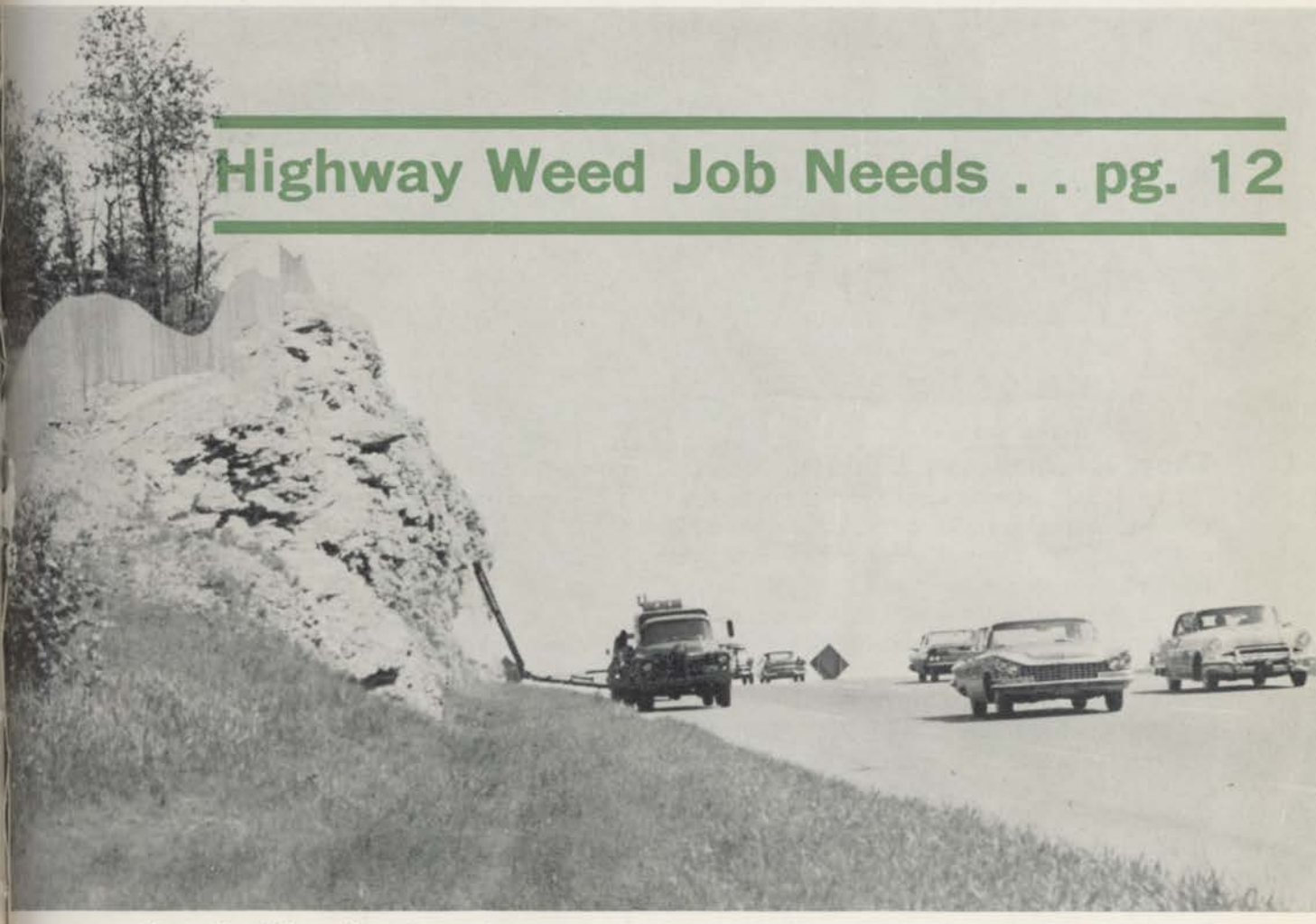
WEEDS TREES and TURF

FORMERLY WEEDS AND TURF

April 1965

Highway Weed Job Needs . . pg. 12



Many miles of the roadways in Massachusetts are cared for by contract applicators like this; detailed article inside.

Tips on Spotting Turfgrass Ills . . . . . pg. 16

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

and get all these SAFETY BENEFITS FREE!

The problem of insecticide residues...
has continued to perplex property owners and commercial operators who control insect pests of turf and plants. *Now many of these worries vanish* for those who use the modern, proved SEVIN® carbaryl insecticide to control any of 160 insect pests that attack turf and other ornamental and crop plants.

Safer to handle...
than many other insecticides, SEVIN is lower in toxicity to humans, livestock and wildlife, including fish and fowl. You need no special protective clothing when you apply SEVIN. Just use normal precautions. You can spray or dust crops adjacent to pastures, fish ponds or streams.

Residues in the soil...
are another hazard you eliminate by using SEVIN insecticide. Long-lasting as a crop protector, SEVIN breaks down quickly in the soil. There is no residue buildup to be picked up by garden fruits or vegetables, or to seep into streams or ponds.

Residue on food...
or feed crops is no problem when label directions are followed. SEVIN is a long-lasting insect destroyer that controls these pests with relatively few applications per season. Though still effective against insects at harvest time, the residue of SEVIN insecticide is not a problem to humans or livestock that eat the crops.

Drift to pastures or feed crops...
does not contaminate the milk, meat or eggs of animals eating the feed or forage, when SEVIN is the insecticide used. In fact, cattle can graze pastures, or forage can be harvested, on the day of application of SEVIN.

You can be a good neighbor...
and reduce hazards for everyone while you control insect pests with SEVIN. Ask your nearby supplier for the new list of recommended uses. Or write Union Carbide Agricultural Chemicals, 270 Park Avenue, New York, N.Y. 10017.

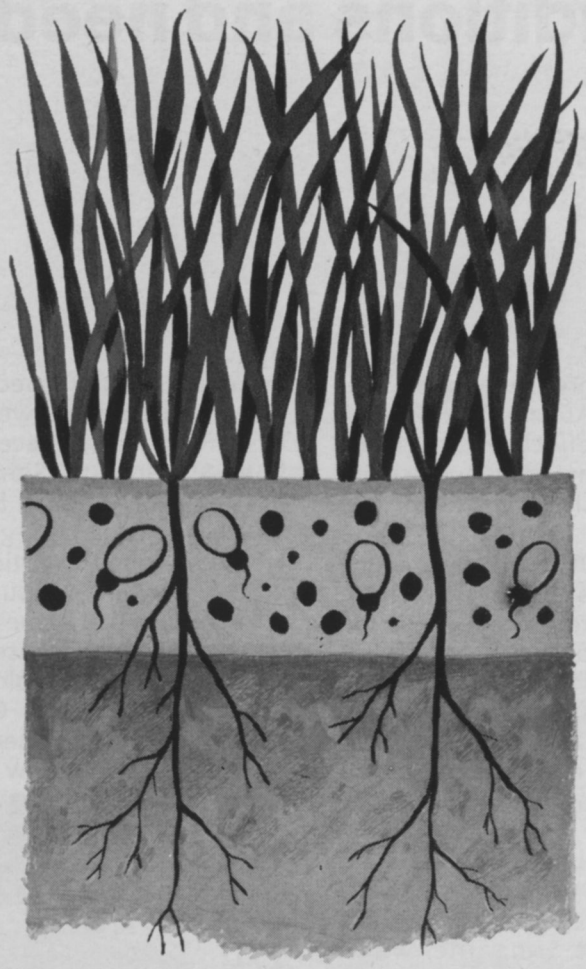
SEVIN is the registered trade mark of
Union Carbide Corporation for carbaryl insecticide.

UNION CARBIDE **AGRICULTURAL CHEMICALS**

USE...

AZAK*

Selective Pre-Emergence Herbicide



Azak, as indicated by center section, must be applied before crabgrass seeds are ready to germinate. Azak then penetrates seed at time of germination to prevent initial growth.

FOR CRABGRASS CONTROL

AZAK* is Hercules' new crabgrass control designed for pre-emergence application on established turf. Its effectiveness has been proved in commercial use. Available as an 80% wettable powder, Azak 80-WP, it can be sprayed in conventional equipment or formulated by manufacturers into a granular product.

Azak brings to users the combined advantages of effectiveness . . . persistence . . . safety to established turf . . . low toxicity . . . economy . . . and practically no odor. Azak is nonleaching. One application of Azak lasts through the crabgrass germination period. Of special interest to the manufacturer is its compatibility with most fertilizers and pesticides, and its low cost.

Technical information on and availability of Azak pre-emergence herbicide can be obtained from the nearest district office listed below, or from Agricultural Chemicals, Synthetics Department, Hercules Powder Company, Wilmington, Delaware 19899.

*HERCULES TRADEMARK

HERCULES

SZ65-3

BOSTON, MASSACHUSETTS / BROWNSVILLE, TEXAS / CHICAGO (OAK BROOK), ILLINOIS / DALLAS, TEXAS / FRESNO, CALIFORNIA / GREENVILLE, MISSISSIPPI / LOUISIANA MISSOURI / MONTGOMERY, ALABAMA / ORLANDO, FLORIDA / PHOENIX, ARIZONA / RALEIGH, NORTH CAROLINA / SAN FRANCISCO, CALIFORNIA / VANCOUVER, WASHINGTON

Which Geigy herbicide best fits your weed control conditions and needs?

Although all three Geigy herbicides ... Simazine, Atrazine and Prometone®... give effective long-lasting control of many weeds and grasses, each has special characteristics of its own.

Simazine 80W works only in the soil, where it is absorbed by germinating weed roots. Since it is the least soluble of the three, it is especially useful in areas of high rainfall. And because it doesn't leach laterally, Simazine won't harm adjacent ornamental plantings and crops. One spray, applied before weeds emerge, usually provides effective control for a full season.

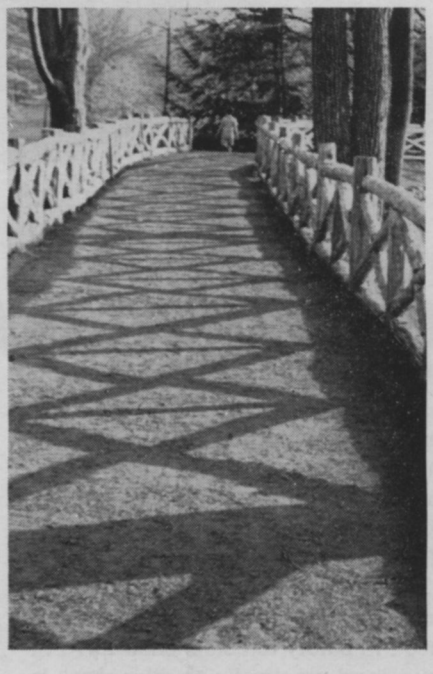
Atrazine 80W may be applied either before, or soon after, weeds emerge. Like Simazine, when sprayed before weeds emerge, Atrazine acts through germinating weed roots. But in addition, Atrazine acts through the foliage when sprayed on young weeds soon after they emerge.

This dual action controls existing broadleaf weeds and grasses, then keeps later-germinating weeds under control as well. More soluble than Simazine, Atrazine is more adapted to areas of low rainfall.

Prometone 25E can provide effective control of weeds up to 3 months after they emerge. Its greater activity through the foliage makes Prometone especially useful where considerable weed growth has already taken place. And, like both Atrazine and Simazine, it is moved into the soil by rainfall where it controls later-germinating weeds by root absorption.

So for maximum results, and for the economy that comes with long-term weed control, base your programs on a Geigy herbicide.

Geigy Agricultural Chemicals, Division of Geigy Chemical Corporation, Ardsley, New York.



Geigy
CREATORS OF CHEMICALS FOR MODERN AGRICULTURE

WEEDS TREES and TURF

FORMERLY WEEDS AND TURF

April 1965
Volume 4, No. 4

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WEEDS TREES AND TURF is published monthly by Trade Magazines, Inc. Executive, editorial, and advertising offices: 1900 Euclid Ave., Cleveland, Ohio 44115. Publication office: Corner of East North St. and Cadwallader St., Fostoria, Ohio. Send all correspondence to WEEDS TREES AND TURF, 1900 Euclid Ave., Cleveland, Ohio 44115.

Single Copy Price: 50 cents for current issue; all back issues 75 cents each. Foreign $1.00.

Subscription Rates: U.S. and possessions, 1 year $3.00; 2 years $5.00. All other foreign subscriptions, 1 year $4.00; 2 years $7.00. **Change of Address:** Three weeks advance notice is necessary for change of address. Both old and new address must be given. Post Office will not forward copies. Third Class postage is paid at Fostoria, Ohio.

High Standards; Low Pressure!

Late last year a southern college sent us a news release which listed case histories of citizens who had been swindled by "phony tree experts." While these occasional swindlers indeed exist in any business, they are decidedly in the minority in this industry. For this reason, among others, we were disturbed with the release we received. The material issued from these sources usually goes to the consumer press also, and could be played up in newspapers which reach the general public. This particular story, fortunately, ended with recommendations on how to choose a reputable company for tree work, but the suggestions were contained near the end and could have been omitted by a local paper seeking a "sensational" story.

How can tree specialists and other vegetation maintenance practitioners avoid the effects of these occasional outbursts of bad publicity? There are a few tried-and-true steps which, while not new by any means, should prove helpful. We list them here for managers to check as another reminder of the necessity for effective communication with the public:

(1) Join national, local, and state trade associations when they are available; then work on the public relations programs these groups traditionally offer;

(2) Join the local Chamber of Commerce and Better Business Bureau. This will enhance your public image while making the individual firm better known among others in the business community;

(3) Maintain *high standards and low pressure* in sales and advertising techniques;

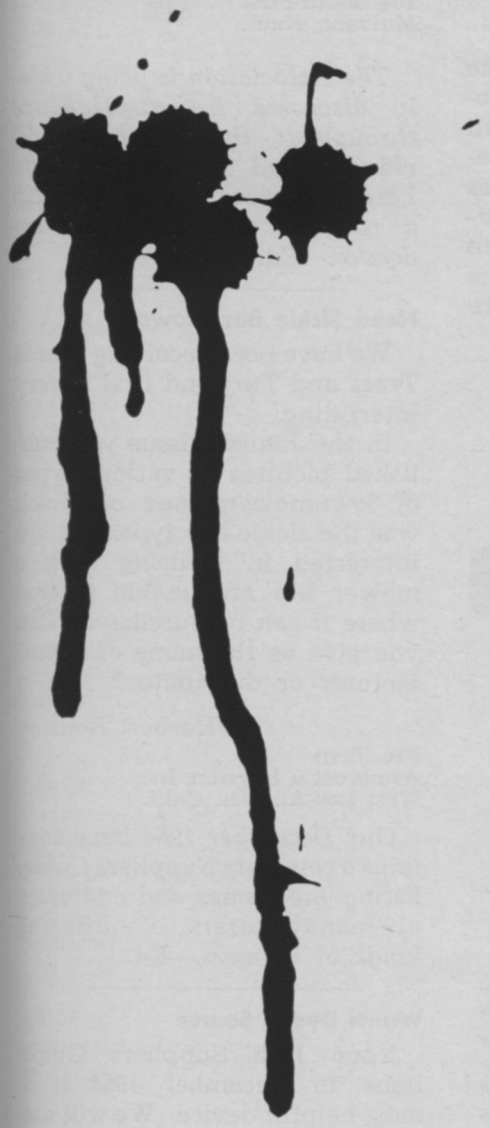
(4) Strive to make known, to universities, industry groups, and other business organizations, the high ethical standards which prevail as a whole in the weed, tree, and turf business; and

(5) Insist on the highest standards of competence and responsibility in your work and make sure your personnel, from office boy to president, maintain a businesslike or professional bearing. This last, of course, is most important.

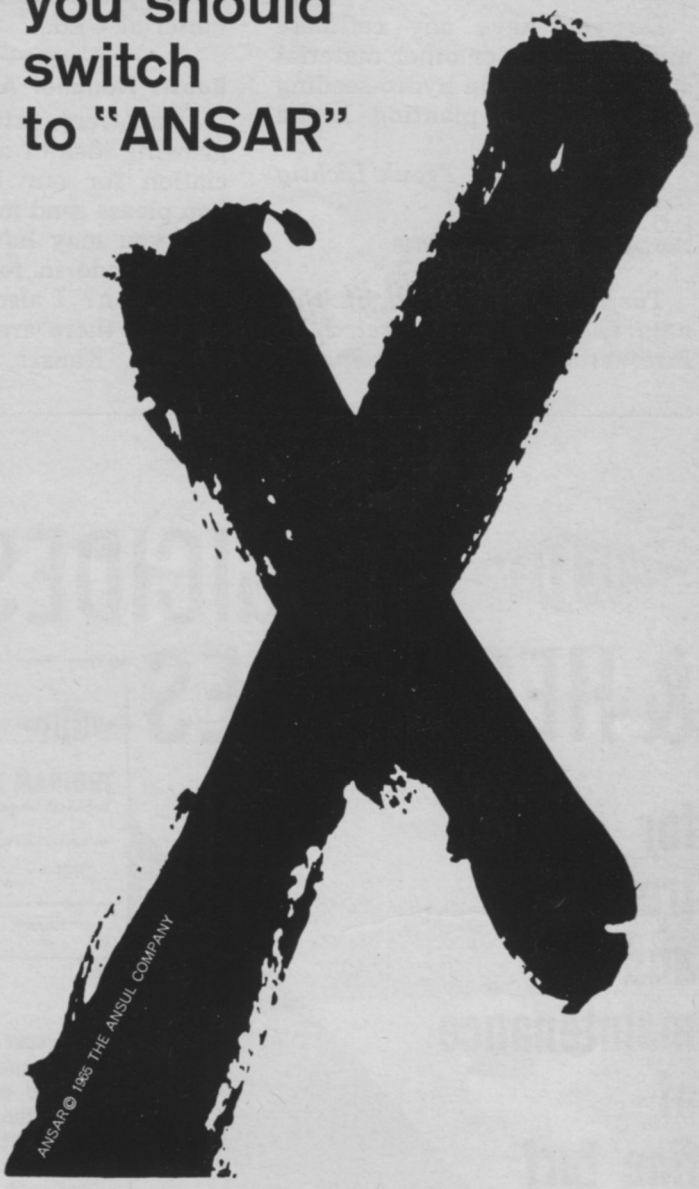
Most people want, by nature, to believe in the integrity of the people they do business with; let them know they can depend on you!

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, 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.

If you're still using weed oil



here's why you should switch to "ANSAR"



"Ansar 560" is a non-selective, general herbicide. It completely eradicates all weeds and vegetation along roadways and ditches, around buildings and in other non-crop areas. If you've been using weed oil to do these jobs you'll find "Ansar 560" vastly superior in at least five important ways: (1) It's more effective and perhaps a little cheaper. (2) There is absolutely no residual toxicity, (3) no staining, and (4) not nearly as much corrosion of your spraying equipment. (5) You'll eliminate the storage problem because one gallon of "Ansar 560" (which is mixed with water when you're ready to apply it) is equivalent to 50 gallons of weed oil.

"Ansar 560" has been thoroughly tested and proven in use. It's just one of a broad line of "Ansar" weed control chemicals which include selective herbicides to meet your particular needs in a variety of formulations—solid crystals, liquid and liquids with surfactant. For complete information see your own farm chemicals dealer, ask your county agent or write

THE ANSUL COMPANY, MARINETTE, WISCONSIN

WTT Mailbox

Cellulose Mulch Wanted in Puerto Rico

Do you have any cellulose mulch product or other material suitable for use in hydro-seeding equipment for planting large turf areas?

Frank Lichtig

Gramaslindas CIA
P.O. Box 128
Dorado, Puerto Rico 00646

Turfiber, a product of this nature, has been marketed by International Paper Co., Special Products Dept., Room 4, Drawer A, Mobile, Alabama, 36601. The company can supply information on the present availability of the material.—Ed.

Boosts National Association

I am very interested in the growing idea of a national association for our industry. Will you please send me any information you may have on progress being made in forming this organization? I also would like to know if there are people in the Wichita, Kansas, area who are interested in this association, as I'd like to meet them. *Weeds Trees and Turf* is a fine magazine . . . I enjoy it!

J. M. Phipps

104 South First
Mulvane, Kans.

The Association is being widely discussed by applicators throughout the country, individually and at local meetings. Later this year we will publish a progress report on the endeavor.—Ed.

Need Sickle Bar Mower

We have been receiving *Weeds Trees and Turf* and find it very interesting.

In the January issue you published pictures of various types of lawnmowers, one of which was the sickle-bar type. We are interested in securing such a mower but are unable to find where it can be purchased. Can you give us the name of manufacturer or distributor?

Herbert Royston

President
Armacost & Royston, Inc.
West Los Angeles, Calif.

Our December 1964 issue contains a complete Suppliers Guide, listing the names and addresses of manufacturers of different kinds of mowers.—Ed.

Wants Dycryl Source

Your 1965 Suppliers Guide issue in December 1964 is a most helpful device. We will use it many times. However, could you help us locate a source of supply for the postemergence product Dicryl in our area?

Leo W. Klarr

Mississippi Grass Nurseries
Route 1, Box 184
Hattiesburg, Miss.

Dicryl is a product of Niagara Chemical Div., FMC Corp., Middleport, N.Y. Perhaps Distributors in your area will write you direct.—Ed.

Weeds Trees and Turf welcomes expressions of opinions from its readers. Send ideas and comments briefly as possible to Charles D. Webb, Editor, Weeds Trees and Turf, 1900 Euclid Ave., Cleveland, Ohio 44115.

IMPORTANT MESSAGE FOR CONTRACT APPLICATORS

UROX® Weed Killers give you long-lasting, economical weed control

On those industrial weed control jobs, your profits depend on weed killers that *clear out* weeds and grasses—thoroughly, reliably, the first time around.

Allied Chemical's Urox weed killers offer you dependability and economy plus these features most important for profitable weed control . . .

FULL LINE

There's a Urox weed killer for almost every industrial contract application requirement . . . for every area of the country. Urox-11 Granular will handle most jobs. The following special formulations zero in on specialty weed problems:

Urox-Liquid for those who prefer to spray

Urox-HX, a Bromacil product for hard-to-kill quackgrass, bluegrass, broomsedge

Urox-D (granular or liquid), a Diuron product for supplementary booster treatment to maintain bare ground.

LATEST DEVELOPMENT

Urox-B is a new, completely water-soluble, liquid concentrate that *stays* in solution, even in hard water. Because it requires little tank agitation (unlike wettable powders), it's economical to apply with simple spraying equipment. Urox-B is ideal for any use where application problems are encountered with wettable powder or granular products—it's a major breakthrough in non-selective weed control!

Allied Chemical

GENERAL CHEMICAL DIVISION
P.O. Box 353, Morristown, N.J.

LONG-LASTING CONTROL

Weeds and grasses *stay* knocked out after one application of Urox for as long as 18 months. And you profit even more on the next application because only a low-cost booster dose is needed.

EASY APPLICATION

All Urox formulations, granular and spray, go on conveniently, rapidly. Spreaders don't jam. Strainers and spray nozzles don't clog. You waste no time applying the weed killers that waste no time going to work for you!

Ask your distributor for these effective Urox weed killers. For more information, simply send us the coupon below.

WE-45

Weed Killer Department
General Chemical Division
Allied Chemical Corporation
P.O. Box 353, Morristown, N.J.

Please send me full details on Urox weed killers.

Name_____

Company_____

Street_____

City_____ State_____ Z-Code_____

Weed-free turf

Dacthal effectively kills weeds and undesirable grasses in the ground before they sprout. Won't damage ornamentals and shrubs. Best weed control yet for golf-course and fairways, parks, rights-of-way, etc. Keep your turf weed-free with Dacthal applied professionally for best results. Diamond Chemicals, Diamond Alkali Company, 300 Union Commerce Building, Cleveland, Ohio 44115.

Diamond Chemicals®

The SINGLE Chemical Control

for the major TURF diseases

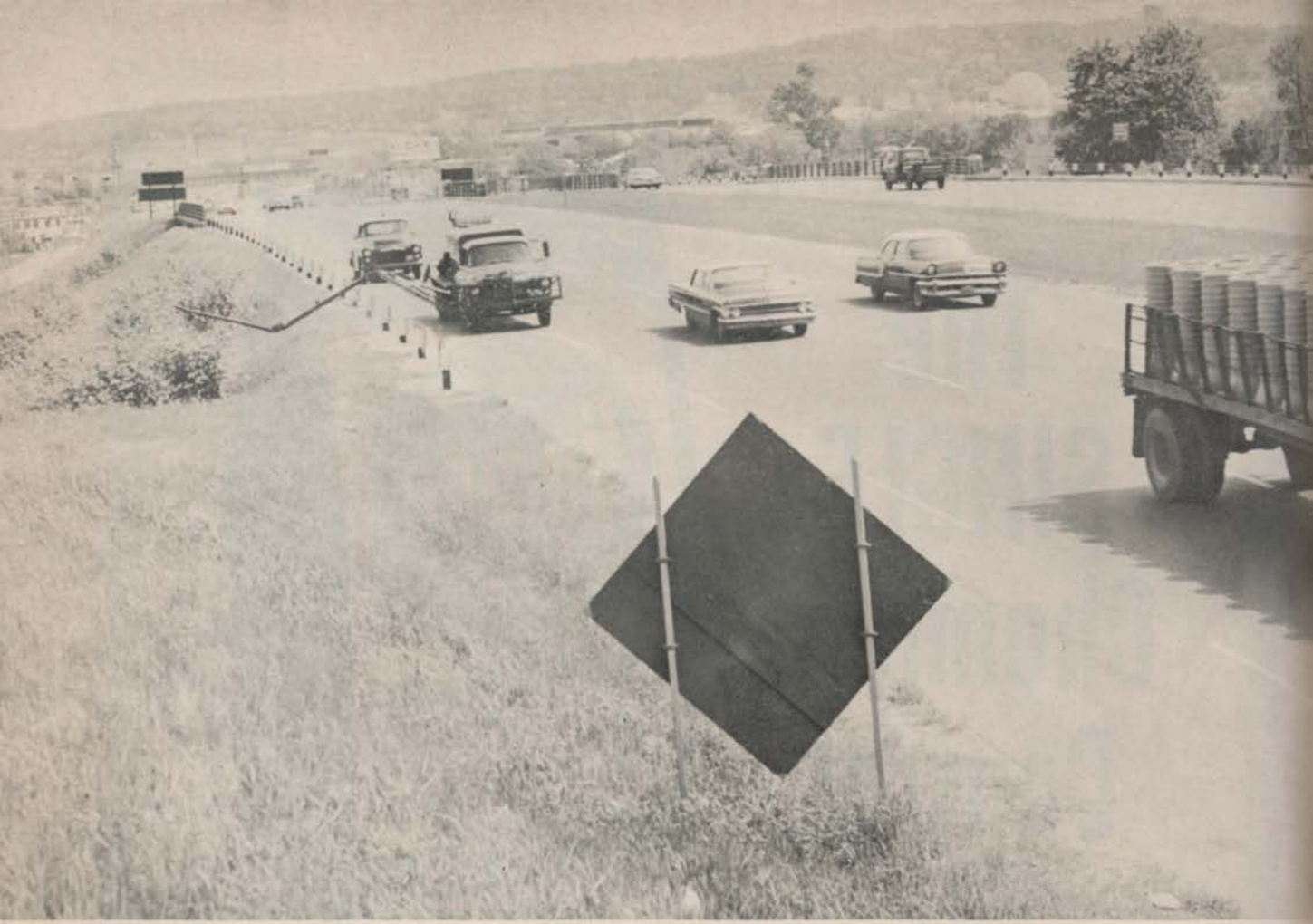
Dyrene is formulated expressly for park superintendents, golf course superintendents, greens keepers, managers and other professionals engaged in the care and maintenance of lawns and turf.

Dyrene's broad spectrum effect combats or prevents all major turf diseases. When used as recommended, it controls leaf spot, copper spot, rust, dollar spot, brown patch, snow mold (*Typhula* spp.).

Eradicant or Preventive—Under normal weather conditions, apply Dyrene at the rate of 4 oz. per 1,000 sq. ft. every 7-10 days. During weather particularly favorable for disease, such as high temperature and humidity, Dyrene may be applied more frequently (5-7 day) or at higher dosages (6-8 ozs. per 1,000 sq. ft.) to keep disease under control with no injury to fine turf grasses. Some golf course and park superintendents use a Dyrene program of 3-4 ozs. per 1,000 sq. ft. of turf on a 12-14 day schedule. This has resulted in disease-free turf all season. When using Dyrene to clean up a disease condition in turf, use 6-8 ozs. per 1,000 sq. ft. for best results. For complete instructions, read the label or send for folder DY4.

Easy to Use—Dyrene is a 50% wettable powder that provides a good suspension in water and is suitable for use in all common types of spray equipment. The formulation is dyed green to blend with turf and eliminate the unsightly appearance of spray deposits on treated areas. Once dried, dye does not stain shoes or fabrics. Dyrene will not harm spray equipment, clog nozzles or corrode metal parts of the sprayer. 365

Chemagro **CHEMAGRO CORPORATION**
KANSAS CITY 20 • MISSOURI



Specially adapted booms like the one in top left portion of picture help highway supervisors and contract applicators apply rights-of-way herbicides.

What Highway Supervisors Want From the Contract Applicator

By JOSEPH L. BEASLEY

Highway Landscape Supervisor,
Department of Public Works
The Commonwealth of Massachusetts, Boston

HISTORY is in the making and there is an opportunity, specifically, for the chemical and equipment industries, and contract applicators, to participate directly in the greatest road building program the world has ever witnessed.

This program will require vast specialized services to an extent that may not now be readily visualized.

The development of materials, equipment, and construction methods for roadside projects must keep pace with those of the road building industry at large.

This expanded highway program will provide an additional outlet for the knowledge and abilities of chemical and equipment suppliers and contract applicators. And there are many problems that may be solved by constructive criticism and complete cooperation of all concerned.

Since 1951 Massachusetts has been using and experimenting with chemical weedkillers in an effort to reduce mowing and maintenance costs.

We have applied 2,4-D; 2,4-D+T; 2,4,5-T; maleic hydrazide; Telvar D.W.; diuron; Ureabor and Urox. All have been used with varying degrees of success. We have learned that each has its place in maintenance as a useful tool. Herbicides in themselves are not a "cure-all" for roadside maintenance problems. When properly used, however, in combination with other roadside operations, the result is a more pleasing roadside appearance at a considerable saving financially. But, to make such materials more economically feasible, their effectiveness must be increased, their cost of application reduced, and their purchase price decreased.

Attacked Poison Ivy First

Massachusetts' first use of chemicals along the roadsides was directed against poison ivy,

at the time an extremely serious problem. Through the use of 2,4-D plus 2,4,5-T, this condition has been practically eliminated. This fact not only has been reassuring to the 3,500,000 people who enjoy our 375 roadside rest areas each season, but, has greatly reduced the duration of time lost by Department employees who are engaged in roadside work.

The Massachusetts Department of Public Works has been making valuable contributions to highway safety with the aid of chemicals, (2,4-D plus 2,4,5-T, 50-50 concentrate of low-volatile esters) by making a concerted effort to increase sight distance on the highways. These herbicides, also, assist in controlling brush at our roadside rest areas and vistas, behind guard rails, and in our selective clearing program.

Not only has the general appearance of the roadsides been improved, but in our opinion, clean roadsides are a major factor in highway safety.

In our program of selective control of weeds, we have used MH-30 in combination with 2,4-D as part of our constant effort to reduce the number of annual mowings. During this operation we found that certain weed growths are less responsive than others, particularly in dry seasons.

We have, also, been applying 2,4-D in combination with urea (45% nitrogen) fertilizer to certain areas requiring rejuvenation. This two-in-one combined application has proven to be economical.

Mass. First to Contract Mow

It is noteworthy that Massachusetts, in addition to being the first state to do all roadside mowing by contract, is among the first to apply fertilizer in combination with 2,4-D spray.

Massachusetts has approximately 2500 miles of state highway, which includes 10,640 acres of grass and 9,550 acres of non-grassed areas such as native woodland growth and ledges. In our attempts to modify turf management costs through chemicals, the Department has combined sprayings of various-purpose chemicals and has advised private enterprise to provide special applicators to accomplish this work:

(1) For median strips up to 40 feet, roadsides, outer edges of interchanges, and narrow divider islands, a 1,000-gallon tank, with booms for 20 feet range: and

(2) For wide median strips and divider islands over 40 feet wide, lobes, bowl areas of interchanges, and other "hard-to-reach" areas, four-wheel-drive Jeep with mounted 250-gallon tanks, fixed horizontal and vertical booms, and a manually operated boom.

While these new applicators are sufficient for the above-mentioned purposes, of necessity, with the vast increase in construction of both state and interstate highways, they will soon become obsolete.

Grass and weed control, through the proper use of chemicals and advanced models of applicators, is most important in all categories of economical roadside maintenance.

Manufacturers should have on their designing boards plans for larger, more efficient applicators. For example, we need a piece of equipment, possibly a belt-type applicator with supercharged power, to spread pellets or heavy granular fertilizers a distance of approximately 100 to 200 feet; such equipment could then reach plant materials on cut slopes and other difficult-to-reach areas from the highway.

Another type of applicator

Private companies which contract for roadside weed and brush control, fertilization, mowing, etc., will find author Beasley's catalog of what he and his colleagues want from contractors and from the chemical and equipment industries useful and interesting. Mr. Beasley is well known among professional vegetation maintenance and control personnel.

This contract application spray rig is a precision-engineered, completely outfitted machine tailored to the unique requirements of roadside vegetation work.

Rear view of this spray rig operated by Worthy Maintenance of Springfield, Mass., reveals the complexity of pumps, tanks, hoses, and other quality equipment necessary for competent contractual work for highway roadside spraying.

should be designed to spread wood chip mulch uniformly, without any decrease in size of the mulch, over any reasonable given area and distance, again from the highway.

Need Bigger, Better Sprayers

Larger and more powerful spraying equipment is needed. Especially important is size of hoses and nozzles for spraying further distances with more accuracy (also from the highway).

It is of paramount importance that all operators of these anticipated new and powerful types of equipment be thoroughly trained and be considered experts in this forward approach in highway landscaping techniques.

The following items are submitted for research by the chemical, equipment, and contract applicator industry.

1. A balanced liquid fertilizer which can be sprayed and will accelerate the growth of seedling pines, evergreens, woody shrubs, low-bush blueberry, bearberry, sods and vines.

2. Chemicals with a faster action and longer effectiveness for grass retardation, ground fertilization, and soil sterilization.

3. A synthetic mulch with lasting qualities and with a resistance to weed growth, as a substitute for present costly hay or wood chips.

4. A synthetic which will augment water retention in plants and grass thereby enhancing their resistance to drought.

5. A safe chemical sufficiently selective and easy to handle to eliminate grass or weed growth, but, without injury to tree or shrub plantings.

6. A less expensive chemical to retard the growth of grass.

7. A chemical or synthetic hormone to break the dormancy and increase the fertility of natural-growth seeds of native pines, low growing woody shrubs, low-bush blueberry, bearberry, sweetfern, and woodbine.

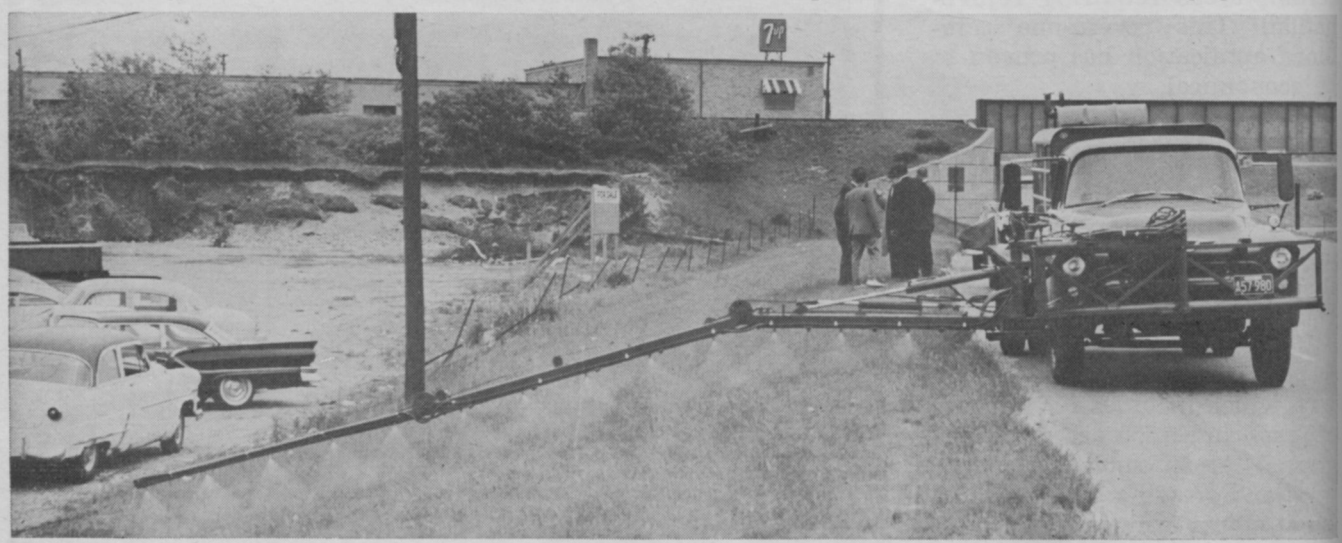
8. A brush-growth retarder which will not brown out the areas where control for sight distance is at a costly premium.

These are but a few, but coupled with many other problem areas in roadside management, are considered to merit a concentrated effort in research because they offer sufficient practical marketing potential.

Educate Public

The industry at large should, also, assist in the education of the general public on chemicals. Many misconceptions relative to chemicals now in roadside use, regarding their effect on birds, animals, and other plants, lead to unnecessary agitation by certain private businesses and various groups dedicated to the preservation of plants and wildlife. Advice to these groups, to allay

(Continued on page 26)



Extended boom has variety of controls allowing operator to adjust spray pattern.

ARE YOU SPENDING MORE THAN YOU NEED TO FOR INDUSTRIAL WEED CONTROL?

Not when you rely on CYTROL®.
Other chemicals and oils may act faster, but they can't match CYTROL's systemic action in killing *roots and all* to provide truly *long-lasting* weed control.

With CYTROL, you don't have to spray as frequently. There's no worry about regrowth.

And for truly season-long control, merely add a soil sterilant to keep weed seeds that are already in the soil from germinating.

What's more, when you rely on CYTROL, you get the additional advantages of no mess, no fire hazard.

CYTROL is easy to apply with any conventional spray equipment. It is not dangerous to handle. When you are through, simply flush out the applicator with plain water.

CYTROL is decidedly economical because of its long-lasting effectiveness. CYTROL keeps on killing weeds long after you apply it. It is the sure way to control hard-to-kill broadleaf and grassy annual and perennial weeds around buildings, along railroad rights-of-way, along highways, or any other type of industrial application.

Clip and send in this coupon today to get complete information about CYTROL for your industrial weed control problem.

BEFORE USING ANY PESTICIDE, STOP AND READ THE LABEL

American Cyanamid Company Date_____
P. O. Box 400
Princeton, New Jersey

Gentlemen,
Tell me how CYTROL can solve my industrial weed problem.

☐ Send literature

☐ Have your representative contact me

Name_____

Position_____

Company_____

Street_____

City_____ State_____ Zip No._____

How to Diagnose Turfgrass Problems

PART ONE

By RALPH W. WHITE, JR.

General Manager
Ousley Sod Company
Pompano Beach, Florida

LAWN PROBLEMS, resulting from insect damage, fungus disease, and drought, are a common occurrence in the South. These problems are due largely to the long growing season, the ideal climate for disease and insect reproduction, the uneven rainfall distribution, and the poor moisture retention of most soils. Many lawns have built-in problems caused by poor soil structure, buried debris, grass of poor quality, or variety of grass not suited to the area. Improper maintenance practices are also one of the largest contributors to lawn troubles.

Solving lawn problems is one of the most important phases of lawn management. Early and accurate diagnosis is essential if the problem is to be corrected before it becomes too serious. Common lawn problems, such as drought, improper mowing, and insect damage are relatively easy to diagnose and correct. The more difficult problems, which usually involve a combination of factors, normally require analysis by someone with a good technical background and much practical experience. The commercial applicator can do a good job of diagnosing and solving lawn problems, provided he considers all the facts before making his conclusion. The following factors are essential for proper diagnosis:

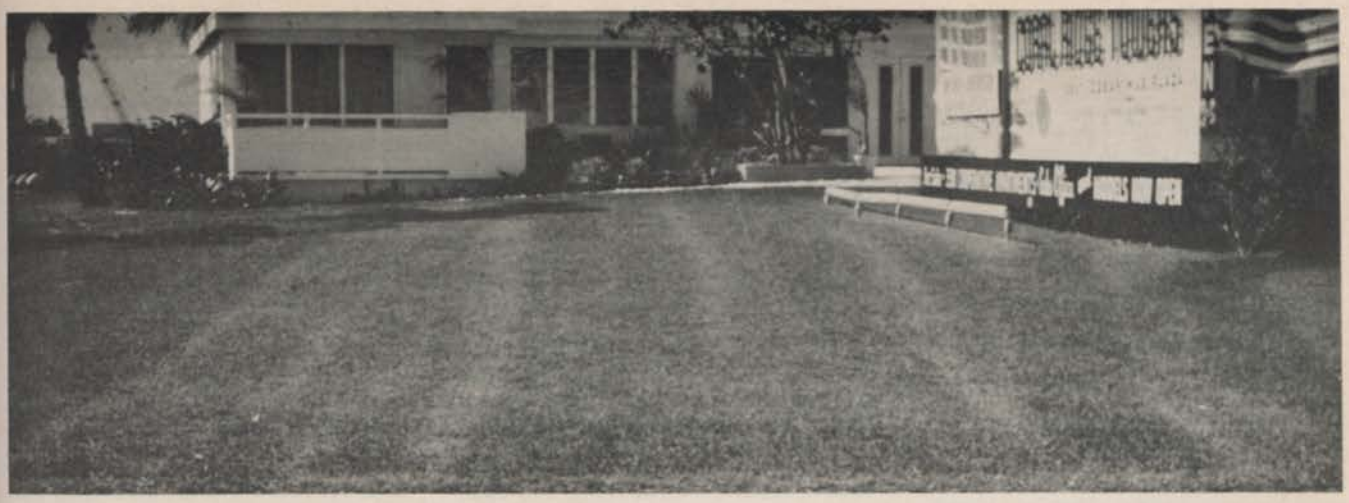
1. Complete maintenance records and history of lawn.
2. Awareness of periods when insects and diseases are prevalent.
3. Frequent, careful observations.
4. Knowledge of common symptoms.
5. Conclusion through process of elimination.

Complete Maintenance Records and History of Lawn

Maintenance records should include the date, rate, and kind of fertilizer applied; the mowing frequency and height of cut; the irrigation frequency and amount of water applied during each watering; and the kind and rate of different pesticides that were applied. A record sheet on which to jot down this information keeps these important facts from slipping from the memory.

History of the lawn should give information about when and how it was established, including any special preparation that was done. If certain areas of the lawn have been known to be trouble spots, year in and year out, it is well to note these locations, also. Such information as when, where, and how spots occurred is important as it often relates to insect and disease pests. Disease is known to occur in the same area of the lawn, year after year, and usually has the same type of pattern. Insects, on the other hand, often occur in different locations from one year to the next.

While author White has used his native Florida as the basis for most of his observations in this article, the techniques he enumerates for diagnosing turfgrass ailments will be invaluable to turf managers from Maine to California. Photographs are by the author, from slides he uses to illustrate his frequent lectures before turfgrass enthusiasts and professionals. This is a two-part article; conclusion will appear next month. Ed.



Skilled detection of turf ailments takes training. Above are streaks caused by improper fertilizing of st. augustinegrass. Below, improper mowing (scalping) of bermudagrass. These symptoms, Mr. White says, are caused by not mowing often enough and by using a rotary-type mower.

Quick diagnosis is possible when certain insects or diseases are known to be prevalent. For example, in south Florida, worm infestations usually begin about the middle of May and last throughout November. On the other hand, chinch bugs are more prevalent from February until October. Brown patch fungus is worse during the late fall and early spring. Therefore, if brown spots occur in the lawn in early January, there is a good possibility that it would be fungus and not chinch bugs or worms, even though the symptoms may look similar.

Frequent, Careful Observations

Frequent, careful observations of the entire lawn will reveal many problems in the early stages, thus allowing for prompt corrective measures. Make mental notes about the color of the grass, the amount of shade and wear, the overall condition of the grass, the presence of any species of weeds, or signs of mismanagement practice, such as improper mowing. Note whether there are brown spots present and if so, if they form any type of pattern or streak, or if there is a general thinning of the grass, because each pattern can usually be related to a cause.

Knowledge of Common Symptoms

Any type of *patch* may indicate the presence of insects or

(Continued on page 22)

New Ways to Apply Aquatic Herbicides

PART II

This is the second of two articles prepared by the Phelps Dodge Information Service on the various types of equipment in current use for application of copper sulfate and other common chemicals for control of algae and aquatic weeds. The first installment appeared in February.—Ed.

Helicopters

PROBABLY the newest technique involves the use of helicopters. The East Bay Municipal Water District, Oakland, California, undertook some experiments at San Pablo Lake in 1963. The work was done under the general supervision of G. L. Laverty, Supervising Sanitary Engineer, Cali'copters of Stockton, California.

The equipment used by Cali-'copters is basic agricultural dry-chemical feeding apparatus, consisting of a Bell 47G-2 Helicopter, two 250-lb.-capacity saddle hoppers, automatic gates, blowers, and ducts. The system is capable of putting out 2,000-2,500 lbs./hour. On all but one of the treatments, the effectiveness of the helicopter was superior to that of the boat-and-sack method on the basis of biweekly plankton samples which were routinely taken from the lakes. Analysis of these samples indicated that East Bay could anticipate fewer treatments during the year using a helicopter rather than a boat. The one treatment which was unsuccessful involved using powdered $CuSO_4$ in an effort to find an acceptable grind. The criteria for the $CuSO_4$ grind are (1) it must be compatible with the feeding equipment, (2) dissolve in the top 10 feet of the water, (3) create a minimum drift problem, and (4) be commercially available at an economical price.

The calculation of the total dosage is based on the amount of water in the lake in the top 10 feet for a given elevation. To this total amount of water was added $CuSO_4$ in the proportion of 4 lbs. per million gallons. For calibration of the feed equipment these total pounds can be converted to pounds-per-acre with the aid of area capacity tables for the lake. The pounds-per-acre will be virtually constant for the deeper parts of the lake and will be less for the shallower regions.

Exact calibration of the feed can be made by relating helicopter heights and speed to hopper opening for the required dose. The hopper opening is set by making a catch of material with the blowers turned on for a given length of time and weighing it. Usually, however, the pilot, equipped with the knowledge of the pound/acre dose and the lake area, or the total pounds for each lake, adjusts his hopper settings based on experience.

The $CuSO_4$ does not leave an immediate trail by coloring the water which the pilots could use as a guide, and, therefore, there have been some alignment problems. However, permanent shore markers would be a possible solution.

Airboat

Another possibility involving the use of equipment that can be purchased rather than made is the airboat. One of the newest developed utilizes ducted fans rather than an open propeller. This particular equipment is manufactured by Aquanautics, 966 Commercial Street, Palo Alto, California, under the trade name of the "Swamp."

The Swamp (Shallow Water Aero Marine Propulsor) class equipment (Swampcat and Swampfox) are moderate-sized planing hulls constructed for operations in shallow water, marshes, and swamps. There are no under-the-hull protrusions to limit their passage and they are propelled by a ducted fan system.

The ducted fan delivers nearly twice as much thrust as an open propeller. When used as a distributing means for liquids or powders it provides a controlled and directed beam, allowing uniform distribution of the material.

The equipment can be fitted with bogie wheels which can be raised and lowered by hand for ease in going in and out of water and for highway trailering. Twin tiltable water rudders are provided for steering.

Two methods of material distribution can be provided. Solid particle material is delivered to the back side of the ducted fan by a pneumatic blower system with its own power source. Liquids are pumped to a small nozzle system mounted behind the ducted fan. Provision can be made to inject powders into the liquid system to reduce airborne loss or unwanted distribution.

(For other airboat suppliers, see *WTT*'s Suppliers Guide in the December 1964 issue—Ed.)

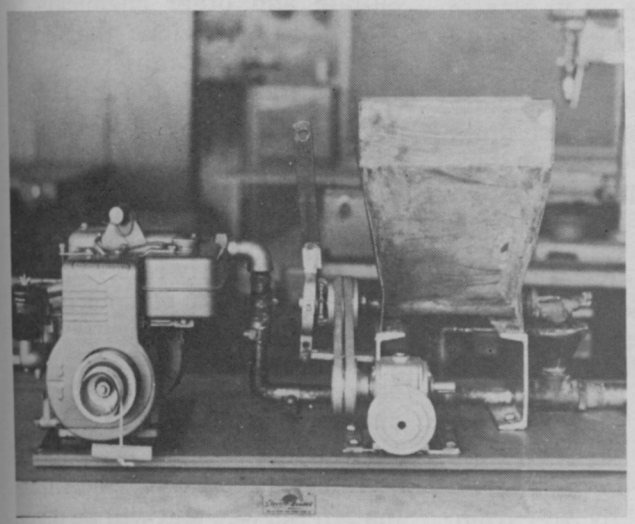
Underwater Delivery

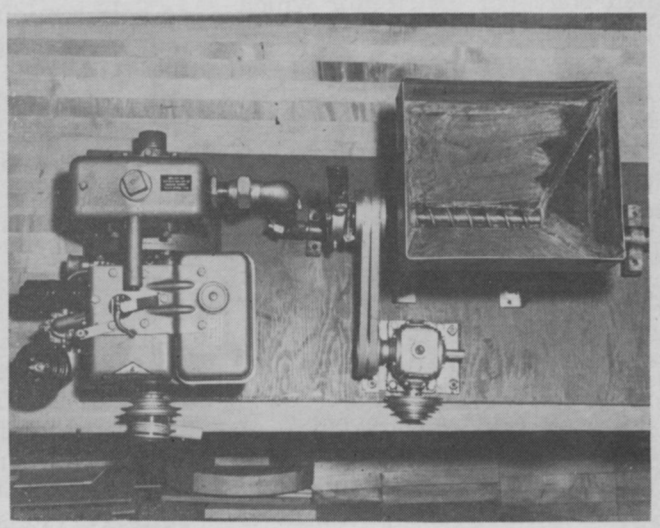
Although the majority of applications are concerned with the upper levels of water there are occasions where conditions dictate depositing a concentration of algicide within 6″ of the lake bottom. This is particularly desirable when controlling the snails and cercariae responsible for swimmer's itch.

The State of Michigan Water Resources Commission has developed equipment to release a slurry just above the lake floor.

The equipment consists of a Briggs & Stratton air-cooled gas motor coupled directly to a pump. This pump not only serves as an intake but the discharge is passed through a venturi to generate the pressure needed to carry the subsequent slurry to the outlet hoses. These

From basic boat-and-hopper outfits to such sophisticated rigs as those mounted on helicopters, aquatic weed controllers have a wide choice when deciding how to apply weed control chemicals. Above is equipment designed by the Michigan Water Resources Commission for combatting swimmer's itch. Helicopters, such as the one at right, are finding their way into the aquatic arsenal, although this particular unit is rigged for land use. Below are two views of a device built by the Michigan Water Resources Commission to deliver copper sulfate slurry to underwater outlets. Side view is at left, top view on the right of the page below. In this system, copper sulfate crystals are fed from hopper by worm drive to flushing cone where they are mixed with water and passed into a discharge pipe. A jet nozzle and venturi in the discharge line build up the necessary pressure to deliver the slurry under water. Water used in this process is drawn from the lake by a Homelite pump. Other methods were discussed in the first part of this article which appeared in February '65 WTT, page 18.





hoses are adjustable to serve a depth of 3′ to 12′. By means of a V-Belt, gear reducer and clutch, the motor also drives a worm-screw feed in the bottom of a hopper. This hopper is located over the discharge line.

The hopper is filled with granular material which is fed into the water discharge line by means of the worm.

The complete rig is mounted on two pieces of ¾″ marine plywood and clamped to the boat. A "Y"-connection on the discharge line leads two hoses to a seven-outlet pipe across the stern of the boat.

The rate of application is 2 lbs. per 1,000 sq. ft. of a mixture of 8 parts granular-grade copper sulfate with 1 part hydrated lime. The slurry is released subaqueously just above the beach floor which results in a concentration of 32 ppm in the first foot of water over the lake bottom, or 87 pounds per acre.

Belt Conveyor

Frequently it is desirable to utilize large crystals of copper sulfate penetrating to a greater depth before dissolving, particularly if deep water growths of weeds and algae are a problem. Conversely, at certain periods of the year, the fine grind is needed to combat microscopic organisms near the surface or in shallow areas.

The Department of Light and Power of the City of Los Angeles has designed and built a belt conveyor distributor which provides great flexibility.

By a minor adjustment of the feed slot the belt conveyor machine allows the operator a range of from 1.2 pounds to 200 pounds per minute in the feed of the chemical used. It is a light machine of approximately 120 pounds in weight and is in two sections, making it possible for one operator to transfer the machine from a truck to a boat if required. The belt conveyor feed operates very evenly. It drops the chemical into the propeller wash of the boat and the distribution of the chemical is not wholly dependent on weather conditions. The hopper is very low, 28″ from the boat deck, which means a minimum of effort required to fill the hopper with chemical. The belt conveyor trough is adjustable in height, and will fit the stern of practically any boat. This machine, after the initial adjustment of chemical feed, requires very little attention from the water-treatment operator. This allows the operator more time for directing the boat operations to get the required distance between boat lanes and full coverage of the reservoir.

Continuous Feed Solution

When it is necessary to maintain a constant copper (or other chemical) residual in a body of water, or when it is desirable to treat water being drawn from a stream, continuous feed equipment frequently will serve the purpose.

This is the second and final article on equipment available to contract applicators for application of chemicals to aquatic areas. Part I appeared in the February issue.—Ed.

Pondweed and duckgrass growths are controlled in reservoirs of the Los Angeles Water and Power Company using continuous flow equipment.

The solution feed units range in capacity from 1,200 to 15,000 pounds and are of sufficient size to hold a minimum of five days' supply of large copper sulfate crystals. This allows the operator to visit the installation on a semiweekly basis. These units consist of a redwood storage tank and a water supply tank. On opposite sides of the redwood tank 4″ by 6″ screenboxes are constructed extending the full depth of the tank. The lower section of each box is perforated with a number of ¼″ diameter holes. These are large enough to allow the free flow of inlet water and outlet solution but will restrict the large copper sulfate crystals (1″ by ½″) from clogging the inlet and outlet lines. The water supply is furnished by a constant level tank, and the flow is regulated by an adjustable outlet. All pipe fittings on the copper sulfate solution side are of hard rubber or plastic. The water level in the bottom of the redwood tank is maintained at a depth of about 12″. The rate of feed is determined by the flow of water from the adjustable head box through the tank, and the concentration of the copper sulfate in the saturated or nearly saturated solution is dependent upon the temperature of the water.

For treating water drawn from a river, the system developed by the Terre Haute Water Works is inexpensive to construct and requires no attention except for replenishment of the chemical.

The copper sulfate is added at a receptacle made out of a concrete tile, 18″ in diameter and 24″ in length, set on a concrete base, with a perforated copper ring installed at the bottom of the tile. An inlet line delivers the water supply to the copper ring, furnishing a jet action inside the tile, where copper sulfate is placed, resulting in the copper sulfate solution feeding continuously from the outlet, through a 2″ plastic pipe.

Flow of water from inlet line to copper ring is regulated to control feeding rate of the solution.

While this article has touched on some of the varied types of equipment used to apply copper sulfate and other chemicals to water, it is obvious that local conditions frequently dictate modifications of the machines and changes in operating procedures.

The Phelps Dodge Refining Corporation Information Service at 300 Park Avenue, New York City, is constantly receiving data on systems and equipment developed and used by waterworks and commercial applicators. The advent of advanced techniques and new developments relating to water treatment are part of continuing studies by the Information Service and will be made available to those concerned with water management.

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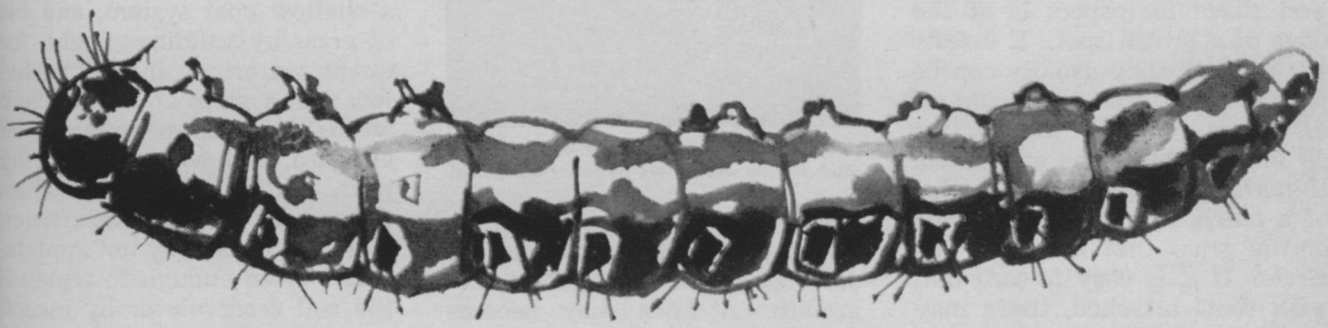

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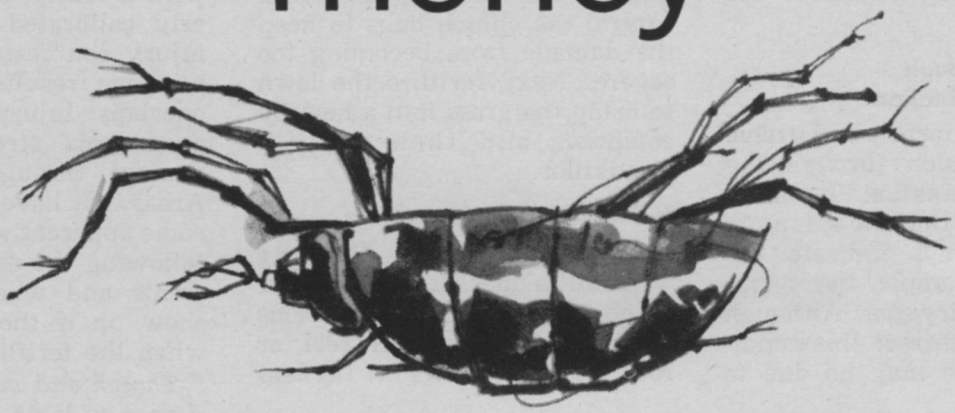


Chinch bugs and sod webworms in any turf and eriophyid mites in Bermuda grass. All three get their comeuppance when you use Ethion. Ounce for ounce no chinch bug killer outperforms it; one application can control up to six weeks or longer.

Ethion

fmc®

FAIRFIELD CHEMICALS, NIAGARA CHEMICAL DIVISION, MIDDLEPORT, NEW YORK

(from page 17)

disease. *Streaks* can be caused by careless application of chemicals, a dripping gas tank on the mower, or improper mowing. A *general decline* of the grass may be due to a shade condition, rhodesgrass scale, an excess of traffic, children's play, or a soil problem. Closely examine any unusual spots to determine if the grass is chewed, dead, wilted, or a yellowish-brown color. The best place to inspect is at the edge of a brown spot. If insects are present, they usually can be found in this area and a fungus disease is generally most active on the circumference of a patch. If nothing is found at the edge of a patch, try pulling up some of the grass that is left in the circle. If it is easy to pull out, with roots attached, there may be pests working on the roots. If nothing is found above ground, then use a shovel or a soil tube to look beneath the soil, sampling both good and bad areas for comparison.

Conclusion Through Process of Elimination

Consider all factors and arrive at the conclusion through the process of elimination. It should be pointed out that the symptom does not always indicate the cause. For example, the symptom may be a dry spot. Although water would correct this condition, the cause may be due to subsurface insects, compaction, layering, nematodes or numerous other conditions that affect root growth. A lawn may become subject to two or three problems at the same time. As an example, a lawn may have chinch bugs, weeds, and need fertilizing. Should this be the case, first control the chinch bugs to keep the damage from becoming too severe. Next, fertilize the lawn to bring the grass into a healthy condition, and then apply a weedkiller.

Chemical burns on this zoysia lawn in south Florida was caused by faulty equipment.

Mismanagement Symptoms

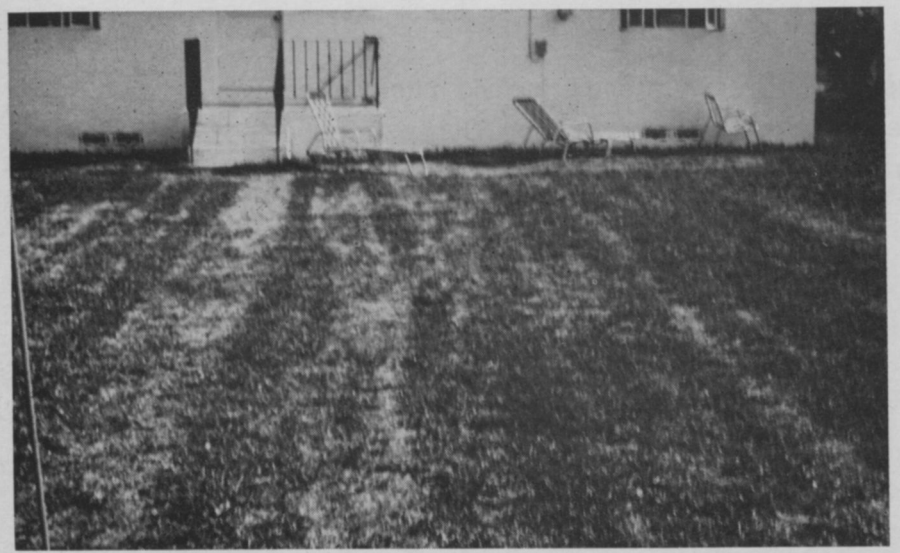
Improper mowing. Mowing with dull blades, at the improper height, or too fast, causes serious lawn damage. A dull reel or rotary mower chews off the leaf blades, leaving the tips split and giving the lawn a grayish-brown cast. A mower set too low scalps the lawn. Mowing too fast gives the lawn a ripple effect. Mower damage is increased if the grass is in a wilted condition at the time of mowing.

Improper watering. Frequent application of too much water usually results in a soggy soil under thin, yellowish grass. This condition does not allow the soil to drain properly and can result also in increased fungus activity, a shallow root system, and loss of grass by scalding. Light, frequent waterings induce a shallow root system and often cause weeds such as pennywort, dichondra, and watersedge to appear. Wilted grass, or localized dry spots, indicate insufficient watering caused by not applying water often enough to replenish the soil reservoir or by insufficient distribution of the sprinklers.

Improper fertilizing. When fertilizer is applied by hand or with a faulty, dirty, or improperly calibrated spreader, grass injury can result. Careless application results in misses and overlaps. Injury can show up as dead spots, streaks, or general damage throughout the lawn. Areas that have been missed become apparent within a few days following the application. Footprints and wheel marks often show up if the grass was wet when the fertilizer was applied.

Thatch and mat accumulation. A spongy lawn, especially if it's only one or two years old, indicates improper watering, fertilizing, and mowing procedures. Thatched or matted lawns are ideal habitats for insects and diseases and make control of these pests difficult. A spongy lawn is more susceptible to cold damage. Also, dry spots develop in thatched lawns because the water has difficulty moving into the soil.

Presence of weeds. Any management practice that reduces the vigor of the grass can pave the way for weed infestation. The presence of certain weeds often indicates corresponding problems. For example, ground



Irregular striations in this st. augustinegrass lawn were caused by 2,4-D improperly applied.

ivy (creeping charlie) or sandspurs frequently denote a need for fertilizer. Pennywort, dichondra, and watersedge show improper watering and poor drainage. Presence of spurge often suggests a nematode or compaction problem.

Improper chemical application. Chemical burns may be generally in a streaked or spotted pattern, and affect the soil as well as the grass. These burns usually are the result of improper calibration, careless application, or poor maintenance of equipment. Almost all pesticides used for the control of insects, diseases, and weeds can cause damage if directions for application are not followed. Careless application results in skips, misses, or overlapping. Burns also result from clogged nozzles and dirty or faulty equipment.

Common causes of chemical burns are: *gasoline* (filling a mower on the grass, or a leaking carburetor or gas line); *oil* (overfilled air-cleaner or adding oil while the mower is sitting on the lawn); and *grease* (excessive grease on fittings).

Common weed chemical damage. High rates of 2,4-D cause grass runners to become looped, the tips curl upwards, and the leaves become brittle. In severe cases there is a brown ring at each joint and the roots are usually dead. Improper rates of Simazine or Atrazine cause the grass to become yellowish with some leaves and stems dead. On st. augustinegrass, the healthy grass usually becomes susceptible to gray leaf-spot fungus.

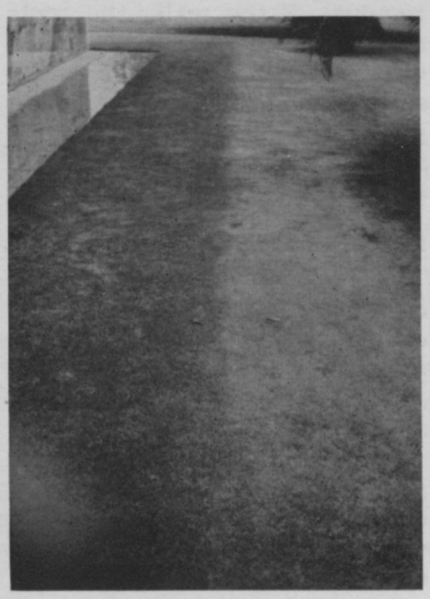
Incompatibility. Some insecticides, fungicides, weed chemicals, and liquid fertilizers are not compatible when applied together. As an example, fungicide containing mercury when applied with liquid fertilizer often will burn the grass. Carefully read the entire label before applying any chemical.

Miscellaneous Symptoms

Excessive traffic. Uneven distribution of traffic in children's play areas, around clothes lines, dog runs, or automobile parking areas causes the grass to become damaged in patterns associated with the cause. The symptom of excessive traffic is worn or ragged grass with loss of color. As the condition becomes worse, most of the grass is killed.

Grass not adapted to area. A general thinning of the grass, weak plants, or worn areas may result when the grass selected was not adapted to the area, or when the maintenance level is not adequate for optimum growth.

Dog damage. Brown spots which resemble disease damage are often caused by dog urine or feces. The grass in these spots often has a speckled appearance,



This drought damage to zoysiagrass was caused by nematode and mole cricket damage to roots. Areas protected from sun survived.

but also may be brown, bleached, or dead.

Salt damage. Usually occurs on grass where salt spray or water washes onto the lawn, such as on the ocean, gulf, or waterways. If the lawns are not watered with fresh water, the salt tends to accumulate, causing tip burns on the leaves of grasses that are more tolerant. On grasses not tolerant of salt, the grass declines and eventually dies. This same condition may occur when fertilizer is applied and a small amount of water added following the application. The tip burn usually shows up in two to three days. Water from swimming pools can cause grass to have a purplish-brown, streaked appearance if allowed to drain on lawns.

Shade. All lawngrasses in Florida need some sunlight. Heavy shade from buildings or trees cause the grass to become weak and thin and the stems and leaves tend to elongate.

Plant roots. Roots of many trees and bushes compete with grasses for water and fertilizer. The grass in areas where there is root competition usually is thin and does not hold its color or may wilt before other areas of the lawn.

Cold damage. When grass has been maintained under a low fertility level, the blades and stems turn a reddish purple with slight cold damage.

Frost damage. First symptom of frost damage is greasy-looking grass. Later the leaves turn a bleached brown. Frost damage is most likely to occur in areas of the lawn that are exposed, with dry soil, or thatched lawn.

Drought damage. Almost all lawns are subject to drought conditions at some time or other. This results from high temperatures and uneven rainfall distribution. Poor moisture retention is a cause in most Florida soils. Many times the same area of the lawn will wilt first. At first, the leaves roll up. If the condition continues, the grass turns brown or a straw color, and may die.

This is the first of two articles. Next month, author White will take up soil problems, nutritional symptoms, insects and diseases.—Ed.

Kansans Should Order Trees Now for Spring Planting

Orders for trees, shrubs, and stratified nuts to be planted this spring are being taken at county extension and soil conservation district offices throughout the state, Harold Gallaher, Extension Forester at Kansas State University, Manhattan, announced recently.

Interest in the Kansas tree distribution program has grown with each succeeding year. In the last 8 years, 8½ million trees, shrubs, and stratified nuts have been distributed in this program.

Tips on Parkway Trees Included on Varied Program For Calif. Nursery, Landscape Tree, and Turf Meet

By RICHARD D. VAN BRACKLE, Extension Information Specialist, University of California, Riverside

In selecting trees for parkway plantings, it is wise to consider tree selection, the size of the parkway, soil conditions, root structure, ultimate size, shape, freedom from pests, and habit of growth.

This is the advice of Robert N. Berlin, Parks and Recreation Superintendent for the City of South Pasadena. He spoke before nearly 1,000 delegates to the annual Nursery, Landscape Tree, and Turf Conference at the University Theatre, University of California, Riverside, Feb. 3-5.

Other topics on the diverse program included an updating on dichondra for turf areas, and observations on roadside maintenance.

In his talk on trees and sidewalk damage during the landscape tree portion of the 3-day program, Berlin said, "Many of us in the profession inherited a problem where trees were planted some 40 to 80 years ago. These trees were planted in parkways which were inadequate. Good examples of such trees are the Carob and Camphor trees which were planted in 3-foot parkways.

"Today, the crown of the tree is pushing up the sidewalk and breaking the curbs and gutters along the streets. The roots of such trees are reaching out many, many feet, raising even greater amounts of sidewalk, and in some cases, raising the pavement in the street."

Berlin described a new machine, similar to stump removers, which can go along the sidewalk edge and cut tree surface roots to a depth of 15 inches. He said the roots are cut on both sides of the sidewalk and upon removal of the walk, the roots are removed with little or no effort. With the machine, he said, it will be possible to do preventive maintenance which should cut down sidewalk damage from tree growths.

Dichondra Gaining Favor

Dichondra, a popular ground cover in California today, may even deserve greater popularity, according to Victor B. Younger, associate professor and turfgrass specialist at UCLA.

"We might expect that improvement such as introducing disease tolerance or reducing the seriousness of the common early summer decline will greatly increase dichondra's appeal and usefulness," Younger said.

Varieties of dichondra are being studied at UCLA, Younger revealed, as a possible road to improvement. "It is hoped and anticipated that disease tolerance, salinity tolerance, increased cold and heat resistance, and better growth habits will be found during these studies."

Roadside Maintenance Not Easy

It takes more than a gardener to maintain roadside plantings to achieve the required effect, California highway roadside expert John Smith told the assembly. Smith is Landscape Supervisor for the California Division of Highways, Los Angeles.

Smith said that the design of the road, size and shape of areas, plus the factor of autos traveling at terrific speeds close to the areas and the constant winds, all contribute to the maintenance problem, making it difficult to achieve what is expected by the architect who designs the roads, and by home gardeners.

Smith said that 14 years ago one landscape man maintained approximately 3 acres of highway landscaping; today, one man is maintaining an average of 10 acres.

"Maintenance of freeway landscaping is an expanding business and could be astronomical in cost if allowed to be a 'backyard' process," Smith said.

Chairman William B. Davis, Extension Ornamental Horticulturist for the University of California, said nearly 1,000 persons attended the conference, and that they included landscape nurserymen; commercial vegetation maintenance firms; superintendents of parks, cemeteries, and golf courses; and researchers from state agencies. The event was sponsored by the University of California Agricultural Extension Service and the Department of Landscape Horticulture, in cooperation with the California Association of Nurserymen, International Shade Tree Conference (Western Chapter), Street Tree Seminar, and the Southern California Turfgrass Council.

Error in January Issue Regarding Geigy Prometryne 80W

There was an error in the report of the Oregon Weed Conference on page 27 of our January '65 issue. In discussing Geigy Prometryne 80W for weed control in bluegrass grown for seed, it was mistakenly stated that the product was "recently registered in Oregon only for *preplant* weed control," and that "The company then *prescribes tillage for proper herbicide penetration* into the soil."

Actually, label instructions read as follows in regard to these two points: "Make applications after burning and 7-10 days after sufficient rainfall to germinate weeds or the first post-harvest irrigation. Application should be made before weeds are 1½ inches high. Additional important information: Grass should have a good burn and field should be worked with a tillage implement to scatter unburned crop residues prior to application to permit better herbicide penetration."

What Highway Supervisors Want From Contract Applicators

(from page 14)

their unwarranted fears, has become an important and sizeable requirement in our roadside program.

The areas of management of vegetation along present day thruways, freeways, parkways, turnpikes, and interstate highways are more extensive in width than formerly and must be administered more efficiently.

Thus, from a maintenance standpoint, it is imperative to fully comprehend this growing giant-in-breadth so necessary to erosion control. Therefore, we must devise new methods of control and improvise on the old, since increased competency in ways and means is the only procedure to extend the overburdened maintenance dollar.

Each individual highway must be designed in a tailored fashion according to the dictates of our surrounding terrain. The construction plans must include not only a complete highway, but, one possessing the many facets of built-in maintenance.

Experience has taught us that there is no single phase of our roadside development operations that can be termed a "cure-all" for a reduction in mowing costs. It is rather a well-planned combination of:

(1) Planting and mulching; (2) weed control; (3) soil sterilant; (4) contract mowing. This is the type of program we envision in Massachusetts.

U.S. Borax Offers "Maintain"

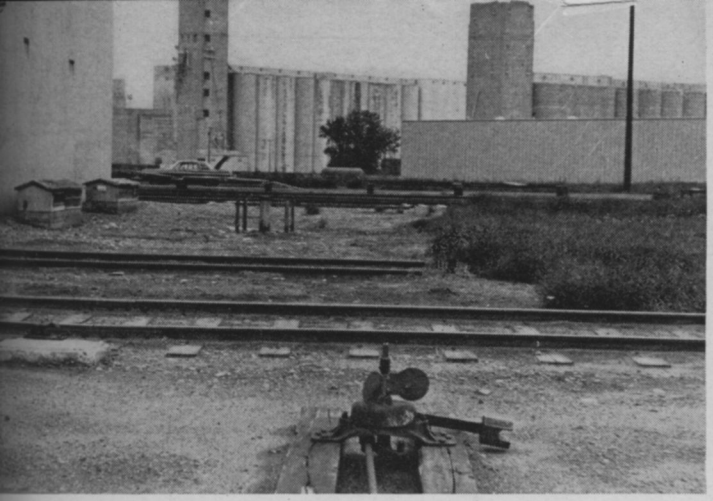
A new herbicidal formulation designed for use as a multipurpose weedkiller is now being marketed by U. S. Borax & Chemical Corp., Los Angeles, Cal.

Called "Maintain," the new weedkiller is described as a liquid emulsifiable concentrate containing 2 pounds of 2,3,6 trichlorobenzyl-oxypropanol, 1 pound of bromacil, and 0.2 pounds of 2,4-D acid equivalent per gallon.

Dr. L. M. Stahler, herbicide products manager for U.S. Borax, said extensive field tests showed "Maintain" to be a long-lasting, nonselective weedkiller for use where complete control of vegetation is desired, such as playgrounds, fuel storage areas, power transformer stations, industrial yards, railroad yards and general track areas, and along highway shoulders and bridges.

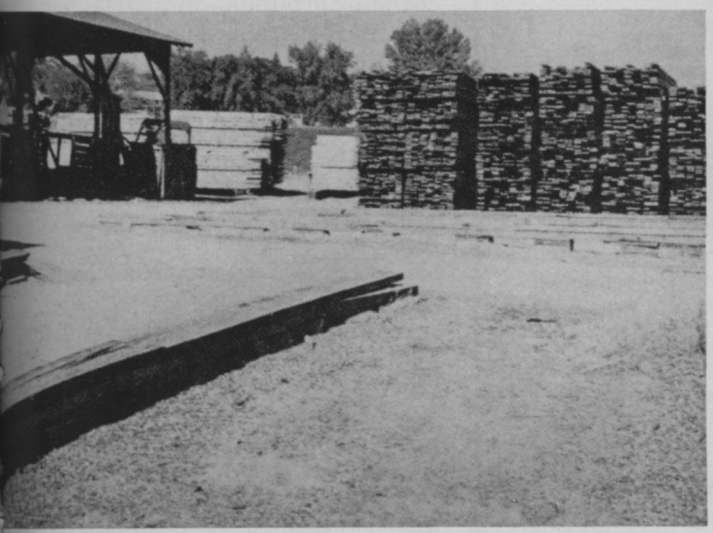
Stahler also says the new herbicide is particularly useful for control of those species which have shown a high degree of resistance to substituted urea and substituted triazine herbicides when applied at maintenance rates. "Rapid initial action and a quick knockdown of existing broadleaf vegetation is obtained at application time. In addition, the formulation has excellent residual effects in the soil," Stahler concluded.

Interested applicators may obtain complete details about this product by writing to U.S. Borax & Chemical Corp., 3075 Wilshire Blvd., Los Angeles, Calif. 90005.

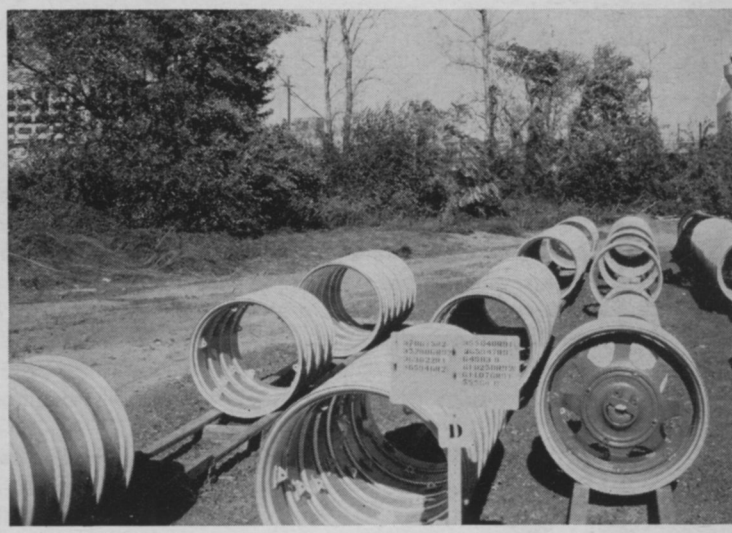


Control hard-to-kill perennial and annual weeds and grasses with new Hyvar® X-WS bromacil weed killer. Vegetation in the foreground and to the left above was effectively controlled with one application of "Hyvar" X-WS; area in right background was not treated. Maintenance cost is reduced by using long-lasting, effective "Hyvar" X-WS.

Easy-to-use "Hyvar" X-WS controlled weeds and grasses around the fence line. Once stirred into solution "Hyvar" X-WS doesn't require additional mixing or agitation. It's easily applied with simple equipment such as knapsack type sprayers. Expensive hand clipping is eliminated when you use "Hyvar" X-WS.



Fire-hazardous vegetation was controlled with Hyvar® X bromacil weed killer in the lumber yard area above. "Hyvar" X is a wettable powder formulation for use in sprayers equipped with adequate agitation. After application "Hyvar" X gives the same effective control as new "Hyvar" X-WS. All Du Pont weed killers are non-volatile, non-flammable, non-corrosive and low in toxicity to man and animals when used as directed.



Moisture-holding vegetation that tends to rust expensive equipment was controlled here with Karmex® diuron weed killer. "Karmex" is a versatile weed killer that gives long-lasting economical control of unwanted vegetation. By removing undesirable weeds and grasses in storage and other areas with "Karmex," employees' working conditions are improved and tool and material losses are decreased.

WEEDS!
A menace to everyone/profits for you

There's money in weeds, if you're on the right side of them. Du Pont weed killers make custom weed control jobs easy, effective and profitable for you. Check the typical problems pictured above. Chances are you'll see similar ones within a mile of where you're standing, and that you can solve them with Du Pont weed killers.

In addition to weed control, Du Pont Ammate® X weed and brush killer and Dybar® fenuron weed and brush killer offer your customers effective brush control. "Ammate" X is non-volatile... brush near crops or desirable plants may be sprayed without harmful fume damage when it's used as directed. On light-to-medium stands of brush, easy-to-use pellets of "Dybar," applied right from the package, do an effective job. For complete information, mail the coupon to Du Pont today.

On all chemicals, follow labeling instructions and warnings carefully.

DU PONT REG. U.S. PAT. OFF. **WEED & BRUSH KILLERS**

Better Things for Better Living... *through Chemistry*

Du Pont—Industrial and Biochemicals Department
Room 2311 B
Wilmington, Delaware 19898

Please send me more information on Du Pont Weed and Brush Killers.

Name _____

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WILD GARLIC

(Allium vineale)

Wild garlic (4) is a perennial which reproduces by aerial bulblets, bulbs (2), and rarely by seed. Its persistent hardshell bulbs are dormant, making it difficult to eradicate even though it is susceptible to common phenoxy herbicides. Found in lawns, grain fields, and pastures in sandy or gravelly soils, wild garlic is considered noxious in many dairy states because when eaten by cattle it imparts an onion flavor to milk. Wild garlic is sometimes found in blank spaces in lawns where disease, insects, or misuse have damaged the lawn. Vigorous competition of well-kept lawn grasses may partially alleviate the problem.

Beneath the ground each bulb (3) produces one stem. The stem is hollow, just like the common onion, and covered around the base with a sheath from the bulb. Leaves are slender, hollow, and emerge mainly from the bulb but also some come from the lower part of the stem. Leaves are grooved and without hairs.

Flowers (1) are borne in an umbrella-like pattern atop the main stem and are greenish pink to greenish white. Flowers frequently develop into small green aerial bulblets which can produce another plant.

Roots are fibrous and emerge from the bottom of an underground bulb which is covered with a thin membranous layer. Bulbs often produce smaller offset bulblets which are hard and dormant and add to eradication problems. Dormant bulbs may persist three years in the soil before producing a new plant.

A similar species which differs only a little is wild onion, *Allium canadense*. Wild onion has no dormant hardshell bulbs and is easier to control. Both species are less common west of the Mississippi Basin, but thrive in both the Northeast and Southeast.

Wild onion bulbs have a matted netlike covering. Wild onion will often have only two leaves arising from the base of the stem in the bulb and no more. Leaves of wild onion are flat but not hollow. Pinkish flowers also form small bulblets.

Both wild garlic and wild onion are susceptible to 2,4-D which gives a top kill, but will not destroy the bulbs. Bulbs resprout several months later and must be treated again with 2,4-D. Adequate control from re-treatments with phenoxy compounds may take 3 years.

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)

Rutgers Turfgrass Field Days Set for April 23-24

Noted for its up-to-date information on turfgrass production and maintenance, Rutgers University again invites turfmen, applicators, and others associated with the turfgrass industry, to attend its two-day turfgrass equipment and products field show scheduled for April 23-24.

Lectures and other educational programs are slated for this annual spring session being held on the campus in New Brunswick, N. J. The first day's sessions are directed to the professional man who associates himself with golf course maintenance, parks, school grounds, industrial, and plant research. The second day is for the general public.

Newest products of manufacturers and suppliers will be displayed.

For more information about this event write to Dr. Henry W. Indyk, College of Agriculture, Rutgers University, New Brunswick, N. J.

Manufacturers and suppliers who may still be interested in displaying products during Rutgers Field Days, may write Dr. Indyk for necessary application forms.

Tordon Weedkiller Report Heard by Calif. Ranchers

Successful eradication of three persistent weeds, in Tordon brush control tests conducted by University of California, Berkeley, were revealed at one of the past meetings of the Central California Brush Range Improvement Assn.

Not yet registered for use on crops or range, Tordon has shown effectiveness against Canada thistle, morning-glory, and Russian knapweed, William A. Harvey, weed control specialist in the Agricultural Extension Service, said. According to Harvey, it killed old chamise with a broadcast foliage treatment of one pound per acre. It also had good effect on some trees where treatment of a single axe cut produced an 80-90% foliage kill. Tordon is a product of The Dow Chemical Co., Midland, Mich.

Three powerful Hooker herbicides for noncrop land

These nonselective weed killers offer broad-spectrum weed control at a low cost.

Used along highways, fence rows, on railroad and industrial sites and other noncrop land, they control a large variety of deep-rooted perennial weeds under a wide range of climatic conditions.

Our new MBC(TM) is fast, easy, highly effective. It gives quick knockdown of vegetation and residual control of broad-leaved and grassy weeds.

Tritac(TM) is a very economical herbicide. As little as four to eight gallons can treat an acre for a season or more. Three formulations—liquid, liquid with 2,4-D, and granular—provide flexibility of treatment.

Hooker sodium chlorate, the original one-shot weed killer, has a forty-year reputation for efficient control.

Our agronomists will be glad to advise you on handling, storing and application of Hooker herbicides and to help with your weed-control problems. Please write Agricultural Chemicals, Hooker Chemical Corporation, 404 Buffalo Avenue, Niagara Falls, N. Y. 14302.

HOOKER
CHEMICALS
PLASTICS

AGRICULTURAL CHEMICALS

Bidrin for DED, Maple Disease Tips, Pricing Hints Conveyed to Arborists at 14th NAA Midwinter Caucus

By DANIEL DOWD, State University of New York, Farmingdale, L.I.

An impressive program that sprang into life despite last minute difficulties with the proposed convention hotel lured some of the nation's leading arborists to Tampa, Fla., for the 14th annual National Arborist Association Midwinter Meeting earlier this year.

Covered in the meeting at Tampa's International Inn were a new Dutch elm disease control called Bidrin, some expert advice on various maple disease problems, three different pricing procedures arborists encounter, and a host of other subjects both new and old. Local convention chairmen had been thrown into a frenzy at the last minute when a previously chosen hotel became unavailable because of operational difficulties. However, the meeting went ahead as planned at the new site.

Of particular interest to the technologist-businessman was a crack panel on the costs and pricing of some tree operations. Lead-off discussion, offered by William A. Rae, distilled his experience with tree moving and planting. Rae is with Frost and Higgens Co., arborists from Arlington, Mass.

Rae said unless estimating tree moving and planting contracts is based on accurate information and knowledge of costs, profit can be wiped out. Collected stock very often costs more per unit than nursery stock because of hidden factors, the expert cautioned. For example, a breakdown of cost figures on a linden, 8″-9″ caliper, showed that actual expense, including all costs, was over three times a nursery's catalog sum of $270.

To such indirect expenses as insurance and overhead, arborists must add the liabilities of transportation, preparation of hole, topsoil, mulch, tree wrap, and planting labor to the final tally before a profit can be determined. Sometimes it is advantageous, when doing a job a long way from headquarters, to hire local labor; it may even be advisable to lease local equipment, the Frost and Higgens expert proposed.

In the second round of the pricing panel, NAA first vice president Edwin E. Irish delivered his views on pruning and fertilization cost analysis. He's with Charles F. Irish Company in Detroit, Mich. The Irish organization is considered unique because it does only private work, a large part of which is with regularly established accounts. "We give priority to our old customers," the Detroiter revealed.

Irish said in his company's relationship with old, private customers, most times there is no contract price and services are computed on a time and material basis. Less than a third of his jobs are estimated in advance.

Some of the details presented were: Time is figured on a portal to portal basis. Air feeding with dry materials is at $35 per hour which includes time of three men and the materials used. Liquid fertilization is charged at 20c per gallon applied. A 20-inch tree takes from 70 to 80 pounds of air fertilization. Unit rate of fertilization is 41 pounds per crew hour.

For a look at the pricing patterns in spraying, bracing, and cabling trees, conference planners slated William P. Lanphear of Forest City Tree Protection Co., Cleveland, Ohio. Lanphear said 60% of his business volume is in elm tree care. For this elm work he considers a spraymeter of essential importance for measuring spray output. Time is recorded on color-coded sheets for each job. Records show gross value of work performed and of materials used, as well as direct labor costs. Lanphear also makes note of such costs as taxes on labor, trucks, etc.; insurance

Aerial Applicators Learn of Safety Needs

An appeal to help develop an effective accident prevention program which focuses more attention on "human factors engineering," was made recently to delegates of the 14th Annual Agricultural Aviation Conference at Texas A&M University.

Speaking on the subject "Accident Prevention," John P. Galipault, principal researcher for the Ohio State University Aviation Department said that state aerial applicator associations should co-operate closely with the federal government to formulate a "realistic set of pilot operating conditions and physiological limits."

Only Texas and California have regulations which require specific pilot competence, the speaker said; most states have little or no regulation of aerial application activities and pilot requirements.

The Civil Aeronautics Board and Federal Aviation Agency estimate that about 80% of all accidents are caused by pilot error.

In other talks to the assembly Dr. Dayton L. Klingman, U. S. Dept. of Agriculture, Beltsville, Md., offered "Research on Control of Weeds and Brush on Grazing Lands"; "Production and Distribution of Sterile Screw-worm Flies," by Charles L. Smith, USDA entomologist at Mission; and "Low Volume Aerial Spraying," by Kenneth Messenger, who is responsible for research at the USDA Plant Pest Control Division at Hyattsville, Md.

costs; depreciation; correspondence and record keeping; and other administrative expenses.

Bidrin in DED War

A new weapon which may help arborists wage successful war against dreaded Dutch elm disease is an organic phosphate compound, from Shell Chemical Company, called Bidrin. The new chemical was examined in detail by Dr. Hugh E. Thompson of Kansas State University in Manhattan.

Dr. Thompson said only expertly trained and experienced people are qualified to apply the new chemical, and that the correct dosage for trees is a critical one. Too little may fail to achieve control but too much may harm the tree, the KSU researcher maintained. Bidrin has a residual effect of four weeks, so timing is also crucial. Proper application time is when elms are in flower, Dr. Thompson said.

The material is packaged in specially designed capsules, color coded for different strengths, which can be attached to tree trunks for injection.

Dr. Thompson said the promising new material has received limited label approval and that Shell has printed recommendations for using the product. Use of Bidrin is limited to persons who have become qualified by examination, the Kansan said in conclusion.

Maple Ills Delineated

A variety of ailments which afflict maples in many areas, referred to variously as decline, blight, dieback, etc., were more specifically described by Dr. George H. Hepting, Principal Research Scientist, U. S. Forest Service, Asheville, N.C. Dr. Hepting said the problems are in fact: (1) New England roadside maple decline; (2) General maple decline in the Northeast; (3) Pathology of the sugarbush maples; (4) Insect-induced maple blight of northern Wisconsin; and (5) Sapstreak disease of North Carolina and the Lake States.

Factors related to the New England ailment are road salt application, road widening, asphalt applications, and snow plow damage, Dr. Hepting said. In Wisconsin, an epidemic of maple webworm was intensified by a simultaneous infestation of leaf roller. Defoliation and its side effects contributed to a general decline.

The sapstreak disease was shown to be concurrent with extended drought conditions. An overlying problem associated with decline of maples and other northern hardwoods is that of general attrition due to a succession of years with below-normal precipitation and above-normal temperature. Accumulated moisture deficits brought about a chain of adverse happenings which cause decline.

What the Utilities Want

A lecture of avowed interest to arborists, who traditionally reap much of their present income from utility work, was presented by P. C. O'Shee, Superintendent of Distribution, Alabama Power Company, Birmingham. O'Shee said fair prices, economical tree trimming, good public and customer relations, financial considerations about expensive equipment, and good line clearing supervisors are necessary to fulfill utility work. But he hastened to point out that it is indeed a "two-way street," and that the utility should have a supervisor who's trained in line work so he can work with the contractor; that the utility should realize the contractor must make a profit and pay for expensive equipment; and that personalities of foremen, owners, and utility personnel should be compatible.

He reminded the arborists that when they're out doing work for the utility, they are in effect working *for* the utility itself, and must be careful to create good impressions for the power company.

NAA officials told *Weeds Trees and Turf* that dates for next year's meeting will be announced on these pages at a later date. The NAA also meets jointly August 15-20 in Washington, D.C., with the International Shade Tree Conference.

Interested in keeping abreast of latest developments in turfgrass research, consulting agronomist Dr. Fred Grau took notes as Dr. Joseph Duich explained studies underway at Pennsylvania State University. Dr. Henry W. Indyk of Rutgers (extreme left); Warren Lafkin of Lawn & Garden Supply Co. (left of Dr. Grau); and Dr. Robert W. Schery, Director of The Lawn Institute (far right) also listened attentively to Dr. Duich's report. The address was part of Rutgers' turfgrass conference held on the campus recently.

Turf Expert Dr. Grau Has Advance Look into Future of Turf for Rutgers Turf Conference

A dramatic peek into the future of turfgrass management was offered 370 delegates to the annual Rutgers Turfgrass Short Course on the University's campus in New Brunswick, N.J., recently.

In his speech, "The Past and Future of Turf," Dr. Fred Grau, widely known consulting agronomist, said everything that has been done in professional turf management thus far is only a beginning.

Peering into his crystal ball, Dr. Grau predicted an exciting future which includes such developments as: use of high-frequency sound for mowing and controlling disease organisms; electronic formulation of fertilizer in accordance with soil test data; fertilizer ingredients with a steady release rate for 4-5 years; root zone placement of fertilizers; completely automated sprinkling systems designed to provide water as it is needed; electronically guided mowers; infrared heating of stadiums for the comfort of spectators and growth of green grass 365 days a year; synthetic grass substitutes; and controlled top growth of turfgrasses with the development of dwarf varieties as well as chemical growth regulators.

Also on the program for the annual Rutgers seminar was Dr. Henry W. Indyk, Extension Specialist in Turf Management at Rutgers. He discussed problems associated with sod production, singling out for comment weed infestation, uniformity of stand, maintenance practices, thickness of cut, sod placement, and harvesting costs as major problems confronting the sod producer.

The Turfgrass Conference is conducted under the leadership of Rutgers staffer Dr. Ralph Engel, with the assistance of Drs. C. R. Funk and H. W. Indyk.

ABC Compounding Represents Gabriel in Southeast

Gabriel Chemicals, Ltd., New York-based pesticides formulator, and ABC Compounding Co., Inc., of Atlanta, manufacturers and distributors of industrial chemicals, have formed an agreement whereby ABC Compounding will function as Gabriel sales representatives in the Southeastern United States.

In addition to representing Gabriel as sales agents, ABC Compounding will manufacture and warehouse various pesticide formulations under Gabriel's label and laboratory control.

Meeting Dates

New Jersey Certified Tree Experts Society Quarterly Meeting. Andrew Wilson, Inc., Springfield, N. J., April 19.

Triangle Turfgrass Assn. Regular Meeting. Green Hill Country Club, Louisburg, N. C., April 20.

Rutgers University Turfgrass Equipment and Products Field Day. New Brunswick, N. J., April 23-24.

Florida Turf-Grass Assn. Meeting. Sheraton Hotel and Plantation Field Laboratory, Ft. Lauderdale, May 6-7.

Florida Nurserymen and Growers Assn. Meeting. Sheraton Hotel, Ft. Lauderdale, May 13-15.

Alabama Nurseryman's Assn. Meeting. Admiral Semmes Hotel, Mobile, June 6-8.

Louisiana Nurserymen's Assn. Meeting. Municipal Auditorium, Lafayette, Aug. 5-7.

Southern Nurserymen's Assn. Meeting. Golden Triangle Motor Hotel, Norfolk, Va., Aug. 8-10.

Texas Association of Nurserymen. Shamrock Hilton Hotel, Houston, Aug. 15-18.

Midwest Regional Turf Field Days. Purdue University, Lafayette, Ind., Aug. 16-17.

Penn State Turfgrass Field Day, on campus, University Park, Pa., Sept. 15-16.

Ohio Agricultural Experiment Station. Lawn and Ornamentals Field Day. Wooster, Sept. 21-22.

Velsicol Offers Wall Chart

Turfmen can have a handy aid hanging right on their office wall, in the form of a new Turf Pest Control Guide, offered by the Velsicol Chemical Corp.

The chart measures 22½ x 35 inches and readily identifies 28 turf diseases, insects, and weed damage situations. Each illustration appears in four colors to further aid in quick identification.

For a free copy, write Velsicol Chemical Corp., 341 East Ohio St., Chicago, Ill. 60611.

Reports of the Georgia Clean Acres Weed Control Program were read by Georgia Weed Control Society president Virgil H. Young, Jr., (left), of Fort Valley. With him was visitor Dr. D. E. Wolf, president of the Southern Weed Conference. Dr. Wolf, from Wilmington, Del., is sales manager for duPont agricultural chemicals. He gave keynote address for the Georgia conference.

Georgia Weed Controllers Meet to Hear Results of New "Clean Acres" Program

By VIRGIL E. ADAMS, Extension News Editor, University of Georgia, Athens

Some crack Georgia weed controllers assembled February 24-25 in Macon to hear results of the "Clean Acres Program" launched by the Georgia Weed Control Society in 1963, at the same time the Society was organized.

Meeting at the Dempsey Motor Hotel, the Georgians learned more about Clean Acres, a project directed by the Extension Agronomy Department of the University of Georgia. Weed control specialists James F. Miller and W. H. Hogan are spearheading the project. Clean Acres is designed to saturate from 25 to 30 counties a year with the latest technology and research findings on chemical weed control. County agents use newspaper articles and pictures, radio and TV programs, banners, and other means to get the weed-destroying story across.

Keynoter for the conference was Dr. D. E. Wolf, president of the Southern Weed Conference and sales manager for the agricultural chemicals section of E. I. duPont de Nemours and Co. in Wilmington, Del. Dr. Wolf cited the dramatic advances in weed control which have marked our times and said, "There's no question of the tremendous interest in weed control, and likewise, there's no doubt that weed science is a healthy and dynamic field, particularly here in the South."

Looking to the future, Dr. Wolf stated that "the science of weed control is occupying some of the best and most creative minds in research, extension, commercial agriculture, and industry. No one branch of science and certainly no individual or business firm is going to have a monopoly on all the know-how."

New herbicide research was subject for two slide-illustrated talks delivered by these weed controllers. Left is Dr. Jack Thompson, agronomist with the Georgia Experiment Station. With him is Dr. E. W. Hauser, USDA researcher from the Coastal Plain Experiment Station.

Morton Introduces Two New Postemergence Herbicides

Introduction of two postemergence herbicides was recently announced by Morton Chemical Co., Chicago.

One of them, Mecopex, introduced on a limited basis last year, is a selective herbicide formulated and proven safe even for application on bentgrasses, Morton reports. It is especially useful for weed control in golf greens and fairways and other places where bent or other sensitive grasses are used. Mecopex is said to be effective on clover, chickweed, knotweed, and plantain.

Mecopar, the second herbicide, provides for broader spectrum weed control than Mecopex, while still retaining greater safety on sensitive grasses. Mecopar controls dandelion, lambsquarters, ragweed, and other weeds controlled by Mecopex, the company says.

Field tests by Morton's research personnel have shown Mecopar to be safe on bluegrasses, fescues, bermudagrass, and even bentgrasses at fairway cutting height. Both products are water soluble.

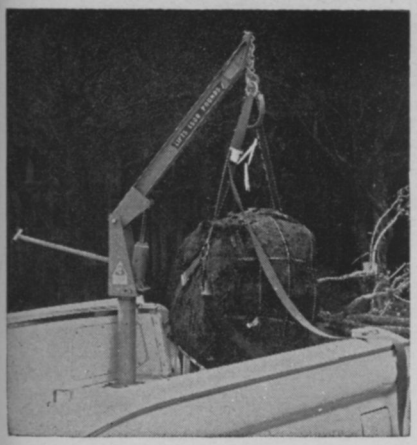
More details on Mecopex and Mecopar may be obtained by writing to Morton Chemical Co., Div. of Morton Salt Co., 110 N. Wacker Dr., Chicago, Ill. 60606.

Contree Offers Fiberglas Bin

A lightweight, transparent bulk fertilizer bin has been developed by Contree Sales, Inc., Columbus, Wis. Built of Fiberglas, this bulk bin will carry a payload of 1½ tons, the company says. Volume of the bin is 60 cu. ft.

The Contree bin weighs less than 200 pounds, making it possible for one man to load or unload it. Metal parts such as unloading gate and handle are made of stainless steel. These bins can be adapted for hauling or storage of liquids.

Further details are available to those who write Contree Sales, Inc., P.O. Box 129, Columbus, Wis.



Using an adjustable nylon sling to lift balled tree onto truck for transport to site of landscaping project cuts the task to a one-man operation, Ideal Crane company spokesmen say.

Lightweight Crane Gives Man Muscle for Heavy Lifts

A portable, hydraulic crane, which reportedly makes it possible for one man to lift up to 1500 pounds, is available from Ideal Crane of Tulsa, Okla. The crane can be installed on any truck and has a 360° turning radius. Another model has a hoisting capacity of 2500 pounds.

The 1500-pound capacity crane weighs 68 pounds, and is mounted in a pipe base which is welded or otherwise fastened to the truck body. Several of these pipe bases can be stationed at other locations: at loading platforms, at scales, on warehouse dollies, or on more than one truck. The crane can easily be placed where it is needed.

Lifting power is provided by a hydraulic ram. The company lists several lifting accessories, among them barrel chains and an adjustable nylon sling for hoisting balled trees, and other large shrubbery.

Complete data on this equipment, including prices, are obtainable by writing to Ideal Crane Div., Bert Parkhurst & Co., 15051 East Admiral Pl., Tulsa 18, Okla.

Dow Tests New Dursban

A new experimental insecticide shows promise for control of a variety of nonfood-crop insects, The Dow Chemical Co. announces.

Named Dursban, the insecticide demonstrates a broad range of effectiveness at low dosages during 3 years of research and development, Dow says. Dr. Henry E. Gray, of Dow Bioproducts research and development, reports research continues in the area of controlling chinch bugs and other turf and lawn insects, cockroaches and other household pests, and mosquitoes.

Further information about Dursban is available to those who write Dr. Gray or Milton B. Irvine at Dow Bioproducts Center, Midland, Mich.

Hercules Brochure Explains Rhap-Trol Spray System

A new, colorful brochure explaining the Rhap-Trol system of herbicide spray application has been published by the Hercules Powder Co.

This new system produces droplets of optimum size to control drift and assure more effective brush control, Hercules says. Droplets are formed in the chamber of a specially engineered nozzle as the herbicide is sprayed. There is no resultant product waste, according to Hercules.

The system can be used in both ground and aerial spraying programs. It is said to be particularly efficient in aerial spray programs since the controlled droplets are of a size that reduces drift caused by wind and air turbulence.

Applicators interested in obtaining a copy of "Keep the Herbicide on the Right-of-Way," (Form 400-722) may write to Hercules Powder Co., Agricultural Chemicals, Synthetics Dept., 910 Market St., Wilmington, Del. 19899.

Century Catalog Available

Wide-area sprayers, agitators, and special trailer mountings are among the many items featured in a new 20-page catalog recently published by Century Engineering Corp. For copies, write the company at Cedar Rapids, Iowa 54201.

Colorado Applicators Asked To Back Proposed Weed Laws

In a keynote address before the 17th annual Colorado Applicators Convention and Short Course, held recently in Denver, Byron G. Allen urged Colorado applicators to support suggested state legislation in enactment of uniform weed and pest control laws.

He was referring to the pest control compact drawn by a committee appointed by the Council of State Governments and a uniform weed law written by the National Association of State Departments of Agriculture. Allen, who is an assistant to Department of Agriculture Secretary Orville Freeman, further said that the pest control compact was designed to forestall the spread of pests from state to state and each state would contribute to a fund with the federal government providing matching dollars to finance campaigns against plant pests in any area.

He said chemicals used against weeds and insects "bear watching" for possible harmful effects to humans and animals, but there is no need for a "fear complex" about their use. He urged the industry to combat adverse attitudes through public education.

Paul W. Swisher, Colorado Commissioner of Agriculture, noted that only the uniform weed law was being considered at this time. The act would require landowners to kill or control noxious weeds under a control authority to be set up in each state to enforce the measure. Failure to comply would result in the authority hiring the work done and assessing the landowner for the cost.

During a joint session of the Colorado Aerial Dusters and Sprayers Association and the Ornamental Spraymen, Jim Omura, a national director of the Associated Landscape Contractors of America, read a report on the movement to establish a national spraymen's association. The assembly voted to support the movement without a dissenting vote.

Midwestern turf chiefs. Here are 1965-66 officers of Midwest Regional Turf Foundation, elected during group's annual conference at Purdue University, Lafayette, Ind., last month. Left to right are Dr. W. H. Daniel, Purdue turf specialist, exec. sec'y.; Norman Kramer, Point O Woods Country Club, Benton Harbor, Mich., V-P; and Morgan Boggs, Bunton Seed Co., Louisville, Ky., president.

Floridians Plan Best Turf Show Ever May 6-7 in Ft. Lauderdale

For the first time since its inception four years ago, the Florida Turf-Grass Trade Show will be held entirely in Fort Lauderdale. Scheduled to take place May 6-7, show activities will center in the newly opened Sheraton Hotel and the Plantation Field Research Laboratory.

A record number of registrants is expected to view the greatest number of turf product exhibits ever shown at the yearly affair. On display will be a wide range of equipment, chemicals, insecticides, herbicides, fertilizers and other products for use in Florida's $130,000,000-a-year turf industry.

The show will open with the traditional tours of turf plots at the laboratory showing the extensive research projects conducted during the past year. Tours are directed by Dr. Evert D. Burt, assistant turf technologist at the laboratory and co-chairman of the show.

Guided tours will be conducted for lawn maintenance men; park, cemetery, and athletic field directors; sod growers; horticultural spraymen; golf course superintendents; etc.

Special demonstrations are being added to the tours this year. These include demonstrations of sprayer-calibration techniques, methods used for measuring irregular areas for spraying and fertilizing purposes, and explanations of the various types of specialized spray equipment available to the professional sprayman.

Agenda for May 7 calls for an early morning start with an increasingly important business management clinic. Designed to assist the turf professionals in all phases of their business operation, the clinic will feature several speakers who will discuss the latest trends and thinking in business management with special reference to the turf industry.

During the course of the show several other groups will hold important business sessions, including the Florida Society of Golf Superintendents and the Horticultural Spraymen's Association of Florida (on May 7).

Additional information and preregistration forms for the show may be obtained by writing to the Florida Turf-Grass Assn., 4065 University Blvd. North, Jacksonville, Fla. 32211.

At Fairview Country Club,

Grass Stops Growing.

Elmsford, New York: Acres of hard-to-mow turf stopped growing this summer at the Fairview Country Club of Elmsford, New York. The grass was treated with MH-30®T by Club Superintendent Ted Joswick. Mowing costs were cut to a minimum.

Mr. Joswick reports: "We started using MH-30T experimentally ten years ago. We now use forty to fifty gallons per year on all areas that can't be cut with regular gang mowers — on steep banks, roughs, and around traps, rocks and trees. The savings in labor costs and machinery repairs are tremendous. And, of course, the always 'just trimmed' look MH-30T gives us, can't be measured in dollars."

Read about a revolutionary chemical that controls the growth of grass without harming it in any way.

An amazing chemical is dramatically reducing the expense of cutting grass throughout the country. This chemical is called MH-30T.

A single spraying of MH-30T controls the growth of grass for an entire season. Here's how it works:

MH-30T temporarily stops cell division (this is what makes grass grow). It does not affect cell expansion. This means grass can stay healthy and vigorous even though it does not grow taller.

The effects of MH-30T gradually wear off late in the growing season. And the grass grows slightly. (The actual amount of growth varies from region to region.) It may have to be cut once or twice a year. Three times if you're extra fussy.

Thousands of acres of highway grass in Connecticut have been treated with MH-30T. Now, mowing costs each year are $20 an acre instead of $70 in hard-to-mow areas. MH-30T is also controlling grass at golf courses, parks, cemeteries, military bases, and airports all across the country.

Find out what MH-30T can do for you. Fill out the coupon and send for our illustrated brochure.

MH-30®T

®MH-30T is U.S. Rubber's registered trademark for its maleic hydrazide.

U.S. Rubber, Chemical Division,
Dept. W4, Naugatuck, Connecticut

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Please send me a brochure on MH-30T. I understand that MH-30T is for commercial use only.

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ADDRESS_____

CITY_____ ZONE ____ STATE_____

How to put the finishing touch on any insect control program

DON'T RUN a needless risk. Complete your program by making sure that empty insecticide containers won't cause problems.

The picture above shows how easily a tractor wheel crushes an empty 5-gallon pail. Puncturing, burying, or burning are other positive ways to deal with containers or packages.

By eliminating the possibility of misuse of a pesticide container you protect yourself, your family, workers and livestock.

The destruction of empty containers—or disposal by other recognized methods—is one of the essential parts of any pesticide program.

To ensure safety and effectiveness throughout your program follow these simple steps: (1) read the label on any pesticide carefully, before you start, (2) follow the directions and precautions exactly, (3) make sure your application goes only on the crop to be protected; drift to neighboring cropland or streams is bad business, (4) never clean or flush out your equipment near a stream, and (5) complete the job by crushing and burying all small empty containers.

To dispose of drums: return them to the formulator, sell them to a cooperage equipped to decontaminate them, or destroy them according to procedures recommended by the U.S.D.A.

Play it safe and you do a great deal to ensure the efficient and profitable performance of any pesticide.

NATIONAL AGRICULTURAL CHEMICALS ASSOCIATION

Suppliers Personnel Changes

American Pulley Co. president John A. Brnich announces appointment of Charles A. Berry as sales manager of Hardie Products Div. in the Midwest. Berry was formerly midwest district manager for Hardie, and in his new position will be headquartered at the company's Philadelphia offices. American Pulley Co. is a division of Universal American Corp.

Niagara Chemical Div., FMC Corp., has added Dr. Loren K. Gibbons to its organic synthesis group of the research and development department. Gibbons will engage in the synthesis of potential fungicides for control of plant diseases. He received his Ph.D. degree in chemistry from the University of Kansas.

Pennsalt Chemicals Corp. recently appointed E. G. Warren to the post of product manager-inorganic chemicals for the industrial chemicals division. At the same time Donald A. King moved from product manager-inorganic chemicals to regional sales manager in Detroit.

Smith-Douglass Co., Inc., has placed Gerald D. Johnston in the Michigan territory to represent Nutro plant food. He was formerly with Heritage House Products, Inc. Donald O. Newhart has been named to represent Nutro pesticides sales in the Midwest. Directing private label sales for the entire Midwest is Hartl W. Lucks, whose new title is midwest manager, Nutro private label sales.

U. S. Borax & Chemical Corp. has appointed H. F. (Hal) Griswold to executive assistant to the marketing department vice president. Griswold was formerly with McCann-Erickson, Inc., Los Angeles advertising agency. Borax has also acquired the services of C. Wayne Jordan, agronomist, who will work at the firm's Auburn, Alabama, offices. Others involved in field moves include David V. Parker, who now heads sales of all the company's products, including industrial and agricultural chemicals.

Literature *you'll want*

Here are the latest government, university, and industrial publications of interest to contract applicators. Some can be obtained free of charge, while others are nominally priced. When ordering, include title and catalog number, if any. Sources follow booklet titles.

Canada Thistle and Its Control, 1963, 8 pp. il., 5¢, Catalog No. A 1.35:523, Superintendent of Documents, United States Govt. Printing Office, Washington, D. C. 20402.

Know Your Soil, Rev. 1963, 16 pp. il., 15¢. Catalog No. A 1.75:267/2 Superintendent of Documents, U. S. Govt. Printing Office, Washington, D. C. 20402.

Scale Insects on Shade Trees and Shrubs, Bulletin E-29, Agricultural Publications Office, Agricultural Experiment Station, Purdue University, Lafayette, Ind., 5¢.

Dyrene Turf Fungicide, 8 pp. il., Chemagro Corp., P. O. Box 4913, Kansas City 20, Mo.

Pruning Woody Plants, Extension Bulletin, 2 pp. il., Agricultural Extension Service, University of Delaware, Newark, Del.

General Contact Weed Killers, Bulletin C-447, Agricultural Experiment Station, U. of Cal., Berkeley 4, Cal.

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.

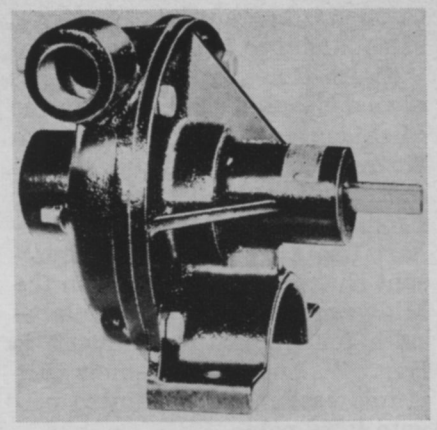
HELP WANTED

BRANCH MANAGERS, Connecticut through Virginia. To head operations for progressive national corporation specializing in professional management of turf, shrubs and ornamentals. Education, experience and/or interest in turf, horticulture or related fields desirable. Expert sales and technical training by top men in the field. Extraordinary opportunity for advancement. Excellent starting salary plus substantial commissions. Must be willing to relocate if necessary. Send resumé to: Charles W. Ridinger, Director of Personnel and Training, Turf Kings, Inc., 46 John St., Yonkers, N.Y. 10702.

QUALIFIED TREE SALESMAN to handle a territory approximately 25 miles. Starting salary $150 week, plus commissions. Company car furnished, vacations, excellent working conditions. Send résumé and references. All replies confidential. For those qualifying, expenses will be paid for personal interview. Write to: Mr. F. R. Micha, Sales Manager, Monroe Tree Surgeons, Inc., 2525 W. Henrietta Rd., Rochester, N.Y. 14623.

LANDSCAPE MAINTENANCE supervisor needed for hard work, mental and physical. A challenge to keep beautiful, Atlanta's finest industrial landscaping. If you have a happy family and 5 years' recent experience, apply Symmes Nursery, Inc., 650 Canterbury Rd., N.E., Atlanta, Ga. 30324.

FOREMAN OR SUPERVISOR needed by rapidly expanding tree surgery and weed control company in New York State. Experience in private work and utility work preferred but not required. Write Box 7, Weeds Trees and Turf magazine.



Model FMC all-iron centrifugal pump is ideally suited for spraying weed control chemicals, reports the Ace Pump Co., P.O. Box 1802, Memphis, Tenn. This new pump can be frame-mounted for use on self-propelled sprayers, for small-lot irrigation, or tank filling. Another feature is counterclockwise rotation (when facing shaft) making the FMC ideal for replacement of roller pumps, the company says.

DuPont's New Weedkiller Can Be Applied at Seed Time

A chemical to control crabgrass and other grassy-type weeds with a high degree of safety to turf, even at time of seeding, has been developed by E. I. duPont de Nemours and Co.

Called Tupersan, the new herbicide has been tested in greenhouses, field plots, lawns, and golf courses under a variety of environmental and climatic conditions for crabgrass control in turf. An outstanding feature of the chemical, du Pont spokesmen add, is its high degree of safety to many cool-season grasses. Its safety to newly seeded turf was demonstrated by mixing the chemical with seeds of many cool-season grasses, sowing them together, and producing crabgrass-free turf.

Tupersan was applied at five times the recommended rate without injury to established turf, du Pont says. The herbicide will not harm annual bluegrass (poa annua) or clover, and has been applied under many trees and ornamentals without injuring them, it is reported.

Interested applicators may obtain more information on Tupersan by writing to E. I. du Pont de Nemours & Co., Product Information Service, Wilmington, Del.

Advertisers

INDEX TO ADVERTISEMENTS

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the Sprayer with the VERSATILITY that pays off!

Myers DU-ALL Sprayers are the pick of professional applicators. Why? Because DU-ALL Sprayers provide the versatility that is so important for the many different spraying jobs a professional applicator is called upon to perform.

In the Myers DU-ALL Line, you can choose from wheel or skid-mounted models, pumps from 2-10 gpm and tanks in 150 or 200 gallon sizes. Boom attachments, guns and many other accessories are available as optional equipment. Myers also offers a full line of other sprayers that feature pumps with 2 to 50 gpm capacities, pressures to 800 lbs. and tanks in 12½ to 1,000 gallon sizes.

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Myers ...*the finest name in power sprayers*

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ASHLAND, OHIO / SUBSIDIARY OF McNEIL CORPORATION

This is WHITE GRUB DAMAGE. For the answer to it and other summer turf problems, see below:

White grubs and Sod webworms. For long-lasting protection from these and other turf insects apply Chlordane. Gets rid of moles and skunks, too.

Brown patch and Dollar spot (bluegrass). Apply Velsicol® "2-1" for effective, economical prevention or cure of these and other turf diseases. New formula provides improved wettability, better stability, and less foaming action.

Gray leafspot and Fairy ring. Velsicol® Memmi .8EC protects warm and cool season grasses from these and other turf diseases. Memmi .8EC is a *liquid* mercurial fungicide—mixes in minutes, needs no constant agitation, won't clog nozzles, leaves no sediment in spray tank!

Mouse-ear chickweed and Knotweed. Banvel® D 4S attacks weeds through leaves and roots, kills most species found in turf. Works in warm or cold weather!

Plantain. Banvel® D+2, 4-D combines the effectiveness of Banvel with reliable, versatile 2, 4-D to give you one-application control of practically every broadleaf weed found in turf. Saves time—gets the job done quicker at lower cost! VELSICOL®

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Gentlemen: Please send me your new Turf Chemicals catalog. WT-45

NAME_____
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Urox B New From General Chem.

Long-term, nonselective weed control may be achieved with a new, completely organic, soluble, liquid-type herbicide, according to General Chemical Division, Allied Chemical Corp.

Called Urox B Water Soluble Concentrate, the new weedkiller is fully soluble in any amount of water, General Chemical reports. It may be used in spray equipment having very little tank agitation, because, unlike wettable-powder-type products, once in solution it stays in solution, company officials say.

This new liquid herbicide, containing 4 pounds of Bromacil, is available in 1-, 5-, and 30-gallon steel containers. It is particularly applicable for industrial sites, railroads, and highways.

For complete details on this new product, write to General Chemical Div., Allied Chemical Corp., 40 Rector St., New York, N.Y. 10006.

Trimmings

On the Beam at Abalene. Back in the early days of this publication (which seems like ancient history now!) we wrote a small piece for this column about Abalene Spray Service, a large, multibranched contract applicator firm based in Poughkeepsie, N.Y. The firm was then expanding into weed control and now we learn, through the company's Robert C. Gardner, that a further step towards diversification has been taken with the establishment of a tree service division, which Bob manages. He spent 10 years with one of the leading pioneers in tree work and joined Abalene to set up the new division. In addition to tree maintenance, Abalene is active in industrial weed control, turf management, and aquatic weed work, Bob writes. He says he uses *WTT* as a sourcebook of information for his men, and comments about his company, "Quite an array of services, isn't it?" We wholeheartedly concur that they're all on the beam at Abalene!

* * *

Rest on His Laurels? *We doubt that Henry J. Kohankie, a retired nurseryman and horticulturist from Painesville, Ohio, is a man to rest on his laurels, although he was recently given an honorary membership in the International Shade Tree Conference. Henry, 77, still enjoys working around his grounds at home and keeps up to date on his profession. The award was presented by the Ohio ISTC chapter president M. W. Staples. Mr. Staples is city forester for Kent, Ohio, and an associate of the Davey Tree Expert Co.*

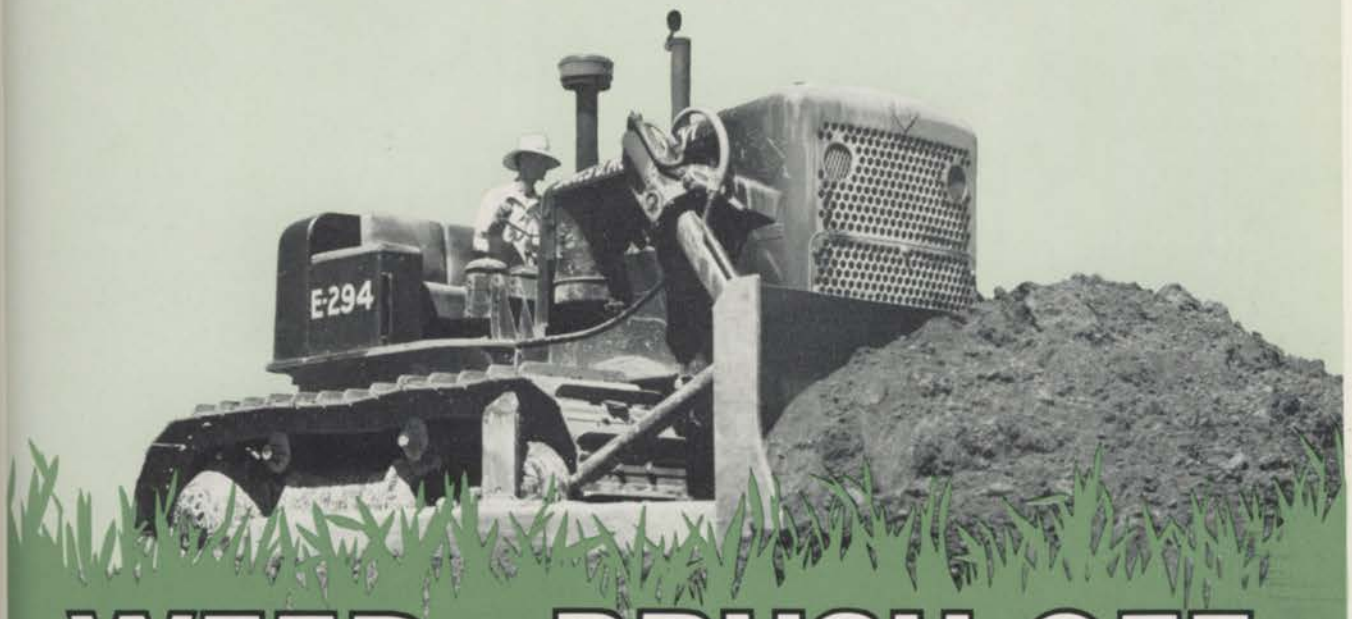
* * *

Omura the Merry. We've had a lot of correspondence in the last few weeks with Jim Omura, landscape contractor and versatile vegetation control expert from Denver, Colo. Jim just retired as president of the Landscape Contractors of Colorado, after two terms in the office. Kenneth Jenner, executive director of the Associated Landscape Contractors of America, had high praise for Jim's accomplishments in office, and we join our voices to the chorus of praise for his many contributions to industry advancement. He was succeeded to the LCC top post by Wayne Parr, landscaper from Englewood, Colo.

* * *

Huzza for Hafstad! *We understand retiring International Shade Tree Conference Midwestern Chapter president Dr. George E. Hafstad gave a truly inspiring welcome address during the group's meeting in Chicago earlier this year. Dr. Hafstad, who is Plant Pathologist with the Wisconsin Department of Agriculture in Madison, said, in closing his talk on the value of trees, "Cities now remove a tree because it is in the way of a utility pole. I long for the day when cities will remove the utility pole because it is in the way of a tree." Dr. Hafstad is noted for his long service to the furtherance of the appreciation of trees in the Midwest.*

there's an easier way to get rid of weeds and woody plants—without killing grass!



WEED and BRUSH OFF

Amine Formula 400

sprays away stubborn weeds quickly, safely!

WEED and BRUSH OFF is a fast-acting, liquid formula you can depend on to get rid of weeds and woody plants — **without damaging grass!**

Just apply with any ordinary spray equipment — quickly destroys such tough-to-kill weeds and woody plants as common chickweed . . . dock . . . plantains . . . ragweed . . . poison ivy . . . and sumac. Emulsifiable in water or miscible in oil — completely safe around humans and animals when used as directed. Concentrated power permits greater coverage — one gallon diluted in 100 gallons of water treats approximately 20,000 square feet.

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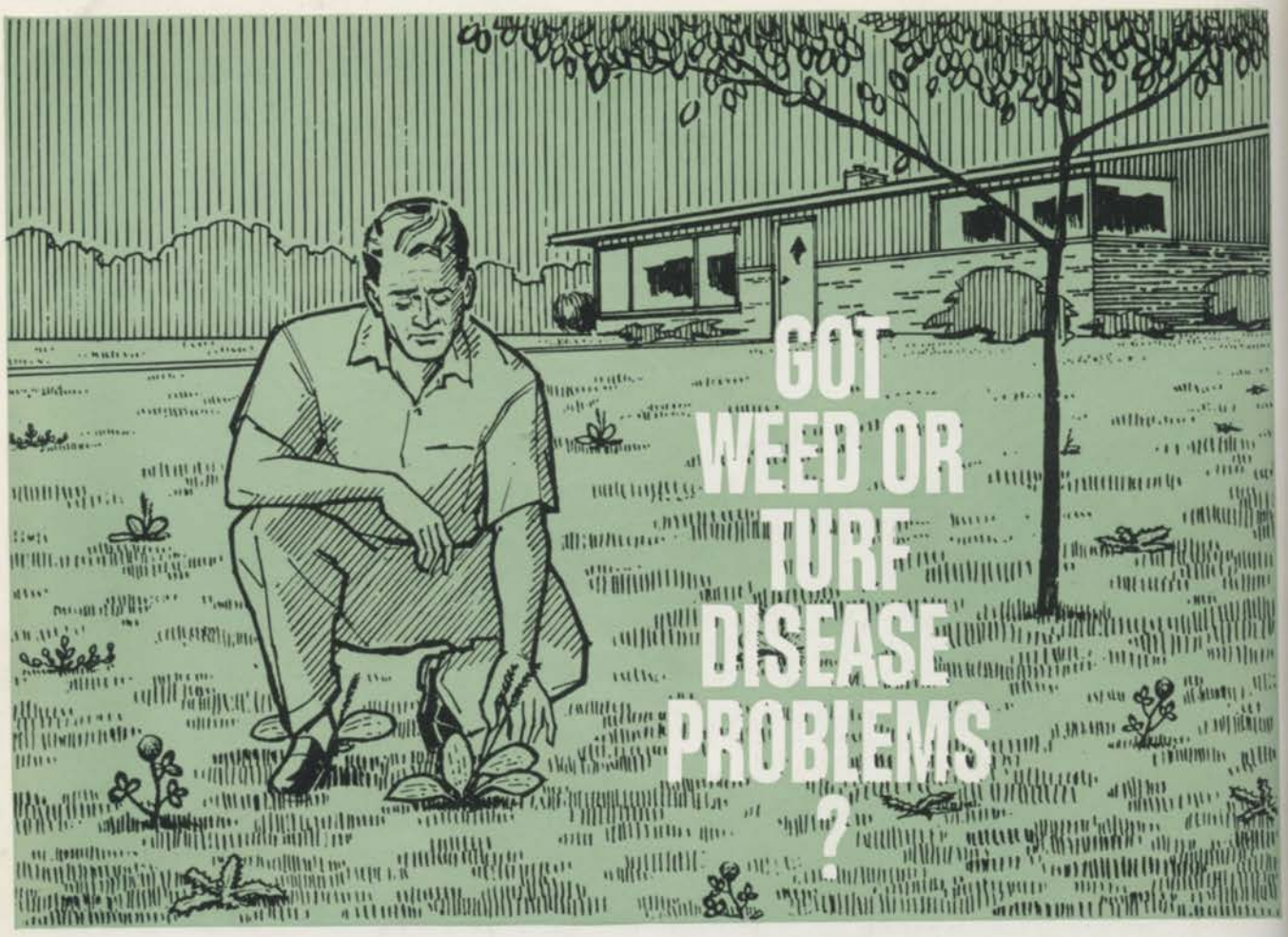

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