 points per blade, 10 blades per unit (30 blades per set), 7 $\frac{3}{4}$ dia. blade point to point.

Power: Spiker powered by Greensmaster 3 reel drive motors; reel motors drive gear box — 12:1 speed reduction; output speed—150 RPM; gear box contains one-way slip clutch for "free wheeling" in forward direction; powered spiker unit assists basic traction unit when required.

3 AS A THATCHER, the features and benefits include:

Reels cut in forward rotation for efficient vertical mowing. Spiral pattern of thatcher blades means less wear on drive motors, more efficient thatching and throwing of thatch into basket. Adjustable gauge wheels tailor cut to various turf conditions. Variable blade spacing (as close as $\frac{1}{2}$ inch — depending on the need) permits adjustment to meet varying turf conditions. Gauge plates are provided for easy bench setting of penetrator depth, 59" working width makes vertical mowing practical and efficient for the first time. High strength blades are made of blue-tempered high carbon steel — and they're reversible for double the life.

SPECIFICATIONS*

Model 04416

Reel Diameter: 5".

Unit Working Width: Effective width per unit — 20 inches; overall width of set of 3 units — 59 inches.

Depth of Penetration: Infinitely variable, up to a maximum depth of $\frac{1}{4}$ ".

Reel Construction: Flat hardened steel blades spaced between various combinations of $\frac{1}{4}$ " spacers. Spacings between blades to vary from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ ". Set at $\frac{1}{2}$ " spacing at factory.

Power: Hydraulic motor splined to thatcher reel shaft.

Bearings: 1-inch shaft ball bearings retained in cast iron bearing housings.

Reel Adjustment: Pivoting shaft in slotted main frame.

Grass Shield Adjustment: Four bolt mounted shield. Slotted mounting straps for adjustment to reel to regulate throw characteristics.

*Specifications and design subject to change without notice.

Toro is an exclusive trademark of The Toro Company.

Rainmaster, automatic valves, electric and hydraulic; automatic controllers, electric and hydraulic; sprinklers—pop-up and stationary heads

Morbark Industries, Inc., P.O. Box 1000, Winn, Michigan 48896

Morbark Total Chiparvestor, disc type chipper reduces whole trees, limbs in tact, up to 21" diameter in less than a minute.

Mott Corporation, 500 Shawmut Ave., LaGrange, Illinois 60525

Mott Hammer Knife, safety flail mower

MTD Products, Inc., 5389 W. 130 St., Cleveland, Ohio 44111
Rotary Vacuum Shredder Bagger, 5 hp, 3 stage cutting action blade

Mud Cat, Div. of National Car Rental, 5501 Green Valley Dr., Minneapolis, Minn. 55431
Weed harvester, aquatic

The F. E. Myers & Bro. Co., 400 Orange Street, Ashland, Ohio 44805

Turf Line, TL 10 E2 10 GPM-500 PSI 200 gallon — paddle agitator; TL 10 E2S 10 GPM-500 PSI 200 gallon—skid model; TL 35 E5 35 GPM-800 PSI 500 gallon—engine—rotary agitator; TL 29 100 GPM-29" fan—150 gallon—engine—mist sprayer

N

National Foam System, Inc., Parco Div., 150 Gordon Drive, Lionville, Pa. 19353

Dragon Model 180, back pack 5 gallon sprayer

National Hydro-Ax, Inc., Box 568, Owatonna, Minnesota 55060

Hydro-Ax Brush Cutter, 117 hp 4-wheel drive articulate steering and rough terrain vehicle

National Mower Co., 700 Raymond, St. Paul, Minn. 55114
National, 84" National Triplex Reel, 10 hp riding Reel; 68" National Triplex Reel, 10 hp riding reel; 68" National Triplex Reel, 8 hp; 30" National Triplex Reel, 8 hp riding reel

Nelco, Inc., 2712 S. W. Freeway, Suite 118, Houston, Texas 77006

Pipe, irrigation through microporous openings

L. R. Nelson Corporation, 7719 N. Pioneer Lane, Peoria, Illinois 61614

Rain Train, traveling sprinklers

Silver Rain, pop-up sprinklers, landscape and turf irrigation equipment

Nunes Manufacturing, 2006 Loquat Avenue, Patterson, California 95363

Nunes Sod Harvester, complete mechanical sod harvester; mounted on Ford Model 4110 tractor; front cutoff and cutter assembly; will eliminate sod cutter labor; available in styles to: fold, slab, roll, sod.

Nunes Vacuum Sweeper, turf sweeper designed for sod growers; available with PTO drive or motor driven

O

Oberdorfer Foundries, Inc., Agri. Pump Div., Thompson Rd., Syracuse, N.Y. 13201

Pumps, bronze and aluminum, rotary gear, rubber impeller, rubber cotlar, centrifugal, helical rotor

Olathe Mfg., Inc., 2nd and Mullberry, Paola, Kansas 66071

Olathe Model 800 Quiet Chipper, brush, limb and lumber chipper with new patent pending noise control features
Model 8 Stump Cutter, portable stump remover, 8 hp
Model 12 Chipper, 3-pt. hitch PTO powered brush chipper

Model 172 and 330 pers, trailer mounted engine powered brush chippers

Model 400 hydraulic power unit, 8 hp portable hydraulic power unit

Omark Industries, Inc., Oregon Saw Chain Division, 9701 S. E. McLoughlin Blvd., Portland, Oregon 97222

Oregon Saw Chain, saw chain and accessory items
Oregon Power Mate and Super-tronic saw bars
Oregon Power Mate, rim and drum sprockets

Onan Division of Onan Corp., 1400 73 rd Ave. N.E., Minneapolis, Minn. 55432

Engines, 12-25 hp air-cooled engine gasoline electric portable generators, 1000 watts-15,000 watts
Porta Charge™, golf car portable electric generator, 1500 watts

Otis Elevator Company—Special Vehicle Division, P.O. Box 8600, Stockton, Calif. 95208

Otis Golf Car, electric, 4-wheel, 36 volt

Otis Turf-Awl, gasoline, 3 and 4-wheel, 18 hp

Otis Materials Handling, 8000 Baker, Cleveland, Ohio
Forklifts

P

Papac machine Co., Shortsville, N.Y. 14548
Leaf blower

Par Aide Products Co., 296 No. Pascal Street, St. Paul, Minnesota 55104

Complete Line of Greens and Tee Accessories equipment including: golf ballwashers, flag poles and flags, tee towels, detergent for golf ballwashers, aluminum and plastic putting cups, hole cutters, cup setter, cup puller, rule signs, custom tee plaques, furniture for locker room and tee benches; spike rushes, sand trap rakes, etc.

Parker Sweeper Company, Box 720, Springfield, Ohio 45501
Estate Master, 3-gang sweeper for turf or large area cleanup

Hurricane Blowers, for windrowing leaves etc. for easy collection

Trail Thatch, a large three-gang Thatch-O-Matic for dethatching large areas

Partner Industries of America, Inc., 2733 W. Fulton, Chicago, Ill. 60612

Saws, chain, six models, 10 1/2-17 lbs. weight, automatic chain oiler

Perma-Rain Irrigation, Inc., P.O. Box 880, Lindsay, Calif. 93247

Filter, sand, silt, algae etc. (irrigation)

Emitter, "E1" for irrigation—trees/shrubs; "Perma-Flo E1"

Fogger, Perma-Rain, for tree and shrub irrigation and plant cooling

Pioneer, OMC-Lincoln, P.O. Box 82409, Lincoln, Nebraska 68501

Pioneer P 40, 4.0 cu. inch engine chain saw for professional use

Pioneer P 20, 3.1 cu. inch displacement chain saw for casual use

Pioneer P25, 3.1 cu. inch displacement chain saw for casual use

Pioneer 1200 A, 3,546 cu. inch displacement chain saw

Piper Aircraft, Bald Eagle Street, Lock Haven, Pa. 17745
Aircraft, fixed wing

Piqua Engineering, Inc., 234 First St., Piqua, Ohio 45356
Lickity, brush chippers, log splitters, can compactors

Pitman Manufacturing Co., Div. A. B. Chance Co., P.O. Box 120, Grandview, Mo. 64030

Mobilift, aerial bucket

Plasti-Chain Corporation, P.O. Box 267, Hebron, Illinois 60034

Plasti-Chain Polymer Chain and Plastic Chain and Steel re-inforced ground and Ground Post, corner posts for use around golf course tees, cart pathways, etc.; connecting links and S-hooks also available; each of 2 sizes in chain and all-purpose posts available in white and black; chain available also in blue, red, green, and yellow

Estate Fencing, plastic chain and steel re-inforced posts pre-packaged as follows: Master Kit, contains 10 posts, 85 1/2 feet of chain packed in 9 1/2 foot lengths, available in black, white, or combinations; ideal for lining a sidewalk, enclosing a patio, garden, etc.—Driveway Pack Kit, contains 6 posts, 47 1/2 feet of chain, packed in five 9 1/2-foot lengths; available in black, white, or combinations; ideal for lining a driveway—Corner Pack Kit, contains 3 posts and two 9 1/2-foot lengths of chain; available in black, white, or in combinations; perfect for fencing off restricted areas or to indicate danger areas

Guideline Lane Equipment, available in 40-inch high/2 1/2-inch diameter, heavy duty "base" post; in black, or white supplemented by two sizes of plastic chain available in black, white, red, blue, green, or yellow; connecting links and S-hooks also available by color; this all Guideline Lane Equipment is ideally suited for directing crowds at all indoor functions, outdoors in parking lots or at field events, or where ever people gather; easy to set up, move, remove, or store; permanently attractive, requires no maintenance

Plastic Techniques, Inc., New Boston, N.H. 03070
Plastic Techniques, aerial lift truck accessories

Plastiline, Inc., 1251 N.E. 45 St., Pompano Beach, Fla. 33061
Polyethelene (plastic) fittings

H. K. Porter, Inc., 74 Foley St., Somerville, Mass. 02143
Cutters, bolt, rod, cable, chain, etc.
Shears, lopping
Trimmers, tree
Shears, pruning
Cutters, brush and root

Beaird-Poulán Division, Emerson Electric Co., 5020
Flournoy-Lucas Rd., Shreveport, La. 71109
Poulán, gasoline chain saws; electric chain saws

Power Spike Mfg. Co., Walters, Okla. 73572
Power Spike, spiker

Precision Chipper Corporation, Box 360, Leeds, Ala. 35094
Chipper, heavy-duty, industrial, feed through rate of about 125 feet per minute

Princeton Manufacturing Co., P.O. Box No. 1, 360 W.
Waterloo Street, Canal Winchester, Ohio 43110
Princeton Sod Harvester, self-propelled harvester, cuts and stacks sod on pallets

Product Development International, Box 676 Liberty, S.C. 29657

Tree-Injectors, systemic tree injection kit
Riggin'-Buddy, rigging device for tree workers
Magic Knot, mechanical fastener for rope tying
Quick Cablers, easy tree bracing system
Tool Holders, for holding tree workers tools on belts
Climber's Tie-In Strap, lightweight safety strap for tree climbers
Training Manuals, for all tree care people

Q

Quadra Mfg. Ltd., Box 491, Trail, B. C., Canada
Frontier, super-light weight chain saws

Quality Marsh International, P.O. Box 406, Thibodaux, La.

Quality, amphibious marsh and swamp equipment; amphibious draglines; amphibious personnel carriers; amphibious roto booms

R

RainBird Sprinkler Mfg. Corp., P.O. Box 37, Glendora, Calif. 91740

RainBird, impact sprinklers, spray heads, rotor pop-up sprinklers, electric valve-in-head sprinklers, hydraulic valve-in-head sprinklers, quick coupling valves, manual angle valves, electric remote control valves, hydraulic remote control valves, electric and hydraulic automatic controllers, specialty valves, valve markers, electric underground cable

Rain Jet Corporation, 301 S. Flower St., Burbank, Calif. 91503
Sprinkler heads for irrigation
Shower head for club house

Rain-O-Mat Sprinklers, Inc., 12414 Whittier Blvd., Whittier, Calif. 90608
Sprinkler irrigation equipment

Raven industries, Box 1107, Sioux Falls, South Dakota 57101
Fiberglass tanks
Rhino polyethylene tanks

Reach-All Manufacturing and Engineering Co., 436 Calvary Road, Duluth, Minnesota 55803
Reach-All, hydraulically operated aerial baskets, truck mounted hydraulic cranes

Red Ewald, Inc., Box 1167, Karnes City, Texas 78118
50-gallon spray rig, the basic unit is 50-gallon fiberglass tank, skid, 5 hp engine, 6 roller pump, 25' hose and handgun, plumbing and regulator

Reinco, Inc., P.O. Box 584, Plainfield, New Jersey 07061
Reinco, Inc., hydrograssers, power mulchers

Rental Equip. Mfg. Co., 2778 So. Tejon, Englewood, Colo. 80110
Bluebird, lawn combers, A/K/A thatchers, dethatchers, lawn rakes, renovators and vertical mowers, 4 hp, 5 hp, 7 hp
Bluebird "1500", engine hoists, knockdown type
Bluebird "3000", engine hoists, towable type
Bluebird "Yardbird", utility crane
Bluebird, engine stands
Bluebird "F.20B", lawn comber, compact type, 5 hp

Ridge Plastics Co., Highway 18 East, P.O. Box 2205, Jonesboro, Arkansas 72401
Biaxially oriented HD plastic pipe, sub-irrigation

Robco, Inc., 2800 Bay Road, P.O. Box 5326, Redwood City, Calif. 94063
Robco—Hatsuta, back-pack mist blower, duster
Robco, high pressure piston pumps, 4 GPM to 28 GPM; Hand sprayers and hand dusters; High pressure vinyl spray hose

Rockwell International, 5001 North Rockwell Ave., Bethany, Oklahoma 73008
Rockwell Thrush Commander, agricultural aircraft, fixed wing

Rogers Bros., 100 Orchard St., Albion, Pa. 16401
Trailers

Roof Mfg., 1011 W. Howard St., Pontiac, Ill. 61764
Ranger, mower, self-propelled, tilt blade for heavy cutting, 5 hp or 7 hp, 24-inch or 26-inch cut
Roof 400, mower, push, blade clutch, 5 hp, 21-inch or 24-inch cut, belt driven blade

Root-Lowell Corporation, 1000 Foreman Road, Lowell, Michigan 49331



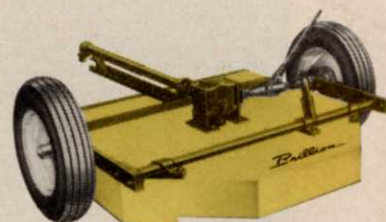
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These rugged Brillion tools make up a complete vegetation maintenance and control system. For soil preparation, seeding and mowing. On parkways or plant sites, public or private grounds. They get the work done quickly, in complete safety. And you'll find it easy staying within your grounds maintenance budget because repair bills just aren't a problem. Like all Brillion tools, these are built to do the toughest jobs, and keep on doing them year after year. Find out more. Send the coupon, or see your nearby Brillion dealer.



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Dept. LI-41-123, Brillion, Wis. 54110

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Mower |
| <input type="radio"/> Rollers | <input type="radio"/> I am a student |
| <input type="radio"/> 60" Rotary Mowers | |

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Silverfish



Birch Leaf Miners

Sowbug



Mosquito



Ant



Tent Caterpillars



1974 will be a bad year for bugs.

Bad for bugs of turf and ornamental plants. And bad for household and structural bugs. Because Dow has a pair of insecticides that will make their lives miserable. There's ZECTRAN* insecticide, a general use biodegradable insect killer that works on almost all major foliage-feeding insect pests—even the hard-to-kill kinds. Use ZECTRAN on over 600 different flowers, ground covers, trees, shrubs and turf. And then there's DURSBAN* insecticide. Its effectiveness, economy, non-phytotoxicity and biodegradability make it the choice of professional turf men for golf greens, turf farms, home and



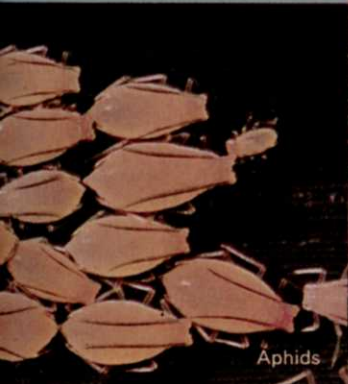
Looper



Spider



Grasshopper



Aphids



Whiteflies



Cockroach



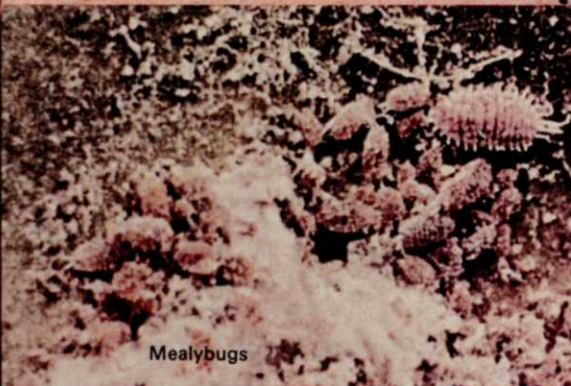
Cutworm



Hairy Chinch Bug



Bagworms



Mealybugs



Leafhopper

Ag-Organics Department, Midland, Michigan 48640

industrial lawns—or wherever grass and ornamentals are grown. It's especially effective to control the hairy chinch bug and sod webworm. DURSBAN insecticide is also preferred by PCO's for controlling household and structural pests—especially resistant roaches that laugh at other sprays. Please remember to read and observe all precautions on the product label. Bugs, get ready for 1974!

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Durapower, power sprayer: 10 gpm double piston pump @ 400 p.s.i., tanks 100, 200, 300 gallons
Spraycat, power sprayer: 3 gpm single piston pump @ 250 p.s.i., tanks 15, 30, 50 gallons

Roper Corporation, 1905 W. Court St., Kankakee, Ill. 60901
Saws, chain; manual and automatic; dual system chain oiler

Rosco Manufacturing Co., 3118 Snelling Ave., So., Minneapolis, Minn. 55406
Rollpac, steel wheeled roller, lawn, asphalt paths, etc.

Roseman Mower Corporation, 2300 Chestnut Avenue, Glenview, Illinois 60025
Roseman, mowers—gang reel, both mounted and hydraulic driven; tiller rake—landscape tiller rake

Roto-Hoe Co., Newberry, Ohio 44065
Cut 'N Shred, shredder, 3½ hp, interchangeable with tiller

Rowco Mfg. Co., Inc., 48 Emerald St., Keene, N.H. 03431
Brushking®, brushcutter, engine driven

Roxy-Bonner, Inc., 2000 Pioneer Rd., Huntingdon Valley, Pa. 19006
Roxy, mower reel, 25" and 28" cut
Lawnshear, mower reel, 21" cut
Ideal, mower reel, 30" cut

Royer Foundry & Machine Co., 158 Pringle St., Kingston, Pa. 18704
Royer Shredders, Models 362, 262, 180, 120, 12, 10, and 8
Power Screens, Models 30 and 42
Royer Chipper, Model 2600 PTO

Ryan, OMC-Lincoln, P.O. Box 82409, Lincoln, Nebraska 68512
Ryan turf equipment, full line of turf aerators, spikers, renovators

Joseph T. Ryerson & Son, Inc., P.O. Box 8000-A, Chicago, Ill. 60680
Landscape Edging, steel

S

Sabre Saw Chain, Inc., Third Ave. and Sabre Drive, Niagara Falls, N.Y. 14304
Sabre, saw chain, guide bars, sprockets, wedges, files, accessories

Safeline Products, P.O. Box 550, Putnam, Conn. 06260
Respirators (all types), lung protection
Safety Glasses and goggles, eye and face protection
Hearing protectors, muff-type and ear plugs
Hard hats and caps, plastic safety hats and caps

Safe-T-Lawn, Inc., 7800 N.W. 32nd St., Miami, Florida 33122
Safe-T-Rain, rotor pop-up (ball drive)
Rise-N-Rain, impact type pop-up
GL-67, 2" pop-up spray type
GL-71, 6" pop-up spray type

Safety Test & Equipment Co., Inc., P.O. Drawer 400, Shelby, North Carolina 28150
Wood/Chuck, manufacturer of Wood/Chipper capable of chipping logs up to 8" in diameter
Safety Test, manufacturer of complete line of tree trimming and linemen's equipment

Satoh Tractor c/o NEDA, P.O. Box 5025, Richmond, Va. 23220
S-650G, tractor, utility, 25 hp; water-cooled, 4-cylinder engine, category I—3-point linkage; 2-speed PTO, 540 and 1,000 rpm

Schutt's Equipment Co., P.O. Box 412, Birmingham, Mich.

48012

Schutt's Marvel Tree Diggers, front loader models from 18" to 60" ball sizes; Back hoe models from 18" to 36" ball sizes
Schutt's Root Pruners, 3-point hitch models from 16" to 22" ball sizes

E. R. Schwartz Mfg. Co., Box 248, Lester Prairie, Minn. 55354
Trailers, equipment

M. J. Scott, Co., 721 W. 2nd, Hutchinson, Kansas 67501
Grasshopper, rotary riding mower

Sea Guard, Inc., Delaware Trust Bldg., Wilmington, Del.
N-Bar®, floating barrier to hold back aquatic vegetation

Selma Trailer & Mfg. Co., P.O. Box 120, Selma, Calif. 93662
Aerial buckets—articulated boom lifts 20 to 55 feet from ground; telescoping bucket from 20 to 55 feet

Servis Equipment Company, 1000 Singleton, Dallas, Texas 75221
Servis Saturn, 5 rotary mower; 6 rotary mower; 7 rotary mower
Servis Cyclone, 60 rotary cutter; 72 rotary cutter
Servis flex, 15 rotary cutter
Servis Gold Star, post hole digger
Servis landscape rakes, box scrapers

Seymour Smith & Son, Inc., 900 Main St., Oakville, Conn. 06779
Garden tools, pruning shears, grass shears, hedge shears, lopping shears, tree pruners, pruning saws

Simplex Mfg. Co., 5224 N.E. 42nd Ave., Portland, Oregon 97218
Greenhouses

Simplicity Mfg. Co., 500 N. Spring St., Port Washington, Wisc. 53074
Lawn and garden tractors with wide range of hp tillers, turf rollers, mowers, rotary, reel, gang, sicklebar

Skil Corporation, 5033 Elston Ave., Chicago, Ill. 60630
Skilsaw, chain saws

R. & G. Sloane Mfg. Co., 7606 N. Clybourne Ave., Sun Valley, Calif. 91352
GSR Color Guard, PVC fittings for pipelines, sizes include ¾-inch through 2 inches class 315 and 2½ inches through 8 inches; class 200, press rated

Slope Tractor, Inc., 106 W. 9th Ave., Harper, Kansas 67058
Slope Runner, tractor mower, rotary flail or sickle, adjustable angle hydraulic lever control adjusts wheels and tractor chassis to remain in level attitude on a slope

Smith & Co., Inc., D.B., 414 Main St., Utica, N.Y. 13503
Sprayers, complete power unit

Smith Precision Products Co., 1299 Lawrence Dr., Newbury Park, Calif. 91320
Measure-Mix, measures precise mixture of fertilizer to water when watering shrubs, lawns, etc.

Smithco, Inc., 11 West Ave., Wayne, Pa. 19087
Red Rider, 3-wheel turf vehicle
Top Rider, top dresser
Little Beaver Spiker, spiker
Easy Rider III, sand trap rake
Lark, 110-gallon fiberglass sprayer
Hawk 200, 200-gallon fiberglass sprayer w/Golden Eagle pump
Hawk 300, 300-gallon fiberglass sprayer w/Golden Eagle pump
Cardinal, 200-gallon stainless steel sprayer w/Golden Eagle pump

The Snow Company, 4350 McKinley, Omaha, Nebraska 68112

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A one-unit operation for
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Basket, Chipper,
Chip Box and tool
compartments all on
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A 3 knuckle aerial unit
with your choice of 136°
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Hydraulically operated chip boxes, either side or end ejection.



REACH-ALL Model 5050 3K aerial basket with hydraulically powered 12" chipper, a hydraulic ejection box and tool boxes. All assembled as one complete unit.



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Snowco, utility trailer, Power-Kart, umbrella/buggy top, Nomad/Tri-Scat/Super-Scat

Soilmoisture Equipment Corp., 801 So. Kellogg Ave., Goleta, Calif. 93017

Jet Fill Tensiometer No. 2750, moisture measuring equipment for irrigation control, semi-permanent installation, sizes 6" through 60"

Quick Draw Tensiometer No. 2900, Moisture measuring equipment for irrigation control, portable, sizes 12" through 18"

Turf Probe No. 2950, double action tensiometer measuring moisture at 2" and 5", portable

Soilmoisture Gage No. 2700, moisturing measuring equipment for irrigation control, semi-permanent installation, sizes 6" through 60"

Soil Water Sampler No. 1900, Obtains soil water for laboratory analysis and leaching determinations, permanent installation, sizes 6", 11", 24", 36", and 48"

Soil Sampling System No. 215, "Veihmeyer/King" soil sampling probes, sizes 4' through 16'

Soil Auger No. 230, auger equipment for strata identification, core sizes of 2", 3", 3½", and 4"

Salinity Sensors & Bridge No. 5500, salinity sensing equipment for field use, portable

Solo Motors, Inc., P.O. Box 5030, 5100 Chestnut Ave., Newport News, Virginia 23605

Sprayer, Model 425 hand operated

Mistblower, Model 410 3 hp, Model 423 5 hp

Tractor Sprayer, 10 hp, Model 424 self-propelled; 18 hp, Model 450 self-propelled; Model 451 PTO mounted; Model 452 PTO mounted; 10 hp, Model 419 super custom mounted

Newport, blower Model 430 5 hp, mini Model 410 3 hp

Chain Saw, Model 610 3 SAE hp, Model 620 4 SAE hp,

Model 650 6 SAE hp, Model 635 8 SAE hp, Model 660 7 SAE hp

Mower, sickle bar, 6.5 SAE hp, Model 520

Water Pump, 6.5 SAE hp, Model 801

Garden Tractor, Model 527 tiller 6.5 hp

Post Hole Digger, Model 812, 6.5 hp

Snow Blower, Model 813, 6.5 hp

Generator, Model 819, 110 volt

Engine, Model 272, 6.5 hp

Speedex Tractor Co., 367 N. Freedom St., Ravenna, Ohio 44266

Speedex, tractor, 8 hp, 10 hp, 14 hp

Mower, rotary, 36-inch, 44-inch, 50-inch

Spray Baby, Inc., 751 N. Edmonds Dr., Carson City, Nev. 89701

Seeders, hydraulic

Mulchers, hydraulic

Spraying Systems Co., North Avenue at Schmale Road, Wheaton, Illinois 60187

TeeJet, spray nozzles with interchangeable spray tips

Foam Jet, spray nozzles with interchangeable spray tips

Vee Jet, spray nozzles

GunJet, spray guns

FloodJet, spray nozzles

Sprinkler Irrigation Supply Co., Div. A. J. Miller, Inc., Campbell Rd., Royal Oak, Michigan 48067

Pipe, irrigation

Irrigation systems, complete

Sprinklers

Standard Mfg. Co., 220—E. 4th St., Cedar Falls, Iowa 50613

Standard, golf course equipment

Stihl American, Inc., 107 Bauer Dr., Oakland, N.J. 07436

Chain Saws, electric and gasoline powered, saw, chain, powered

Stihl SG-17, blower/sprayer, back-pack gasoline powered

Stihl Cutquik, saw, circular cut-off for cement, stone, steel, pipes, etc.

Stihl earth auger and planting tool, gasoline powered

Stihl Brush-Cutter, brush and weed cutter, gasoline powered

Stihl Hedge-Trimmed, hedge trimmer, gasoline powered, trim hedges and small brush/trees

Stone Construction Equipment, Inc., 32 Main, Honeoye, N.Y. 14471

Stone, digger—12 volt, operates off of 12 volt system; 2" to 7" digger dirt augers for digging post holes and holes for trees, shrubs, etc.

Sudbury Laboratory, Inc., 572 Dutton Rd., Sudbury, Mass. 01776

Sudbury Soil Test Kits, designed to make "on-the-spot" tests for nitrogen, phosphorus, potash and acidity/alkalinity; simple to use "as easy as reading a thermometer."

Sun-Mastr Corp., P.O. Box 31, Olathe, Kansas 66061

Safty-Shear, 74" and 90" flail mowers

Sun Mastr, mid-mount mowers; rotary cutters 60"-72"-84"; 60" and 72" rear-mount mowers; 3-gang and 5-gang reel mowers

Swan Hose Div.—Amerace Corp., P.O. Box 509, Worthington, Ohio 43085

Swan, garden hose, Industrial and maintenance hose

Sweepster, Jenkins Equipment Co., 2910 Baker Road, Dexter, Michigan 48130

C-36, self-propelled Walk Behind, 3' wide, 5 hp

C-48, 4' wide front mounted compact tractor broom

B-60, 5' wide front and rear mounted broom for grounds maintenance tractors

TR-48, 4' wide tow behind pick-up sweeper, 5 hp

AH, 6' wide 32" diameter front mounted tractor broom,

all hydraulic operation, hydraulic swing, run and lift

HF, 6' wide 32" diameter front mounted tractor broom,

mechanical drive

R-HF, 6' wide 32" diameter rear mounted on 3-point

hitch, mechanical drive

HH-60, 5' wide loader mounted pick-up sweeper (for fork

lifts also)

LH, 6' wide 32" diameter loader mounted sweeper

C-72, compact truck mounted broom

Swenson Spreader & Mfg. Co., P.O. Box 127, Lindenwood, Illinois 61049

Spreader, gas, hydraulic

Thatcher, attachment for rotary mowers

Leaf Loader, trailer mounted

T

TCI, Inc., Box 249, Benson, Minn. 56215

Tyler, 2 to 8-ton pull type fertilizer spreaders; 15' to 45'

anhydrous ammonia applicators

Herculift, 4-wheel drive rough terrain forklifts

Super Challenger, 4-wheel drive, 1 yard bucket loader

Tallman Equipment Co., Inc., 3825 W. 31st St., Chicago, Illinois 60623

Shears

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

Tecumseh Engines, 2 to 18 hp, 4-cycle + 2-cycle, air and liquid cooled, single + twin cylinder

Tecumseh genuine parts

Peerless Gear Drives, transmission, transaxles, hydro-

static gear drives, right angle + T drives

Taylor Mufflers

SnowKing Engines

Teledyne Wisconsin Motor, 1910 South 53rd St., Milwaukee,

Wisconsin 53246

Wisconsin, Wisconsin-Robin, Wisconsin-Hatz Diesel, heavy-duty, air-cooled internal combustion engines, 3—80 hp, single, two, three and four-cylinder

Tennant Maintenance Systems, 781 North Lilac Dr., Minneapolis, Minn. 55490

Hydraulic heavy-duty power sweeper for driveways, walks and maintenance areas covered with cement

Terrain King Corp., 4444 Center, Houston, Texas 77007

Terrain King, rotary mowers—4'-25'

Turner, flail mowers—(3-point and boom)

Slopemower, boom type mowers—31' reach

Thomas Equipment, Ltd., Centreville, New Brunswick, Canada

Mower, Sickle, attachment to front end loader

Thompson Manufacturing, 2251 E. 7th St., Los Angeles 90023

Turf Irrigation Sprinkler and Accessories, gear driven rotary turf irrigation sprinklers

Tilton Equip. Co., 855 3rd St. S.W., New Brighton, Minnesota 55112

Jonsered Chain Saws, four models, 11 1/2 to 20 lbs. weight, 12-60 inch bar length, automatic and dual system chain oiler

Tork Time Controls, Inc., 1 Grove St., Mt. Vernon, N.Y. 10550

Tork, irrigation, automatic lawn sprinkler controls

The Toro Company, 8111 Lyndale Ave., So. Bloomington, Minn. 55420

Hevi-Duty, mower, rotary (hand or self-propelled) 21 inch and 25 inch

Whirlwind, mower, rotary, 31-inch

Trojan, 60-inch cut

Professional, mower, triplex reel, 70-inch, 76-inch and 84-inch cut

Greenmaster, mower, walk greensmower, 21-inch

Greensmaster 3, mower, triplex greensmower, riding

Spartan Gang, mower, 5, 7 or 9 bladed-formal and semi-formal turf

Landscaper 4, multi-purpose landscaping tool for seedbed preparation, seeding, fertilizing, also Model 6 Pro.

Rake-O-Vac, turf and hard surface sweeper

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Parkmaster, 5-7-9 unit hydraulic mowing tractor

Roughmaster, 4 and 5 bladed rough area reel mowers

Toro Frames, reel mower transport and lift frames

Toro Turf Tractor, utility turf tractor

Sandpro, sand trap maintenance and grooming unit, all hydraulic

Groundsmaster 72 with 70 1/2-inch cut, riding rotary mower

Workmaster, utility vehicle

Toro Irrigation Division, P.O. Box 489, Riverside, Calif. 92502

Automatic Controller, irrigation equipment, hydraulic or electric; 4, 8, 11, 23 station control satellite

Automatic Remote Control Valves, 3/4-inch to 2-inch, hydraulic or electric

Pop Up Spray Sprinklers, 8-54 ft. diameter stream spray

Pop Up Rotary Sprinklers, 65-235 ft. diameter, valve and hand, hydraulic or electric, 2-speed, gear driven

Shrub and Bubbler Sprinklers, adjustable, stream, flood Boring Machine, 10 ft. and 16 ft. models

Trenching Machines, residential, light commercial, converts to boring machine, 1-3 inches wide, 7 inches deep Quick Coupling Valves, standard, vinyl or with lock cover, valve range 3/4-inch to 1 1/2 inches

Impact Sprinklers, 1/2-inch to 1 1/4 inches threaded connection, part of full circle

Towner Mfg. Co., P.O. Box 6096, Santa Ana, Calif. 92706
Trenchers and harrows

Tradewinds, Inc., P.O. Box 1191, Tacoma, Washington 98401
Holder, tractors, 4-wheel drive, diesel, 14 hp to 40 hp; tractor mounted sprayers, PTO pumps, complete with turbulator mistblowers, (all sizes from 22 gallons up); knapsack power sprayers (for mist, dust, granules, flamethrowers, etc.) world's only packsack sprayer with centrifugal pump

Travelrain Power Sprinkler Co., 239 No. Robertson Blvd., Beverly Hills, Calif. 90211

Travelrain Power Sprinkler, (irrigation) traveling sprinkler

Sharpomatic, drill & Tool sharpener (electric)

Tree ject Company, Box 396, Waycross, Ga. 31501

Sprayers, hose end, complete power unit

Triumph Machinery Co., Willow Grove St., Hackettstown, N.J. 07840

Rakes, landscape

Thatchers, mower, vertical

Mowers, sickle bar; rotary, heavy-duty

Trojan Battery Company, 9440 Ann St., Santa Fe Springs, Calif. 90670

Trojan, storage batteries—electric golf car, automotive, commercial, truck, bus, and industrial

Turf Service Laboratory, Inc., P.O. Box 1001, Laguna Beach, California 92651

Moistureometer Model 50, protable 12" probe electronic measures soil moisture from 1 inch to one foot

Moistureometer Model 20, portable 6-inch probe designed for measuring moisture in pots

Moistureometer Model 75, one meter probe designed to measure moisture at depths of one meter, 75 CM, 50 CM, and 25 CM permanent installation; meter separate digital read out

Turf Vac Corporation, P.O. Box 4339, Long Beach, Calif. 90804

Turf Vac, self-propelled rider vacuum

Fairway Master, sweepers—18-25 hp with hydraulic drive systems, blower attachments, and hand pick-up hose attachments, and hydraulic lift dump available; towed units 4 1/2' to 10' wide, 10 1/2-25 hp or PTO; hydraulic lift dump and hand intake hoses available

U

Universal Division Leigh Products, Inc., Coopersville, Michigan 49404

Universal-Spray Doc, sprayer—tank; sprayers—open top tank

Universal, slide sprayer; flame sprayers; hose-end sprayers; power sprayers; continuous and intermittent hand sprayers; hand dusters; fogger—mineral base

Universal Motor Division, Medalist Industries, P.O. Box 920, Oshkosh, Wisconsin 54901

Aquamaster Pumps, portable centrifugal pumps 1 1/2" or 2" suc/disch., 3 hp gas engine or 1/2, 3/4, 1 1/2, 2 hp electric motors, standard seal for water, corrosion resistant seal for fertilizer, herbicides, etc.

Up-Right Scaffolds, 1013 Pardee St., Berkeley, Calif. 94710
Scaffolds, portable, aluminum for tree trimming

Utility Body Co., 901 Gilmen, Berkeley, Calif. 94710

Buckets—aerial towers

V

Val-Jac Mfg. & Supply Co., Inc., 110 N. Park, Maize, Kansas 67101

Small truck compactor for parks and recreational areas
Valley Products Corporation, Box 668, Valley, Nebr. 68064
VPC Stump Cutter, 8 hp one-man tree stump remover

Vandermolen Corp., 119 Dorsa Ave., Livingston, N.J. 07039
Blower KWH, for leaves and debris, wheeled, 2-cycle engine
KWH Mistblower, back pack
Diadem Brush Chipper, for branches up to 3", wheeled, PTO or skid models, 8 and 12 hp models
Bora KWH Mistblower, skid model, 110-gallon tank, 75-80 ft., reach fan power by rotary engine
Diadem Spreader/Seeder, broadcaster, PTO driven, 3-pt. hitch
Flykil, electric flykiller

Venable Sprinkler Sales, Inc., 3401 Couflans, Irving, Texas 75060

Pump-A-Matic, pre-built pump station for golf course, etc., irrigation
Pressure-Matic, booster pump unit to increase pressure of water in hydraulic system tubing to use potable water

Veri Products, P.O. Box 5129, Cardwell Station, Fresno, Calif. 93705

Scabbards for chain saws

Vermeer Manufacturing Company, P.O. Box 200, Pella, Iowa 50219

Stump Cutters, 12-65 hp, seven models
Tree Spades, 4 models (trailer or mounted)
Log Chippers, 2 models
Log Splitter,

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

Village Blacksmith, McGraw Edison Portable Electric Tool Division, 1200 East State St., Geneva, Illinois 60134

Village Blacksmith, garden cutting tools, electric chain saws, electric hedge trimmers, electric edger trimmers, electric cultivator, Cord Reels, "Blitz Fog" insect fogging devices, gas engine fogger, electric tree surgeon, post hole diggers and augers

Vogel Tool & Die Corp., Stone Park, Illinois
Post hole drill

W

W-W Grinder, 2957 N. Market, Suite 169, Wichita, Kansas 67219

Shredder-Grinders, complete line of soil shredder-grinders for gardeners, nurseries, greenhouses, etc.; horsepower ranging from 1 hp models to 30 hp models; available with gas engines, electric motors or less power; some models feature electric start gas engines

Waco Industries, Inc., 749 Airways Blvd., Jackson, Tenn. 38301

Chain saws

Waldon, Inc., 201 W. Oklahoma Ave., Fairview, Okla. 73737

Tractor, hydraulic, 4-wheel drive, articulating and oscillating type frame plus utility air, may be used as a forklift or loader

Pickup Broom, attachment to Waldon 5000 tractor
Snow Blower, attachment, auxil. engine, 65 hp, chain drive

Forklift, boom type, attachment to Waldon 5000 tractor
Scrap Grab, attachment, lift capacity 1300 to 1900 lbs.
Backhoe, attachment to Waldon 5000 tractor

Walsh Manufacturing Co., 1200 Fisher Street, Charles City, Iowa 50616

Trailer Model Sprayer, exclusive sump trap, exclusive uni-stand, rear safety stand 200, 300, and 500-gallon cap.; built in nylon agitator

RA Side Mounted Sprayer, 400-gallon capacity; each tank valve controlled, 2-200 gallon tanks, custom fit mounting brackets, valve stand

3-Point Hitch Sprayer, 165, 200, or 300-gallon capacity, Cat. II hitch pins

Fiberglass Tanks (all above units), 10" x 20" fill hole; bullet shaped ends; built in agitators built in steel outlets; 1 1/4" steel sump outlet; double protection inner lining; lid with snap-over lock; special sump trap and anti-swirl baffle; continuous flow pump; sprays evenly over all terrain; sprays to last drop

Index-O-Matic Washer, completely portable; semi-pneumatic tires; all-steel frame 5 or 25-gallon tank; 3 GPM pump; 1 1/2 hp motor; fiberglass tank

Tri-Matic II, fiberglass tank; completely portable; all-steel frame 25-gallon tank; 3 GPM pump; 1 1/2" hp motor; semi-pneumatic tires

Waymark, 44 River St., Cortland, N.Y. 13045

Spreaders, disc type

Sprayers, boom; complete power unit

Wayne Engineering Corp., 1st & Iowa Sts., Cedar Falls, Iowa 50613

Honey B, lightweight refuse packer for parks highway rest stops, etc.

Pup, pickup refuse packer

Weather-matic Division/Telsco Industries, P.O. Box 18205, Dallas, Texas 75218

Weather-matic, controls, electric valves, solenoids, rotary heads, spray heads, nozzles, accessories (irrigation equipment)

H. N. Webster Mfg., P.O. Box 623, Sebring, Florida 33870
Webstermatic, irrigation, quick coupling riser valves

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Western Products, 1234 N. 62nd St., Milwaukee, Wis. 53213

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Westinghouse Electric Vehicles, Westinghouse Bldg., Pittsburgh, Pa. 15222

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Wet Mfg. Co., Inc., 955 Elm St., Orange, Calif. 92667

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Wheel Horse D-180 Automatic, 18 hp twin cylinder tractor; featuring—automatic transmission with "no belt" drive; sealed beam head and taillights; hydraulic lift; 5 3/4-

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Wheel Horse D-160 Automatic, 16 hp tractor; featuring—automatic transmission with "no belt" drive; front PTO; polyfoam seat; hydraulic lift; 5 3/4-gallon fuel tank; ammeter; many options; 3-way safety interlock system; and a choice of four tire options

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Wheel Horse C-100 8-speed, 10 hp tractor; featuring—heavy-duty all-gear 8-speed transmission; unitized steel frame; head and taillights; friction disc attachment clutch; turf saver tires; optional electric lift; and a 3-way safety interlock system

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Wheel Horse C-Series Attachments, for C-160 automatic, C-160 8-speed, C-120 automatic and C-100 8-speed: 48" side discharge mower; 42" side discharge mower; 36" side discharge mower; 36" rear discharge mower; 42" snowthrower; 56" snow/dozer blade; 42" snow/dozer blade; 40" grader blade; 36" tiller; 36" aerator; 38" or 31" lawn sweeper; 32" roller; 2-section cultivator; harrow; 32" disc; lawn vacuum; 4-wheel wagon; and a 2-wheel dump cart

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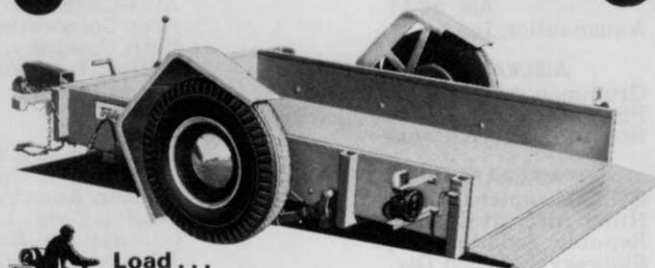
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RainBird Sprinkler Mfg. Corp.
Rain Jet Corporation
Safe-T-Lawn, Inc.
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Thompson Manufacturing
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Weather-matic Div., Telsco Ind.
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Rain Jet Corporation
Rain-O-Mat Sprinklers, Inc.
Sprinkler Irrigation Supply Co.
Toro Irrigation Division
Weather-matic Div., Telsco Ind.

IRRIGATION SPRINKLERS, VALVE IN HEAD

Buckner/Johns Manville
RainBird Sprinkler Mfg. Corp.

IRRIGATION SYSTEMS, COMPLETE

Buckner/Johns Manville
Greenlawn Sprinkler Co.
Moody Sprinkler Co., Inc.
L. R. Nelson Mfg. Co., Inc.
RainBird Sprinkler Mfg. Corp.

Rain Jet Corporation
Sprinkler Irrigation Supply Co.,
Div. A. J. Miller Inc.
Toro Irrigation Division
Weather-matic Div., Telsco Ind.
Wet Mfg. Co., Inc.

IRRIGATION, SWITCHES

Buckner/Johns Manville
L. R. Nelson Mfg. Co., Inc.
RainBird Sprinkler Mfg. Corp.

IRRIGATION, SAND SEPARATORS

Moody Sprinkler Co., Inc.
Perma-Rain Irrigation, Inc.
Rain-O-Mat Sprinklers, Inc.

IRRIGATION, MISCELLANEOUS ACCESSORIES

Buckner/Johns Manville
Certain-tyed Pipe & Plastics Group
Champion Brass Mfg.
Cresline Plastic Pipe Co., Inc.
Greenlawn Sprinkler Co.
King Bros. Industries
Melnor, Turf Irrigation Div.
Moody Sprinkler Co., Inc.
L. R. Nelson Mfg. Co., Inc.
RainBird Sprinkler Mfg. Corp.
Rain Jet Corporation
Rain-O-Mat Sprinklers, Inc.
Safe-T-Lawn, Inc.
Thompson Manufacturing
Toro Irrigation Division
Weather-matic Div., Telsco Ind.

IRRIGATION VALVES, AUTOMATIC

Aqua-Dial
Buckner/Johns Manville
Champion Brass Mfg.
Greenlawn Sprinkler Co.
W. L. Hamilton Co.
Hays Mfg. Div., Zurn Industries
Melnor, Turf Irrigation Div.
Moody Sprinkler Co., Inc.
L. R. Nelson Mfg. Co., Inc.
RainBird Sprinkler Mfg. Corp.
Rain-O-Mat Sprinklers, Inc.
Toro Irrigation Division
Weather-matic Div., Telsco Ind.

IRRIGATION VALVES, FLOW CONTROL

Griswold Controls
Moody Sprinkler Co., Inc.
Toro Irrigation Division

IRRIGATION VALVES, MANUAL

Greenlawn Sprinkler Co.

IRRIGATION VALVES, PRESSURE ACTIVATED

Griswold Controls
W. L. Hamilton Co.
Moody Sprinkler Co., Inc.
RainBird Sprinkler Mfg. Corp.
Toro Irrigation Division

IRRIGATION, QUICK COUPLING VALVES

Buckner/Johns Manville
Melnor, Turf Irrigation Div.
Moody Sprinkler Co., Inc.
L. R. Nelson Mfg. Co., Inc.
RainBird Sprinkler Mfg. Corp.
Rain-O-Mat Sprinklers, Inc.
Sprinkler Irrigation Supply Co.
Toro Irrigation Division
Weather-matic Div., Telsco Ind.
H. N. Webster Mfg.

IRRIGATION VALVES, SOLENOID

Griswold Controls
Hays Mfg. Div., Zurn Industries, Inc.
Melnor, Turf Irrigation Div.
Moody Sprinkler Co., Inc.
RainBird Sprinkler Mfg. Corp.
Toro Irrigation Division

KNIVES, INJECTOR

Contree Sales, Inc.

LANDSCAPING, STUDY COURSES Lifetime Career Schools

LEAF BLOWERS

Billy Goat Industries, Inc.
Finn Equipment Co.
Gravely Corp.
Lindell Pattern Works
F. E. Myers & Bro. Co.
Papec Machine Co.
Parker Sweeper Co.
Solo Motors, Inc.
The Vandermolen Co.

LEVELERS

(Also See Blades, Dozer Scraper)

Arps Corporation
Brillion Iron Works, Inc.
Deere & Co.
DriAll Drier's Inc.
Eversman Mfg. Co.
International Harvester Co.
Servis Equipment Co.
Side-Winder Plant, FMC Corp.

LITTER RECEPTACLES

Bemis Mfg. Co.
Friend Mfg. Corp.

LOADERS, BOOM

Century Engineering Corp.
Deere & Co.
Dico Co., Inc.
Howard Rotavator Co., Inc.
Pitman Mfg. Co.
Waldon, Inc.

LOADER, SKID STEER

Clark Equipment Co.
Davis Mfg.
Deere and Co.
Erickson Corp.
International Harvester Co.
K-D Manufacturing Co.
Massey Ferguson Inc.
(Industrial Products)
Melroe Division
TCI, Inc.

LOADERS, TRACTOR MOUNTED

Allis-Chalmers
Arps Corp.
Deere & Co.
Engineering Products Co.
Ford Motor Co., Tractor Div.
Giant-Vac Mfg. Inc.
Gravely Corp.
International Harvester Co.
Johnson Hydraulic Equip. Co.
Massey-Ferguson, Inc.
Melroe Mfg. Co.
The Sun-Mastr Corp.
Vermeer Manufacturing Co.

LOG SPLITTERS

Lupton Tree Service
Piqua Engineering, Inc.
Vermeer Mfg. Co.

MARKERS, LINE

Fox Valley Marking Systems

MASKS, DUST

Acme Protection Equipment Corp.
American Optical Co.
Martindale Electric Co.
Mine Safety Appliances Co.
Welsh Mfg. Co.
Willson Products Div., Ray-O-Vac

MASKS, GAS

Acme Protection Equipment Corp.
Mine Safety Appliances Co.
Safeline Products
Welsh Mfg. Co.
Willson Products Div., Ray-O-Vac

MATERIALS, HANDLING

B.A.G. Corp.
Bemis Mfg. Co.

MEASURING WHEEL

Gandy Co.

MASKS, FACE

American Optical Corp.

MISTBLOWERS, BACKPACK

Buffalo Turbine Ag. Equip. Co.
Curtis Dyna Products Corporation
Echo Chain Saw Div., Kioritz Corp.
of America
Friends Mfg. Corp.
H. D. Hudson Mfg. Co.
Robco, Inc.
Solo Motors, Inc.
Stihl American, Inc.
Tradewinds, Inc.
Vandermolen Corp.

MISTBLOWERS, ELECTRIC

Root-Lowell Corp.

MISTBLOWERS, SELF-PROPELLED

Century Engineering Corp.
Solo Motors, Inc.
Tradewinds, Inc.

MISTBLOWERS, TRUCK-MOUNTED

Ag. Machinery Div., FMC Corp.
Aquanautics, Inc.
The Broyhill Co.
Buffalo Turbine Ag. Equip. Co.
Finn Equipment Co.
F. E. Myers & Bro. Co.
Solo Motors, Inc.
Vandermolen Corp.

MISTBLOWERS, NOZZLE PARTS

Ag. Machinery Div., FMC Corporation
The Broyhill Co.
Buffalo Turbine Equipment Co.
Century Engineering Corp.
Delevan Mfg. Co.
H. D. Hudson Mfg. Co.
F. E. Myers & Bro. Co.
Solo Motors, Inc.
Spraying Systems Co.

MOISTURE METERS

Agtronics Mfg. Co.
Irrrometer Company
JLM Products & Design
Soilmoisture Equipment Corp.
Turf Service Laboratory, Inc.

MOWERS, FLAIL

BMB Company
Brillion Iron Works, Inc.
E. L. Caldwell & Sons, Inc.
Deere and Co.
Excel Industries, Inc.
FMC Side-Winder
Ford Motor Co., Tractor Div.
Gravely Corp.
International Harvester Co.
Kinco Mfg.
Lakes Supply Co., Inc.
Massey-Ferguson, Inc.
Mathews Company
Mott Corporation
Slope Tractor, Inc.
Sun-Master, Corp.
Terrain King Corp.

MOWERS, GREENS

Cooper Mfg. Co.
Hahn, Inc.
Jacobsen Mfg. Co.
National Mower Co.
The Toro Company

MOWERS, REEL

Bunton Company
Cooper Mfg. Co.
Engineering Products Co.
Hahn, Inc.
Jacobsen Mfg. Co.
Jari Corp.

Locke Mfg., Div. Stellar Lawn Care
McDonough Power Equipment, Inc.
National Mower Co.
Roseman Mower Corporation
Roxy-Bonner, Inc.
Simplicity Mfg. Co.
The Sun-Mastr Corp.
The Toro Company

MOWERS, ROTARY

AMF Western Tool Division
Allis-Chalmers
Ariens Company
Avco Ezee Flow Div.
BMB Company
The Black & Decker Mfg. Co.
Brillion Iron Works, Inc.
Bunton Co.
E. L. Caldwell & Sons, Inc.
Deere & Co.
Economy Tractor
Engineering Products Co.
Excel Industries, Inc.
Flymo Division, Keltec, Inc.
Ford Motor Co., Tractor Div.
Goodall Div.
Hesston Corporation, Ind. Div.
Hydro Turf
International Harvester Co.
Jacobsen Mfg. Co.
Jari Corp.
Lawn-Boy, OMC-Lincoln
Lehara Equipment Co., Inc.
Locke Mfg. Div. Stellar Lawn Care
MTD Products, Inc.
Massey-Ferguson, Inc.
McDonough Power Equipment, Inc.
Outdoor Power Equip. Div.,
FMC Corp.
Roof Mfg.
Ryan, OMC-Lincoln
M. J. Scott Co.
Servis Equipment Co.
Side-Winder, FMC Corp.
Simplicity Mfg. Co.
Slope Tractor, Inc.
Solo Motors, Inc.
Speedex Tractor Co.
The Sun-Master Corp.
Terrain King Corp.
The Toro Company
Triumph Machinery Co.
Wheel-Horse Products
Wood Brothers, Inc.
Yazoo Mfg. Co.

MOWERS, SICKLE BAR

Allis-Chalmers
BMB Co., Inc.
Deere & Co.
Ford Tractor Operations,
North America
International Harvester Co.
Jacobsen Mfg. Co.
Kinco Mfg.
Massey-Ferguson, Inc.
Simplicity Mfg. Co.
Slope Tractor, Inc.
Solo Motors, Inc.
Thomas Equipment Ltd.
Triumph Machinery Co.
Wheel Horse Products
Year-A-Round Cab Corp. (Jari Div.)

MOWERS, VERTICAL (Also See Thatcher)

Artic Mizer Manufacturers, Inc.
Deere & Co.
E-Z Rake, Inc.
Giant-Vac Mfg., Inc.
Hahn, Inc.
International Harvester Co.
Jacobsen Mfg. Co.
F. D. Kees Mfg. Co.
Kinco Mfg.
Parker Sweeper Co.
Rental Equipment Mfg. Co.
Ryan, OMC-Lincoln
Terrain King Corp.
Triumph Machinery Co.

MOWERS, REPLACEMENT PARTS

Allis-Chalmers
Ariens Company
Deere & Co.
Flymo Div., Keltec Inc.
Ford Motor Co., Tractor Div.
Goodall Div.
Hesston Corp.
International Harvester
Jacobsen Mfg. Co.
Lakeshore Equipment & Supply Co.
Locke Mfg. Co., Inc.
Massey-Ferguson
Roof Manufacturing Co.
Ryan, OMC-Lincoln
Servis Equipment Co.
Side-Winder, FMC Corp.
Slope Tractor, Inc.
The Sun-Master Corp.
Terrain King Corp.
The Toro Company
Wheel Horse Products
Wood Brothers, Inc.
Yazoo Mfg. Co., Inc.
Year-A-Round Cab Corp. (Jari Div.)

MULCH BLOWERS

Bowie Industries, Inc.
Finn Equipment Co.
Reinco

NOZZLES (See Spray Nozzles)

OIL STORAGE

Contree Sales, Inc.

PAINT, MARKING

Fox Valley Marking Systems

PARK EQUIPMENT

Game Time, Inc.

PIPE (See Irrigation Pipe)

Amoco Chemicals Corp.
Cresline Plastic Pipe Co., Inc.
Hydro-Turf

PIPE FITTINGS

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PLOWS, VIBRATORY

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Vermeer Mfg. Co.

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Friend Mfg. Corp.
Mine Safety Appliances Co.

PRUNERS

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Bartlett Mfg. Co.
Corona Clipper Co.
Fairmont Hydraulics
Fanno Saw Works
Friend Mfg. Co.
Jameson Corporation
Karl Kuemmerling, Inc.
Limb-Lopper Co., Inc.
Pitman Mfg. Co.

H. K. Porter, Inc.
Rowco Mfg. Co., Inc.
Safety Test & Equipment Co.
Seymour Smith & Son, Inc.
Stihl American, Inc.
Village Blacksmith

PUMPS (Also See Sprayers, Complete Power Unit)

Ace Pump Corp.
Ag. Machinery Div., FMC Corp.
Aurora Pump
Berkley Pump Company
John Blue Co.
Bowie Industries, Inc.
The Broyhill Co.
Century Engineering Corp.
Contree Sales, Inc.
Delavan Manufacturing Corp.
Friend Manufacturing Corp.
H. D. Hudson Mfg. Co.
Hydraulic Products Co., Inc.
Hydro Turf
Hypro, Inc.
Larson Machine, Inc.
F. E. Myers & Bro. Co.
Oberdorfer Pump Div.
Robco, Inc.
Root-Lowell Corp.
Solo Motors, Inc.
Universal Motor Co.
Venable Sprinkler Sales, Inc.
Viking Pump Company

PUMPS, CENTRIFUGAL

Ace Pump Corp.
Aurora Pump
Berkley Pump Company
L. L. Larson Machine, Inc.
Oberdorfer Foundries Inc.,
Agri. Pump Div.
Universal Motor Div., Medalist Ind.

PUMPS, DIAPHRAGM

Ace Pump Corp.

PUMPS, PISTON

L. L. Larson Machine, Inc.
Robco, Inc.

PUMPS, ROLLER

L. L. Larson Machine, Inc.

PUMPS, SUBMERSIBLE

Ackley Mfg. Co.
Hydraulic Products Co., Inc.
ITT Marlow

PUMPS, TURBINE

Hydraulic Products Co., Inc.

RAKES, LANDSCAPING

Arps Corporation
Brillion Iron Works, Inc.
Deere & Co.
Ford Motor Co.
International Harvester
Roseman Mower Corporation
Servis Equipment Company
Triumph Machinery Co.
York Modern Corp.

RAKES, ALL PURPOSE

Arps Corp.
Asplundh Chipper Co.
Bartlett Mfg. Co.
Brillion Iron Works, Inc.
Coursigns, Inc.
Deere & Co.
Ford Motor Co., Tractor Div.
International Harvester Co.
Jari Corp.
F. D. Kees Mfg. Co.
Lely Corp.
Rental Equipment Mfg. Co.
Roseman Mower Co.
Ryan, OMC-Lincoln
Servis Equip. Co.
Skaggs Turf Equipment Co.

Smithco, Inc.
The Toro Company
York Rakes

REELS, HOSE

Ag. Machinery Div., FMC Corp.
American Hose & Reel Co.
Friend Mfg. Corp.
Clifford B. Hannay & Son, Inc.
H. D. Hudson Mfg. Co.
F. E. Myers & Bros. Co.

RESPIRATORS

Acme Protection Equipment Corp.
American Optical Co.
Friend Mfg. Co.
Glendale Optical Co., Inc.
Martindale Electric Co.
Mine Safety Appliances Co.
Safeline Products
The Vandermolen Co.
Welsh Mfg. Co.
Willson Products Div., Ray-O-Vac

ROCK PICKERS

(Also See Stone Pickers)

Armor Metal Products
William Bergman Company
Bridgeport Implement Works, Inc.

ROLLERS, TURF

Brillion Iron Works, Inc.
Ford Motor Co., Tractor Div.
Hadfield Sod Roller Co.
International Harvester Co.
Lakes Supply Co., Inc.
Maxey Manufacturing Co., Inc.
Rosco Manufacturing Co.
Ryan, OMC-Lincoln
Simplicity Mfg. Co.
Wheel-Horse Products

ROOT-FEEDING RODS

Ross Daniels, Inc.
H. D. Hudson Mfg. Co.
Hydroponic Chemical Co., Inc.

ROOT PRUNERS

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Asplundh Chipper Co.
Bartlett Mfg. Co.
Karl Kuemmerling, Inc.
Mine Safety Appliances Co.

SAFETY EQUIPMENT

Ag. Machinery Div., FMC Corporation
American Optical Co.
Asplundh Chipper Co.
Bartlett Mfg. Co.
Friend Mfg. Corp.
General Scientific Equipment Co.
Glendale Optical Co.
Karl Kuemmerling, Inc.
Martindale Electric Co.
Mine Safety Appliances Co.
Product Development International
Safeline Products
The Vandermolen Co.
Welsh Mfg. Co.
Wilson Products Div., Ray-O-Vac

SAWS, MANUAL

Bartlett Mfg. Co.
The Fanno Saw Works
Friend Mfg. Corp.
Karl Kuemmerling, Inc.
Seymour Smith & Son, Inc.

SAWS, CHAIN, ELECTRIC

Beaird-Poulán Div., Emerson Electric Co.
Campbell-Hausfeld Co.
DESA Industries, Inc.
Stihl American, Inc.
Village Blacksmith

SAWS, CHAIN, GASOLINE

Allis-Chalmers Corp., Outdoor and Leisure Products
Beaird-Poulán Div., Emerson Electric Co.
Campbell-Hausfeld Co.
Deere & Co.
DESA Industries, Inc.
Echo Chain Saw Div., Kioritz Corp. of America
Ford Tractor Operations, North America
Friend Mfg. Corp.
Hoffco, Inc.
Homelite
Husqvarna, Inc.
Jobu Chain Saws
Landcaster Pump & Mfg. Co., Inc.
Lombard Power Equipment
McCulloch Corp.
Omark Industries, Inc., Oregon Saw Chain Div.
Partner Industries of America
Pioneer, OMC-Lincoln
Quadra Mfg. Ltd.
Roper Corporation
Skil Corporation
Solo Motors, Inc.
Stihl American, Inc.
Tilton Equipment Co.
Waco Industries, Inc.

SAWS, CHAIN, HYDRAULIC

Ackley Mfg. Co.
Fairmont Hydraulics
Limb Lopper Co., Inc.

SAWS, CHAIN, PNEUMATIC

DESA Industries, Inc.
Limb-Lopper Co., Inc.

SAWS, CIRCULAR, GASOLINE

Skil Corporation
Stihl American, Inc.

SAWS, CIRCULAR, HYDRAULIC

Ackley Mfg. Co.
Fairmont Hydraulics
Limb Lopper Co., Inc.

SAWS, CIRCULAR, PNEUMATIC

Ackley Mfg. Co.
Limb Lopper Co., Inc.

SAWS, CIRCULAR, ELECTRIC

Allis-Chalmers Corp.
Outdoor and Leisure Products
The Black & Decker Mfg. Co.
Friend Mfg. Corp.
Skil Corporation

SAWS, CHAIN, PARTS

Beaird-Poulán Div., Emerson Electric Co.
Campbell-Hausfeld Co.
Grandberg Industries
McCulloch Corporation
Omark Industries, Inc., Oregon Saw Chain Div.
Pioneer, OMC-Lincoln
Sabre Saw Chain
Skil Corporation
Stihl American, Inc.

SAWS, EARTH

Charles Machines Works, Inc.

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Up-Right Scaffolds

SCABBARDS, SAW

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of America
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Ag. Machinery Div., FMC
Corporation

SEEDERS, DISC-TYPE

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International Harvester Co.
The Toro Company
Vandermolen Export Co.

SEEDERS, HOPPER-TYPE

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Brillion Iron Works, Inc.
Cyclone Seeder Co., Inc.
Deere & Co.
Engineering Product Co.
Gandy Co.
Garber Seeders, Inc.
Herd Seeder Co., Inc.
Hydro-Turf
International Harvester Co.
Jacobsen Mfg. Co.
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Lawn Medic, Inc.
Lely Corporation
Parker Sweeper Co.
Vandermolen Corp.

SEEDERS, HYDRAULIC

Bowie Industries
Finn Equipment Company
Hydro Turf
Reinco, Inc.
Spray Baby
The Toro Company

SEEDERS, SOD

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Cyclone Seeder Co., Inc.

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Grandberg Industries

SHARPENER, MOWERS & CUTTERS

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Travelrain Power Sprinkler Co.

SHEARS

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Black & Decker
Friend Mfg. Co.
Melnor Industries, Inc.
H. K. Porter, Inc.
Seymour Smith & Son, Inc.
Tallman Equipment Co., Inc.

SHREDDERS

(Also See Chippers)

Deere & Co.
Engineering Products Co.
Ford Motor Co., Tractor Div.
F. D. Kees Mfg. Co.
Kemp Shredder Co.
Lindig Mfg. Co.
MTD Products, Inc.
Outdoor Power Equipment Div.,
FMC Corp.
Roto-Hoe Co.
Royer Foundry & Machine Co.
W-W Grinder

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Leisure Products

Deere & Co.
International Harvester Co.,
Consumer Products
Jacobsen Mfg. Co.
Massey-Ferguson, Inc.
Outdoor Power Equipment Div.,
FMC Corp.
Solo Motors, Inc.
The Toro Company
Walden, Inc.
Wheel-Horse Products
Yardman, The Leisure Group, Inc.

SOD CUTTERS

Beck Mfg. Co.
Big Brute Turf Cut
Bowie Industries, Inc.
Brouwer Turf Equipment, Ltd.
Jacobsen Mfg. Co.
Princeton Manufacturing Co.
Ryan, OMC-Lincoln

SOD HARVESTERS

Beck Manufacturing Company
Big J. Products, Inc.
Brouwer Turf Equipment Ltd.
Nunes Manufacturing
Princeton Manufacturing Co.

SOIL TESTERS

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Hydroponic Chemical Co., Inc.
Sudbury Laboratory, Inc.

SPADE, TREE

(Also See Tree Movers)

CareTree Systems
Vermeer Mfg. Co.

SPIKERS

Hahn, Inc.
Jacobsen Mfg. Co.
Power Spike Mfg. Co.
Ryan, OMC-Lincoln
Smithco, Inc.

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The Broyhill Co.
Century Engineering Corp.
Contree Sales, Inc.
Red Ewald, Inc.
Friend Manufacturing Corp.
H. D. Hudson Mfg. Co.
L. L. Larson Machine, Inc.
F. E. Myers & Bro. Co.
Papec Machine Co.
Root-Lowell Corp.
Walsh Manufacturing Co.

SPRAY GUNS

Ag. Machinery Div., FMC Corp.
Bar-Way Mfg. Co.
The Broyhill Co.
Century Engineering Corp.
Contree Sales, Inc.
Delavan Manufacturing Co.
Foamspray Chemicals, Inc.
Friend Manufacturing Corp.
W. L. Hamilton Co.
H. D. Hudson Mfg. Co.
L. L. Larson Machine, Inc.
Melnor Industries, Inc.
F. E. Myers & Bro. Co.
Foot-Lowell Corp.
Spraying Systems Co.
Walsh Manufacturing Co.

SPRAY NOZZLES, COMPLETE

Amchem Products, Inc.
Bete Fog Nozzle, Inc.
The Broyhill Co.
Buffalo Turbine Equipment Co.
Century Engineering Corp.
Contree Sales, Inc.
Delavan Manufacturing Co.
Foamspray Chemicals, Inc.
Friend Manufacturing Corp.
W. L. Hamilton Co.

H. D. Hudson Mfg. Co.
L. L. Larson Machine, Inc.
Melnor Industries
F. E. Myers & Bro. Co.
Papec Machine Co.
Root-Lowell Corp.
Spraying Systems Co.
Walsh Mfg. Co.

SPRAY NOZZLES, DISKS

The Broyhill Co.
Century Engineering Corp.
Delavan Manufacturing Co.
Friend Manufacturing Corp.
L. L. Larson Machine, Inc.
F. E. Myers & Bro. Co.
Spraying Systems Co.
Vandermolen Co.
Walsh Manufacturing Co.

SPRAY NOZZLES, WHIRLS

The Broyhill Co.
Century Engineering Corp.
Delavan Mfg. Co.
Friend Manufacturing Corp.
L. L. Larson Machine, Inc.
F. E. Myers & Bro. Co.
Spraying Systems Co.
Walsh Manufacturing Co.

SPRAY-SLEEVE

Becco Products Co.

SPRAYER, BIFLUID

Ag. Machinery Div., FMC
Corporation
The Broyhill Co.
Buffalo Turbine Equipment Co.
Red Ewald, Inc.
Finn Equipment Co.
Friend Mfg. Corp.

SPRAYERS, BOOM

Ag. Machinery Div., FMC Corp.
Amchem Products, Inc.
John Blue Co., Inc.
The Broyhill Co.
Century Engineering Corp.
Contree Sales
Cushman, OMC-Lincoln
Deere & Co.
Red Ewald, Inc.
Fimco, Inc.
Friend Manufacturing Corp.
Hahn, Inc.
H. D. Hudson Mfg. Co.
International Harvester Co.
L. L. Larson Machine, Inc.
F. E. Myers & Bro. Co.
Papec Machine Co.
Root-Lowell Corp.
Walsh Manufacturing Co.
Waymark

SPRAYERS, CART OR WHEELBARROW TYPE

Ag. Machinery Div., FMC Corp.
Amchem Products, Inc.
The Broyhill Co.
Buffalo Turbine Ind. Equipment Co.
Century Engineering Corp.
Deere & Co.
Red Ewald, Inc.
Fimco, Inc.
Friend Mfg. Co.
H. D. Hudson Mfg. Co.
L. L. Larson Machine, Inc.
F. E. Myers & Bro. Co.
Root-Lowell Corp.
Solo Motors, Inc.

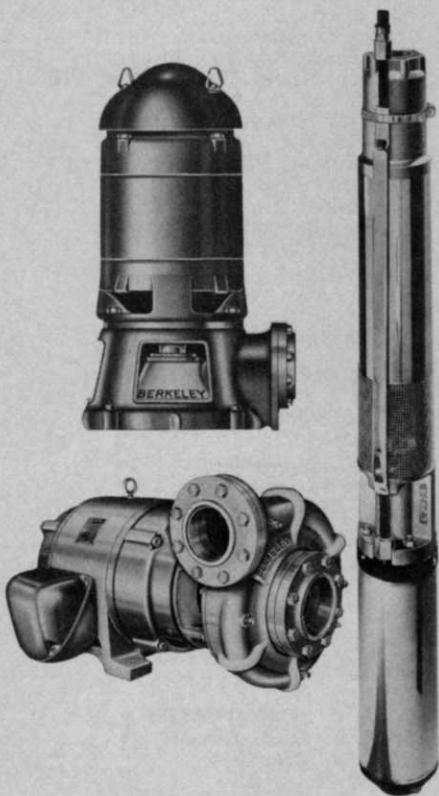
SPRAYERS, COMPLETE POWER UNIT (Also See Pumps)

Ag. Machinery Div., FMC Corp.
John Blue Co., Inc.
Bowie Industries, Inc.
The Broyhill Co.
Buffalo Turbine Ag. Equip. Co.
Century Engineering Corp.
Contree Sales, Inc.



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Berkeley has great capability in this area. First, as a full-line manufacturer of every type of pump used in water systems and sprinkler irrigation, and with experience gained over nearly four decades. Also with a dealer organization in most urban, suburban and rural areas of North America. Plus a factory branch and warehouse system geared to urgent demands both for original equipment and spare parts.

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Deere & Co.
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Tradewinds, Inc.
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The Vandermolen Co.
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Red Ewald, Inc.
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L. L. Larson Machine, Inc.
Parco Div., National Foam
Root-Lowell Corp.

SPRAYERS, HAND

Bartlett Mfg. Co.
Broyhill Co.
Buffalo Turbine Ag. Equip. Co.
Century Engineering
Contree Sales, Inc.
Deere & Co.
Friend Mfg. Co.
H. D. Hudson Mfg. Co.
L. L. Larson Machine, Inc.
Melnor Industries, Inc.
Parco Div., National Foam
Root-Lowell Corp.
Solo Motors, Inc.
Tradewinds, Inc.
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The Vandermolen Co.
Walsh Manufacturing Co.

SPRAYERS, HOSE END

Ag. Machinery Div., FMC Corp.
Amchem Products, Inc.
Bar-Way Mfg. Company
Broyhill Co.
Century Engineering Corp.
Friend Mfg. Co.
Hayes Spray Gun Co.
Hub States Corporation
H. D. Hudson Mfg. Co.
L. L. Larson Machine, Inc.
Melnor Industries, Inc.
F. E. Myers & Bros. Co.
Tree Ject Company
Universal Div. of Leigh Prod., Inc.
Walsh Mfg. Co.
Wayne Engineering Corp.

SPRAYERS, KNAPSACK

Bartlett Mfg. Co.
Buffalo Turbine Ag. Equip. Co.
Friend Mfg. Co.
H. D. Hudson Mfg. Co.
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Parco Div.
Public Health Equip. & Supply Co.
Robco, Inc.
Root-Lowell Corp.
Solo Motors, Inc.
Stihl American, Inc.
Tradewinds, Inc.
Vandermolen Co.

SPREADERS, DISC-TYPE

L. L. Larson Machine, Inc.
The Vandermolen Co.
Waymark

SPREADERS, HOPPER-TYPE

Arctic Mizer
Avco Ezee Flow Div.
John Blue Co.
Cushman, OMC-Lincoln
Deere & Co.
Ford Tractor Operations,
North America
Gandy Co.
Great Lakes Chemical Div.
Herd Seeder Co., Inc.
Highway Equipment Co.
International Harvester Co.
F. D. Kees Mfg. Co.
L. L. Larson Machine, Inc.
Lely Corp.
Ryan, OMC-Lincoln
Simplex Mfg. Co.
Swenson Spreader & Mfg. Co.
TCI, Inc.
Vandermolen Corp.
Willmar Mfg. Co.

SPREADERS, LIQUID

Amchem Products, Inc.
TCI, Inc.

SPRIGGERS

Beck Manufacturing Co.
Bermuda King Co.
Bowie Machine Works

SPRINKLERS

(See Irrigation)

STENCILS, MARKING

Fox Valley Marking Systems
M-B Company

STONE PICKER

(Also See Rock Picker)

Armor Metal Products
William Bergman Company
Bridgeport Implement Works, Inc.
Lockwood Corp.

STRAINERS

Hypro Division, Lear Siegler, Inc.

STRAINERS, SUCTION

Bar-Way Mfg. Co.

STUMP CUTTER/REMOVER

Arps Corp.
Hesston Corp., Lawn Equipment
Div.
International Harvester Co.
Karl Kuemmerling, Inc.
Levco Manufacturers, Inc.
Municipal & Industrial Service
Equip. Div., FMC Corp.
Valley Products Corporation
Vermeer Manufacturing Co.

SWEEPERS, LAWN

(Also See Broom, Vacuum)

Billy Goat Industries, Inc.
Deere & Co.
International Harvester Co.
Jacobsen Mfg. Co.
Lindell Pattern Works
M-B Company
Mars Industries, Inc.
Mathews Company
Melroe Mfg. Co.
Municipal & Industrial Service
Equip. Div., FMC Corp.
Nunes Manufacturing
Parker Sweeper Co.
Rental Equipment Mfg. Co.
Ryan, OMC-Lincoln
Sweepster, Jenkins Equip. Co.
Tennant Maintenance Systems
The Toro Company
Turf Vac Corp.

Wheel Horse Products, Inc.

TAILGATES, LIFTING

Adventure Line Mfg. Co.
S & H Industries, Inc.

TANKS, SPRAY

Ag. Machinery Div., FMC
Corporation
John Blue Co.
The Broyhill Co.
Century Engineering Corp.
Contree Sales
Edwards Manufacturing Co.
Red Ewald, Inc.
Fibre Glass Products
Friend Manufacturing Corp.
Hemco Corporation
H. D. Hudson Mfg. Co.
Inject-O-Meter Mfg. Co.
L. L. Larson Machine, Inc.
F. E. Myers & Bros. Co.
Papec Machine Co.
Raven Industries
Root-Lowell Corporation
Universal Div. of Leigh Prod., Inc.
Walsh Manufacturing Co.

THATCHERS

(See Mowers, Vertical)

Arctic Mizer
Arps Corporation
Giant-Vac Mfg., Inc.
Parker Sweeper Company
Rental Equip. Mfg. Co.
Ryan, OMC-Lincoln
Swenson Spreader & Mfg. Co.
Triumph Machinery Co.

TILLERS

Allis-Chalmers
Ariens Co.
Auto Hoe Inc.
Contree Sales, Inc.
Deere & Co.
Engineering Products Co.
Ford Motor Co., Tractor Div.
Howard Rotavator Co., Inc.
International Harvester Co., Inc.
Jacobsen Mfg. Co.
Lakes Supply Co., Inc.
Lely Corp.
Massey-Ferguson, Inc.
MTD Products, Inc.
Outdoor Power Equip. Div., FMC
Corp.
Roseman Mower Corporation
Roto-Hoe Co.
Side-Winder Plant, FMC Corp.
Simplicity Mfg. Co.
Solo Industries, Inc.
Village Blacksmith
Wheel-Horse Products
Yazoo Mfg. Co., Inc.

TIRES

Dunlop Tire & Rubber Corp.

TOOLS, HAND, HYDRAULIC, PNEUMATIC

Black & Decker Co.
Deere & Co.
Friend Mfg. Corp.
F. D. Kees Mfg. Co.
Limb Lopper Co., Inc.
H. K. Porter, Inc.
Seymour Smith & Son, Inc.
Village Blacksmith

TOOL BOXES, PICKUP

(See Chests, Tool)

Hemco Corporation
Knaack Mfg. Co.

TOP DRESSERS

Cushman, OMC-Lincoln
Jacobsen Mfg. Co.
Lely Corp.
Ryan, OMC-Lincoln
Smithco, Inc.

WHAT MAKES **DITCH WITCH** THE LEADER?



PRODUCT Ruggedness, dependability, ease of operation and low maintenance costs — just some of the reasons the Ditch Witch J20 is the leader in its class. This 18-horsepower trencher has the price and size of a compact, with design advantages of bigger Ditch Witch models. The J20 gives you rigid-frame construction for stability and safety, four-wheel drive with a choice of tire options, auto-type power steering and full hydraulic convenience controls, a fully-hydraulic backfill blade and much more. The digging chain is driven directly through the J20's three-speed transmission while travel speed during trenching is controlled hydraulically. Why not let Ditch Witch demonstrate the J20 on your job site? See for yourself why Ditch Witch is the leader.



PEOPLE The industry's leading dealer organization helps maintain Ditch Witch's role of leadership. Ditch Witch dealers do their best to supply equipment that fits each customer's individual needs. Then they support their product line with unmatched service. With Ditch Witch, an obligation *begins* with every sale. If you need a part, your dealer will get it to you — fast. If something goes wrong, his factory-trained servicemen will fix it. Every Ditch Witch dealer is a trained professional who believes in his product. He treats each customer honestly and fairly and provides the best possible service. Is it any wonder Ditch Witch is the leader?

FOLLOW THE LEADER!



... offering a full line
of trenching equipment from 7-HP to 65-HP.

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TRACTOR, 8-12 HP

AMF Western Tool Division
Allis-Chalmers Corp.
Ariens Company
Avco New Idea
J. I. Case
Deere & Co.
Ford Tractor Operations, North America
International Harvester Co.
Massey-Ferguson, Inc.
Simplicity Mfg. Co.
Smithco, Inc.
Speedex Tractor Co.
Wheel-Horse Products
Yardman, The Leisure Group, Inc.

TRACTOR, 13-20 HP

Allis-Chalmers Corp., Outdoor and Leisure Products
Avco New Idea
J. I. Case
Deere & Co.
Economy Tractor
Ford Tractor Operations, North America
General Electric, Outdoor Power Equip. Operations
Hesston Corporation, Ind. Div.
International Harvester Co.
Kubota Tractors, Inc.
Massey-Ferguson, Inc.
Outdoor Power Equip. Div., FMC Corp.
Simplicity Mfg. Co.
Speedex Tractor Co.
Tradewinds, Inc.
Wheel-Horse Products
Yardman, The Leisure Group, Inc.

TRACTOR, 21-60 HP

Allis-Chalmers
J. I. Case
Deere & Co.
Ford Tractor Operations, North America
International Harvester Co.
Kubota Tractors, Inc.
Massey-Ferguson, Inc.
Sato Tractor c/o NEDA
Slope Tractor, Inc.
Tradewinds, Inc.
Waldon, Inc.

TRACTORS, 61-150 HP

Allis-Chalmers
J. I. Case
Deere & Co.
Ford Tractor Operations
Massey-Ferguson, Inc.
Waldon, Inc.

TRACTORS, 151 and up HP

Deere & Co.
Ford Tractor Operations
International Harvester
Massey-Ferguson, Inc.
Waldon, Inc.

TRACTOR, CRAWLERS

Allis-Chalmers
Deere & Co.
International Harvester Co.

TRAILERS

Beatty Trailers
The Champion Co.
Clark Equipment Trailer Div.
Deere & Co.
Fayette Division, Dayton-Walther Corp.
Harvestall Industries, Inc.
Jacobsen Mfg. Co.
Lakeside Mfg. Corp.
Lawn Medic, Inc.
Magline, Inc.
Maxey Manufacturing Co., Inc.
Miller Tilt-Top Trailers, Inc.
Rogers Bros.
E. R. Schwartz Mfg. Co.

Selma Trailer and Mfg. Co.
The Snow Company
Trailevator Div., Magline, Inc.
Wheel Horse Products, Inc.

TRASH COMPACTORS

Air Rake Manufacturing Corp.
Piqua Engineering, Inc.

TREE INJECTORS

Creative Sales
Ferti-Feeder
Tree-Ject Company

TREE MOVERS

(See Spade, Tree)

CareTree Systems
Davey Tree Expert Co.
Ideal Crane Div.
Schutt's Equipment Co.
Vermeer Manufacturing Co.

TREE WRAPPINGS

Bartlett Mfg. Co.
Bemis Mfg. Co.
American Excelsior Corp.

TRENCHER

Arps Corp.
Charles Machine Works
Davis Mfg.
Digz-All Trencher Co.
Ground Hog, Inc.
Moody Sprinkler Co., Inc.
Toro Irrigation Division
Towner Mfg. Co.
Vermeer Mfg. Co.

TRIMMERS, HEDGE AND GRASS, PARTS

Bartlett Mfg. Co.
The Black & Decker Mfg. Co.
Bunton Co.
Gandy Company
Goodall Div.
Grandberg Industries
HMC
Jacobsen Mfg. Co.
K-D Mfg. Co.
Lindell Ind., Div. Lindell Pattern Works
Melnor Industries, Inc.
H. K. Porter, Inc.
Rowco Mfg. Co., Inc.
Seymour Smith & Son, Inc.
Stihl American, Inc.
Tallman Equip. Co. Inc.
Village Blacksmith
Yazoo Mfg. Co., Inc.

TRUCK, ACCESSORIES

Maxey Manufacturing Co. Inc.

TRUCK, FORESTRY

Asplundh Chipper Co.
Mobile Aerial Towers, Inc.

TRUCK, LIGHT-HAULING, UTILITY

Cushman, OMC-Lincoln
HMC
Jacobsen Mfg. Co.
Wayne Engineering Corp.

TRUCK, UTILITY BODIES

Fibre Glass Products

TUBING

(Also See Hose)

American Hose & Reel Co.

TURF VEHICLES

Club Car, Inc.
Cushman, OMC-Lincoln
HMC
Jacobsen Manufacturing Co.
Jeep Corporation
Otis Elevator Company, Special Vehicle Div.
Ryan, OMC-Lincoln
Smithco

The Snow Company
The Toro Company
Wheel Power Corp.

UNDERWATER WEED HARVESTER

(See Aquatic Weed Harvester)

A.O.A. Research & Development, Inc.
Air-Lec Industries, Inc.
Aquamarine Corporation
Aquanautics, Inc.
Aquatic Controls Corp.
Mud Cat, Div. of National Car Rental
The Vandermolen Co.

UNDERWATER WEED RAKE

Aquanautics, Inc.
Aquatic Controls Corp.

UNLOADERS

Dico Co., Inc.

UTILITY TRAILERS

Beck Mfg. Co.
Miller Tilt-Top Trailers, Inc.
Trailevator Div., Magline, Inc.

VACUUMS

Air Rake Manufacturing Corp.
Alis-Chalmers Mfg. Co.
Arctic Mizer
Ariens Co.
Billy Goat Industries, Inc.
The Black & Decker Mfg. Co.
Deere & Co.
E-Z Rake, Inc.
Giant-Vac Mfg. Inc.
Hesston Corp., Lawn Equipment Div.
Jacobsen Manufacturing Co.
Lindell Industries, Div. of Lindell Pattern Works
MTD Products, Inc.
Nunes Manufacturing
Parker Sweeper Co.
Ryan, OMC-Lincoln
Simplicity Mfg. Co., Inc.
Sweepster, Jenkins Equip. Co.
Swenson Spreader & Mfg. Co.
Tennant Maintenance Systems
Turf Vac Corp.
Wheel-Horse Products

VALVES

(Also See Irrigation Valves)

Aqua-Dial
Hypro Division, Lear Siegler, Inc.
Inject-O-Meter Mfg. Co.

VALVE BOXES

Ametek, Plymouth Plastics Division

VERTICAL SLITTERS, TURF

Rental Equipment Mfg. Co.
Ryan, OMC-Lincoln

VIBRATORY PLOWS

Charles Machine Works
Davis Mfg.

WASHERS, HIGH PRESSURE

Century Engineering Corp.
Fimco, Inc.
Walsh Mfg. Co.
Wayne Engineering Corp.

WEED BARRIER

Sea Guard, Inc.

WELDERS

American Lincoln Corp.

WINCH

(Also See Hoist)

Fairmont Hydraulics
Hoffco, Inc.
Ideal Crane Div.
International Harvester Co.
Maasdam Pow'r Pull, Inc.

He's got a horse. Wheel Horse, of course!

When your business depends on a lawn and garden tractor, it's important that you have the right tractor. That's why the Wheel Horse ABCD's of tractoring is so important to you. It gives you four series of tractors from which to choose. Once you've decided on the horsepower and features of a particular series, you can choose a model that most nearly fits your needs. It's as simple as:



The economy line, featuring the A-800 Ranger electric and recoil start tractors. For mowing small to medium-size lawns. A 32" mower is standard. Dimensions for A Series tractors: Width, 30½"; Length, 56"; Height, 36½".



Compact value leaders, recommended for intermediate-size lawns and small gardens. This series includes the B-80 4-speed and the B-100 Automatic. Dimensions for B Series tractors: Width, 35"; Length, 63"; Height, 40".



Tractors with more power, more versatility, designed for medium or large-size lawns and gardens. A choice of four C Series models is available — the C-120 and C-160 Automatics and the C-100 and C-160 8-speeds. Dimensions for C Series tractors: Width, 36"; Length, 65"; Height, 43".



Top-of-the-line Wheel Horse tractors, big on horsepower and exciting features. The D-200 Automatic, with a 19.9 HP twin-cylinder engine, is the biggest, toughest Wheel Horse tractor yet. Designed for large lawns and gardens, the D Series also offers the D-180 and D-160 Automatics. Dimensions for D Series tractors: Width, 45"; Length, 75"; Height, 45".

With the ABCD's of tractoring, Wheel Horse also offers 29 attachments to give professional results to all the outdoor maintenance work you do...to save you time...and to add to your profits.

Get the complete story today at your Wheel Horse dealer. Ask him for a free copy of our new 1974 catalog or write to us.

Wheel-Horse Products, Inc.
Dept. WTT, 515 W. Ireland Road, South Bend, Indiana 46614

The basics of tractoring are as simple as **A B C D
...by Wheel Horse, of course.**



WHEEL HORSE
lawn & garden tractors

515 West Ireland Road., South Bend, Indiana 46614





San Vicente C. C./Ramona, California
Ready for play one year after start of construction.

Choosing an automatic controlled system should be like going to a good smorgasborg: the more you have to choose from, the greater your satisfaction will be.

That's why it's important to get together with Buckner during your initial planning stage. Because Buckner makes seven different types of controllers—more than anybody else.

And that means that Buckner can work with these seven systems to deliver exactly the control system your course should have. These systems range from sophisticated two-wire, solid-state set-ups to basic units where cost is the prime requisite:

Binar® offers the ultimate in two-wire central control. Eliminates field controllers and miles of costly wire. Solid state circuitry provides trouble-free performance. You can scramble individual control valves for maximum program flexibility.

CP-2 provides advanced central programming where field controllers are needed for on-course inspection and maintenance. Syringe and omit cycles. Watering of fairways, tees and greens can be completed in less than nine hours.

711 is the perfect automatic in-field controller for large turf areas. This 11-station system features 0-60 minute control. Waters fairways, greens and tees in less than nine hours.

The ICM series offers three systems: The 12E has 12 control stations, the Dual 12E has two 12E units with two clocks, and the 24E has 24 control stations and one clock, where longer watering times are permissible.

The BR-10 delivers dependable performance at a rock bottom price for a dual program with ten stations.

If you're planning new watering systems, now's the time to get together with the Buckner Agri-turf Division of Johns-Manville. We'll take the time to figure out exactly what you should have. Then we'll supply it. Because we have more kinds of controllers, heads, valves and pipe than anybody in the business.

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**Now you can get
exactly the automatic
control you need:**

**Because we make more automatic
controllers than anybody else.**

Buckner Agri-turf Division, Johns-Manville can do more for you.
Because we have more to work with.

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☐ I'd like to talk to a Buckner expert about a Buckner system.

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Dept WTT

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Green Industry Associations Report Objectives And Goals

EDITOR'S NOTE: Accomplishments by an industry as new and dynamic as the Green Industry can best be achieved through organizations and associations. Bodies of people united for a common cause, sharing in the mistakes, rejoicing in the rewards, active as a unit, and aggressive as a team—these are the qualities which build industry-wide recognition. These are the attributes which distinguish dynamic from static. These are the parameters of success.

In November, WEEDS TREES AND TURF polled leading organizations of the Green Industry. We asked, in addition to identifying information, for three organization objectives which were met in 1973. Further, we requested the organizations to state three goals they planned to achieve in 1974. Their answers are given below.

ASSOCIATED LANDSCAPE CONTRACTORS OF AMERICA, INC.

1750 Old Meadow Road, McLean, Virginia 22101.
Tel. (703) 893-5440

Thomas Hal Stewart, Executive Director

Officers and Directors: Jerry J. Lankenau, president; Ralph Stout, Jr., president-elect; Lew Hammer, vice president; Ronald A. Ahlman, vice president; Duane Nelson, Secretary; William C. Byers, Treasurer; Norman Gray, past president. Regional Directors: Jack Brem; Philip Thorson; Wally SaBell; Vern Smith; Larry Bisel; Jake Branyon; Roy Zehren; Dick Brickman; John D/Ginto; Ritch Skelton; Robert Hutt; Ed Helmke; Jerry Murdock; Isaiah Crosby. Directors At Large: Joe Korematsu; David Johnson; Bill Thornton; George Hederhorst; Ray Gustin, III. Associate Directors: Tom Edgren; Parker Shirling; Tom Clark; Wil Schulze; James Chester; Sandy Lee.

Total membership: 400.

OBJECTIVES MET IN 1973: 1. Publication of *Planting Specifications*, jointly produced by ACLA and the American Society of Landscape Architects; 2. Publication of *Handbook of Landscape Architectural Construction*, jointly produced by ALCA and the American Society of Landscape Architects; 3. Publication of *Handbook of Business Forms For The Landscape Contractor*.

GOALS TO ACHIEVE IN 1974: 1. Series of local meetings of landscape contractors under the sponsorship of ALCA to bring problems and solutions to the grassroots level. 2. Task Force meeting on single problems between landscape contractors and landscape architects at several points across the country; 3. Publication of Contracts and General Conditions which will have been accepted jointly by ALCA and ASLA.

AMERICAN SOCIETY OF CONSULTING ARBORISTS

12 Lakeview Avenue, Miltown, New Jersey 08850.
Tel. (201) 821-8948

Spencer H. Davis, Jr., Executive Director

Officers and Directors: Walter P. Morrow, Sewickley, Pa., president; W. Roland Shannon, Milford, Pa., president-elect; O. J. Andersen, Houston, Tex., vice president; F. Earle Martin, Toronto, Ont., Canada, secretary-treasurer; L. C. Chadwick, Columbus, Ohio, past president. Directors: Leslie S. Mayne, Burlingame, Cal.; Frederick R. Micha, Rochester, N.Y.; William P. Lanphear, Cleveland, Ohio; Charles H. Michler, Lexington, Ky.

Total membership: 100.

OBJECTIVES MET IN 1973: 1. Increased materials in case history files for member use; 2. Increased publicity which resulted in increased requests for ASCA Membership Directory; 3. Increased background materials on legal aspects of tree evaluations.

GOALS TO ACHIEVE IN 1974: 1. More realistic methods for evaluations of shade trees and acceptance by Internal Revenue Service; 2. Closer association with insurance adjustors and their viewpoints on tree evaluations; 3. Continued increase in publicity for ASCA.

AMERICAN SOD PRODUCERS ASSOCIATION

Association Building, 9th and Minnesota, Hastings, Nebraska 68901.
Tel. (402) 462-5515

Bob Garey, Executive Director

Officers and Directors: Jack Kidwell, Kidwell Turf Farms, Culpeper, Va., president; Charles Davis, Wharton Turf Grass, Inc., Wharton, Tex., vice president; Gerry Brouwer, Brouwer Sod Farm, Ltd., Keswick, Ont., Canada, secretary; J. F. Nunes, Jr., Nunes Turfgrass Industries, Patterson, Calif., treasurer; Tobias Grether, Cal-Turf, Inc., Camarillo, Calif., past president. Directors: Paul Florence, Paul Florence Turfgrass, Marysville, Ohio; Wallace A. Huggett, Sod Farm, Inc., Marlette, Mich.; Parker Shirling, Princeton Turf Farms of Md., Centerville, Md.; William Latta, Princeton Turf of Kansas City, Kansas City, Mo.

Total membership: 234.

OBJECTIVES MET IN 1973: 1. Extensive circulation of specifications in the utilization and installation of sod for the use of architects, contractors, governmental agencies and other individuals and entities. Through this standardization manual, the user as well as the sod industry have been able to do the finest job in meeting requirements of the consumer; 2. The staging of two successful nationwide meetings, the annual mid-winter conference held in Hawaii wherein financial management, tax planning, tours of agriculture projects, and fun were on the program. The annual summer meeting and field day in Denver found equipment manufacturers demonstrating the latest in sod harvesting machines, power equipment and all the related products which are

desirable and necessary in the production and installation of sod. In addition, the formal program included accounting for sod producers, utilizing the ASPA Standardized Accounting System, labor relations determining seed quality, nematodes and the annual business session; 3. continued advancement of the association in the securing of a professional association management organization to continue the growth and development of the association, expanded programs and to meet the additional need of the association as it expands.

GOALS TO ACHIEVE IN 1974: 1. Greatly expanded membership and participation in all three categories of producers, suppliers and educational extension; 2. greater involvement with Federal regulatory agencies so as to minimize governmental control and regulation consistent with good citizenship. To secure favorable interpretations as to the nature of sod production and installation so as to enable the industry to operate efficiently; 3. Expanded educational activities, with both winter educational conference and summer convention equipment demonstrations designed to provide the maximum in practical information which can be applied to the operation of each member. The development of improved association communications through regular printed and periodic publications and bulletins is consistent with education and thus is of direct benefit to the members.

GOLF COURSE SUPERINTENDENTS ASSOCIATION OF AMERICA

1617 St. Andrews Drive, Lawrence, Kansas 66044
Tel. (913) 841-2240

Conrad L. Scheetz, Executive Director

Officers and Directors: Clifford A. Wagoner, CGCS, president; Charles G. Baskin, CGCS, vice president; Palmer Maples, Jr., CGCS secretary-treasurer; Robert V. Mitchell, president emeritus. Directors: George W. Cleaver, CGCS; Richard W. Malpass, CGCS; Carlton E. Gipson; Gordon C. Witteveen, CGCS; Ted W. Woehrl, CGCS.

Total membership: 3550.

OBJECTIVES MET IN 1973: 1. November 19, 1973 marked the conclusion of the Association's headquarters relocation, with the occupancy of its newly completed office, the first constructed and owned by the organization in its 47 year history; 2. A public relations-communications staff member was added to the headquarters staff in July. As a result of this hiring, a number of Association brochures are being up-dated, with new materials and additional services being planned; 3. Closer working relationships were established between GCSAA and its allied associations, the PGA and CMAA, through increased cooperation and joint planning meetings.

GOALS TO ACHIEVE IN 1974: 1. The Association's educational programs will be increased and improved to better meet the individual member's personal needs. This will be accomplished through the offering of multi-level educational programs, including regional seminars, and by upgrading the available audio-visual teaching aids through the addition of slide and film presentations; 2. In the coming year, through a variety of publications and talks, golf course superintendents,

golf course officials and the golfing public in general will be provided new information relevant to the superintendent's role and his importance to golf. In addition, emphasis will be placed on making people aware of the advantages and values of membership in GCSAA, not only to the superintendent, but also to the golf course and to the game of golf; 3. GCSAA plans to continue assisting the golf course superintendent improve his managerial capabilities through the utilization of a multi-media program which will include THE GOLF SUPERINTENDENT, informational brochures, films, etc. Of prime importance this coming year will be the existing and impending shortages of many basic golf course maintenance necessities such as manpower, fuel, fertilizer, parts, seed, etc., and the increase of government regulations which pertain to golf courses.

INTERNATIONAL PESTICIDE APPLICATORS ASSOCIATION, INC.

221 First West, Seattle, Washington 98119
Tel. (206) 284-4774

Ralph V. Backstrom, Executive Director

Officers and Directors: Donald R. Mock, Seattle, Wash., president; Robert Huntwork, Concord, Calif., vice president; Lew Sefton, Lake Oswego, Oregon, corporate secretary. Directors: Bob Skanes, Tacoma, Wash.; Jack Daniels, Seattle, Wash.; George Harrison, Seattle, Wash.; Rod Fairbanks, Seattle, Wash.; Stan Raplee, Seattle, Wash.; Bill Gildroy, Lake Stevens, Wash.; Gary W. Mulkey, Junction City, Ore.; Bill Owen, Clackamas, Ore.; Charles E. Seibold, Portland, Ore.; Milt Ellis, Portland, Ore.; Ray Collier, Portland, Ore.; Jim Stevenson, Oakland, Calif.; Paul G. Walker, San Diego, Calif.; Jim Osborn, Danville, Calif.; Alvin J. Wallman, Sonoma, Calif.; Don Caldwell, Salt Lake City, Utah.

Total membership: 106.

OBJECTIVES MET IN 1973: 1. Establishment of a permanent and adequately paid executive secretary with clearly defined duties and responsibilities; 2. Steady improvement through increasingly effective submissions for publication in The Professional Applicator; 3. Established liaison with other Green Industry organizations for greater collective effectiveness in telling our story and reaching our individual and joint objectives.

GOALS TO ACHIEVE IN 1974: 1. Attempt to so organize Board of Directors activities that annual conference meeting could become the only full board meeting needed within the year, with strong committee activity carrying the load during the year; 2. Develop more local talent for eventual improvement in board activities of IPAA; 3. Emphasize strongly greater inter- and intra-chapter influence on legislation, local and national which affects professional application of pesticides.

INTERNATIONAL SHADE TREE CONFERENCE, INC.

3 Lincoln Square, P.O. Box 71, Urbana, Illinois 61801
Tel. (217) 328-2032

E. C. (Cal) Bundy, Executive Secretary

Officers and Directors: F. Lewis Dinsmore, Dinsmore Tree Service, St. Louis, Mo., president; John Z. Duling, Duling Tree Expert Co., Muncie, Ind., president-elect; Jack R. Rogers, Superintendent of Street Trees, Los Angeles, Calif., vice president; E. B. Himelick, Illinois Natural History Survey, Urbana, Ill., executive director; Dan Neely, Illinois Natural History Survey, Urbana, Ill., editor.

Total membership: 2251.

OBJECTIVES MET IN 1973: 1. Finalized the revised Constitution and Bylaws as adopted by the membership at the 1973 Convention in Boston; 2. Realized the approval and distribution by the American National Standards Institute of the much needed publication "National Standards for Tree Pruning and Trimming" as formulated by a national committee sponsored by the I.S.T.C.; 3. Provided a group insurance program for the association members with the assistance of the Fred S. James Company, San Francisco, Calif.

GOALS TO ACHIEVE IN 1974: 1. Will complete the revision work of two out-of-print publication entitled "Transplanting of Trees and Shrubs" and "Opportunities in Arboriculture;" 2. Will have all back issues and indexes of our monthly magazine "Arborist News" microfilmed for sale and distribution to libraries, institutions, and individuals; 3. Will observe and celebrate 50 years of existence in 1974 by planning the best possible educational program at our annual convention in Atlanta, Ga. In addition, I.S.T.C. will realize the formation of a new chapter in the State of New Jersey.

NATIONAL ARBORIST ASSOCIATION

1750 Old Meadow Road, McLean, Va. 22101
Tel. (703) 893-7374

Robert C. LaGasse, Executive Secretary

Officers and Directors: John A. Shullenbarger, president; W. Roland Shannon, vice president; Thomas A. Morrison, secretary; Boyd Haney, treasurer; Gerald E. Farrens, director; Larry Holkenborg, director; Kenneth Kirk, director; Robert Felix, past president.

Total membership: 213

OBJECTIVES MET IN 1973: 1. The NAA Professional Home Study Program was revised and reprinted as a continuing service to its members and the industry; 2. Published the "Handbook on Forma" which lists over 200 business forms currently being used through the tree care industry. The purpose of the Handbook is to offer members an unparalleled resource by which they can compare the individual needs of commercial tree care companies; 3. Planted the first live national Christmas tree in over 20 years. Working in cooperation with the National Park Service and the Department of Interior, the NAA located, secured, transported and planted a 40 foot Colorado Blue Spruce which will serve as the official Christmas tree for the next 100 years. It is located just behind the White House.

GOALS TO ACHIEVE IN 1974: 1. Emphasize the updating of business education among the members of NAA for the better operation of tree care companies; 2. Research and distribute publications on specific technical problems experienced by the tree care industry, such as

disposal problems, company policies and procedures, the "energy crisis," industry spray practices and other topics vital to the operation of commercial tree care companies.

SPRINKLER IRRIGATION ASSOCIATION

13975 Connecticut Avenue, Suite 310
Silver Spring, Maryland 20906
Tel. (301) 871-8188

Walter D. Anderson, Executive Secretary

Officers and Directors: John H. Stevens, Eugene, Ore., president; James D. Pichon, Zephyr Cove, Nev., president-elect; W. J. Ogle, Lubbock, Tex. treasurer. Directors: Paul B. Bohley, Mansfield, Ohio; Joseph Harris, Lubbock, Tex.; W. H. Lane, Bellaire, Tex.; Thomas W. Crockett, Williamston, N.C.; Earl Morrison, Billings, Mont.; Taylor Ramsey, Eugene, Ore.; Gary Underhill, Glendora, Calif.; Kenneth B. White, Jr., Winchendon, Mass.

Total membership: 375.

OBJECTIVES MET IN 1973: 1. Publication of the first "Supplement to Sprinkler Irrigation" containing the SIA's first presentation of a section of its textbook devoted to turf irrigation; 2. Establishment of the Waste Water Resources Committee to act as an industry voice and clearing house in the area of land treatment of waste water through sprinkler irrigation in both turf and agriculture; 3. The holding of the first Sprinkler Irrigation Short Course in Fresno, Calif., in December with more than 80 enrollees and a three day program devoted to turf and agricultural principles and practices of sprinkler irrigation.

GOALS TO ACHIEVE IN 1974: 1. Publication of the completely revised and rewritten "Minimum Installation Specifications for Turf Sprinkler Irrigation Systems" expected in mid-winter; 2. Completion of a nation-wide study on licensing laws pertaining to irrigation contractors and complete analysis of existing laws to form a basis for local groups to make recommendations to state legislatures in their areas when licensing of contractors it shows to be desirable and feasible to insure quality and experienced workmanship; 3. Completion of preliminary plans for the establishment of a turf and agriculture correspondence course on sprinkler irrigation to be operated through and administered by the SIA.



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WEEDS TREES and TURF

1973

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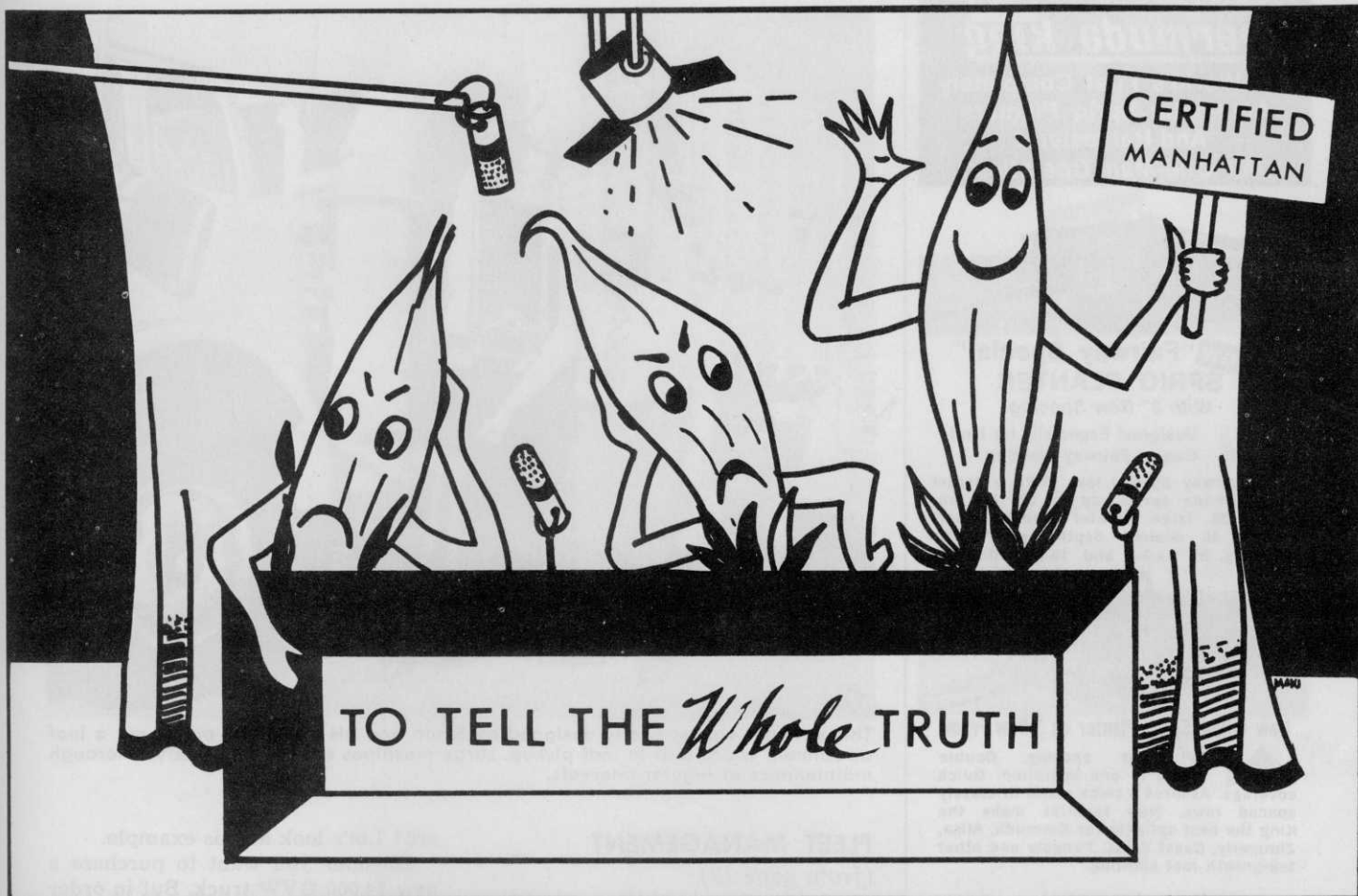
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The seed produced by these growers is closely watched and both field certification and seed certification are required before the seed is released to you, the customer.

Any seed bearing the name "Manhattan" but which does not carry certification tags may not be truly Manhattan. The variance could be drastically untrue of variety.

For your protection — buy only Certified Manhattan; why take a chance on imitations?



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The Big Red Line

bermuda king

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Automatic Sprig Planters
And Harvesters
All One-Man Operation



New "Fairway Special" SPRIG PLANTER

With 2" Row Spacing

Designed Especially for Golf
Course Fairway Planting

The Fairway Special lays down a carpet of Bermuda sprigs, up to 100 bu. per acre. 36 large planter wheels insert sprigs to desired depth on 2" row spacing. In 2-4-6-8 and 10-ft. widths.



New 4-Row Sprig Planter on 3-Row Frame

20" Row spacing. Double sprigs in one operation. Quick coverage. Assures a thick stand in closely spaced rows. New features make the King the best sprigger for Bermuda, Alisa, Zimmerly, Coast Cross, Pangola and other top-growth root planting.

The Big Red Line of Harvesters

New 42" Sprig Harvester with Elevator

6 Models
to Choose
From:
42", 28", 20"



Designed especially for Custom operators. Digs, loads and cuts to planting length 1000-1200 bu. of clean sprigs per hr. . . up to 2000 bu. when equipped with Side-Loading Elevator.

New 20" Sprig Harvester



The popular new 20" Sprig Harvester digs and loads 400 to 500 bu. of clean sprigs per hr. Up to 600-900 bu. with side loading elevator. Floating PTO Shaft and Shear-Pin protection. Heavy-duty construction.

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This sweeper was specially designed by Smith and his crews. He points out a leaf attachment which aids in leaf pickup. Large machines such as this receive thorough maintenance at regular intervals.

FLEET MANAGEMENT

(from page 13)

leasing programs, open end leasing, and closed end leasing.

Open end leasing can be had with or without full maintenance. A contract is written on a mileage or hourly basis, for instance. The cycle period is 36 months, mileage limitation 45,000 miles, 3¢ thereafter, the lease makes up the balance of the purchase price when the vehicle is disposed of.

Closed end leasing can also be had with full maintenance programs. The cycle period is still 36 months, mileage limitation 45,000 miles, 3¢ thereafter. The lessee turns in vehicle at end of cycle period and completes all obligation.

Most lease agreements have a penalty clause for mileage; i.e. 60,000 to 80,000 miles pays penalty equivalent to blue book loss.

The lessee can write off 100% of lease payment as operating expense. The only tax write off is license.

In some cases it is better to purchase or own the equipment, as owned vehicles can be written off for such items as: sales tax, annual license and annual depreciation.

How should a manager decide whether to purchase one vehicle with needed options (larger axles, etc.) or the next model up which has the desired equipment as stand-

ard? Let's look at this example.

Consider you want to purchase a new 24,000 GVW truck. But in order to purchase a truck this size with components you want, it is necessary to purchase a 20,000 GVW truck and purchase optional components. I am referring to a F-700, for instance, where standard FA. 7000 pounds and an optional FA 9000 pounds compares to a standard RA. 13,000 pounds and an optional RA. 15,000 pounds. By going to a standard model F-750, it is possible to purchase the F-750 at the same price or sometimes even less. The main factor to consider would be cost.

Aerial Equipment

New regulations on vehicle-mounted elevating and rotating work platforms have brought new meaning into the purchase of aerial equipment. Due to a personnel accident some years back, we have established a preventive maintenance program on aerial ladders, cranes and personnel platforms for the City of Los Angeles. This program meets the State of California and manufacturer's recommendations. The program now in effect meets or exceeds OSHA requirements.

First, we are required to install a safety bar inside the bucket to fasten a safety belt to. This bar must be insulated on the outside of bucket, so no projected bolts can make contact

with electrical wires.

We also have established detailed series of inspections for aerial devices. They consist of: 1. Daily operators inspection in which records are turned in weekly; 2. A 90-day visual inspection of performance, controls and warning devices; 3. A one-year inspection as to lifting capacity, stability tests, electrical insulation tests and complete visual inspection of cable, hoses, and all other components; and 4. A three-year tear-down inspection. This consists of dismantling of machine, magna-flux all pins, shafts, sprockets, and shives. Replace all hydraulic lines overhaul controls, x-ray booms and replace cables.

In some ways the OSHA program follows the manufacturers recommendations. The Bureau of Transportation provides and is responsible for maintenance of same. It is our responsibility to supply and maintain the best and safest equipment possible to the using agencies. □

Spray Irrigation Effluent Yields Phosphorus To Soil

Most soils, irrigated with sewage effluent, are capable of removing unwanted phosphorus from the effluent for countless years without becoming over-saturated.

Such irrigation with sewage effluent is considered widely as feasible to meet the proposed goals of Federal legislation which would forbid disposal of critical pollutants into surface waters by 1983, stated Dr. Louis T. Kardos, professor of soil physics at Penn State University.

The phosphorus is either "fixed" or held onto by the soil, or is removed by crops through the root systems in a process termed "the living filter," Dr. Kardos explained. In medium-textured Hublersburg clay loam, for example, phosphorus has not increased below 12 inches of soil after irrigating the land with a total of 472 inches of sewage effluent over a 10 year period.

In coarse-textured Morrison sandy loam, on the other hand, 591 inches of sewage effluent applied over a 7 year period has increased the phosphorus content as far down as 3 feet. This soil is largely covered with forest. Virtually all of the phosphorus taken up by the trees is recycled through leaf litter each fall.

Water samples taken from the soil pores indicate that phosphorus leakage at 4 feet has been less than 1 percent of the total applied phosphorus on the clay loam soil. Leak-

age at the same depth was about 7 percent on sandy loam soil.

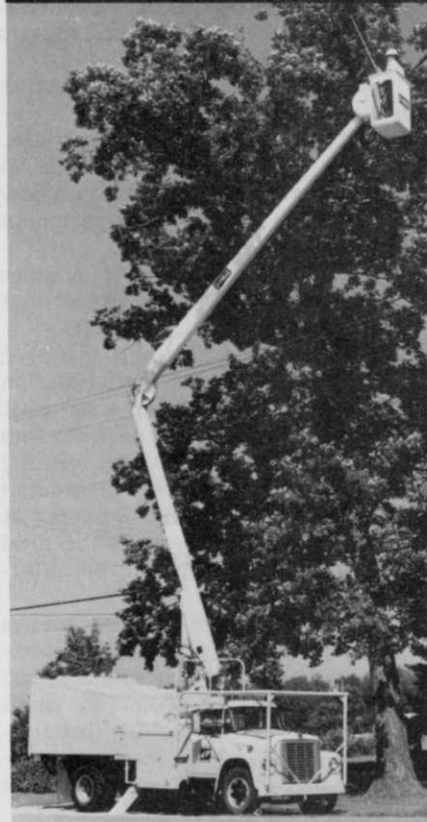
Regardless of the amount of effluent applied, no change was detected in phosphorus concentration in groundwater at either site.

Harvest of crops from the clay loam soil removed from 10 to 140 per cent of the applied phosphorus in the various years, Dr. Kardos stated. Such harvesting of crops contributes substantially to extending the time over which the soil can behave as an effective phosphorus filter.

Approximately 500,000 gallons of effluent are currently being sprayed daily on about 75 acres of farm and forest land at Penn State. Chlorinated secondary effluent is diverted from a sewage treatment plant into a pipeline which runs about 4½ miles to the irrigation site. Any one piece of land is irrigated only once a week. The system has been in operation since 1963.

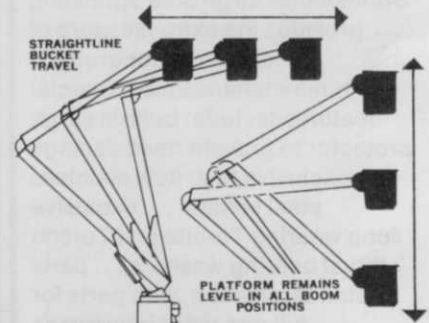
A system irrigating four million gallons daily is now being designed to dispose of the entire effluent output from the university community.

HI-RANGER® gives you more



... that's needed for safer, more productive tree trimming and line clearing.

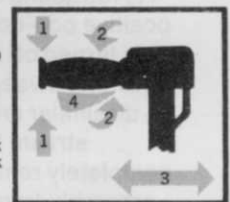
More than 20 years refinement in design and construction account for the No. 1 position HI-RANGERS hold among owners and operators of mobile personnel towers for overhead work.



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3D ONE-HAND CONTROL

- (1) up and down
- (2) 360° rotation
- (3) forward & back
- (4) safety interlock release



HI-RANGER Aerial Towers meet the "American National Standard for Vehicle-Mounted Elevating and Rotating Work Platforms ANSI A92.2-1969," as required by the Williams-Steiger Occupational Safety and Health Act of 1970; Part 1910, Occupational Safety and Health Standards; Section 1910.67.

Owners and operators of HI-RANGERS "wrote the book" for features exclusive with HI-RANGER... □ single hand 3-D bucket control, □ automatic safety interlock system, □ stronger tapered upper boom, □ power-reserve accumulator system, □ constant-angle upper boom movement with straight-line bucket travel, □ self-leveling bucket, and □ maximum safety with faster, easier operation for more work at low cost.

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THE METRIC SYSTEM

(from page 30)

dustry, yet the advantages of getting in step with the rest of the world are so great that business and industry are converting rapidly — already!

About 30 percent of Ford Motor Co.'s production worldwide is metric. Ford has opened a new plant at Lima, Ohio, and now is building a completely metric engine there for the Mustang II. The engines being used in the Ford Pinto, Plymouth Cricket, Dodge Colt, and Chevy LUV are already metric.

At General Motors, all new development now will be metric from the start.

John Deere is producing metrically dimensioned tractor engines here and in Europe.

IBM initiated a 10-year conversion program in 1971.

At its Hough plant at Libertyville, Illinois, International Harvester is designing and manufacturing all new products in metric measurement units.

Manufacturers of small engines will follow suit. You can expect that new designs soon will be metric.

These actions are being taken even though there has been no legislation yet. Perhaps it's better that way. With the present active participation of the United States in refining metric standards, and a gradual changeover by manufacturers at their convenience, perhaps the total cost and disruption can be minimized.

Total conversion to the metric system in the United States, according to one estimate, would cost 100 billion dollars. The cost to small engine central and service distributors and dealers will be an infinitesimal part of that. The real burden falls on manufacturers.

An estimated 10 percent of the total 100 billion dollar cost will be in what is called "soft" conversion — simply expressing measurements of our present products in metric equivalents — on drawings, on literature, on labels, on packaging, in books, in records. We would also change road signs, gasoline pump meters, and innumerable other familiar items now bearing nonmetric language.

The remaining 90 percent of the cost of going metric is in what is called "hard" conversion. "Hard" conversion means complete redesigning of products to metric measurements. That means redesigning every component in a Kohler engine. Every component in conveyor systems and lift trucks. Every gauge.



E. L. Fisher is director of service, electric plant and engine division, Kohler Co. He is a graduate engineer and has served as director of service since 1970.

Every measuring device.

When the heating system in a Kohler factory is replaced, when the wiring is replaced, when the building itself is replaced, all components will be metric, from bricks and 2 by 4's to boiler pipes and light fixtures.

Convert all industry and all products to the metric system, and you can understand why the total cost has been estimated at 100 billion dollars. Keep in mind, however, that the conversion will be gradual and that the cost will be spread over 10, 20, or more years. Keep in mind, too, that if we don't convert to the metric system, we could lose many times 100 billion dollars in international trade in the next century; and that would affect the standard of living for all of us.

What does adopting the metric system mean to small engine central and service distributors and dealers?

I don't think that it will be a big problem. I don't think that it will be costly. Again, the transition will be gradual; and before you know it, you will be thinking in metric terms of inches, pounds, and gallons.

School systems are already starting to teach the metric system so that young people will be well prepared for the transition period.

The conversion to metric will increase the inventory of hardware items somewhat for small engine distributors and dealers, because they will have to carry replacement nuts and screws for today's nonmetric engines at the same time that they are "phasing in" metric parts. Other parts are unique to a particular engine anyway, unless you are dealing with a family of engines with some interchangeability of

parts. So I would conclude that the effect on inventory cost would be minimal.

Small engine distributors and dealers will have to double up on some tools during the transition period. They will need the non-metric tools they have now, but they will need metric tools also.

Many of our present tools will need no conversion. Others such as socket wrenches, open end wrenches, torque wrenches, pressure gauges, and micrometers must be sized or calibrated to the metric scale. The cost of equipping a dealership with metric tools is moderate.

Will we have to train dealers in the metric system? Probably not. For one thing, many of them already work with metric engines — snowmobile engines, motorcycle engines, diesel engines — and I suspect they worked into it without any special training in the metric system.

Also, dealers order replacement parts by part number, whether the parts are metric or non-metric.

Thirdly, at the risk of repetition, the transition will be gradual and dealers will learn to think metric and talk metric almost without realizing it.

Actually, this discussion can be summarized in a few words:

The United States is going metric. Legislation is imminent. Companies are already changing.

Small engine manufacturers are going metric. New designs are apt to be metric, while production continues for a while on non-metric models. Or we could say it this way — as older models are dropped from the product line, new products will be metric.

Small engine distributors and dealers are going metric. And they will do so at minimum cost, with minimum effort, and so gradually that they will be part of the metric world before they know it.

Along the way, we will forget a few things — like the "perfect 36." Or that time-honored saying, "An ounce of prevention is worth a pound of cure." And Texans will have to give up, or resize, the 10-gallon hat.

Required OSHA Poster Revised By Dept. of Labor

The U.S. Department of Labor has announced publication of a revised "Safety and Health Protection on the Job" poster.

The new poster, required by the Occupational Safety and Health Act of 1970 to be posted in most of the nation's workplaces, is a more de-

tailed copy of the original notice.

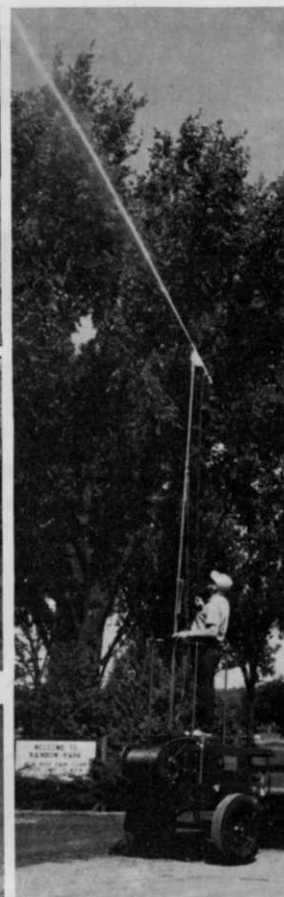
Assistant Secretary of Labor John H. Stender, head of the Occupational Safety and Health Administration (OSHA), said the new poster "summarizes the provisions of the Act in easily understandable language so that both employer and employee will understand their rights and responsibilities under the law."

The revised, two-color notice includes a summary of the general responsibilities of employers and employees for creating safe and healthful workplaces. It explains the rights of an employee during an OSHA in-

spection, and summarizes the employee complaint procedures under the Act.

The poster also describes the citation provisions of the Act and details the various penalties that can be imposed. It also describes OSHA's commitment to voluntary compliance as an integral part of its efforts.

The poster is available, without charge, at any OSHA Regional Office. These offices are located in Atlanta, Boston, Chicago, Dallas, Denver, Kansas City, New York City, Philadelphia, San Francisco, and Seattle.



Help from Hudson on any spraying job

You name the spraying job—small, medium or large. A Hudson power sprayer can tackle it.

Take our 12½-gallon Suburban™ Trail-N-Spray™. Hitch to any compact tractor. Dependable positive piston pump—2½ gpm.

Or step up to our Matador® sprayers. Choice of 3 or 5 gpm positive piston pump. Four tank sizes: 15, 30, 50, 100 gallons.

For really big jobs, choose from our Peerless™ line on wheels or skids—with tanks sizes up to 300 gallons. Can

cover turf at 10 acres an hour with 20-ft boom. Or reach up high with telescopic gun mast. Models available with rugged Ten-O-Matic® 10-gpm pump, stainless steel tank for trouble-free service.

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Performance proven across the nation and rated highest by universities doing turfgrass research. Sells for more yet is less expensive to produce than other bluegrass strains. Two crops of sod in one growing season possible with A-20 & A-34. A few northern territories open for exclusive grower's franchise. Write or call for information:

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Your investment in our program is completely protected and guaranteed to produce a prestige, professional business, high profits and precision results with complete customer satisfaction.

22 years of unequalled success with exceptionally high profits, dramatic advertising, promotion, and public relations, unique and different scientifically proven products and techniques, complete training and field assistance, plus a total R & D Agronomy Dept. Guaranteeing you success and positive results all of the time.

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industry people
on the move



DR. JOHN E. KAUFMANN, appointed assistant professor of turfgrass management for Cornell University. He fills the position vacated by Professor Emeritus **JOHN F. CORNMANN**.

* * *

DR. MICHAEL TYSOWSKY, named entomologist for the agricultural chemicals division of ICI America, Inc. **DR. DAVID H. BROOKS**, appointed research supervisor. He is on a two-year leave from the London based parent company.

* * *

EDGAR E. FEHNEL to vice president of agricultural marketing planning for Elanco Products Company. He will be responsible for product planning and coordination of agricultural products on a worldwide basis.

* * *

PAUL R. BLUM, appointed area manager for the southeastern states for Kohler Co. He will headquarter in Atlanta and work with original equipment manufacturers and Kohler engine distributors in a nine state area from Arkansas to the Carolinas.

* * *

CHARLES S. PUTNAM, elected vice president/sales for Telsco Industries. He has served as Weather-matic division sales manager for four years.

* * *

WAYNE G. RICHTER, appointed sales planning manager for consumer products manufactured by Massey-Ferguson, Inc.

* * *

FLOYD L. SIMPSON and **JAMES C. BRYAN** become district sales managers for Elanco Products Company. Simpson will manage sales in the Indianapolis district and Bryan will head the Cleveland district.

* * *

Addition of nine technical representatives brings to 63 the number of ProTurf representatives for O. M. Scott & Sons. New additions include: **DICK GRAY**, **MIKE RAINEY**, **FRED TOOT**, **STEVE SCOTT**, **BOB TUMEY**, **CHARLES LOMBARD**, **BEN MALIKOWSKI**, **CHUCK CURTIS**, **GERALD SWEDA**. All have backgrounds in turfgrass management, seed, irrigation, turf equipment or other specialized areas of the Green Industry. In other company moves, **JACK CANTU** has been named vice president and director of the company. **GEORGE HORN** assumes the organization-wide responsibilities of director of marketing. New director of sales is **FRANK KOLLEY**. **JIM CONVERSE** becomes director of technical services. **GARY NEYMAN** has been named manager of technical information. **TOSH FUCHIGAMI** joins ProTurf as manager of technical field services. **BILL HOOPES** becomes senior PTI instructor of the company's retail division. **J. C. HIGGINS** moved to assistant general manager. **RAY FLEMING** becomes ProTurf's manager of field administrative services. **GEORGE GUMM** named manager of the midwestern region and **BRIAN FINGER** appointed manager of the eastern region. **ED DOTSON** promoted to manager of sod growers sales.

* * *

DONALD J. VALSVIK elected vice president of Conwed Corporation. He will continue to serve as manager of the developing business group.

WEEDS TREES and TURF

Int. Pesticide Applicators Form Michigan Chapter

A Michigan chapter of the International Pesticide Applicators Association has just been formed according to an announcement by Lew Sefton, corporate secretary.

Charter members of the new chapter are: Al Ray, Wolverine Tree Care Co., Detroit; Frank Jasso, Jasso Tree Service, Clarkston; Paul King, West Side Forestry Service, Inc.; and Bob Olsen, Robert Olsen Landscape, Inc., Lapeer.

For more information about starting a state chapter of IPAA write: Lew Sefton, Corporate Secretary, International Pesticide Applicators Association, Inc., 5600 S. W. Rosewood, Lake Oswego, Oregon 97034.

Applicator Workshops To Be Held By B&G Company

Workshops designed to teach the applicator more about his business have been announced by the B & G Company, Dallas, Tex.

According to L. P. Quattrochi, general manager, each of the workshops is one and one-half days in length. The program is presented by

means of a workbook which contains outlines of each talk. Delegates to the workshops will fill in the workbook which will act as a source of material later.

Dates and locations of the workshops are: Dallas Workshop, Ramada Inn, Carpenter Freeway, Irving, Tex., Jan. 11-12; Houston Workshop, Royal Coach Inn, South Boulevard, Houston, Tex., Jan. 18-19; Lubbock Workshop, KoKo Inn and KoKo Palace Convention Center, Lubbock, Tex., Feb. 8-9; and Oklahoma Workshop, 89er Motel, Oklahoma City, Oklahoma, Mar. 1-2.

Texas Turfgrass Conference Held on A&M Campus

About four hundred people attended the 28th annual Texas Turfgrass Conference in early December in the J. Earl Rudder Conference Center at Texas A&M University.

Dr. Richard H. Duble, associate professor in the Soil and Crop Sciences Department, said the conference was aimed at turf management on golf courses, parks, lawns and business areas.

Keynote address this year was presented by Dr. James R. Watson, vice-president of the Toro Company, Minneapolis, Minn.

Afternoon talks covered grass establishment, weed control in overseeding greens, golf course construction budgeting and bentgrass for Texas golf greens.

Other topics were athletic field maintenance, roadside turf establishment, recent advances in weed control, turf growth retardants and cultural problems of ornamental plants.

The second day's sessions focused on bermuda turf thatch control, Floratam, irrigation system installation and making golf courses competitive. Also included were personnel motivation, woody ornamentals, annual plant propagation and lake management.

Conference sponsors were the Texas A&M soil and crop sciences department, Texas Turfgrass Association and U.S. Golf Association, Green Section.

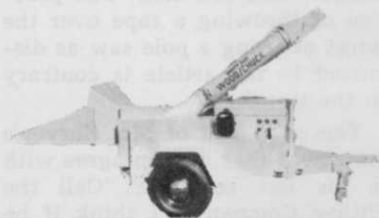
Zip-Penn Offers Catalogue

A new catalog of replacement chain saw chains, guide bars, sprockets, engine parts and other equipment for chain saws has been issued by Zip-Penn Inc. Write: Zip-Penn Catalog Office, Box 43073, Middletown, Ky. 40243.

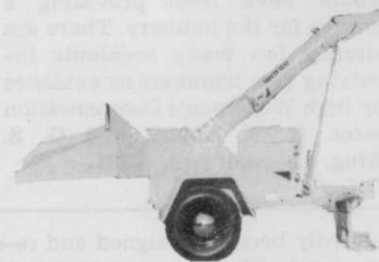
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Both Heavy Duty and
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Safety Test Wood/Chuck chippers are in a class by themselves.

You get superior performance, economy and safety. There's less down-time for blade adjustment and replacement. The Wood/Chuck's blades lock into the rugged rotor and automatically position properly. This takes just minutes for a Wood/Chuck but often requires hours with other chippers. Wood/Chuck's blades are "V"-grooved for full length support that means extra safety. And where most "chippers" blades are so positioned that chips are actually crushed away . . . the Wood/

Chuck's shallow blade angle slices chips away. Goodbye friction, wasted energy and vibration; jobs go faster, fuel goes farther.

Only the Wood/Chuck has really been built from the ground up as a chipper for heavy-duty use. It's modern, functional, no-nonsense design sets it apart. Above all, the Wood/Chuck has that built-in Safety Test "Extra Measure" of dependability. You can rely on it to do a full day's work . . . day after day, year after year. Frankly, there are dozens of reasons why no other chipper compares with the Wood/Chuck.

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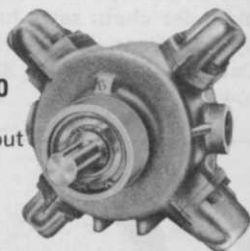
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at 400 psi with
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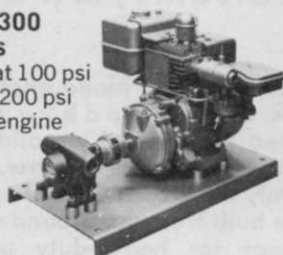
**Series 5400
4-Cylinder**
25 gpm output
at 600 psi



ROLLER PUMPS

Choice of rubber or nylon rollers

**Series 6300
6-Rollers**
6.9 gpm at 100 psi
6 gpm at 200 psi
4 hp gas engine



**Series 7560C
8-Rollers**
10 gpm at 200 psi
with 4 hp engine

Write for complete pump catalog or request pump recommendation for your need.

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LETTERS TO THE EDITOR

HATS "ON" TO US

Hard Hats & Tree Men In my own company, I'm only the boss, and when I get up in the morning I put my plant on, then put my hard hat on my head. I feel it is the best insurance coverage possible for a treeman's head, and the company pays the \$5 premium, but the policy only covers you when it covers you. Hard hats are good insurance.

Like your article in July issue on synthetic ropes says, most tree men resist change, but these hard headed souls would still be wise to get accustomed to wearing hard hats. Some of us here in Westchester have made it a condition of employment spelled out in the job application along with other safety rules. If a man is fired for violation of safety rules which are so part of the conditions of employment, in New York he cannot collect unemployment until he works another 14 weeks. Besides OSHA says THOU SHALL WEAR an approved hard hat whenever in the vicinity of any overhead hazard.

Maybe you can help editorially. I'd like to see hard hats worn a lot more often. Safety's Cheap! **John A. Crockett, vice president, Westchester County Tree Protective Association, Inc.**

JUST THE FACTS

You may construe this letter as fan mail. I am an ardent environmentalist, Sierra Club member, etc, etc, who, as a plant scientist receives selected publications I think you do an excellent job of presenting the new FDA and EPA ruling, pronouncements, etc. without using the usual wild, bitter comments Most of us realize that all chemical or all natural will not work, but emotion will not solve the problem either. We must continue to work together for the common good; not just the good of one side.

So, even if you have an almost uncontrollable urge to "blast out" when a new chemical is removed

or restricted from use, just remember that you might lose a group of readers that really just want to help solve the problems, not obstruct for the sake of obstruction. **Fred R. Rickson, associate professor of botany, Oregon State University.**

OBJECTION SUSTAINED

Mr. Hank Harvey, Jr.'s article, "Arborist Shop Talk" in the October issue advocates a "limb-over-a-wire-technique." This very definitely is an unsafe practice. Use of this technique could result in the wires burning down injuring a person on the ground. Under certain conditions, conductor contact could cause a voltage increase thereby damaging televisions, refrigerators, appliances, etc.

The American National Standards Institute appointed a committee designated as Z133 to develop "Safety Requirements For Tree Pruning, Trimming, Removal and Repair." This standard was developed by representatives of industry, government, trade and educational groups, including U.S. Department of Labor and OSHA. Because of the hazards associated with the practices advocated by Mr. Harvey, we feel compelled to respond to his article.

This standard specifically identifies electrical hazards associated with tree work in Section 4, Section 8.2.1 and 8.2.5. The practice of throwing a rope over the wires or using a pole saw as discussed in the article is contrary to the standard.

The only part of Mr. Harvey's statement that we can agree with is his last sentence, "Call the Utility Company." I think if he had said this in the beginning, he would have been providing a service for the industry. There are already too many accidents involving tree trimmers as evidence by high Workmen's Compensation rates. **R. E. Abbott and G. S. King, Co-chairmen, Z133.**

Lockwood-Hardie Sprayers Featured in New Brochure

A new brochure on the full line of Lockwood-Hardie sprayers is now available from the Lockwood Corporation, Gering, Nebraska.

The complete line of sprayers has

recently been re-designed and re-engineered. They are equipped with stainless steel tanks to prevent corrosion and lower maintenance cost.

For a copy of the Lockwood spraying brochure, write: Lockwood Corp., Dept. 119, Gering, Nebraska 69341.

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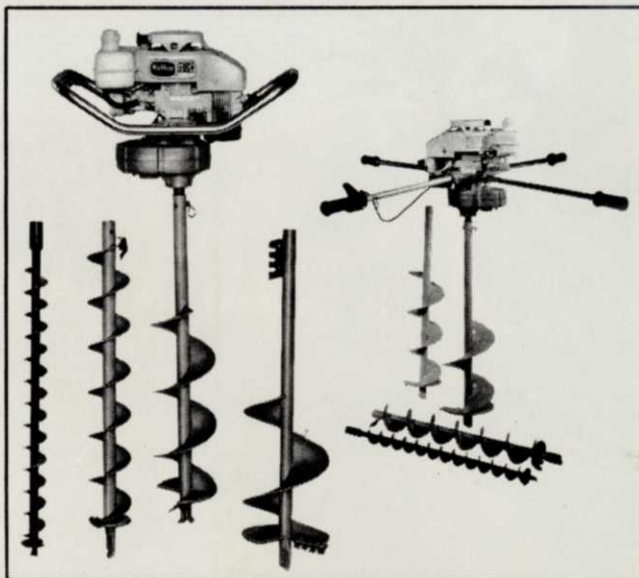
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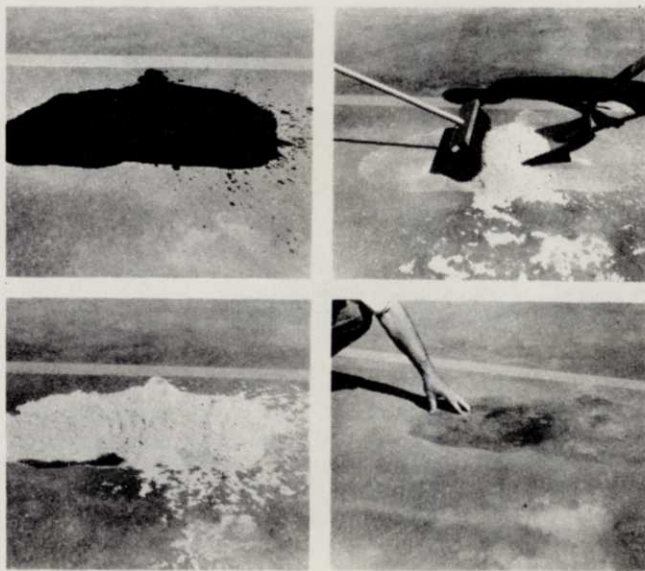
HIGH-PRESSURE HEATER: Century Engineering Corp., Farm Equip. Div., Cedar Rapids, Ia.

Here's a 155,000 BTU oil-fired, high-pressure portable heater that can take the chill off an area in a hurry. It has a 12 gallon fuel capacity that provides 12 hours of continuous heating. All you do is plug the heater in and set the thermostat. A high-pressure pump moves fuel from the tank to a valve which controls flow to the combustion chamber. A fan puts out 325 cubic feet of heated air per minute. For more details, circle (701) on the reply card.



POST HOLE DRILL: Hoffco Inc., Richmond, Indiana

Drills for post holes, earth or other uses are part of this line of machines. There a choice of one man-two cycle, two man-two cycle, or two man-four cycle models. Features include: heavy duty transmission fully equipped with precision ball bearing at all load points; centrifugal clutches with over-riding abilities for the protection of the operators and machines; anti-weep baffles on all fuel tanks; quick release throttle controls, and more. Low tone mufflers are used on all units which exceed all current, metropolitan anti-noise requirements. There a drill available to handle augers from two inches through eight inches. For more details, circle (702) on the reply card.



SPONGE-IT: Johns-Manville, Celite Div., Denver, Colo.

Water and oil spills on streets, driveways and work area floors can be lifted quickly with this new product. It's available in powder form. Tests have shown the powder to be more effective than commercial floor sweep due to its higher absorptive capacity and dryness of oil and powder mixture, according to the manufacturer. To remove oil spill, pour produce over spot and then sweep away powder and oil mixture. Oil is absorbed by powder and effectively removed from surface. For more details, circle (703) on the reply card.



FLEX-A-MATIC 140: Hahn, Inc., Evansville, Ind.

This five-gang reel mower is now available after four years of development and testing. It cuts a swath up to 12 feet and features five 30 inch wide variable speed heavy duty reels driven by mechanical cables. Other features include: fingertip height of cut adjustment from 1/2 inch to 3 1/2 inches; a break-away outboard reel device; and reels positioned around traction wheels to avoid running over uncut grass. Unit has a short turning radius and high flotation tires. For more details, circle (704) on the reply card.





Photo by R. H. Bailey.

This green, sixteen miles east of Palm Springs, Calif., shows Pennncross creeping bentgrass doing well in 113° temperature. Photo was taken June 26, 1973. Mel Curci, golf director of

Indian Wells Country Club commented on that day, "113° in the shade and growing strong." Indian Wells Country Club is one of four sponsoring courses in the Desert Classic.

CREEPING BENTGRASS RESEARCH

Polycross Pennncross "... the grass designed for golfers ..."

By W. SCOTT LAMB

THERE are many varieties of turf-grass being grown with an eye toward the golf trade. But, based on performance, none have come up to the reputation of Pennncross Creeping Bentgrass.

Dr. Burt Musser and Dr. Joseph Duich, Pennsylvania State University developed the polycross bearing the Pennncross name, by crossing three strains of creeping bentgrass for the express purpose of making a better bentgrass for golf greens. Their research spread through many lines of bentgrass before they developed the three-line cross with the qualities they were looking for in a putting green grass.

The parent lines developed by the researchers are kept in carefully

maintained condition in Pennsylvania State University greenhouses. From these three varieties come stolons which are planted with great care by selected seed growers in Oregon.

The stolons are field-planted in rows, with the three components planted in separate rows so there are balanced populations throughout the field. The resulting cross pollination makes the polycross (3-plant crossing) throughout the field.

The process sounds simple enough, but the requirements for growing this certified seed are very rigid. No other plantings of bent can be grown near the Pennncross, nor may other varieties of bentgrass be grown in the field for a number of years.

The fields are sanitized chemically to eliminate all growth of weeds or

other grasses. The rows of stolons are hand planted and constantly patrolled through the early growing season to rogue weeds and unwanted grasses that may contaminate the field after planting.

Each field is registered for certification by the grower. Certification specialists from Oregon State University inspect each field to make sure it complies with planting regulations and to verify isolation from other plants which could cross pollinate.

Harvesting is carried out with immaculately clean combines and the seed is handled by lot number which indicates the field in which it was grown. Samples from the lot are taken by Oregon State University certification specialists to the official laboratory for careful inspection and

testing.

Oregon certification standards require 98% pure seed and 85% germination with minimum allowance for weed and crop seed. Penncross growers, through their association, have tightened these requirements even more. Putting green quality Penncross must meet the above standards plus be free of all objectionable weeds and crop seeds including *Poa annua*. This extra effort by the growers makes Penncross one of the purest turfgrass seeds available for putting greens.

Bentgrass seed is extremely small, with approximately 9-million seeds per pound. Since each seed produces a plant, the seeding rate for even new greens is light compared to larger turfgrass seeds sown on other areas of the golf course.

The general recommendation for seeding new greens is one to two pounds of seed per 1,000 square feet. For overseeding existing greens, one to one and a half pounds per thousand square feet is recommended. Rapid establishment of new greens is proven by letters from enthusiastic golf course superintendents who report newly seeded greens being in play from 60 to 90 days after seeding.

This bentgrass variety does receive scattered complaints from course superintendents who run into maintenance problems, such as the requirement for a tight mowing schedule. The hybrid qualities of Penncross require greater attention; brushing and verticutting are necessary to keep greens in top condition. When properly maintained, it will give that consistent texture required for true putting. The rapid growth also repairs the green from heavy traffic associated with today's courses.

The hybrid characteristics of Penncross testify to the ability of Penncross to crowd out *Poa annua*

from greens. Where *Poa* is a problem, overseeding with this bentgrass on a regular program will indeed help. In fact, according to a letter from one golf course superintendent, it is the only cure he knows for riding greens of *Poa annua*.

Penncross is deep rooted, a quality which must be considered in a golf green grass. This factor makes it both cold and heat tolerant. From the rigors of the Canadian and Alaska winters word comes to the Penncross Association that it came through in great shape. Conversely, a golf course superintendent in California reports an irrigation system breakdown for one week in over 100 degree weather and still the Penncross emerged with no visible harm.

The consistent demand for Penncross seed is evidence of its acceptance throughout the golf world and speaks well for this very special polycross developed by Dr. Musser and Dr. Duich. The Penncross Association has adopted the slogan, "the grass designed for golfers" and the reputation speaks well for that slogan. □

Fertile Tiller Increase Noted By Open Field Burning

Open field burning after harvest has helped control disease and weeds and produce better yields in grass seed crops in Oregon's Willamette Valley since the practice began in the mid-1940s.

How does the heat improve yield?

Oregon State University crop scientists, working with red fescue, have found part of the answer. The answer is important because Willamette Valley growers, who produce 70 percent of the U.S. supply of red fescue and a large part of the world's supply of other grass seed, face a January 1975 deadline. That is when open field burning is scheduled to be

banned in Oregon because of air pollution problems.

Dr. David O. Chilcote, OSU crop physiologist, recently reported on the red fescue results at the annual meeting of the American Society of Agronomy.

"The primary response to post-harvest residue burning was an increase in the number of fertile tillers (panicles)," he said.

"Not surprising is that competition for sunlight in the fall is one of the keys to plant growth and yield. With field burning, the plant does not elongate, seeking the sunlight. The shorter plant has more tillers in the fall and the tillers produce more seed heads in the spring."

In tests conducted by graduate student Phillip C. Stanwood, plants in a burned area produced 16 tillers per 10 primary shoots in the fall. The rate for the unburned area was one tiller per 10 primary shoots.

"Contrary to the belief that burning causes a shock in plants which stimulates growth, we found that burning, in addition to opening up the stand of plants, also exposes the soil more, so the plant roots and shoots experience a wider range of temperature each day," Chilcote said. This may favor floral induction.

Red fescue was picked for the plot experiments because it is particularly sensitive to burning in terms of seed yield. Similar results were produced in more limited tests with tall fescue, perennial ryegrass, bentgrass and bluegrass.

The importance of sunlight was established by shading burned and unburned plots through the winter. The shade, acting much like stubble left in an unburned field, stopped seed production.

"Our evidence points to light competition as being probably the most important single factor related to crop response and post harvest burning," said Chilcote.

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—insect report—

TURF INSECTS

CINCH BUG

(*Blissus leucopterus leucopterus*)

MARYLAND: Several heavy infestations in turf reported by homeowners in Baltimore, Prince Georges, and Montgomery Counties. Commercial acreage also treated in several areas.

GRASSHOPPERS

KENTUCKY: Adults and nymphs of various species averaged 80 per 100 sweeps in Shelby County roadside grasses, mostly of fescue.

FALL ARMYWORM

(*Spodoptera frugiperda*)

TEXAS: Increased activity noted on lawns in several south-central counties. Damaged St. Augustine lawns in Llano County. OKLAHOMA: Still heavy in lawns in Tillman County. ARKANSAS: New generation present in many pasture areas. This generation in same localized area as previous generations. Still problem and required treatment to pastures in State. MISSOURI: Larvae moderate to heavy, 1-25 per square foot, on fescue, orchard grass, and brome pastures throughout south-central and southwest areas. Damage mostly in new stands. TENNESSEE: Heavy on newly sown grasses in Greene, Knox, Jefferson, Sevier, Loudon, Monroe, and Roane Counties. Treatments applied. MISSISSIPPI: Still heavy and damaging to permanent and temporary pastures in southern areas. KANSAS: Second in-star larvae averaged 2 per row foot in drilled 5-inch fescue in Cherokee County.

INSECTS OF ORNAMENTALS

WHITEMARKED TUSsock MOTH

(*Hemerocampa leucostigma*)

OHIO: Larvae severely defoliated group of *Potentilla fruticosa* (bush cinquefoil) shrubs in Pickaway County. Defoliation complete on several small sweet gum trees in Wayne County. Larvae had been heavily parasitized by 3 wasps in both areas.

POPLAR TENTMAKER

(*Ichthyura inclusa*)

WEST VIRGINIA: Larvae caused 25-percent defoliation to several willow trees in Calhoun County. This is a new county record.

TREE INSECTS

NANTUCKET PINE TIP MOTH

(*Rhyacionia frustrana*)

VIRGINIA: Widespread and more severe than usual throughout Portsmouth area.

YELLOWNECKED CATERPILLAR

(*Datana ministra*)

TENNESSEE: Larvae defoliated oak trees in Henry, Madison, and Shelby Counties. Populations heavy; due to lateness of season, only slight damage expected. ALABAMA: Larvae, 100+ per tree, partially defoliated numerous oak trees on lawns and along highways in Montgomery, Butler, Geneva, Crenshaw, Lee, and other counties.

VARIABLE OAKLEAF CATERPILLAR

(*Heterocampa manteo*)

NORTH DAKOTA: Completely defoliated birch trees currently evident in the Killdeer Mountains in Dunn County. Very little defoliation noted in August. Some mature larvae still present. Defoliated birch trees also noted north of Grassy Butte in McKenzie County. KANSAS: Defoliated some oak trees in Sedgwick County and caused light defoliation of oaks at Topeka, Shawnee County. Growth stages in Topeka included eggs and larvae up to half grown.

For More Details On Following Page Circle (134) On Reply Card

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meeting dates

Kansas State Shade Tree Conference and Kansas Arborist's Association, Student Union, Kansas State University, Manhattan, Kan., Jan. 3-4.

Western Association of Nurserymen, trade show and 84th annual meeting, Plaza Inn, Kansas City, Mo., Jan. 6-8.

Tennessee Turfgrass Association, annual conference, Roger Millers King of the Road Motor Inn, Nashville, Tenn., Jan. 7-8.

Mid-Atlantic Golf Course Superintendents Association, 45th annual conference, Sheraton-Lanham Beltway Convention Center, 8500 Annapolis Road, New Carrollton, Md., Jan. 7-8.

New England Chapter, International Shade Tree Conference, annual meeting, Highpoint Motor Inn, Chicopee, Mass., Jan. 8-9.

Northeast Weed Science Society, annual meeting, Holiday Inn, 18th & Market St., Philadelphia, Pa., Jan. 8-10.

Michigan State University-Michigan Pesticide Association, weed workshop, MSU campus, East Lansing, Mich., Jan. 9-10.

New York State Arborist Association, annual convention, Raleigh Hotel, So. Fallsburg, N.Y., Jan. 13-16.

Michigan Turfgrass Conference, 44th annual, Kellogg Center, Michigan State University, East Lansing, Mich., Jan. 15-16.

Michigan Turfgrass Conference, 44th annual, The Kellogg Center for Continuing Education, Michigan State University, East Lansing, Mich., Jan. 15-16.

New Hampshire Turf Seminar, Sheraton Wayfarer Motor Inn, Bedford, N.H., Jan. 17-18.

California Weed Conference, Woodlake Inn, Sacramento, Calif., Jan. 21-23.

University of Tennessee, Winter Short Course in Turf Management, University of Tennessee Plant Sciences Building, Knoxville, Tenn., Jan. 21-25.

Southern Weed Science Society, Sheraton Biltmore Hotel, Atlanta, Ga., Jan. 22-24.

Rocky Mountain Regional Turfgrass Conference, 20th annual, Colorado State University, Fort Collins, Colo., Jan. 24-25.

Ohio Chapter, International Shade Tree Conference, annual meeting, Sheraton Columbus Hotel, Columbus, Ohio, Jan. 27-28.

Ohio State University Short Course, 45th annual, for arborists, turf management specialists, landscape contractors, garden center operators and nurserymen, Sheraton Columbus Hotel, Columbus, Ohio, Jan. 27-31.

Associated Landscape Contractors of America, 12th annual meeting, Hilton Palacio Del Rio, San Antonio, Tex., Jan. 28-Feb. 1.

Penn State Turfgrass Conference, Keller Conference Center, Campus, University Park, Pa., Jan. 28-Feb. 1.

Winter Seminar for Commercial Arborists, Illinois Commercial Arborists Association and the extension service, University of Illinois, Sheraton O'Hare, Rosemont, Ill., Jan. 29.

Virginia Turfgrass Conference, Sheraton Motor Inn, Fredricksburg, Va., Jan. 29-30.

Northern California Turfgrass & Environmental Landscape Exposition, 10th annual, San Mateo County Fairgrounds, San Mateo, Calif., Jan. 30-31.

Golf and Fine Turf, Three-Day Turf Course, Rutgers University, New Brunswick, N.J., Jan. 30-Feb. 1.

Penn-Del Chapter, International Shade Tree Conference, annual meeting, Marriott Motor Inn, Philadelphia, Pa., Jan. 31-Feb. 1.

Nebraska Aviation Trades Association, agricultural seminar, Norfolk, Nebr., Feb. 5-8.

Midwestern Chapter, International Shade Tree Conference, annual meeting, Stouffer's River Front Inn, St. Louis, Mo., Feb. 5-7.

American Sod Producers Association, winter conference, Ramade Bourbon Orleans, New Orleans, La., Feb. 7-8.

Golf Course Superintendents Association of America, 45th International Turfgrass Conference and Show, Anaheim Convention Center, Anaheim, Calif., Feb. 10-15.

American Society of Consulting Arborists, 8th annual, International Inn, Tampa, Fla., Feb. 14-16.

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National Arborist Association, 36th annual meeting, International Inn, Tampa, Fla., Feb. 17-21.

Wisconsin Arborist Association, annual convention, Wausau, Wisc., Feb. 20-21. Contact Jerry Koch, city forester, Courthouse, Wausau, Wisc. for details.

Shade Tree Disease and Insect Short Course, 17th annual, Iowa State University, Ames, Ia., Feb. 20-22. Contact Dr. A. H. Epstein, dept. of botany and plant path., Ia. State Univ. for details.

Park, Recreation and Environment Design, National Symposium, Carleton House, Orlando, Fla., Feb. 25-28.

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SPECIAL SECTION

TURF VEHICLE CARE

Urban Pesticide Dealer And Applicator Clinics Dates Set

Pesticide use recommendations, as well as pesticide regulations, change from year to year and dealers and applicators are hard-pressed to keep up-to-date.

But Illinois "small package" dealers and applicators can get the latest in pest control information and recommendations at any one of 10 Urban Pesticide Dealers and Applicators Clinics, scheduled during January, at locations throughout Illinois.

The clinics are sponsored jointly by the University of Illinois cooperative extension service and the Illinois department of agriculture, division of plant industry.

The sessions at each clinic will provide information for dealers and applicators who sell or apply home, yard or garden pesticides and for custom applicators and operators who apply pesticides to non-agricultural areas, such as parks, highways, golf courses and similar areas.

Some of the scheduled session topics are: "Weed Pests in Turfgrass and Other Crop Areas," "Calibrating Pesticide Application Equipment," "Insect Pests of Trees, Shrubs and Lawn Areas and Their Control," "The New Federal Environmental Pesticide Control Act," and "Controlling Weeds On Roadsides, Ditches and Other Non-Crop Areas."

A representative of the Illinois State Department of Agriculture will administer the examinations for custom-spray applicator and oper-

ator licenses at the end of each clinic for those wishing to take the exam.

The following are dates and locations for the 1974 clinics: January 14, Rantoul, Redwood Inn; January 15, Peoria, Heritage House, Rt. 88 North; January 16, Springfield, Heritage House, Rt. 66 South; January 17, Belleville, Augustines, Rt. 460 & Rt. 158; January 18, Marion, Holiday Inn, I-57 & Rt. 13; January 21, LaSalle-Peru, Holiday Inn, I-80 & Rt. 51; January 22, Rockford, Howard Johnson, Rt. 51 South; January 23, Rock Island-Davenport, Holiday Inn, Davenport, Iowa; January 24, Des Plaines, Seven Eagles Restaurant; January 25, Joliet, Holiday Inn—South.

Because of the anticipated large enrollment, advance registration is required for the clinics at Des Plaines and Rock Island-Davenport. Dealers and applicators who plan to attend the clinic at Des Plaines should contact James Fizzell, Cook County associate extension adviser, Room 3, 622 Graceland Avenue, Des Plaines, Illinois 60016. Those planning to attend the Rock Island-Davenport meeting should contact J. E. Kenney, Rock Island extension adviser, 1188 Coaltown Road, East Moline, Illinois 61244.

New England Chapter, ISTC Plans 10th Anniversary

The New England Chapter, International Shade Tree Conference, will hold their 10th annual meeting at the High Point Motor Inn, Chicopee, Mass. Jan. 8-9.

According to Erik H. Haupt, president, this year's meeting will feature an in-depth look at disease and insect control of shade trees, as well as a presentation on tree wounds.

Dr. Francis Holmes will discuss Benlate benomyl fungicide as it relates to Dutch Elm Disease. Professor Clifford Chater will present a forecast for 1974 about insect pest infestations. Dr. Alex Shigo of the Northeastern Forest Experiment Station will review some of the work being done on tree wounds.

The New England Chapter annual business meeting will commemorate the 10th anniversary of the chapter. Dinner speaker at the annual banquet will be John Hansel, director, Elm Research Institute and the Harvard Elm Project.

On the second day, Prof. Gordon King, chairman, ANSI Z133 committee will discuss new regulations for tree care companies.

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WSSA Meeting Scheduled For Las Vegas Feb. 12-14

A varied, informative program and all the entertainment the "Convention Capital of the World" can offer are both set to welcome those attending the annual meeting of the Weed Science Society of America.

The meeting is set for Las Vegas' famous Caesar's Palace on February 12-14.

A special feature of this year's session will be the initial meeting of the new Turf and Ornamentals Section of the Society. A program organized by Chairman Al Turgeon will be presented.

The meeting this year promises to be of value to a wider audience than ever — including researchers, extension personnel, and agri-businessmen. Special emphasis panels featuring outstanding speakers have been set up to provide information for these groups with a need for a particular kind of knowledge about the industry and science of weed control.

Featured speakers will include Dr. Hans Gysin of Ciba-Geigy Corporation, Basle, Switzerland, who will speak on international weed control

problems; Dr. James R. Hay of the Regina Saskatchewan Research Station speaking on "Gains to the Grower from Weed Science"; Dr. W. A. Harvey, University of California, on challenges ahead in weed science.

Keynote speaker is Secretary of Agriculture Earl L. Butz.

Panels will discuss the state of integrated pest management, biological control of weeds, and pesticide safety. R. C. Ferguson, executive secretary of the National Agricultural Marketing Association, will also be a speaker during Wednesday's industry session.

Rounding off the meeting are other presentations on aquatic weed control, teaching and extension work, as well as a full program featuring some 60 papers on physiology.

In all, more than 500 papers by 250 different authors will be presented.

This year's session will be open to more interested persons than ever before through a new associate WSSA membership now available. The new classification is designed for anyone interested in weed science — chemical dealers or distributors, custom applicators, grounds maintenance managers, agri-fieldmen, regulatory

— 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" 10¢ per word, minimum \$3.00. All other classifications 20¢ 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.

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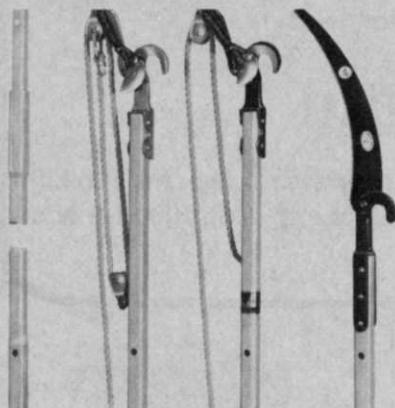
Position for an individual to promote and supervise distribution of turfgrass seeds to the institutional and retail markets in northeastern Illinois. Must locate in the territory, preferably in the Rochelle, Ill. area. Sound turfgrass background is required. This could include college training or on the job experience servicing or selling institutional turfgrass accounts. Compensation includes base salary, car, expense allowance and bonus program. Opportunity and room for growth. In initial letter furnish complete information including education, work experience, phone number and salary history. Qualified candidates will be contacted regarding an interview date. Send resume to the attention of D. W. Servais.

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RESPONSIBLE and established turf distributor desires representation in Detroit and Indiana markets. Our present sales personnel average \$20,000.00 plus car and expenses. Knowledge of industry a necessity; sales experience helpful. All replies held in strictest confidence. Write Box 108, Weeds, Trees & Turf, 9800 Detroit Avenue, Cleveland, Ohio 44102

MANAGEMENT POSITIONS OPEN. Managers wanted for supervisory positions with progressive utility line clearance company presently working in New York and New England area. Salary open, benefits, send resume to: Mr. D. B. Franklin, Tree Preservation Co., Inc., 89 So. Saw Mill River Road, Elmsford, New York 10523 or call 914 592-7800.

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LANDSCAPE ARCHITECT AND/ or designer; degree with experience. Firm involved in park planning, need personnel with skills in working drawings of site and landscape development. Send resume to Wukasch & Assoc., Architects and Engineers, P.O. Box 7788, Austin, Texas 78712. 512 476-0571

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trimmings

AFTER BUILDING the largest, most advanced industrial machine in the history of the world for the purpose of the betterment of human life, we now realize that the uncontrolled wastes from our society and our material progress are destroying some of that quality of life we hoped to better," said John R. Quarles, Jr., deputy administrator of EPA. "This is the supreme irony (of the energy crisis)."

SOME 82 PERCENT of all workers in this country now commute to their jobs by car — and more than two-thirds of them drive alone," says Norbert T. Tiemann, Federal Highway Administrator. "... Obviously, since the only region with a present capability to meet our growing oil needs is the Middle East, we must expect sharply increasing prices, as well as increasing difficulties in securing adequate oil supplies. It is a sobering thought that more than 40 percent of this country's total oil usage must be imported — and that this percentage will continue to rise as U.S. oil production continues to decline.

"We must immediately start to reduce consumption — there is no alternative. And the private automobile is a necessary target. We must get people out of their own cars — particularly during the rush hours — and into car pools or mass transit facilities."

Tiemann said nothing about reducing the number of trucks on the highways by placing their cargos on railroads. Nor did he suggest alternatives to the biggest fuel guzzlers, airplanes.

HOW MANY GOLF COURSES are in the Carolinas? According to the Carolinas Golf Course Superintendents Association, there are 227 either 9 or 18 hole courses who responded to a recent survey. Yet this is an increase of 62 courses since the last survey in 1967. Dr. Carl Blake, North Carolina State University, estimates there are over 400 courses in North Carolina alone.

GEORGE TOMA, groundskeeper at Arrowhead Stadium in Kansas City and a consultant for a KC based trade magazine, shares this experience with those of the Green Industry. Earlier this fall a full can of ammonia, used to remove paint from

stadium astroturf, exploded in his face. According to the Kansas City Star, George said, "It was stupid. I told the kids to be careful with this ammonia. We use ammonia-base paint on the field and it takes this 100 percent ammonia to get it off each week. We've had some of the pumps rupture before, but usually with the paint in them. They would blow maybe 20 feet in the air. So we don't let the kids work with it."

Toma's advice is to hold the cans to the side when pumping. "But this time I was pumping it right in front of me, between my legs. I was looking out on the field to see where I would spray the stuff when it ruptured and hit me right in the eyes," he told the city newspaper.

He's back on the job now, but he still shudders when he thinks about the experience. It could have left this professional blind.

MAN SHOULD NOT RELY on a single method to control a given plant disease, says Prof. Kenneth F. Baker, a plant pathologist at the University of California, Berkeley. Citing host resistance, proper cul-

tivation practices, use of planting stock free of disease organisms, chemical treatments and biological controls as means of combatting plant disease, he said that "each works best at different times and places, and they compensate for each other's deficiencies. Man has tended to emphasize the single-shot overkill control procedure, and perhaps we pathologists have developed a one-to-one syndrome that further diminishes our options."

He said that man has greatly intensified the disease potential of microorganisms by decreasing host resistance, by providing large areas of a single crop, by producing an exceptionally favorable physical environment, and by reducing or destroying the natural microorganism balance.

Under natural long-term changes, the soil microorganisms have time to adjust, but man disturbs this situation by his abrupt and violent alterations, thus reducing or destroying the very basis of dynamic stability in the ecosystem. "... The greater the imbalance, the more severe a disease is apt to be," he said.

Checklist For Jumping Your Battery

If you're forced to jump your battery because it doesn't have enough zing this winter, take a few tips from W. E. Stuckey, extension leader, safety at Ohio State University. Carelessness in handling jump cables can cause a battery to explode. Even a good battery can explode, and the frozen one runs the greatest risk.

Although a rare occurrence, the most frequent cause for explosion is a nearby flame or spark, he says. The most frequent cause of spark is the misuse or wrong procedure of attaching jump cables. Here's a checklist:

1. Be sure both batteries are of the same rated voltage, 12 volt to 12 volt, etc.
2. Both batteries must be negative-ground systems.
3. If the "dead" battery is frozen, STOP! Find an alternative way to start the engine.
4. Bring the two vehicles together, but not touching. Set brakes and keep both vehicles out of gear. Keep booster car's engine running.
5. Remove the well caps on both batteries and cover the wells with cloth. Double check for icing or dry wells.
6. Locate positive (+) terminal on each battery. Connect one cable clip to the positive terminal on the operating battery and the other end of the same cable to the positive terminal on the dead battery. Positive to positive.
7. Connect one clip of the other cable to the negative (-) terminal of the operating battery. Connect the other clip to the dead vehicle's frame at least 12 inches away from the battery. (This is not the usual advice, but it is safer than running the risk of an explosion. Sparks, if any, will be away from the danger spot.)
8. Start the dead vehicle's engine.
9. When engine is running, disconnect the two cables in exactly the reverse order from that used in connecting them.
10. Replace well caps.



Look at it this way

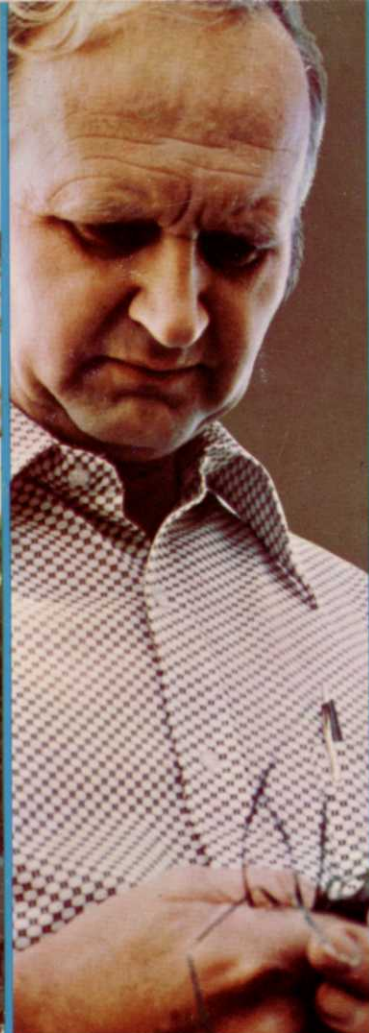
Before selecting an automatic irrigation system, consider the viewpoint of a blade of grass. It wants to see enough water coming its way often enough to keep it healthy. How much and how often depends on such variables as growing conditions, sun and shade, height, temperature, and course contour. That's why the happiest sight a blade of grass can see is a member of Rain Bird's exclusive Golf Team (six full time golf irrigation experts) consulting with a Rain Bird installer and the superintendent — right on the course. It means the best irrigation plan, tailored to your course, carried out with the most reliable equipment. Ask anyone with a Rain Bird system. Ask any blade of grass.

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