

**New Ideas
for
Spraymen**

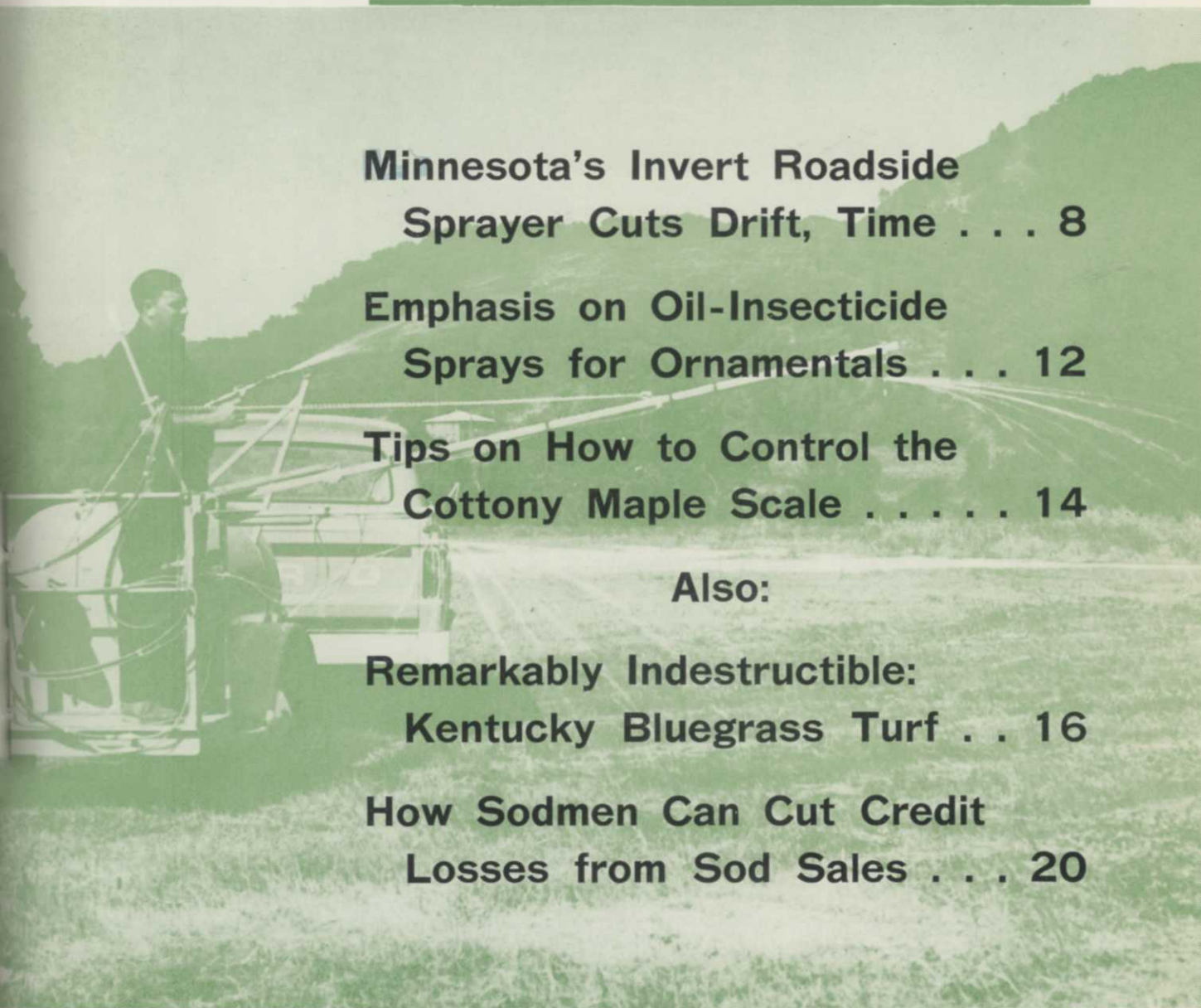
WEEDS

TREES

and TURF

A TRADE MAGAZINES, INC. PUBLICATION

October 1966



**Minnesota's Invert Roadside
Sprayer Cuts Drift, Time . . . 8**

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Sprays for Ornamentals . . . 12**

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**Remarkably Indestructible:
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**How Sodmen Can Cut Credit
Losses from Sod Sales . . . 20**

Monthly magazine of methods, chemicals and
equipment for vegetation maintenance and control

4 reasons why it pays to spray for Dutch elm disease control this fall



1. Effective. Most authoritative researchers have stated that DDT sprays applied in the fall are just as effective in preventing elm bark beetle feeding, during the period of tree susceptibility to Dutch elm disease, as sprays applied in late winter or early spring. Our co-operative research tests with a Midwest University bear out this conclusion.

2. Better weather. There usually are more good spraying days in the fall than in spring. It is much, much easier to get thorough coverage on a pleasant, relatively calm fall day, than on a gusty day in spring.

3. Efficient use of labor. You get better distribution of work loads by beginning your Dutch elm sprays in the fall—finishing in spring, if necessary.

4. Fewer bird problems. There are fewer problems with birds and other wildlife (real or imagined) when you spray in late fall.

To assist you in saving our beautiful elms, we offer: **AMOCO® Elm Spray—25% DDT plus White Oil**, the “old standby” in Dutch elm disease control programs, proved effective in wide commercial use since its introduction in the early 1950’s.

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"Now that we're using Copper Sulfate, our water problems are very few"

reports Mr. John Courchene,
Director of Water Quality for the Seattle Water Department



Constant sampling is one of the safeguards insisted upon by Mr. John Courchene, Director of Water Quality for the Seattle Water Department.

Seattle uses copper sulfate to treat not only the 725 acres but also the 7 mile shoreline of its primary storage and sedimentation reservoir. "Our primary objection to using other algae control chemicals is the difficulty of application," Mr. Courchene says. "When you total the cost of chemical purchase and application, copper sulfate is less expensive."

Seattle has been using copper sulfate for water treatment since 1940. At that time, they used approximately 20,000 pounds per year; in 1963, they used 70,000 pounds; in 1964—92,000 pounds. Mr Courchene says, "We usually treat the entire lake in fall, winter and spring. During the other months we generally make shoreline applications. At one time we had a problem with Isoetes, an aquatic

rooted plant which rises to the surface and drifts over the lake. Before using copper sulfate we had to rake the shoreline, which proved expensive. Now that we apply copper sulfate from winter through spring, this problem is virtually eliminated."

While water can be treated by simply dragging a burlap sack of copper sulfate crystals behind a rowboat, labor costs frequently suggest more efficient procedures. The Seattle Water Department has designed and built two specialized pieces of distributing equipment. For the treatment of the lake itself, a large, bronze, mesh-screened hopper was constructed. Copper sulfate is fed into the submerged screen hopper which is mounted on the stern of a power launch. The boat is steered over parallel courses approximately 100 feet apart. Prop wash spreads the copper solution out over an area ap-

proximately 100 feet wide. For shoreline application, a portable blower is mounted on a truck and a belt of copper sulfate 30 to 50 feet wide is blown out over the shoreline from the truck as it is slowly driven along the top of a dike that encircles the lake.

The Seattle reservoir, when full, holds about 11 billion gallons of water, of which about 4.6 billion gallons are available to intake. "We use the available water figure when determining how much water we wish to treat. The amount of copper sulfate is determined by the quantity of water, water temperature and number and types of algae present. Both shallow and deep samples are collected each week from six sampling stations, as well as from the reservoir's source of supply and its distribution system. There is no industrial contamination and, now that we're using copper sulfate our water problems are very few."

For assistance on your water problems, Phelps Dodge Refining Corporation — one of the world's major producers of copper sulfate — can supply the following: Information on systems and equipment developed and used by water works and commercial applicators; literature, containing data and chemical formulas; technical assistance in algae and water weed control. Write: Phelps Dodge Refining Corporation Information Service, 300 Park Avenue, New York, N. Y. 10022.



Seattle designed and built simple, efficient equipment for distributing copper sulfate by power launch.

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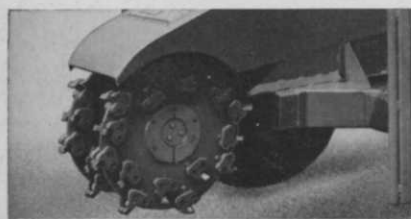
Just set this dial to cut stumps economically



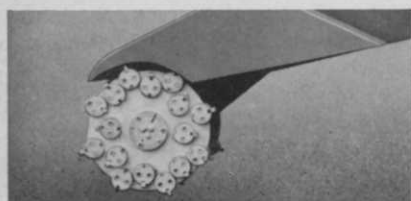
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23%
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52%
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FORMERLY WEEDS AND TURF

October 1966
Volume 5, No. 10

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<p>JAMES A. NELSON Editor and Publisher</p> <p>MICHAEL I. LAH, JR. Production Manager</p> <p>D. BUNKIN Circulation Supervisor</p>	<p>Advertising Representatives National Headquarters 1900 Euclid Avenue Cleveland, Ohio 44115 Phone: Area Code 216+771-4169</p> <p>Chicago 60601 Peck & Billingslea, Inc. 185 North Wabash Ave., Suite 1809 Phone: 312+DEarborn 2-0292-93</p> <p>New York City 10017 Billingslea & Ficke 420 Lexington Avenue Phone: 212+532-1632</p>
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In this issue, WEEDS TREES AND TURF begins a new feature with our first Monthly Insect Report. Because we feel there is a need for more grass roots information on the whereabouts of our migrant problem pests, we'll report each month on insects, attacking turfgrasses, trees, and ornamentals throughout the country.

In this mobile society of ours, there are many insects still looking for a home. Consider, for example, the immigrant European chafer (*Amphimallon majalis*), a light-brown beetle, about 1/2 in. long. Chafer larvae feed on turfgrasses, causing the turf to brown and die out. With its airborne, nocturnal mating habit and a bent for traveling by auto, rail, or aircraft, the chafer is spreading.

From New York it has migrated to Connecticut, New Jersey, Pennsylvania, and Ohio. Parts of New York and Connecticut have been placed under quarantine, requiring chafer-free certification for sod, topsoil, gravel, sand, and some plants before they are moved from the area. But the beetle is still looking for a home. This year, it was reported for the first time in two Pennsylvania counties and four New York counties, and the first Massachusetts infestation was observed in the Boston area. Who knows how long it will be before turf managers, golf course superintendents, and CAs in other states encounter the chafer?

Pinpointing the insect won't solve the problem,

of course, but it's the first step. Annually, state and federal agricultural agencies survey the chafer's peregrinations, and this summer, Connecticut set out traps to tip off the growing infestation. Unfortunately, that state's previously effective spraying of infested areas has been terminated because of "pesticide nerves." The beetle is almost sure to spread further.

USDA counsels control of the chafer by the use of soil insecticides. And, it urges a sharp eye for the pest, requesting those who collect suspicious specimens to join the chafer war by sending them to USDA's Plant Pest Control Division. Our point is this: the rapid spread of insect infestations doesn't permit the turfman or treeman to work in a vacuum. Coordinated effort is required in the war on destructive pests, and the first stage is to know and share the knowledge of the insect's home. WTT hopes to contribute to this knowledge with its Monthly Insect Reports (page 30).

WEEDS TREES AND TURF is the national monthly magazine of urban/industrial vegetation maintenance, including turf management, weed and brush control, and tree care. Readers include "contract applicators," arborists, nurserymen, sod growers, and supervisory personnel with highway departments, railways, utilities, golf courses, and similar areas where vegetation must be enhanced or controlled. While the editors welcome contributions by qualified freelance writers, unsolicited manuscripts, unaccompanied by stamped, self-addressed envelopes, cannot be returned.

Before you buy
any sprayer, see the
**BIG
PERFORMER**



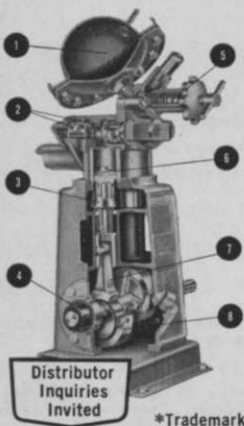
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What To Do About Ground Pearl

Will you please let me know how to control ground pearl? A great many of the lawns in our city are infested with this insect, and a lot of grass has been killed. But, we have been unable to find any information on these pests or a suitable chemical for their control.

George Madray

Economic Exterminating Co.
Jesup, Ga.

We did a bit of research into the scale insect, ground pearl, *Margarodes meridionalis*, and found that it has been fairly recently recognized as a cause of serious damage in southern turfs, particularly in centipedegrass and bermudagrass. The "pearl" is a hard shell, about 1/8 in. in diameter, that is secreted by the nymphs, which destroy grasses by feeding on their fine roots. Most control recommendations specify either that the lawn be nursed through the attack, or that grass be replaced with more resistant varieties, or that the soil be sterilized before replanting with seed or noninfested sod. We asked for an expert's opinion on how to control ground pearl and received the following recommendation from Professor Kirby L. Hays of Auburn University, Auburn, Ala.:

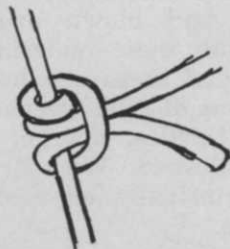
Ground pearl, *Margarodes meridionalis*, is quite a problem in turf management. For several years we have done some research on this problem and recommend the following procedure for control: Apply 1.9 pints of 75% of emulsifiable VC-13 (Nemacide) in 10 to 15 gal. of water per 1,000 sq. ft. of sod, and wet the sod thoroughly after treatment. Do not apply the insecticide when people or animals are present and do not allow the insecticides to drift to other areas where they might injure people or animals. After the insecticide has been applied, do not permit children or pets in the area until the insecticide has been washed into the grass and the grass has dried completely. Persons using this or any other insecticide

should read the label and follow the instructions thereon.

Doesn't Like Knot

Sorry, but we feel we must jump on Mr. Bryan again in regard to his article in your August issue, "Safety and the Tree Surgeon." His photo clearly illustrates an improperly made climbers' knot.

The sketch below indicates a properly made knot. This knot must be kept tight in order to



effectively bind when released. The knot will slide only when held in a vertical position.

Congratulations for an excellent article on sycamore anthracnose by Dan Neely. We need more of this kind of specific information.

James W. Taylor

James W. Taylor Tree Surgery
Newburgh, N. Y.

Queries Time Evaluations

I recently came across the following time evaluations for industrial landscape maintenance operations. I believe the figures were compiled in 1964, and I am wondering just how far they hold true now. Can you tell me if these are good, realistic figures, or can you recommend any other guides?

Here they are with times given as standard minutes for 1,000 sq. ft., potential minutes for 1,000 sq. ft., and number of times performed each week:

Lawn Operations: Std. Pot. Times

Mowing	5	3	1
Hand watering	5	3	2
Sprinkler watering	2	1/2	2
Pest Control	10	1	1/4
Weed Control	10	5	1/8

Shrubs and Ground Covers:

Weed and prune	60	30	1/4
Pest Control	10	5	1/4

What I assume to be standard times are also given for these operations: fertilizing with 18" hand spreader, 10,000 sq. ft. per hour; light raking, by hand, 2,000 sq. ft. per hour; dethatch raking, by hand, 600 sq. ft. per hour; mowing and edge trim, with 18" hand mower, 7,000 sq. ft. per hour; mowing and edge trim, with 18" power mower, 15,000 sq. ft. per hour; mowing and edge trim, with 25" riding mower and power edger, 40,000 sq. ft. per hour.

(Name withheld on request)

We've checked our files and have been unable to locate time study data on these landscape maintenance operations. WTT therefore invites its readers to send in their comments on the figures. Are they up-to-date and realistic? We'd like to hear from experienced landscape maintenance men what they think.—Ed.

Sends Beautification News

William H. Bartles, of W. H. Bartles Tree Service, Hyde Park, New York, sends news of his election to the office of Supervisor of Hyde Park and word of one of his first official acts, formation of a Shade Tree Commission, which is designed to add arboreal attraction to the historic town:

It is our intention to set up a tree planting program with the town highway forces doing the actual planting in the early spring just after the frost is out. We intend to use town-owned property as a small nursery to furnish streetside planting stock. Young sugar maples will be set out and will be transplanted along the streets when they reach 1 1/2 in. diameter. Other species, such as Kwanzan and European linden will be used as well as maple. Trees will be planted bare root in the dormant season, which will work well with the highway department because crews are not too busy. The Shade Tree Commission will also give advice to homeowners on care and maintenance of their properties. We think this should be a big step towards beautification of the town.

How Minnesota Uses Invert Roadside Sprayer

By
BERT J. PINSONNEAULT
County Highway Engineer
Wabasha County, Minnesota

WEEED CONTROL, required for many years in Minnesota, has been a part of the job during my 30 years as a highway engineer because weed-free roadsides are essential for traffic safety, road maintenance, winter travel, and beautification. Also, good weed control helps the farmer by cutting down the number of seeds available to infest his farmland and helps the hay fever sufferer by getting rid of weed pollen.

In the early days, we had no alternative but to mow weeds, chop brush by hand or with mechanical equipment, and burn when local conditions permitted. As everybody in the business knows, this was time-consuming, tedious, and never-ending. Roots remained and weeds and brush sprouted right back.

The first chemicals introduced

for weed control removed all vegetation so that soil was easily eroded and blown away. We could use these materials only for special areas and heavy infestations of such weeds as ragweed, thistles, spurge, cattail, and milkweed. We still had to rely principally on mechanical controls.

Tremendous contributions to weed control were made by 2,4-D, and subsequently 2,4,5-T, because they killed broad-leaved weeds and brush, yet left desirable grasses. But getting these materials to behave was sometimes a problem, since when applied as the conventional oil-in-water spray, some drift of fine particles occurs even in calm weather.

Wabasha County, located in southeastern Minnesota, is a scenic county with wooded hillsides, excellent cropland, and beautiful farms. It has ample rainfall, and conditions for plant growth are ideal. Such susceptible crops as soybeans, vegetables, fruit, and clover are grown

adjacent to the roadsides. Of course, our citizens do not want their crops, ornamentals, and other desirable plants along the highways damaged.

For many years we sprayed our roadsides with 2,4-D and 2,4,5-T herbicides, successfully, using conventional-type sprayers, but we had to contend with a certain uncontrollable amount of damage from drift over adjoining areas. This resulted in a public demand for strict control over the use of herbicides. We had to come up with a safer method of application if we were to continue spraying our roadsides.

New Spray System

Early in the spring of 1964, we first learned of invert spray equipment that would produce and apply herbicides as heavy wind-resistant droplets having the appearance and consistency of mayonnaise. This water-in-oil spray, called an invert because it contrasts with the conventional oil-in-water spray, appeared to be the answer to our drift problem.

Lyon Chemicals, Inc., of St. Paul, Minn., introduced this new spray system for ground application of 2,4-D and 2,4,5-T products. The sprayer, engineered and manufactured by the Minnesota Wanner Co. of Minneapolis, is a complete bifluid unit mounted on a two-wheel trailer that can be pulled by truck or tractor. Arrangements were made for this equipment to be



Bert Pinsonneault inspects good coverage of right-of-way obtained from 9-ft. and 3-ft. booms. Both booms are attached to the trailer and can be turned on and off as needed.

demonstrated to the Board of County Commissioners and some of our maintenance personnel.

The demonstration unit was equipped with a handgun only, but it gave us a definite indication as to size of droplets it produced and assured us that the drift problem would be negligible. We determined that a 12-ft. boom with three or four adjustable nozzles would provide controlled roadside coverage. Using this boom and the handgun, our crews could reach all areas along our highways.

In the spring of that same year, we purchased the first boom-equipped Wanner Invert Roadside Sprayer commercially used in the United States. It has proved so successful that we now have two units in Wabasha County. The Minnesota State Highway Department and 18 other county highway departments are using these spray units. Rural electric cooperatives and private power utilities also have these invert ground spray units in operation.

As a matter of fact, I've worked with just about every method of weed control during my 30 years as a highway engineer in Minnesota, and the invert sprayer does the job better than anything we've tried before. The equipment gives a good spray pattern for killing weeds, and most important, controls the spray to prevent drift.

Use In The Field

From the beginning, the Wanner Roadside Sprayer gave good drift control, and this was our primary objective.

But, as with most new equipment for a special use, the first year under field conditions turned up some problems. The 12-ft. boom was too long and not flexible enough for the areas that required a shorter swath. Nozzles were too close together, causing overlap in the pattern and chemical waste. And, droplets were too large.

The manufacturer supplied newly designed tips, and we increased pressures slightly. The droplet size was reduced and can now be controlled to each job requirement. It was found that

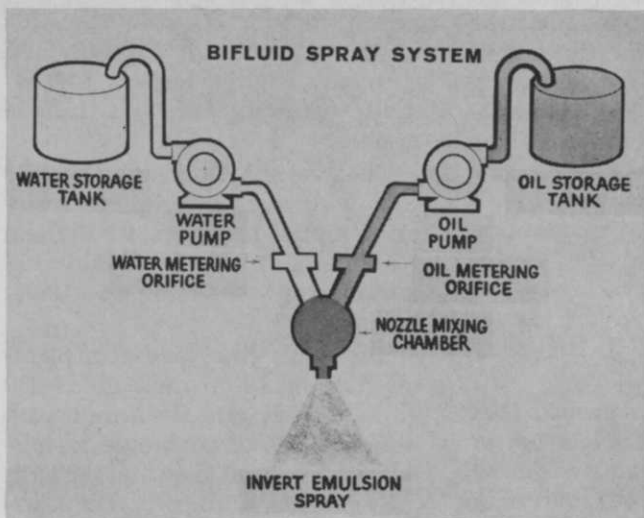


Fig. 1. (left) shows schematic drawing of the bifluid invert spray system. In practice, newer units use one tank with a divided compartment for the chemical.



Closeup (right) of typical pattern left by the invert sprayer, showing good coverage that results in effective control of roadside weeds and brush.

only two nozzles were required to do the job with the 12-ft. boom.

Our second unit, now in operation, has a "stub boom" only 3 ft. long, as well as a 9-ft. boom and a handgun. With the short and long boom and handgun, we have maximum flexibility to move around poles and mailboxes to reach all areas along the roadside with one trip. Also, we can keep the spray within the narrow sections of right-of-way.

We found the operation of the invert sprayer somewhat different from that of conventional equipment because the bifluid sprayer is really two systems in one. But our operators soon developed the skills needed to handle preparation and pressure adjustments.

The invert takes less water volume than the conventional 2, 4-D and 2,4,5-T sprays. We can start out with enough water to

spray about 60 acres a day and do not usually have to waste spray time by returning to the shop to refill the tank.

The white color of the mayonaisse-like droplets helps the operator positively identify where he has sprayed. If wind velocity is questionable, crews can check to be sure the herbicide is falling only where weeds and brush are. If there is a question about good coverage, individual weeds and brush can be checked for the desired pattern.

With good drift control, our crews spray many days when we couldn't think of spraying with conventional 2,4-D formulations. This enables us to do more roadside spraying during the period that weeds are actively growing and are more easily killed. We can also spray closer to fence rows and farm lands with a much greater degree of safety.

The invert droplets resist

washoff. We know because showers have come up unexpectedly right after spraying without adverse effect. Resistance to washoff has enabled us to spray dew-covered weeds and brush in early morning with good kill. Fog is not uncommon during the day in the southeastern Minnesota valleys. Our crews using the invert never have to wait for it to lift; they go right on spraying.

Our crews have observed that the sticky invert droplets better control some species of weeds or brush that characteristically have a waxy or thick outer cuticle. Because of their oily nature, the invert droplets seem to stick and penetrate these leaf surfaces more effectively.

There is no better proof of drift control than the fact that we have had no damage claims from our invert spraying during the three-year period that it has been in use. And, each year we have used this equipment to cover an average of 230 miles of roadside adjacent to farmland.

Cost Comparison

We have continued to keep and use our conventional spray equipment on a limited basis when wind conditions permit. However, the invert equipment has proved so satisfactory that we are using the conventional less and less each season. Comparing costs between the two methods, we have found that the cost per acre is about the same. Even though the invert chemical costs slightly more, the reduced labor time per acre with the invert offsets the additional chemical costs.

About the Equipment

We learned from Cliff Schrader of Lyon Chemicals, Inc., that the idea of spraying invert formulations had been under development for some time. The major problem had been to engineer a spray system that could pump the thick invert emulsion to nozzles and release it with a uniform pattern.

The Wanner Roadside Sprayer does this with a bifluid system that pumps the water and herbicide from separate tanks to the

nozzle, where a thick emulsion is simultaneously formed and sprayed. Figure I gives a schematic drawing of this bifluid system.

The Wanner Roadside Sprayer that we use is a complete spray unit mounted on a two-wheel trailer. It is also available skid mounted for installing on a truck bed.

The tank has two compartments: the large tank holds 260 gal. of water and the small tank holds 40 gal. of herbicide formulation. The unit is equipped with a 10-gal.-per-minute positive displacement pump on the water side, and a 3-gal. piston pump on the chemical side. For optimum operation of the booms, pressures are maintained at 30-35 p.s.i. The handgun performs best with pressures of 100-125 p.s.i.

Invert roadside spray units are now available with a handgun and one or two booms that break-away for poles and other roadside obstructions and that are adjustable in height. The standard single boom is 13 ft. long with two nozzles and gives a 16 ft. to 20 ft. swath. This boom can be extended to 17 ft. which adds the third nozzle and increases the swath to 24 ft. to 30 ft. The double-boom units have a 9-ft. boom and a 3-ft. stub boom. The single nozzle on the longer boom is faced outboard and reaches 16 ft. to 20 ft. The stub boom nozzle faces inboard and covers an 8-ft. to 12-ft. swath.

The Hercules Low Volume nozzles are supplied to Minnesota Wanner from Hercules Incorporated, manufacturers of the herbicide formulations. The nozzle and special tips used in the bifluid spray system have been engineered and field tested to give the optimum spray pattern for weed and brush control with regulated drift.

Application Rate

The roadsides of Wabasha County are infested with a wide variety of brush including plenty of sumac and boxelder as well as a number of annual and perennial broad-leaved weeds. We have found that $\frac{3}{4}$ lb. of 2,4-D and $\frac{3}{4}$ lb. of 2,4,5-T acid equiva-

lent per acre gives good weed and brush control.

The "Visko-Rhap" formulations used in the Wanner Roadside Sprayer, as well as the equipment, are distributed by Lyon Chemicals, Inc., of St. Paul. "Visko-Rhap" formulations containing 2,4-D and 2,4,5-T are recommended for normal spraying of a variety of weeds and brush. "Visko-Rhap" formulations containing 2,4,5-T are used for fall spraying and for hard-to-kill woody plants.

The recommended uniform travel speed for the Wanner Roadside Sprayer is 3 to 7 m.p.h., depending on the height, density and type of weeds and brush. For dense brush or heavy infestation of noxious weeds, additional chemical may be applied with the handgun.

Heated Turf Grows Faster, Is Frost-Free, More Popular

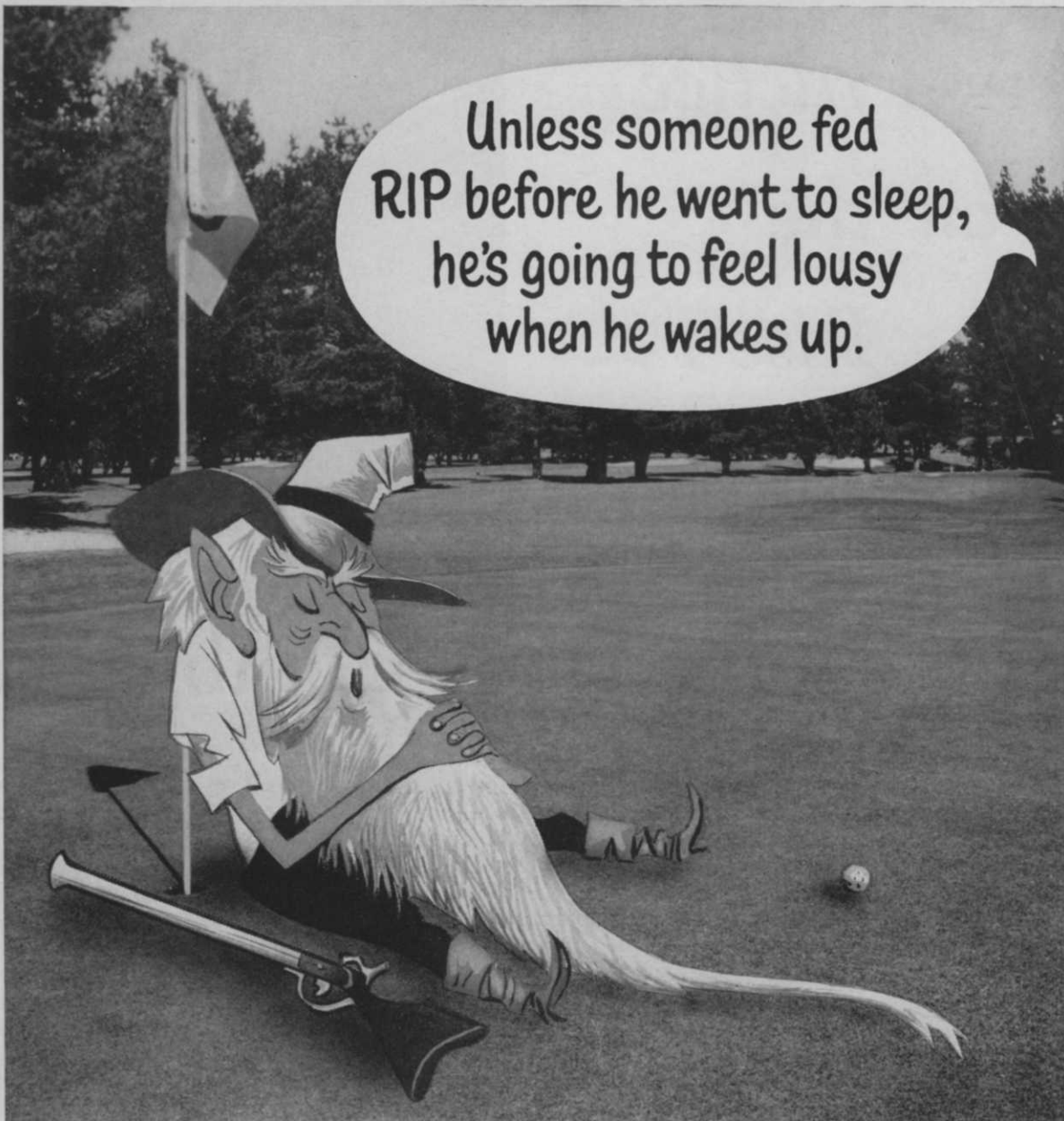
With the installation of underground heating cables in the football field turf of the U. S. Air Force Academy's Falcon Stadium, The Singer Co., whose Climate Control Division made the cables, predicts increasing popularity of turf heating.

Cables were installed 1' apart at 8" below the surface, and are said to be designed for frost- and snow-free football, with fewer injuries from frozen field surfaces. A similar installation is planned for the new Civic Center Busch Memorial Stadium in St. Louis, and interest has reportedly been expressed in other areas. If used for baseball field turf, Singer says, heating cables would encourage faster growth, cut down on seeding and sodding, and allow the use of sturdy, southern grasses.

Experiments in turf heating have been conducted since 1962 at the varsity practice football field at Purdue University in Lafayette, Ind. Singer adds that heated playing fields have been in existence in Europe since 1959.

Write the Singer Co., Climate Control Div., Box 7047, Cleveland, Ohio 44128, for additional data on heating cables.

Unless someone fed
RIP before he went to sleep,
he's going to feel lousy
when he wakes up.



Like Rip Van Winkle, your turf enjoys a long nap. Turfgrass goes dormant after a fall surge of growth, needs a deep healthy root system to survive the winter, and to get a vigorous start in the spring.

A fall feeding with Nitroform restores turf damaged during the summer and takes advantage of the peak growing cycle of cool-season grasses, allowing them to spread out and develop roots while most weeds are dormant. Fall feeding with Nitroform strengthens any turf for overwintering and builds re-

*HERCULES TRADEMARK

sidual nitrogen in the soil for use in the spring.

Nitroform[®], Hercules Powder Company's ureaform turf food, contains a whopping 38% nitrogen which is released slowly as the grass needs it. In addition, Nitroform is easy to handle and store, is odorless and nonburning, and is available in two forms: granular Blue Chip[®] for conventional spreading, and Powder Blue*—the first sprayable ureaform.

But let the Hercules representative explain why Nitroform means "pleasant dreams" in grass talk!

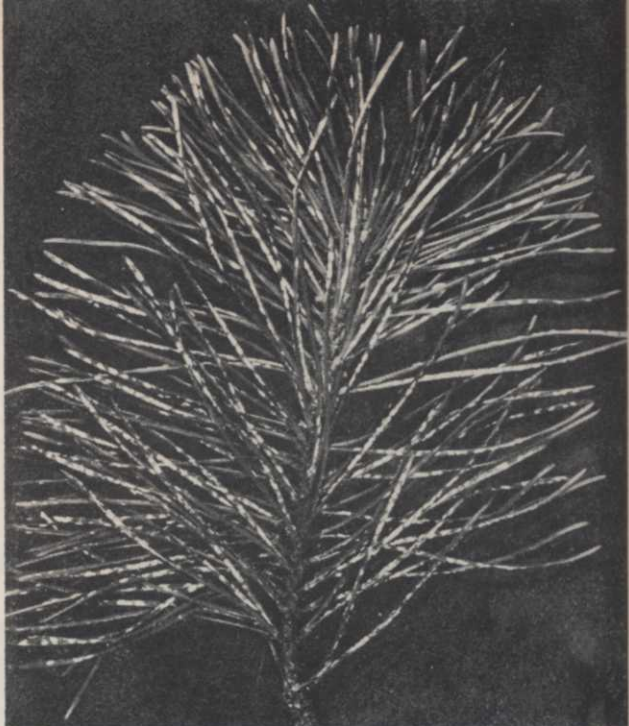
STH66-10



New Practice on the Rise . . .

By
D. H. MOORE

Research & Development Department
Niagra Chemical Div., FMC Corp.



Pine needle scale can be all-but-eliminated with application of ethion-oil combined spray. (See table 1. for field test results).

Oil-Insecticide Combination

MANY nurserymen and professional landscapers are taking a long and interested look at a relatively untouched mode of pest control—a combination of oil and insecticide.

Though oils have been used by themselves as insect sprays in this country for more than 75 years, they have had rather limited acceptance since World War II. Now, increasing resistance of pests to some organic compounds and the marriage of small quantities of chemical insecticide with oil have spurred increasing interest in oils once again.

Why Insecticide With Oil

When properly applied, oil sprays generally provide good control of mites and most scale insects. But thorough coverage is an absolute must when using oil alone. The oil must make direct contact with the pest upon application since its action is via suffocation and there is no residual toxic effect. It is strictly a "one shot" material, and if you don't hit the pest upon application, for all practical purposes you have missed him.

The possibilities regarding types of insecticide-oil combinations are almost limitless and there has been experimentation with several variations. Ethion, malathion, parathion, DDT, Trithion and many other insecticides have been used successfully in combination with different grades and viscosities of oil. At present, however, only an ethion-Superior oil combination is being used commercially to any extent and is available as a preformulated product that does not require mixing of components by the user.

Ethion-oil formulations are registered both for dormant and summer sprays. For dormant applications they can be used on some 20 different ornamental trees and shrubs (including such common varieties as maple, elm, oak, birch and dogwood) to curb 12 species of scale. For summer sprays a special formulation containing less oil and more ethion has registration for control of both mites and scale on 11 ornamental varieties (including such plants as camellias, box-

wood, gardenias, and azaleas).

This combination has been found considerably more effective than straight oils. Inclusion of ethion in the formulation provides additional assurance of control. Even if eggs are missed by the oil during application, the insecticide, with its long residual activity, will halt resulting larvae as they crawl around. Control of aphids, leafhoppers and mealybugs is another plus for ethion-oil, although there is currently no registration regarding these pests on ornamentals. Straight oil has never been a reliable weapon against them.

Use of oil-insecticide combinations as dormant sprays might be considered as a means for combating resistance. Petroleum oils appear to be resistant proof, at least there is no indication of pests developing immunity to them. Then, too, by controlling pests in their overwintering form, the population is more exposed and therefore more readily reached by the pesticide.

The closer to hatching, the more susceptible insect eggs are

Table 1. Field Tests on Effectiveness of Ethion-Oil**Control of Pine Needle Scale**

Treatment	Date Applied	Average No. Growing Scale/Leaf		
		6/5	6/12	6/21
Ethion-oil 2 qt./100 gal.	5/22	0.4	0.6	0.0
Ethion-oil 3 qt./100 gal.	5/22	0.0	0.0	0.05
Untreated check		15.0	24.1	45.6

**Control of Taxus Mealybug on Taxus
with Ethion .67 Superior 60 Oil**

Material	No. of Mealybugs/Tip		
	7 Days* 7/5	13 Days 7/11	39 Days 8/6
Ethion .67 Superior 60 oil (ME C241), 3 qt./100 gal.	0.8	0.0	0.0
Untreated check	12.9	6.2	155.0

*Number of days after first treatment.

Sprays for Ornamentals

to oil. Because of this, many nurserymen have found it effective to apply oil-insecticide sprays in the delayed dormant stage—after some foliage has appeared. A good rule of thumb is to treat when about one-half inch of leaf tissue is exposed.

200 Species Tested

Care must be taken to avoid phytotoxicity (damage to the plant) when using oil-insecticide combinations. This is particularly true of summer sprays which should utilize lighter viscosity oils. It might be noted here that ethion and light grades of superior oil have been tested on over 200 ornamental species without injury, even on orchids.

Cold weather is a factor to consider regarding delayed dormant sprays. Treatment should not be made when temperatures are expected to drop to freezing or below.

Still another consideration is compatibility of oils with other materials which may be applied around the same time. Oil and sulfur are incompatible, for ex-

ample, and may lead to damage of new growth.

A major deterrent to the use of oils has always been their tendency to injure plants. Development of a class of highly refined, basically paraffinic oils having a narrow distillation range has relieved this problem somewhat. The term Superior oil was coined by New York State Experiment Station workers to describe them.

Another factor making oil sprays somewhat safer to use today is the trend toward lighter (less viscous) oils, particularly where summer use is concerned.

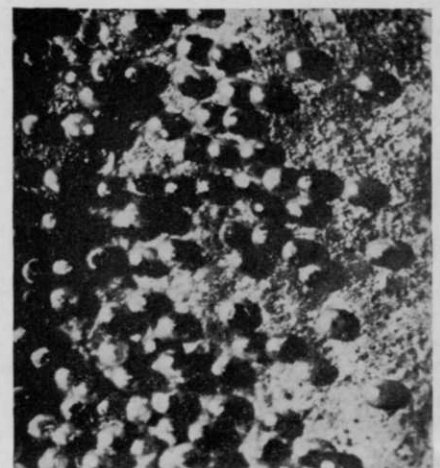
Among the lighter oils frequently used are 60-second and 70-second Superior oils, so named to indicate the number of seconds it takes for a sample of oil to flow through a special test device. The lower the number, the lighter the oil.

Today's oil formulations are "fast breaking." That is, they contain just enough of the proper emulsifier to keep the oil in proper suspension in the spray tank, provided there is adequate

agitation. This permits rapid disassociation of the oil and water upon application to a plant surface. In short, the emulsion will "break" upon striking the plant, leaving oil on the surface and permitting water to run off. This is in contrast to older so-called "tight" emulsions which did not break rapidly but allowed both oil and water to run off the plant.

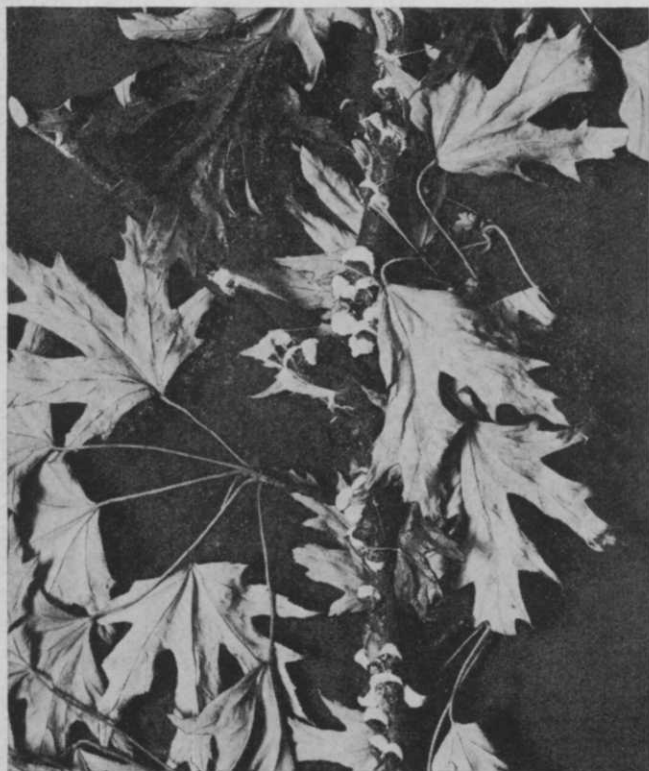
This "speed of breaking" has become very important in recent years because application techniques have changed so much. With today's speed sprayers, fast-breaking oils are very necessary. They do not have as great a tendency to leave the tree with the water carrier and "runoff" of oil is therefore minimized. When hand guns and stationary spray tanks are employed, however, fast-breaking oils—through overlap spraying—will result in excessive oil deposits on trees and may lead to phytotoxicity. Hence slower breaking oils are still best where these older or simpler types of equipment are used.

It can be seen from the foregoing that oil sprays are quite different today from what they once were. Now, improvement in the oils themselves and their use in combination with small amounts of insecticide, make them safer and more effective than they ever were. It would appear that as a result, a rise in the use of oil-insecticide sprays can be expected in the years ahead.



European red mite eggs on the bark of ornamentals will hatch into trouble if not checked. Ethion-oil has proved effective.

How To Control



Cottony maple scale is obvious from white egg sacs, each containing 500 to 3000 eggs. Flat, brown bodies of the female insects can be seen at end of the sacs.

Cottony Maple Scale

By

DR. R. LEE CAMPBELL

Associate Professor
Ohio Agricultural Research and Development Center
Wooster, Ohio

THE COTTONY MAPLE scale, *Pulvinaria innumerabilis* (Rathvon), has been rather abundant this year, particularly in the vicinity of Cleveland. This insect occurs throughout the United States and southern Canada, wherever its host plants grow. Although primarily a pest of soft maples, especially silver maple, the cottony maple scale has also been reported to attack a wide variety of plants including: linden, alder, dogwood, euonymus, hawthorne, ivy, lilac, rose, spirea, apple, pear, willow, poplar, grape, hackberry, sycamore, honeylocust, beech, elm, plum, peach, gooseberry, currant, Virginia creeper, sumac, boxelder, white ash, black lo-

cust, oak, red mulberry, and snowball.

This scale periodically appears in great numbers, rather suddenly, and then, two or three years later, apparently disappears again, only to recur in another outbreak a few years later. The reason for this fluctuation is that there are several species of insects which feed on the cottony maple scale and these can, in a couple of years, nearly eliminate an infestation. Then, having little left to feed on, these natural enemies of the scale decline in numbers themselves. This allows the scale insect to become abundant again. Some of the insects which can contribute to a decline in cottony maple scale numbers are: several lady beetles, nota-

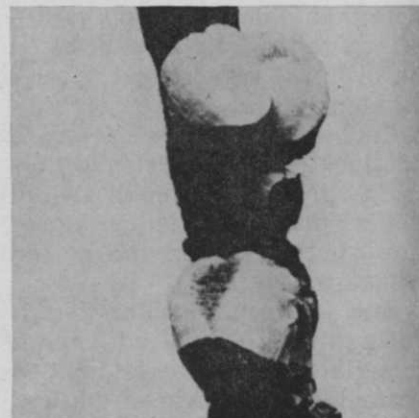
bly the two-spotted lady beetle (*Adalia bipunctata*); a moth (*Laetilia coccidivora*); and a chalcid wasp (*Coccophagus lecanii*).

Egg Sacs Are Conspicuous

The cottony maple scale is usually noticed when the females begin to produce their conspicuous white egg sacs. At this time they may be 4 x 7 mm. This is generally the period from late May to early August, depending upon latitude and annual variations in weather. These egg sacs are composed of a waxy material which the female secretes through pores near the posterior end of her body. Within these sacs each female deposits 500 to 3000 eggs. When these hatch, the young scales move to tender twigs or to the undersides of the leaves where they suck sap and grow. Before the leaves fall in autumn the male scales mature and transform into a tiny winged stage. These mate with the still immature females and then die. The females move from the leaves to small twigs and branches where they survive the winter. These overwintering females are about 1/16 by 1/8", oval in shape, slightly convex, and dark brown.

The next spring when sap begins to rise in the trees the females resume feeding and complete their development. After the eggs are laid the female dies.

As the scales grow, they produce copious amounts of honeydew which can be obnoxious as it drips from the trees onto sidewalks, cars, or passersby. Also the honeydew which sticks on leaves serves as a nutrient media for a sooty mold fungus and the



Closeup shows waxy egg sacs of the female.

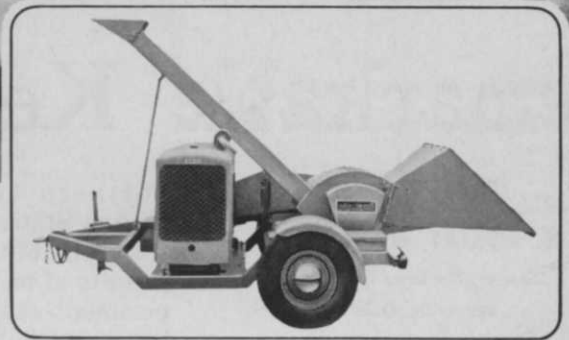
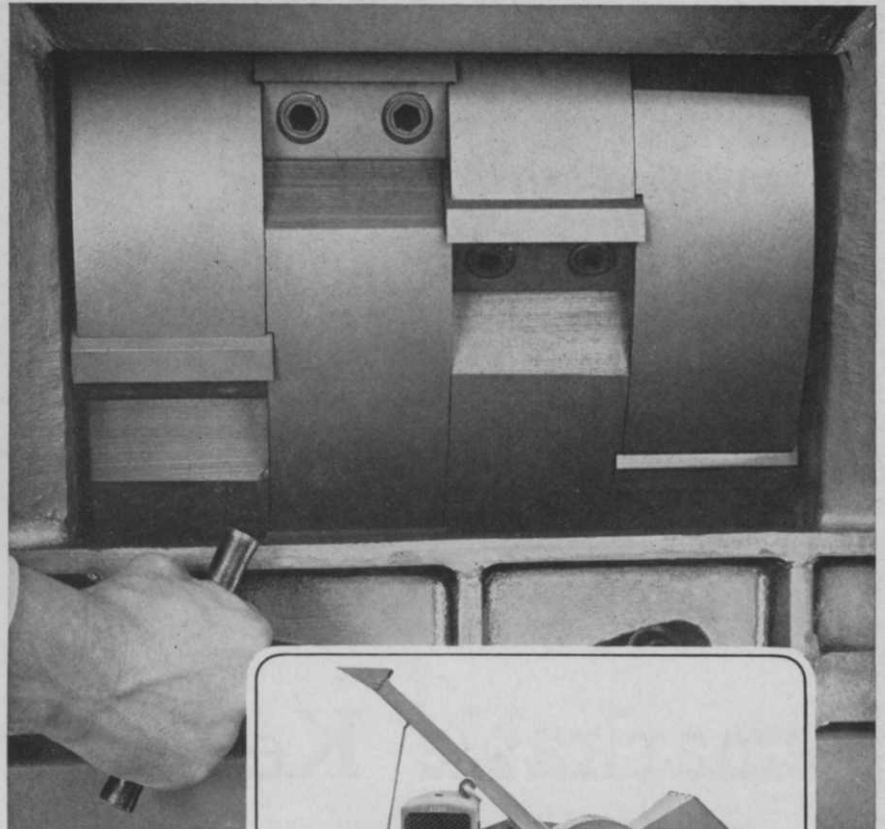
black mass of this can reduce the esthetic value of a tree.

The more serious damage which the scale can cause when present in large numbers results from their sucking sap from leaves and twigs. This reduces growth and weakens the tree, and can cause dieback of branches or even the death of trees if an infestation is not controlled. Weakened trees are susceptible to attack by bark beetles and borers. For this reason some people may want to spray their more valuable trees. Suitable materials are a Superior-type oil applied when the trees are dormant, or either malathion or carbaryl (Sevin) applied as the crawlers begin to move out of the egg sacs.

The dormant oil treatment, designed to kill the overwintering females, is least harmful to the natural enemies of the scale, but care must be taken to ensure that it is applied only when the trees are truly dormant, as oil is known to cause injury to some maples, particularly the hard varieties. A highly refined Superior oil should be used at the rate of 2 to 3% oil in water. Thorough coverage is important.

The materials, malathion and carbaryl, can be used to destroy the young crawlers as they move to the leaves and twigs. Carbaryl may be used at the rate of 2 lbs. of 50% wettable powder per 100 gals. of water. This material has the advantage of a somewhat longer residual action than malathion, but is more toxic to honeybees and slightly more hazardous to apply. Also it may cause some injury to the trees if used in wet or humid weather. Malathion can be used at the rate of 4 lbs. of 25% wettable powder per 100 gals. of water. This treatment usually needs to be repeated 10 days later due to the short residual period which is characteristic of malathion.

These materials will be ineffective if used at other times of the year since after the crawlers settle down and begin developing they are very difficult to kill. Only while they are moving, generally early July in central Ohio, can they be controlled with malathion or carbaryl.



Why do staggered knives chip tree trimmings better?

Why do you get them only on Mitts and Merrill brush chippers?

Smoother, more economical operation that is easier on the chipper's internal mechanisms are the solid reasons for staggered knife superiority.

Look—most brush chippers use four knives that run the full length of the cutting cylinder. They are spaced around the cylinder at four equal intervals.

M & M, however, divides the same knife length up into 16 smaller knives, spaced only inches apart around the cylinder. Full length knives take only four cuts each time the cylinder revolves. The staggered knives take 16 cuts per revolution.

This faster cutting action draws the log in smoothly and distributes

cutting shock four times more evenly throughout each cylinder revolution. Machine vibration is virtually eliminated; there is less shock per bite; horsepower is used more efficiently; and a lot of fuel is saved.

Knife changing is quicker and easier in M & M design too, because we use a foolproof pin and wedge-lock principle. Knife sharpening is a snap because no angle grinding is required and the double edged knife can be sharpened many times before it needs replacing.

Why can you get staggered knives only on M & M chippers? Because M & M has been the design leader of wood reduction equipment for over 70 years.



more and more from m & m
mitts & merrill

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mow it tall . . .

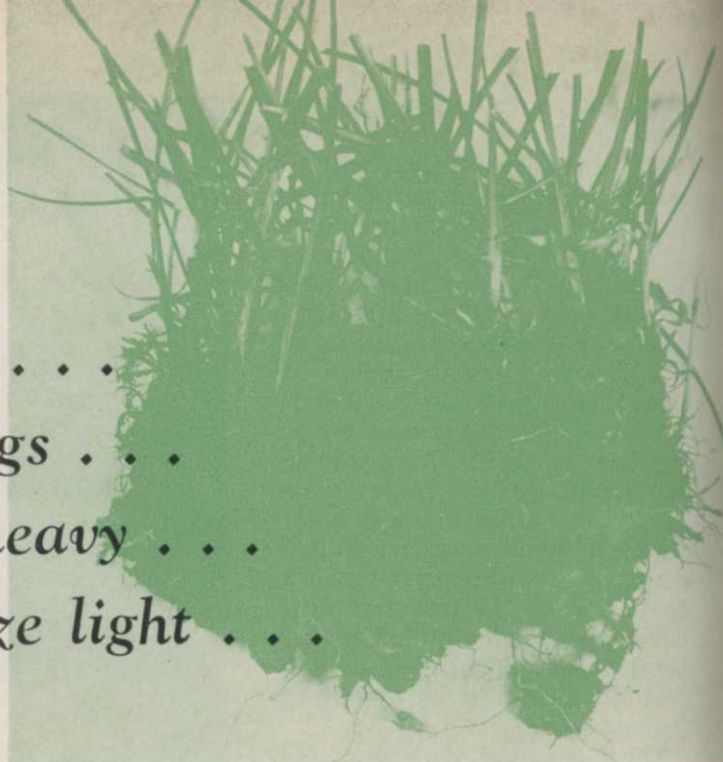
mow it short . . .

collect clippings . . .

leave clippings . . .

fertilize heavy . . .

fertilize light . . .



Remarkable Kentucky Bluegrass

By

DR. ROBERT W. SCHERY

Director, The Lawn Institute
Marysville, Ohio

KENTUCKY bluegrass, *Poa pratensis*, including its many select varieties such as Park and Merion, is one of man's most coveted and widely used plants. Generally in combination with one or more of the fine fescues, such as Chewings, Illahee or Pennlawn, Kentucky bluegrass is responsible for most of the lawns and play turf in the



Thatch removal was part of the bluegrass test; here performed with an attachment to the John Deere garden tractor.

northern two-thirds of the United States.

In spite of this importance, and in spite of no little research at experiment stations within the bluegrass belt, the relative consequence of various management factors is still elusive. Although we know that Kentucky bluegrass requires at least reasonable fertility to look well, it is puzzling that sometimes the untended pasture survives better than the pampered lawn. And what happens to all these materials we deposit on bluegrass turf? Where does all the nitrogen go, particularly on lawns where the clippings are left? The phosphorus and the potassium, too? How does clipping collection and thatch removal relate to fertility and grass response, over a protracted period?

For the short term such questions have been at least partially answered for circumscribed conditions and particular soils, to the satisfaction of many experimenters. But, there is often nagging wonder how really important certain practices are to lawn survival through the years.

Kentucky bluegrass is a truly remarkable plant, in its tenacity. It can suffer seemingly complete disaster, only to revive and

spread the next favorable growing season to the extent that its former decimation is unrecognizable. In drought years on the eastern plains, bluegrass appears to have disappeared; but it's back in as great abundance as ever when rains revive it. Some fields in Kentucky are said to have been continuously in bluegrass for more than a century. Certainly the grass thriving in them must clearly be well adapted to its environment. On the other hand, "disease" sets back the bluegrass on many a lawn, and the weeds invade. Why?

Five Year Search For The Answers

Wondering about the longer term influence of several lawn management practices, a section of the Lawn Institute grounds was set aside for several-year observation. The original seeding was to natural Kentucky bluegrass, and invasion by volunteer bluegrass as well as other adventives is likely. For the last five years certain treatments have been continued consistently. Part has been mowed at 3 inches, part at 1½ inches. Part of each of these sections had the clippings collected, part not. Some sections received frequent

and generous fertilization, some relatively little. And, more recently, thatch was mechanically removed in strips across several of these interacting treatments.

Perhaps we shouldn't have been surprised to note that versatile Kentucky bluegrass adapted itself fairly well to almost any combination of treatments, and when once again (after five years) all the area was treated alike not a whole lot of difference could be noted in the sod attributable to former care.

Before resuming uniform care for this section of the grounds, the frequency of shoots and depth of thatch were measured, relative to the various treatments. This was accomplished by taking 20 plugs in spring from each test area under scrutiny, hand separating and counting the culms in the laboratory, and measuring the depth of thatch on the plug (as nearly as the exact limit of thatch can be estimated, often appreciably different on opposite sides of a plug). No claim is made for statistical significance to the differences noted; obviously, considerable chance is involved in just how dense a population of culms would occur in any given plug, depending where the plug was taken.

Some of the conclusions of Table I are the expected. For

example, lower clipping should increase proliferation, giving a greater number of (but correspondingly dwarfed) tillers. On the other hand, it was somewhat surprising that the rate of fertilization seemed to make no long-term difference, either in extent of thatch or number of tillers.

Influence of clipping removal was not clear-cut. In most cases, leaving the clippings on the turf seemed to increase the thatch somewhat, but it had no influence on the density of the sod. However, under tall mowing, there was a slight indication that letting the clippings lie increased the number of shoots slightly.

Perhaps most strange was that thatch removal (the year previously) seemed not to decrease the thickness of the thatch, but actually to increase it slightly. The frequency of culms was increased somewhat, too, by thatch removal. Perhaps the area sampled here just happened to provide better growing conditions, which would tend to make more thatch more quickly, as well as provide somewhat denser turf.

Table I sums up these observations.

Summary

Kentucky bluegrass turf, after five years' comparative maintenance, showed:

Fertilization—Rate made little difference in amount of thatch or density of sod.

Mowing Height—Shorter mowing produced somewhat denser but weaker sod.

Clippings—When left, increased thatch slightly, but generally had no influence on sod density except possibly beneficial under high mowing).

Thatch—Removal seemed to have no permanent influence, though process possibly stimulates slightly greater culm production.

Northwest Spraymen's Association Defines Goals

"It is our main purpose to provide for our members a regional voice in any matters of concern to the professional applicator of pesticides, wherever that voice may be needed. In education, legislation, self-protection, self-inspection, public relations, and any other areas, the Pacific Northwest Spraymen's Association aims to be there providing leadership and help in any way that will best serve the public and our profession." These are the words of Bill Owen, president of the recently organized PNSA, as he describes the goals and functions of the association.

The Pacific Northwest Spraymen's Association is an organization of professional pesticide applicators, and is comprised of four regional groups in Oregon and Washington. It is incorporated under Oregon law and is also legally recognized in Washington, Idaho, and British Columbia. Owen notes that three years of effort have gone into incorporation and establishment of the organization.

Among the group's plans are the annual spraymen's conference (their 1966 Spray-O-Rama was held in Portland, Sept. 23-24), sponsorship of short courses for pesticide applicators in various spots throughout the area, public relations and educational programs, and the formation of committees to investigate group insurance plans and to work with legislators and other groups towards betterment of the profession.

Table 1. Kentucky bluegrass turf, managed as indicated over 5-year span, with thatch thickness and culm density resulting under the various combinations of treatment.

Treatment	Average, from 20 Plugs Randomly Sampled			
	Thatch Average Thickness, in inches		Density Average number of culms per plug	
	Av. No.	Range	Av. No.	Range
A. Mowed tall, clippings collected, heavy fertilization.	.46	1/8"-3/4"	16	10-30
B. Mowed tall, clippings left, heavy fertilization.	.53	1/8"-1"	21	9-36
C. Mowed tall, clippings left, heavy fertilization, de-thatched 1 year ago.	.71	1/4"-1"	30	7-59
D. Mowed short, clippings left, heavy fertilization.	.58	1/4"-1"	27	9-45
E. Mowed short, clippings left, light fertilization.	.48	1/8"-1"	25	9-63
F. Mowed short, clippings collected, light fertilization.	.32	0-3/4"	25	8-61
G. Mowed short, clippings collected, heavy fertilization.	.31	less than 1/8"-3/4"	26	12-38

Want an extra month of spring next year?

Get the jump on maintenance jobs right now!

How did your work go last spring? Packed tight? Summer on top of you before you finished your maintenance and rebuilding jobs? If so, you had plenty of company.

One way to beat the calendar is to turn it upside down. Act like April comes in the fall. Just look around. There may be a dozen jobs you've scheduled for next spring that could be polished off right now.

Building or repairing service roads, walks, drives, terraces or parking areas. Cut and fill work, leveling, paving or spreading gravel.

Trap and tee repair on golf courses. Reshaping rough. Relocating bunkers and other hazards.

Removal of dead trees and other waste growth.

Plus of course all the usual fall chores. Clean-out of waterways and open drains. Leaf raking and mulching. Fall fertilizing and spraying.

Ambitious schedule? Sure. It demands a hustling tractor. One like the International® 2424 turf tractor—

plenty of moxie for off-season chores, plus compact styling for all your mowing jobs later on.

The 2424 delivers 47 hp (43.5 diesel) in a low profile design that out-



maneuvers every other tractor in its class. The tightest turning radius: 8½ feet. The shortest wheel base: 70 inches. Only 51 inches, chest height, to



the top of its hood. And the Lo-Boy® model is an even tighter package!

It's the only tractor in this class with full-time hydrostatic power steering.

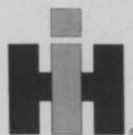


A differential lock feeds power to both rear wheels regardless of traction. No spin-out. No gouging of turf even when you start up from a dead stop on a slope. On side hills it holds the nose straight and prevents down-drifting.

The 2424 has a dual range transmission with 8 forward and 2 reverse

speeds (8 and 8 optional). Live, constant running PTO. Draft-sensing 3-point hitch. Live hydraulics. Wide, high-flotation tires. And more, much more.

Schedule a demonstration by your IH dealer. And while you're at it, talk money. He offers one, two and three-year financing. Deferred payments, up to three a year without penalty. Leasing. Leasing with purchase option. Or *you* suggest something. He wants to make a deal!



INTERNATIONAL HARVESTER COMPANY

The people who bring you the machines that work



INTERNATIONAL 2424

How To Reduce Sod Credit Losses

By

RICHARD HORNER

Horner Sod Farms
Union Grove, Wisconsin



Horner Sod Farms' office manager, Bob Brewer, doubles as dispatcher. Farm communication is by radio, but instant communication is also needed between home offices and sales outlets. Teletype provides 24-hour hookup for credit approval and other matters.



Acres and acres (about 800) covered with lush, green sod. Meticulously cared for sod isn't worth the trouble to irrigate if, once delivered, the customer refuses to pay. As Horner points out, "sod has no retrievable value after the customer has received it."

If there is any problem that almost every sod grower has a burning interest in, it is the problem of collections and accounts receivable.

Members of the Sod-Growers Association of Mid-America exchange information on delinquent accounts. The last list compiled by our secretary in 1965, made up of reports from eight or nine growers (mostly in the Chicago area), contained the names of 246 delinquent accounts with a total amount of \$142,800 outstanding.

This list refers only to accounts the reporting growers considered delinquent. It did not contain the names of accounts that had made arrangements to pay debts over a period of time, those who signed notes, or those whose accounts were on a current basis.

Considering that probably at least one-half of these outstanding accounts are uncollectible, it illustrates the nagging problem of collections in the sod business. No grower, large or small, newcomer or oldtimer, is immune. It is a problem that is upsetting and frustrating, as well as representing a considerable drain on the profits of the typical sod farm. In short, it drives sod men crazy.

Why Collections Are a Problem

Why are collections such a problem in the sod business? There are several reasons.

One, sod is a product that has no retrievable value after the customer has received it.

Two, a large percentage of sod is sold to landscape contractors, and unfortunately a relatively large percentage of landscapers

are either underfinanced or poor businessmen, or both.

Three, these landscapers require relatively large amounts of short-term credit to finance their projects. This credit is usually extended by their suppliers since it is difficult for them to obtain through banks.

Accounts receivable go sour for a variety of reasons. About the time the average sod man has figured that his system is finally perfected, some account manages a new way to escape through his grasping fingers.

Let's take some typical cases. There is good old Meanwell, for instance. He plugs along paying his bills more or less regularly. His great faults are two — he has no reserve and he is not sharp enough to ever make sufficient profit to build one.

His sod supplier may get along very well with him for a while. He may, in fact, be inclined to consider him a good customer. Suddenly, misfortune strikes! Meanwell is in an accident; or his wife has major surgery; or a child goes off to college. Take your pick. It all adds up to the same thing. Meanwell can't pay his bill. If this account has gotten too big, the sod man ends up holding a very empty bag.

Then there is the Sharp-E Landscape Company. Sharp-E breezes in with a line about how good your sod is and how wonderful your service. Thus disarmed, you charge his first order without further investigation. Before long, Sharp-E pays. But in the meantime his bill is running up much faster than his payments.

When he is finally called on the size and age of his account, naturally enough, he switches to a more accommodating supplier. Since this is exactly the strategy he intended to use, it really should not be any surprise to find out that he has no particular intention to ever pay his bill. Nor should it be surprising to find that Sharp-E owes money to every sod grower he ever patronized. He regards his unpaid bills as extra profit, a sort of bonus for clever thinking on his part.

Another dandy is Fleece Land-

Faster way to wipe out broad-leaf and grassy weeds...

HOOKER MBC™



This nonselective herbicide gives you quick knockdown of vegetation.

As a spray, it kills top growth almost on contact.

Dry, it leaches easily after rainfall or irrigation and quickly attacks the root zone.

MBC controls bur ragweed, hoary cress and many other weeds and grasses on noncrop land. It is especially good for such hard-to-kill, deep-rooted perennials as Johnson grass.

For suggested rates and other application information, please write for our descriptive folder. Agricultural Chemicals, Hooker Chemical Corporation, 410 Buffalo Avenue, Niagara Falls, N.Y. 14302.



AGRICULTURAL CHEMICALS

scaping. Fleece is a creative writer at heart. His most profitable work is done on paper — blank checks! Fleece likes to hit and run. His first check or two, usually small, may clear his bank in fine style. But that is just the setup.

What he really has in mind is hitting very quickly with two or three big ones all written and accepted before the first one bounces. Fleece is an adept liar. With a straight face he explains his rebounding checks: (a) One of his customer's checks bounced, (b) his bank has made an error, or (c) his wife forgot to make a deposit. "Just run it through again," he smiles. "It's OK now."

Protection Necessary

Well, how can sod men protect themselves from these kinds of losses? Can we eliminate credit losses entirely? If not, what is an acceptable bad debt loss? Why not eliminate the problem by eliminating credit?

Let's start with the last first. I reject a cash-only policy as impractical, overrestrictive, and unnecessary. For one thing, cash only requires the handling of relatively large amounts of cash. In many cases this handling would be done by hired help, either the landscaper's or the sod grower's. This is neither safe, nor businesslike, nor convenient.

Another argument against cash only is that there is a legitimate and justifiable reason to finance landscapers by offering short-term credit. Finally, there are ways to control credit to hold losses to an acceptable level so that the very inconvenient policy of cash only is unnecessary.

All right, what is an acceptable bad debt loss? At this point I would like to make some observations from our own experience at Horner Sod Farms.

In 1962 we opened our first wholesale sales lot in the Chicago area, which is about 75 miles from our farm. A hired manager was placed in charge. Our controls were almost nonexistent since he had no previous information to act upon, but we managed to muddle through our first season fairly successfully. In 1963 we really began to sell.

In December of 1963 we discovered that about 12% of our total 1963 sales was uncollected. By March 1964, 8% was still uncollected. (Most of this has since been written off.) The result was that, in the early months of 1964, we began to think hard thoughts about accounts receivable.

So obvious that it hardly needs stating is the first principle of credit management: *Accounts are easy to collect when they are small and when they are not old.* With that principle in mind we started revising our whole system.

How To Cut Credit Losses

The first change was to strip our salesman almost completely of authority to grant credit. This authority was reserved for our home office. Credit decisions are made objectively only away from the competitive battlefield that the salesman operates on.

It is not fair to the salesman, and it is certainly not smart business, to give him the responsibility to make credit decisions. He is much freer to operate when he can blame some dirty so-and-so in the home office for refusal to give credit.

Next, we set up an individual file for every customer and prospect. For these files we acquired credit applications, reports from references, reports from credit information organizations, old account ledgers showing the history of how accounts were maintained, etc. These files have proved of tremendous worth and they become more and more valuable as time goes by.

Each customer was studied

and a decision was made. No, we would not give credit. Or yes, we would give credit, but only so much. Credit limits granted varied from \$300 to \$2,000.

Another change we made was to print new invoices, on which we stamped in big, bold letters the words: "Please Pay from this Invoice." Our terms had been net 30 days. Our terms remained 30 days with the important difference that 30 days is reckoned from the date of purchase and not from the date of the statement.

Calendar File Tabs Delinquent Accounts

Our final and perhaps most valuable addition was a calendar file. This is simply a series of files numbered 1 to 31. As soon as our invoices are posted to the various ledgers, the originals are dropped into the file that bears the number corresponding to the date of purchase. That is, invoices dated on the first of the month are put in file 1, second in file 2, etc.

A month later these invoices are examined. Those that have been paid are removed. The unpaid are immediately acted upon. The customer is sent a friendly reminder that invoice so-and-so in the amount of such-and-such is unpaid. We suggest that it has probably been overlooked.

At this point we don't just dismiss it from our minds. The invoice is moved back 10 days and again it is either pulled if paid or else followed up with a slightly stronger note. At this point we cut off any further credit.

This process continues until the account is paid, or at the end of about four requests, each of

Peerless Over-the-Road sprayers, now available from Hudson Mfg. Co., come specially equipped with auto-type axle springs, dual tail-lights, directional license plate lights, plate holders, and a hitch with safety chains. Stainless steel lined tanks are standard. Up to 100 ft. of hose can be rolled onto a reel in the rear. Power for the sprayer comes from a Hudson Ten-O-Matic pump, rated at 10 gpm. For more details, write H. D. Hudson Mfg. Co., 589 East Illinois St., Chicago, Ill. 60611.



which is stronger than the previous, the account is referred to a collection agency.

We became convinced that the customer that does not pay his account after four or five notices and an elapsed time of 75 days is not worth having as a credit customer. He usually quits us after we put a collector on him, but we consider this no great loss since we shall, in all likelihood, lose enough on him eventually to cancel out any profit we could ever hope to have made on our sales to him.

That in a nutshell is the system we set up to manage our credit from 1964 on. Has it worked? Yes! In both 1964 and 1965 our credit losses were less than $\frac{1}{4}$ of 1%. We were shooting for 1% or less and we were well below that. We would tolerate 1% if our competitive situation required loosening of our controls.

Is our system perfect? No, but we feel we are on the right track. At this point we feel our particular weakness is our vulnerability to bad checks presented in lieu of cash. It is the credit problem to which we have now directed our principal attention.

Attack Next Year's Nematodes This Fall

Chemical treatment of soil to kill nematodes must be done when the temperatures are between 60 and 80°, advises Claude L. King, extension plant pathologist, Kansas State University, Manhattan, Kans.

Since most garden and flower crops are planted in cooler spring weather, he suggests treating soil the previous September while temperatures are still high. To treat small areas for the microscopic worms, he recommends furrowing 6 to 8" deep, with furrows 12" apart. One pint of D-D soil fumigant should be enough for 150 to 175 lineal feet, and after application, furrows should be filled with soil and packed lightly, the extension expert advises. At least two weeks must be allowed between soil treatment and planting.

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Anhauser Dwarf Looks "Outstanding" At Purdue's Midwest Turf Field Days



Chief agronomist Daniel explained experiments underway at Purdue's agronomy farm and in other test areas about the campus.

Of the close-cut bluegrasses inspected by some 200-plus at Purdue's agronomy farm, during the August 8-9 Midwest Turf Field Days, Anhauser dwarf has continued to be "outstanding" when maintained at $\frac{3}{4}$ " cut, without disease control, but with weed and insect control. For three years blocks of bluegrass, both commercial and experimental, have been grown by Field Days host Dr. William H. Daniel and his agronomy department staff at this Purdue University farm just north of Lafayette, Ind. Severe damage with leafspot occurred in April and May '66, but Anhauser dwarf seemed to successfully weather the obstacles. Prato was badly damaged with leafspot; of two other experimentals, 0217 has been one of the better performers, and K-5-47 continues to "look good," shirt-sleeved delegates were told as they stood on the 92°, sun-drenched farm examining experimental plots.

Graduate student Terry Riordan explained he is continuing his research on low-growing bluegrasses which have good rhizome development. Similar ef-

fort is being devoted to finding vigorous, aggressive, fast-spreading clones that will be suitable for highway use. Available varieties from this work are at least six years away, Riordan amplified through his portable squawkbox.

3 Years With 4 lb. N

Crowds moved next on the 400-acre farm, where the turf work began in 1950, to grass plots submitted to fertilizer testing. During 1966, nine sources of nitrogen, including five experimental fertilizer blends, are being compared at rates of 0, .5, 1, 2, and 4 lbs. actual nitrogen per 1,000 sq. ft. Ureaform 4 lb. actual N/100 sq. ft. per application is of "particular interest," Daniel reported, because where this has been repeated for three years, its release pattern is quite uniform compared to single applications of previous years.

Soil always appears to need nitrogen, the turf expert continued; it can't seem to be stored in the soil for more than a year. And, there is a related need for potash to balance the nitrogen; the more nitrogen applied, the more potash required. Dr. Daniel

said a ratio of about one-half as much potash as nitrogen should be applied to get continued healthy growth.

But, no matter which grass variety experts deal with, Daniel reminded the sun-parched outdoorsmen, it must be kept vigorous to protect it from disease, drought, and competition.

Crabgrass killers under test include CY-5702 (American Cyanamid); S-W-25 (Sherwin-Williams); Ortho CS-5331 (Chevron Chemical); Planavan (Shell); and Dow's Zytron 15# A/A. Of the newer chemicals, CY-5702 look especially promising.

Delegates trekked to the Purdue Stadium where continued use of bluegrass is now favored. Daniel admitted the zoysia which was originally planted (mixed with bluegrass) has completely died due to fall fertilization combined with wintertime temperatures (which sometimes fall to 10° below zero in this flat, windswept section of the Midwest).

Drains for Soggy Sod

Too much water is often as much of a problem to turf maintenance as too little, especially



Terry Riordan showed these results of seed plantings six months old.

on athletic fields where Big 10 varsity football roughs up the sod. Excess water, often a soggy headache during the peak fall pigskin season, is tackled by vertical slitting.

"Wherever disposal of surface water is a problem, vertical slitting may help," Daniel related. Vertical slitting, he described, is making narrow trenches into which porous materials, such as pea gravel or coarse sand, are placed and then capped with sand or calcined clay. Purdue's football field is slitted with a "Groundsaw" that trenches 20 to 24" deep. The technique is also said to be widely used in low areas on golf greens.

Another tip Daniel revealed for extending the durability of athletic fields is to broadcast light and frequent overseeding with a 5 to 10 lbs./A mixture of bluegrasses just before home games. This helps to make a better sod this season, and extends it into the next, Daniel explained.

An Idea from Sweden

Hopscotching across the Purdue campus to other test plots, turfmen looked at some utilizing an idea from Sweden involving the placement of small slitted plastic pipes under a layer of sand. This is dirtied at the top

with soil, peat, and calcined clay, and used as a thin rootzone. The storage of moisture and nutrients is limited, but that present is readily available to short roots, Daniel revealed. Rootzone depths of from 4 to 12" are being prepared by grad student David Bingaman in a new project being installed.

It's been found, after seven years, the durability of numerous calcined clays appears adequate. Exposure to wear, weather, and chemicals has not caused a rapid deterioration. If soil under calcined clay pulls much of the capillary water out of the calcined clay above it, the rootzone is too drouthy. Where there is a sand layer to reduce capillary pull, adequate moisture is retained.

On their enviable, velvet green experimental putting green, Purdue agronomists exhibited a new and different approach to sub-surface irrigation. Here they have large sheets of plastic and slitted plastic tile. Adjustable float valves maintain a reservoir of water in base sand; distribution pipe serves as drainage for excess rain. Laboratory determinations have shown a column of sand placed above a reservoir can be kept moist at the surface. Research of grad students, David Ralston and David Bingaman, is



Kathryn House, popular agronomy department secretary, registered over 200 Field Day participants, welcoming back oldtimers, some of whom have attended all held to date.

utilizing one-square-meter plots of this experimental green to determine reservoir depth, rootzone depth, exact rootzone texture needed, and possible mixes which can be used for this. Results of these experiments are being anticipated with keen interest.

Practical adaptability of much of what visitors saw on either of the two days, each of which was an exact carbon of the other, may be years away, but some of the findings may be available for use in 1967, such as the availability of seed for Anhauser dwarf bluegrass.

Next year, the Midwest Turf Field Days will be split, with one being held late in July and the other early in October.

Don't Cut Grass Too Short

Leave enough grass leaf surface each cutting to provide food to support the plant and develop a strong root system, reminds Colorado State University extension horticulturist, Charles M. Drage.

Extra fertilizer, more frequent watering, and more intense management will be required if grass is cut closer, the plant expert cautions.

"If grass is permitted to grow taller than the usual height, cut it back to its regular height gradually, not at one clipping. And keep your mower sharp," Drage suggests.



Merits of Anhauser Dwarf were closely examined in this plot at Purdue.

Myers Shows Complete, Versatile Lineup of Spray Equipment

With 175 sprayers, the F. E. Myers and Bro. Co., of Ashland, Ohio, claims to have the broadest lineup of equipment in the power sprayer industry. Both air and boom sprayers, designed for uses from A to Z, from apples to zoysia, were shown at the Myers Sept. 12 Power Sprayer Conference in Ashland.

Several sprayers in the Myers line are constructed largely of the company's own fiberglass, "GlasStran," which is said to reduce sprayer maintenance and weight, and consequently shipping costs and fuel expenses, while still offering structural strength and durability. Other steel tanks and sheet metal parts used in the sprayer line are coated with a baked Epoxy material for corrosion resistance and longer life.

Myers makes air sprayers for crop applications, boom sprayers for golf course and general-purpose use, tree sprayers, small "estate" sprayers, and a line of industrial sprayers. The latter encompasses 30 models, which can be mounted on trucks or railroad cars for highway brush control, railroad right-of-way spraying, and tree and turf maintenance. Myers "Industrial Right-of-Way" Sprayer is said by the company to provide complete and even coverage of steep cuts and hard-to-reach downgrades, and has been approved for appli-



Tall Tree Mist Sprayer, shown here in action, delivers 30,000 cfm air volume. Entire Myers unit swivels through 360°.

cation of MH-30 growth retardant.

Shown here are a utility sprayer designed for mounting on a standard ¾-ton pickup truck, and the TT29 Tall Tree Mist Sprayer, whose air outlet elevates or depresses through 70° for versatility on the ground or in the air.

Florida Spraymen To Talk Industry Trends, Nov. 3-5

New trends in the spray industry and new laws and regulations pertaining to spraymen will be scrutinized when the Horticultural Spraymen's Assn. of Florida meets at the Pier 66 Hotel in Fort Lauderdale, Nov. 3-5. Due for discussion at the Saturday, Nov. 5 business meeting is the proposed formation of a Horticultural Pest Control Association for the Eastern United States.

Technical sessions also are on tap for the meet, with presentations scheduled on lawn grass characteristics, lawn renovation and aerification, and lawn maintenance equipment. On Friday afternoon, a discussion forum will tackle the complex question of weed, fungus, and fertilizer relationships.

More than 200 participants are expected to visit display booths and equipment demonstrations planned for Nov. 3. Registration,

which includes the Nov. 4 banquet, is \$10 for certified owner-operators and \$5 for all others. Contact HSAF president, Larry Nipp, at American Power Spraying, 90 South Vermont Avenue, Fort Lauderdale, Fla., for registration and program particulars.

Cal. Scientists Develop Bermuda Variety for Smog

Santa Ana, a new bermudagrass variety bred from a South African grass is about to be made commercially available. Described as "an excellent variety for southern and central California," Santa Ana boasts an inbred resistance to the troublesome smogs of that area.

The new turfgrass, developed by scientists at the University of California, is not easily discolored by smog, as are related types of bermudagrass, Tifway, and Tifgreen. Other advantages of the variety include good resistance to damage by the Eriophyid mite and an extremely high level of salt tolerance.

Expected to be available to the public in 1967, Santa Ana has already been distributed to commercial sod and stolon producers. Nurseries interested in obtaining limited quantities of propagating material should contact the Department of Agronomy, University of California, Riverside, Calif. 92502.

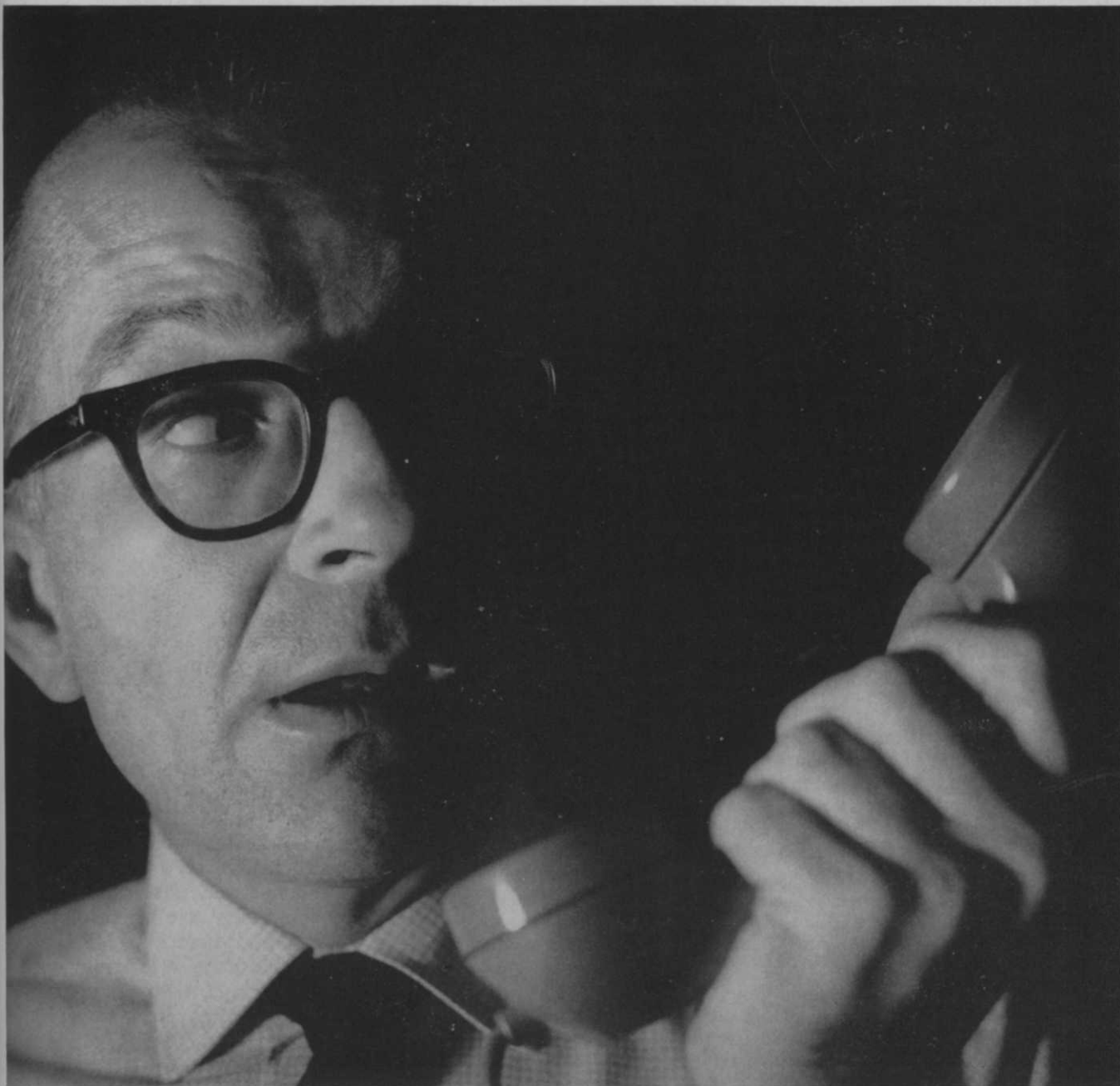
Beautification Aid Available from AAN

In response to the current emphasis on beautification and screening objectionable views from sight, the American Association of Nurserymen has released a new publication, "Living Screens for America" to aid in the beautification battle.

Developed by a panel of expert nurserymen, the booklet describes suitable screening plant materials under four categories based on plant hardiness zones and keyed to a map. Appropriateness for use as plant screens, rapidity of growth, availability, disease resistance, low maintenance, and reasonable cost were considered along with hardiness



Multi-Purpose Myers Industrial Sprayer is designed for mounting on pickup. Remote control nozzle is optional.



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CREATORS OF CHEMICALS FOR MODERN AGRICULTURE

BLACK NIGHTSHADE

(*Solanum nigrum*)



Black nightshade, an annual that reproduces only by seeds, is found throughout the United States and southern Canada. Introduced from Europe, some forms of this poisonous plant are probably native to North America.

Sometimes known as deadly nightshade, garden nightshade, and poison berry, the plant is seen in cultivated fields, gardens, waste places, and is frequently found in moist, shady spots.

Black nightshade grows from an erect or spreading stem to a height of 1 to 2 feet and is widely branched (1). Oval leaves are about 1 to 3 inches long with wavy edges. Leaves are attached alternately to the stem.

Berries (2) are green, turning black when ripe. The smooth and round berries are about $\frac{3}{8}$ inch in diameter and contain a number of small, round, flattened, yellow seeds. Seeds are about $\frac{1}{16}$ inch in diameter and have a pitted surface.

White, 5-lobed flowers (3) are borne in drooping clusters on long stalks occurring between the leaves. Flowers are about $\frac{1}{4}$ inch across and look somewhat like tomato blossoms.

Leaves, stems, and green berries of the plant contain a toxic alkaloid which has been known to poison livestock and is regarded as poisonous to man. Though ripe berries and dried plants are less toxic, the best advice is to eradicate the entire plant whenever it is found. Black nightshade appears late in the season, but produces seeds quickly. Plants should be destroyed to prevent birds from spreading the seed.

In some areas, only fair control of black nightshade has resulted from application of 1 pound of 2,4-D per acre, and other areas report the plant resistant to 2,4-D. Silvex, applied at the same rate, may give good control. Also, simazine at $\frac{3}{4}$ to 1 pound per acre as a preemergence will give good control.

Prepared in cooperation with Crops Research Division, Agricultural Research Service, United States Department of Agriculture, Beltsville, Maryland

(DRAWING FROM NORTH CENTRAL REGIONAL PUBLICATION NO. 36, USDA EXTENSION SERVICE)

in formulating the recommendations.

The booklet provides such information as eventual growth of the plant, method of planting, recommended sites, and advisable trimming practices. "Living Screens for America" can be obtained from the American Association of Nurserymen, 835 Southern Building, 15th & H Streets, N.W., Washington, D.C. 20005. Cost is 50c each, or 25c in quantities of 25 or more.

Rain Bird Has New Sprinkler Heads

A new line of spray head sprinklers is now being marketed by Rain Bird, which claims its "Space 15" sprinklers can be set 15 ft. apart, reducing the number of sprinkler heads required and saving up to 40% in pipe, sprinklers, trenching, and labor costs.

Three models make up the line: model 2800 pop-up sprinklers; model 2600 surface spray heads; and model 2400 shrubbery spray heads. All models are available in square sprinkling patterns as well as full, half, and quarter-circle patterns. Special nozzle design to eliminate burred edges and insure precise part-circle patterns with wider sprinkler spacings, all-brass construction, adjusting screw to regulate pressure and radius of water flow, and clog-resistant swirl plates are features of the new Rain Bird line.

Literature on "Space 15" sprinklers is available from Rain Bird, Glendora, Calif. 97140.



Model 2600 surface spray head is one of three new "Space 15" Rain Bird sprinklers.

Illinois Publishes Aquatic Plant Guide

"Aquatic Plants of Illinois," a new directory of the water weeds and plants of that state has just been published by the Illinois State Museum and the Department of Conservation. The 142-page book is a result of a 1964-65 study of aquatic plants, during which 1188 collections were made. It updates the previously released "Submerged and Floating Aquatic Plants of Illinois, a Preliminary Illustrated Manual."

With semidiagrammatic drawings keyed for plant identification, the following categories of aquatic plants are included: submersed (growing under water); floating; plants with both submersed and floating leaves or parts; and emersed marsh and marginal plants (standing in water or having some plant parts above water level).

Biggest criteria for inclusion of plants in the booklet was the frequency of occurrence, though some plants infrequently collected are included for information purposes. Indexed by common and scientific names, the booklet is available for \$1.25 from the Illinois State Museum, Springfield, Illinois 62706. Quantities of 10 or more may be ordered for 75¢ each.

Weed Killers for Tree Nurseries Affect Soil

Some chemical weed killers can create an imbalance of soil conditions by killing various bacteria, fungi, and nematodes, which influence chemical properties of soils, availability of nutrients, and breakdown of applied pesticides.

Soil productivity can be affected as a result, University of Wisconsin scientists say. They are currently studying the effect of Dacthal on beneficial organisms, such as mycorrhizal fungi, and harmful ones, such as damping-off fungi and nematodes.

Dacthal, applied at the low rate of 4 lbs. per acre, killed common weeds in red pine, jack pine, and white spruce nurseries without damage to seedlings or soil fungi. Dacthal at 12 lbs. per

acre killed some bacteria and fungi, though fungi later recovered in the Wisconsin U. experiments.

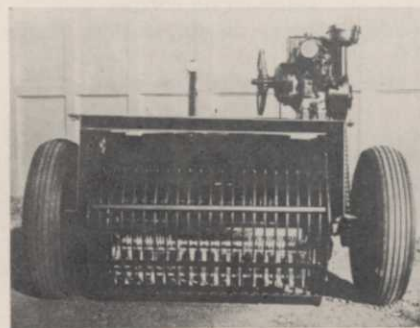
Pixtone Is Self-Contained

A machine that gathers rocks and debris from fields without using power from the pulling rig has been introduced by Bridgeport Implement Works, Inc.

Named the Pixtone, the machine's own engine powers the stone-picking mechanism. Four- to eight-hp. engines are available to meet specific work loads. The unit is equipped with pneumatic tires and has a trailer de-



Rock capacity of up to 2,500 lbs. per load is a feature of the Pixtone picker.



Rake teeth of Pixtone stone picker can be changed to accommodate various rock sizes.

sign suitable for highway travel. The company also states that Pixtone can carry up to 2,500 lbs. per load, and features interchangeable raking units to handle stones from 3/8" to 9" in diameter.

The self-powered device has proved adaptable for stone picking on sod farms, highway medians and roadsides, and in various grass areas, the manufacturer claims.

Write Bridgeport Implement Works, Inc., Box 286, Stratford, Conn., for complete description and performance data on the Pixtone.

Meeting Dates



Florida Nurserymen and Growers Assn. Trade Meet and Short Course, George Washington Hotel, Jacksonville, Oct. 14-16.

National Conference on State Parks, 46th Annual Meeting, Kentucky Dam Village State Park, Ky., Oct. 16-21.

Southern California Landscape Equipment and Materials Exposition, Fanny Morrison Horticultural Center, Pasadena, Oct. 18-19.

Central Plains Turfgrass Conference, Kansas State University, Manhattan, Oct. 19-21.

Southern California Turf Conference, Huntington-Sheraton Hotel, Pasadena, Oct. 20.

Tennessee Turfgrass Assn., Meeting and Turf Clinic, Nashville, Oct. 24.

New England Agricultural Chemicals Conference, Concord, N.H., Oct. 25-26.

Northwest Turfgrass Assn., 20th Annual Conference, Salishan Lodge, Gleneden Beach, Ore., Oct. 26-28.

National Weed Committee of Canada, Eastern Section, Research Station, Canada Agriculture, Kentville, Nova Scotia, Nov. 1-3.

Horticultural Spraymen's Assn. of Florida, Annual Convention, Pier 66 Hotel, Fort Lauderdale, Nov. 3-5.

New Jersey Federation of Shade Tree Commissions, Annual Meeting, Haddon Hall Hotel, Atlantic City, Nov. 13-15.

Nebraska Association of Nurserymen, Annual Convention, Cornhusker Hotel, Lincoln, Nov. 14-15.

National Weed Committee of Canada, Western Section, Research Station, Canada Agriculture, Brandon, Manitoba, Nov. 29-Dec. 1.

Illinois Turfgrass Conference, University of Illinois, Urbana, Dec. 1-2.

Minnesota Nurserymen's Assn., 40th Annual Convention, Curtis Hotel, Minneapolis, Dec. 5-6.

North Central Weed Control Conference, Broadview Hotel, Wichita, Kans., Dec. 5-7.

Connecticut Nurserymen's Assn., Annual Meeting, Hotel Park-Plaza, New Haven, Dec. 28.

Monthly Insect Report

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

Turf Insects

ARMYWORMS

Georgia: Larvae heavy in dwarf bermudagrass golf greens in Telfair County.

A CHINCH BUG

(*Blissus insularis*)

Texas: Heavy damage to st. augustinegrass lawns continues from central area to gulf coast. Populations and damage appear higher than in previous years. Extensive damage reported in Jefferson, Falls, Montgomery, Orange, Angelina, Jasper, Brazos, and Wharton counties.

WHITE GRUBS

Missouri: Causing dead patches in bluegrass lawns through central third of the state. **Wisconsin:** Major problem in lawns throughout state. Damage severe to roots of lawn turf.

SPITTLEBUGS

Georgia: Infesting centipedegrass in Laurens County.

THRIPS

(*Chirothrips* spp.)

Arizona: Controls necessary in Yuma County bermudagrass.

SOD WEBWORMS

Georgia: Heavy in dwarf bermudagrass golf greens in Telfair County. **Iowa:** Numerous adults reported. **Kansas:** Moderate populations causing some damage to lawns in northeast area. **Michigan:** Numerous adult *Crambus* spp. trapped in Kalamazoo, Branch, and Lenawee counties. **Nebraska:** Moderate to severe injury in bluegrass lawns in eastern area from *Crambus* spp. **New Jersey:** Increasing activity reported in central counties. **Oklahoma:** *Crambus* spp. damaging golf courses in Tulsa and Garfield

counties, lawns in Payne County. **Rhode Island:** Adults heavy in Kingston and Providence counties. **South Dakota:** Unspecified species heavy in many lawns in state.

Insects of Ornamentals

BAGWORM

(*Thyridopteryx ephemeraeformis*)

Texas: Heavy and widespread on many lawn ornamentals in Wharton County.

A LEAF-FOOTED BUG

(*Leptoglossus* sp.)

New Mexico: Moderately heavy on ornamental junipers in Bernalillo County.

SPIDER MITES

Iowa: Increased injury due to dry conditions. **New Mexico:** light to medium on Arizona cypress and ornamental junipers in Albuquerque area.

Tree Insects

ELM LEAF BEETLE

(*Pyrrhalta luteola*)

Arizona: Continued damage to elms in Graham and Maricopa counties. Controls largely ineffective. **California:** Locally heavy in Santa Cruz County and Santa Clara County. Medium local occurrence in Santa Barbara County. **Nevada:** New infestations found in Clark County. **Texas:** Moderate to heavy on elms in Midland County. Some trees 60 to 80% defoliated. **Utah:** Many elms severely injured at Huntington and Green River, Emery County.

LARGER ELM LEAF BEETLE

(*Monocesta coryli*)

Georgia: Heavy on elm in Pike County.

SMALLER EUROPEAN ELM BARK BEETLE

(*Scolytus multistriatus*)

Colorado: Taken on elm at Grand Junction, Mesa County for new county record.

RED-HUMPED CATERPILLAR

(*Schizura concinna*)

Colorado: Damaging honeylocust in Denver area.

WALNUT CATERPILLAR

(*Datana integerrima*)

Ohio: Numerous roadside walnut trees defoliated in Darke and Preble Counties. **Wisconsin:** Defoliation continues from trace to complete throughout southwest area.

AN OLETHREUTID MOTH

(*Proteoteras aesculana*)

California: Larvae of this and omnivorous looper locally heavy in maple trees in Santa Barbara County.

ORANGE-STRIPED OAKWORM

(*Anisota senatoria*)

Rhode Island: First infestation of season noted in Kingston. **Tennessee:** Infesting pin oak in Knox County. **Virginia:** Larvae feeding on red oak in Nansemond County.

PINE NEEDLE SCALE

(*Phenacaspis pinifoliae*)

Ohio: Abundant on some hemlock in Wayne County. **Utah:** Severe damage to Colorado blue spruce and moderate to Engelmann spruce.

OYSTERSHELL SCALE

(*Lepidosaphes ulmi*)

Utah: Severe on some poplars and willows in Ashley Valley area, Uintah County.

MIMOSA WEBWORM

(*Homadaula albizziae*)

Illinois: Caused severe browning of honeylocust in central area. New county record in Cass County. **Maryland:** Heavy on many mimosa and honeylocust trees in central and southern sections. **Ohio:** Populations high. Observed in Miami, Montgomery, Preble, Warren, Fairfield, and Franklin counties. Infestation causing from 5 to 100% leaf destruction in individual trees. Reported in Summit County for new county record.

Compiled from information furnished by the U. S. Department of Agriculture, university staffs, and WTT readers. Turf and tree specialists are urged to send reports of insect problems noted in their areas to: Insect Reports, WEEDS TREES AND TURF, 1900 Euclid Ave., Cleveland, Ohio 44115.

New StumpKing model stumpcutter features Dial-a-Stump cutting speed selector, low-profile "Beaver Tail" boom, and new hydraulic system and clutch, said to speed setup and reduce operator time.



Dial Selects Cutting Speed on New, Improved StumpKing

By means of a new Dial-a-Stump cutting speed selector on '67 models of the StumpKing stumpcutter, operators can dial the exact cutting speeds required for a particular stump while the cutter is in operation, according to its manufacturer, Brooks Products Division of The Tool Steel Gear & Pinion Co.

Time lost in stopping the cutter to make necessary adjustments is eliminated, the company says; more cutting time is delivered for each hour of operator time. Other new features

include a "Beaver Tail" boom of low profile for greater versatility and maneuverability, a new clutch design that permits the operator to stop rotation of the cutter head without stopping the engine, and a new hydraulic system that functions at all times when the engine is running, thus allowing movement of other machine components even when the cutting head is declutched.

Designed to be pulled by a pickup truck, the StumpKing offers a hydraulically controlled double cutter head, located at the rear of the unit, said to reduce the toughest stump to mulch in minutes. The new models also feature improved stability, greater visibility, and improved operator safety and convenience.

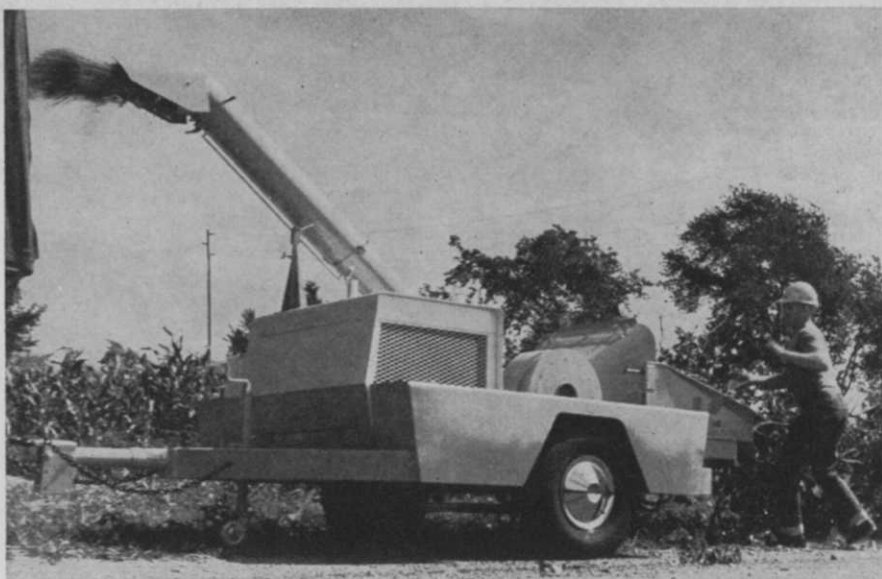
Brooks Products Div., The Tool Steel Gear & Pinion Co., Cincinnati, Ohio 45216, will send full details to those who write it and ask for bulletin 464-B.

Dow, Chemagro Reveal Joint Marketing Plans

Joint marketing of Dow Chemical Co.'s Dowpon and Tordon herbicides and Chemagro Corp.'s Di-Syston and Bay 25141 insecticides has been revealed by the two large producers of agricultural chemicals. Explaining that the new arrangement will enable both companies to offer a more versatile line of products, the announcement was made jointly by Dow, Midland, Mich., herbicide producer, and Chemagro, Kansas City, Mo., maker of insecticides and fungicides.

Chemagro will market Dow's Tordon, used principally for control of hard-to-kill perennial weeds, and Dowpon, killer of such problem grasses as johnsongrass. Dow, in turn, will distribute Di-Syston, a systemic insecticide, and Bay 25141, nematocide registered for use on ornamentals and commercial turf.

In addition to diversification of their market capabilities, the two companies termed the plan a step toward combating rapidly mounting costs of chemical research and development.



The "Wood/Chuck" is Pitman Manufacturing Co.'s new chipper. Telescoping, rotating discharge chute chucks out wood and brush at 1/15th of its size on entering the 67 in. long steel feeding apron. Unit is mounted on rugged frame with 5,000 lb. capacity axle.

"Wood/Chuck" Designed To Ease Brush Clearance

The "Wood/Chuck," Pitman Manufacturing Co.'s new precision chipper, is said to be designed to handle brush clearance jobs faster, safer, and cheaper than conventional methods. Capable of chipping wood up to 8 in. in diameter, the new chipper quickly reduces brush to 1/15th of its original size, the Grandview, Mo., company claims.

Available skid- or trailer-mounted, "Wood/Chuck" is constructed around a balanced, forged solid steel rotor with corrugated knives of hi-alloy cutting steel which cut into wood at a shallow angle, providing smooth slicing, according to Pitman. Other features include an adjustable bed knife with four cutting edges, a heavy-duty 3 in. diameter rotor shaft, rugged unitized frame, and telescoping discharge chute that rotates through 360° and can be lowered for road travel.

Steel feeding apron is 67 in. from its outer end to the rotor knives for safety. In addition, a protective feed shroud and safety control panel have been incorporated for safe chipping. A hydraulic, vacuum-actuated safety brake is available as an option. Large, built-in tool boxes and a fold-away support wheel with 5,000 lb. capacity are standard

features on the chipper.

Designed for one-man operation, the "Wood/Chuck" is powered by a 240, 300, or 330 cu. in. Ford industrial engine. Pitman Manufacturing Co., Grandview, Mo. 64030, will send further data on this newest addition to its equipment line to readers requesting it.

Landscapers Move to D.C.

The Associated Landscape Contractors of America, professional association of landscapers, has recently announced the move of its national headquarters to Washington, D.C. from Berkeley, Calif. ALCA president, John Bell of Arlington, Mass., said the move would permit the association to better serve the country's beautification program, provide greater service to members, and permit the group to work more closely with other associations in the horticulture field.

ALCA has also appointed a new executive director, Harry J. Lambeth of Washington, D.C. Plans are being made to expand organization activities, and the first issue of a new newsletter, "ALCA Action Letter," has already been mailed. Associated Landscape Contractors of America, Inc., 632 Shoreham Building, 806 15th Street, N.W., Washington, D.C. 20005, will provide more information about the group and its newsletter.

Classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 1900 Euclid Avenue, Cleveland, Ohio 44115.

Rates: "Position Wanted" 5c per word, minimum \$2.00. All other classifications, 10c per word, minimum \$2.00. 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. **Boldface rule box:** \$15.00 per column inch, two inch minimum.

HELP WANTED

MANAGER: New sod operation being combined with 800-acre farm. Experience required. Age 30 to 45. Top pay, extras, large modern home. Unlimited future. Huber Ranch, Schneider, Indiana.

WORKING FOREMAN/assistant supervisor for tree service company doing private work in southern Ohio. Must be capable of working with and supervising crews. Possibility of becoming manager later. Please send details of experience, background and references. Write Box 21, Weeds Trees and Turf magazine.

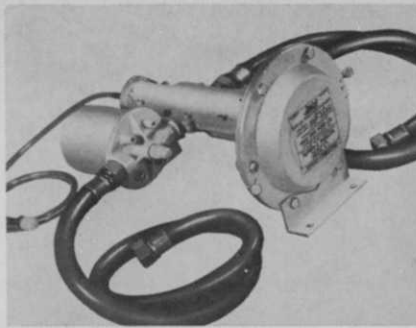
FOR SALE

ONE 60-GPM HARDIE sprayer, 500-gallon tank, Wisconsin air-cooled motor; one 40-gpm Iron Age sprayer, 500-gallon tank, LeRoi Industrial motor. (These complete sprayer units go on and off flat-bodied trucks.) Also one 60-gpm Hardie pump; lawn measuring wheels; weed booms for lawn spraying; one 15-gpm complete lawn sprayer, 275 tank on wheels. Write Box 20, Weeds Trees and Turf magazine.

Hale Produces Proportioner

A chemical proportioner, capable of measuring exactly 1 ounce of chemical to each gallon of water, is new from Hale Fire Pump Co., Conshohocken, Pa. Proportioning is reportedly constant regardless of water flow volume or water line pressure.

Said to be useful to spraymen,



All-bronze Hale Chemical Proportioner is said to provide exact, unvarying measures.

turfmen, and nurserymen, the all-bronze proportioner is capable of delivering 500 gals. per hour and is constructed without springs, seals, packing, or external moving parts, according to the firm. Self-priming and completely automatic, the unit works on water power alone and includes a water filter and high pressure hoses with cast bronze connections, Hale says.

Literature and prices can be obtained from the distributor, Alfred A. Rudolph, 26 Evelyn Ave., Vineland, N. J.

Bulletin Describes Tree, Shrub Pests

"Insect and Mite Pests of Trees and Shrubs" is a new bulletin by Dr. Ralph B. Neiswander, Professor Emeritus of Zoology and Entomology, Ohio Agricultural Research and Development Center.

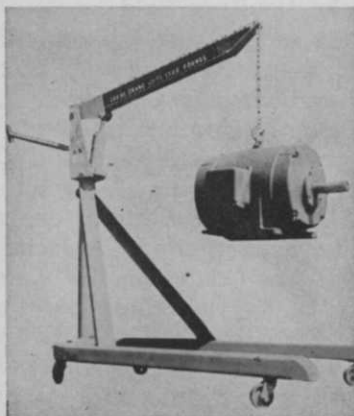
Pests are described in detail and their habits carefully delineated in the 54-page booklet, which offers 85 excellent black-

Advertisers

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and-white photographs of pests and damaged plants. Insects and mites described include sucking pests of foliage and twigs, gall makers, leaf miners, defoliators, wood-boring insects, and root feeders. Issued as a pest identification aid for commercial arborists and nurserymen, Research Bulletin 983 is available for \$1 from the Ohio Agricultural Research and Development Center, Wooster, Ohio. Ohio residents should add 3¢ sales tax.



ONE-MAN HYDRAULIC CRANE

Comes complete with truck mount and 6-ft. chain. Can be mounted on any type truck. Accessories include Nylon Adjustable Tree Sling, \$27.50; Barrel Chain, \$4.95; Stiff Leg for use under truck bumper, \$9.95. Floor Dolly shown only \$99.50. Crane is interchangeable from dolly to truck mount.

1500-Lb. Capacity **\$119.50** 2500-Lb. Capacity **\$169.50**

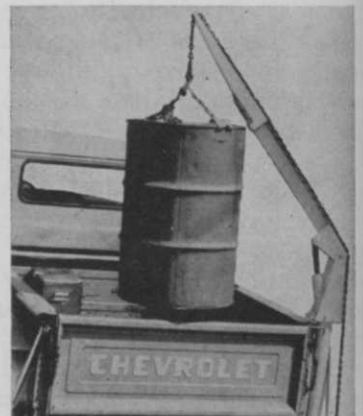
Sold on Guaranteed Performance basis or money back.

If check accompanies order we pay freight to your door. Call collect to place your order.

IDEAL CRANE

DIVISION BERT PARKHURST & CO.

15051 East Admiral Pl. Tulsa 18, Oklahoma
Telephone: 918 + GE 7-3313



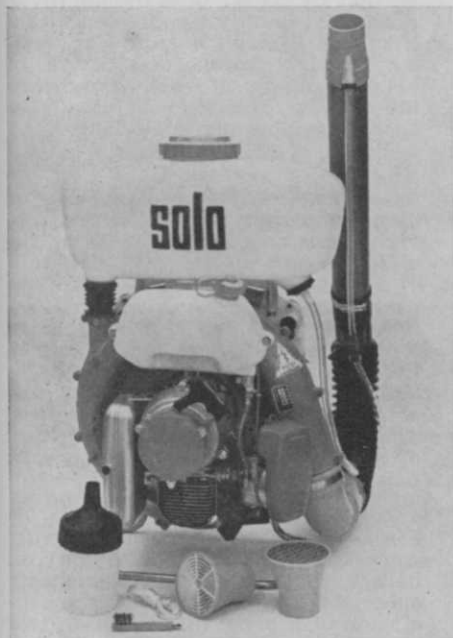


SOLO JUNIOR 410
3 h.p. Only 15 lbs.

it's time to
solo
for
**Unmatched
Power,
Performance
and
Dependability**

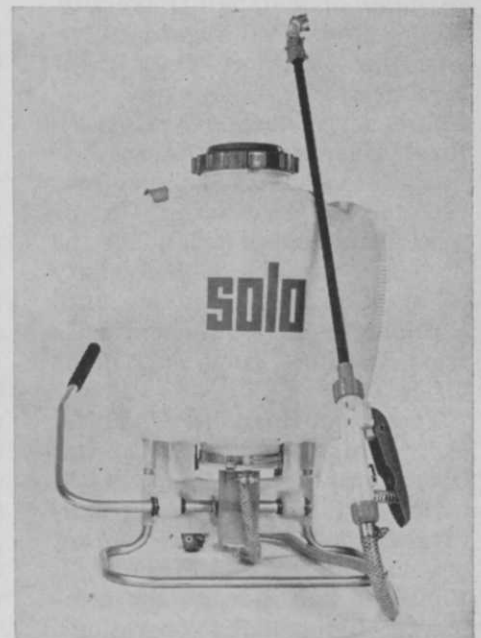


SOLO 630 PRUNING SAW
Other models available from "Lightweight"
to 9½ h.p.



SOLO 423 MISTBLOWER
5 h.p. Only 26 lbs.

*Made by
the
World's
First and
Largest
Backpack
Sprayer
Manufacturer*



SOLO KNAPSACK HAND SPRAYER 425
Capacity, 4 gallons. "Lightweight" weighs 8 lbs.
Delivers up to 16 feet in height.

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*Please send me complete information on SOLO's new Power
Unit 410 — 423 — 425 — 630 (Circle one of interest)*

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City..... State..... Zip Code.....

I'm interested in a dealership.

When Writing to Advertisers Please Mention WEEDS TREES AND TURF

Suppliers Personnel Changes

Eli Lilly and Co., Indianapolis, Ind., has named Dr. Edwin F. Alder director of agricultural research. The former senior plant physiologist and director of plant science research holds degrees from the University of Chicago and the University of Oklahoma, where he received his doctorate in 1956. Dr. Alder, who also did research work at the University of Bergen in Norway, is a member of numerous professional societies, including the Weed Society of America, and the American Society of Plant Physiologists.

Smith-Douglass division of Borden Chemical Co., Norfolk, Va., has appointed Ronald W. Moore sales supervisor for the division's Nutro Turf & Garden plant food line. Moore, who is a graduate of Marshall University, Huntington, W. Va., will supervise the Baltimore area sales territory.

Stauffer Chemical's Agricultural Chemical Division has named Harold L. Straube, former director of marketing, to be marketing vice president for the division. Straube, a University of Massachusetts graduate, will continue to direct division sales from Stauffer's New York home office.

Thompson-Hayward Chemical Co., Kansas City, Kans., has named two branch managers and added five men to its Agricultural-Chemical Division market development staff. Harold J. Vandiver will manage the company's Indianapolis operations, and John Baker will manage the Omaha branch. Vandiver is a

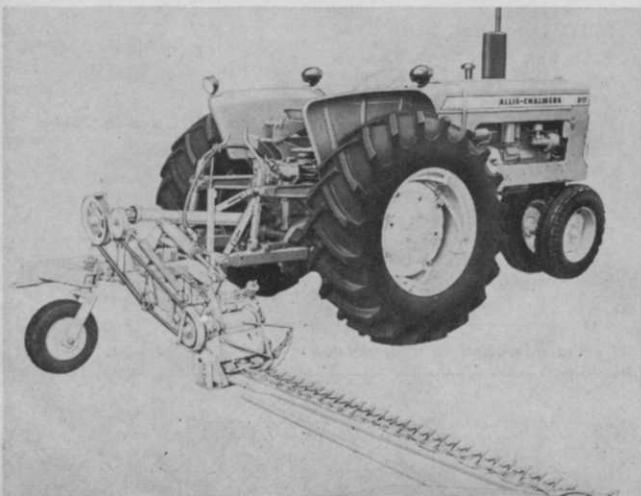
20-year veteran of Thompson-Hayward, while Baker has been with the company 25 years. Recently named market-development staffers, who will be responsible for developing new pesticide compounds, are: James Taylor for the southeastern region, headquartered in Gainesville, Fla.; Larry Livengood, who will also go to the Gainesville office; Frank E. Phipps, northwestern representative, to work out of Tigard, Ore.; John Plant for the southwestern area; and Charles Reed, representative in the north central region.

Allis-Chalmers Adds Two to Mower Line

Addition of two new models to its 80 Series line of no-pitman mowers is being announced by Allis-Chalmers. New models are the 82-R and 82-T, the latter replacing the company's Model 80-T.

Mowers are said by the maker to attach quickly and easily to the tractor, and to feature heavy, welded box-type frames for rigidity and support of the entire unit to keep operating parts in true alignment. Both models have twin-wheel drive, which gives quiet, almost vibrationless mowing, according to Allis-Chalmers. The trail-type 82-T mower has large tires for smoother operation and greater stability. Optional equipment includes a choice of three sickle guards for regular mowing and for use in heavy grasses or thick undergrowth.

For more details on 82-R and 82-T ask Allis-Chalmers Mfg. Co., Box 512, Milwaukee, Wis.



New addition to the Allis-Chalmers 80 series line is this Model 82-R no-pitman, twin-wheel mower. Cutter bar and sickle knife swing back on contact with rocks or debris to prevent damage.

Trimmings

Pesticide Nerves. As we were chiding Connecticut, editorially, for discontinuing its spraying of the European chafer, we received a release pertinent to that state's apparently virulent case of "pesticide nerves." The gist of it is that the State Board of Pesticide Control is preparing to hold a public hearing on a proposal to ban the use of DDT by custom ground applicators and state agencies. We find it surprising, to say the least, that a state should seriously consider outlawing one of the most time-tested and useful of pesticides. A reasonable degree of caution towards pesticides is unquestionably necessary. But, caution out-of-hand is apt to become a do-nothing attitude towards destructive pests, and neither the nervous minority prompting the Connecticut scare nor anyone else is prepared to say precisely what will happen if man is over-cautioned into forfeiting the war against pests. We feel that the recent Ribicoff report on pesticide usage and safety hedges the question, and we doubt that the report will ease anti pesticide tensions. It's more likely to increase the tension by its air of wary approval. Perhaps it is only a coincidence that chairman Ribicoff is from Connecticut, but it's obvious that certain of his constituents, at least, have drawn the blackest possible conclusions regarding remote pesticide dangers.

* * *

Green Thumbs to Take Flight. Nurserymen, landscapers, and horticulture enthusiasts in general are being invited to sign up for a 21-day tour of Europe's arboretums, gardens, parks, and other horticultural delights. Set for May 1967, the guided tour will visit Scotland, England, Holland, France, Italy, and Switzerland. Interested parties should contact tour escort Dr. Harold Davidson, Associate Professor of Horticulture at Michigan State University, East Lansing, Mich.

* * *

Portrait of a Pioneer. The recently completed 42nd ISTC Convention held a surprise for veteran utility arborist Fred Ashbaugh. At the conclusion of a panel discussion on tree growth retardants, which Ashbaugh moderated, the floor was "stolen" by representatives of The Dow Chemical Co., who then presented the Pennsylvania arborist with an oil portrait in recognition of his outstanding contribution to the field of weed control.

* * *

Rose Grows on Bananas. Or, a note for the vegetation expert who forgets to fertilize his wife's roses: the United Fruit Co. is promoting mashed banana peels for rose bush food.

* * *

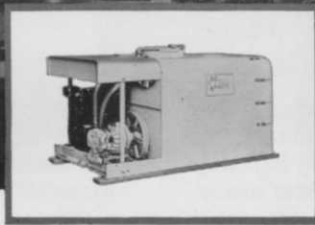
Seedman Dies. Recently, WTT was informed of the death of Dwight Guthrie Scott, pioneer seedman and former president of O. M. Scott & Sons. D. G. Scott was one of the founders of the famous seed firm, which grew from a 19th century Marysville, Ohio, hardware business.

leadership  *engineering* pushes performance up - prices down

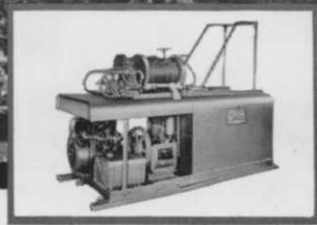
IT PAYS TO LEARN THE 3-R's OF HIGH-PRESSURE SPRAYING



ROYALETTE the leader for all-purpose versatility. 5 or 10 GPM @ 400 psi. (500 psi with the Model R-10) 14 separate models to meet your needs exactly.



ROYALIER the middle-sized "R" delivering 20 GPM @ 400 psi with new velva-flo Royalier 4-piston pump. Pick from 15 models.



ROYAL the "big daddy" in 25, 35 and 60 GPM capacities @ pressures to 800 psi. Proven by years and years of service. 12 models.

It pays to learn the 3-R's, because the knowledge can help you save time and money, do more profit-making jobs, and help you get your jobs done better and sooner. What jobs? Ah, there's the key! Jobs like shade tree spraying, brush and weed control, dust abatement. Close to the soil tasks like liquid fertilizing, lawn insect and turf disease control, root feeding. Clean-up jobs like sanitation spraying, mosquito and insect control. Fringe benefits like equipment cleaning, water-soluble paint spraying, many more. With John Bean High-Pressure Sprayers, you have the power to do the jobs thoroughly and quick. You have Bean-Bond corrosion-resistant tanks, ceramic pump cylinders, and many other Leadership-Engineered features to insure durability and dependability. Now, go back and add up the models. Forty-one (and we didn't even count several engine options)! That makes it as simple as ABC to look through the 3-R's and pick the one that's exactly right for you. May we help you pick?

LEARN THE 3-R's. First lesson is writing for catalogs on the models that interest you most. Just clip this coupon to your letterhead and mail.

- ROYALETTE all-purpose sprayers
- ROYALIER high-pressure sprayers
- ROYAL heavy-duty, high-pressure sprayers



JOHN BEAN DIVISION

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Introducing **CASORON**[®]

CHLOBENIL WEED & GRASS KILLER



Here's the new herbicide that makes your weed-killing job much easier on (1) landscape ornamentals, (2) around buildings, office, home grounds, (3) on highway rights-of-way, (4) in park and recreational water areas.

CASORON is the multiple-use weed killer. It murders perennial and annual weeds before they come up.

Yet as devastating as CASORON is to weeds, it won't hurt ornamentals, evergreens and shrubs.

It's the one safe herbicide.

CASORON digs in and gets the job done. Then gets out with no injury.

And it's a total program. You use CASORON and that's all, for complete control all season.

CASORON is easy to apply. In most soil types, no incorporation needed.

Apply CASORON this fall. Come next spring, no weeds. You'll have more time for other jobs.

CASORON is available as G-4 granules, W-50 wettable powder or AQ granules (for aquatic weed control). Write to the address below for the name of your nearest CASORON dealer and a detailed booklet on how, when, and where to apply CASORON.



CASORON AQ controls certain weeds in parks and recreational waters.



CASORON should be a part of every landscape program—use CASORON for weed control on ornamentals around the office, building grounds, and the home.



CASORON wipes out weeds around ornamentals along highway interchanges, municipalities and institutions.



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