

# **WEEDS TREES and TURF**

A TRADE MAGAZINES, INC. PUBLICATION

January 1967

Special 1967

Weed Control Issue

Articles on:

**Rail, Industrial, Sod Farm Methods**


**Plus: Survey of New Herbicides, by F. L. Timmons**

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



# 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 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**

5923-632

# WEEDS TREES and TURF

FORMERLY WEEDS AND TURF

January 1967  
Volume 6, No. 1

|||  
want to know  
more about  
aquatic  
weed  
control . . . ?



. . . then our Applicator's Manual of Aquatic Weed Control offers you just the material you need.

. . . in 16 pages, entirely concerned with the practical aspects of aquatic weed work, Applicator's Manual of Aquatic Weed Control details growth habits and ecology of aquatic species;

. . . thoroughly discusses chemicals used in aquatic weed work;

. . . and concludes with explanations on equipment used to perform control measures. The final pages also include an extensive bibliography.

. . . if you've been contemplating expanding into aquatics and need some solid down-to-earth information . . . Applicator's Manual of Aquatic Weed Control will give you a firm grasp of this complex and stimulating phase of the industry.

. . . there's no substitute for this handy "hip-pocket" manual of aquatic weed fundamentals. Order your copy today . . . better yet . . . order one for each member of your organization.



**PRICES:** 1-10, \$1.00 each; 11-25, 90¢ each; 26-50, 80¢ each; 51-250, 75¢ each; 251-500, 60¢ each; 501 and over, 50¢ each; postage prepaid in the United States only. Supply is limited.

**ORDER NOW!**

## WEEDS TREES AND TURF

1900 Euclid Avenue  
Cleveland, Ohio 44115

Send me . . . copies of your aquatic reprint at \$. . . each. My check for . . . is enclosed.

Name .....

Address .....

City ..... State .....

### Features:

High Speed Spray Train Knocks Out British Railway Weeds By Gordon Fisher .....	6
Survey '67: New Herbicides for Noncrop Areas By F. L. Timmons .....	9
How to Stake a Young Tree By W. Douglas Hamilton .....	12
Portrait of an Industrial Weed Killer By Paul E. Pedersen .....	14
Match Engine Power to Pump Requirements .....	17
Herbicides for Sod Field Weed Control By Dr. John A. Meade .....	20

### Departments:

Editorial: Incident In Vermont .....	4
Meeting Dates .....	22
Know Your Species: Carpetweed .....	23
Monthly Insect Report .....	24
Classifieds .....	25
Advertisers Index .....	25
Trimmings .....	26

**JAMES A. NELSON**  
Editor and Publisher

**JOSEPH R. CORNER**  
Assistant Editor

**D. BUNKIN**  
Circulation Supervisor

Advertising Representatives  
National Headquarters  
1900 Euclid Avenue  
Cleveland, Ohio 44115  
Phone: Area Code 216+771-4169

Chicago 60601  
Peck & Billingslea, Inc.  
185 North Wabash Ave., Suite 1809  
Phone: 312+DEarborn 2-0292-93

New York City 10017  
Billingslea & Ficke  
420 Lexington Avenue  
Phone: 212+532-1632

WEEDS TREES AND TURF is published monthly by Trade Magazines, Inc. Executive, editorial, and advertising offices: 1900 Euclid Ave., Cleveland, Ohio 44115.

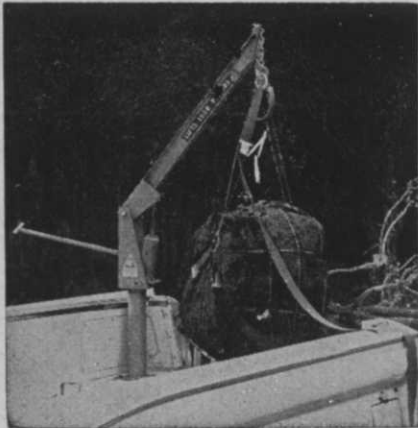
**Single Copy Price:** 50 cents for current issue; all back issues 75 cents each. Foreign \$1.00.

**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.

Contents of this Issue © Trade Magazines, Inc., 1967

## ONE-MAN HYDRAULIC CRANE

**Gives One Man the Strength of 10!**  
Easily mounted on any type truck. 360° Swing.



1500-Lb.  
Capacity

**\$119.50**

2500-Lb.  
Capacity

**\$169.50**

**BOTH  
COMPLETE  
WITH TRUCK  
MOUNT AND  
6' CHAIN.**

Equipped with ad-  
justable nylon sling  
Ideal Crane easily  
hoists balled trees  
onto truck.

Ideal Crane is portable. Place it on the truck, loading platform, or warehouse dolly . . . wherever it is needed. Pipe bases stationed at several loading points all use the same crane!

Many accessories available. Sold on a Guaranteed Performance Basis! Hundreds now in use throughout U. S. and Canada.

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

### IDEAL CRANE

15051 East Admiral Pl.

Telephone: 918 + GE-7-3313

A Division of  
Bert Parkhurst & Co.

Tulsa 18, Okla.

## Changing Your Address?

If so, notify our circulation department right away to be certain the magazine reaches you at your new location. The Post Office won't forward your copies. So when you write us, make it at least three weeks in advance of your moving date, and include your old address, as well as the new one. We'll see you don't miss a single issue.

Send old and new address information to:

**WEEDS TREES AND TURF** magazine

Circulation Department

Room 802

1900 Euclid Avenue

Cleveland, Ohio 44115

## Incident in Vermont

Pick up almost any magazine these days that is even remotely related to vegetation control, and you will find numerous admonitions for safe herbicide usage. Turn to page 22 of this issue, and you will find the following reminder: "Read the label. Observe all precautions and use herbicides wisely."

Almost every day, we receive quantities of news releases pertaining to chemicals and their application. Many, if not most, bear statements similar to the above. The few releases, which space limitations permit us to publish, usually have such precautions deleted in the process. Not because we don't believe in them, but because they're everywhere—and too often ignored. If repetition could assure their being followed, everyone who uses herbicides would be thoroughly indoctrinated by now.

We've all heard of the Mississippi fish kill and the dark forebodings of "Silent Spring." These constitute the more dramatic evidence of pesticide troubles. Frankly, we've heard too much of them, and have to admit to a preference for such "backwater" cases as the following, which recently came to our attention:

It happened in Vermont, where a dairy farmer sued a tree company for damages because the company had contaminated his waterhole by mixing herbicides uninvited. The farmer won a substantial judgment. And that is the substance of the entire case. Nevertheless, the suit made the *N. Y. Times*, which quoted this from Circuit Judge Harold R. Medina's appeal ruling:

"It seems to us to be just a bit silly to try to convince a jury of hard-headed Vermonters that it is perfectly all right to put a combination of chemical weed killer and No. 2 fuel oil into a farmer's water supply."

We think this summarizes the case quite well, and while hardly a dramatic occurrence, it does illustrate several very important points. One, it emphasizes the amount of publicity being given to chemical misuses. Two, it shows that people, whether sophisticated urbanites or Yankee dairy-men, will not quietly tolerate such misuses. And, three, it underlines the adverse publicity and substantial damage claims that responsible parties leave themselves wide open for.

We offer no admonition. We only remind the few applicators who are tempted to employ unsafe chemical practices of this Vermont incident.

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.

**Approves of Sod Editorial**

Your September editorial, Law Aids Sod Certification, was reviewed by this Department with sincere appreciation. It appears that your philosophy on how sod certification can assist the producer and consumer parallels our own thoughts. Sod certification programs will not be easy to establish. An entirely new group of purchasers will have to be educated in what certification means and how it will work in a marketing program.

It is gratifying that many other states feel certification can assist their sod industry and establish a grade of known quality. The one point we most strongly agree on is that sod certification will never succeed unless it is strictly enforced and relates a meaningful factor of quality to its product.

Your publication is most informative and well prepared, and is reviewed by many of my staff members.

*Phillip Alampi*

Secretary  
State of New Jersey  
Department of Agriculture

**Boosts Penngift Crownvetch**

Mr. Cott's excellent article on "Turfgrasses and Ground Covers" in your September issue was especially interesting to us because it mentioned crownvetch, which we have been studying since 1935, and which we were the first to produce in commercial quantities.

While Mr. Cott's loyalty to the Emerald variety developed at Iowa State University is quite understandable, you probably would like to mention to your readers that the Penngift variety is also performing well in Iowa and Nebraska, as well as in its native Pennsylvania and all across the country.

Whatever variety is used, crownvetch is serving well to hold soil in place; to revitalize unproductive land, to beautify roadsides, medians, rocky banks, slopes, and many other problem areas. It is gratifying to see our project come of age, and to find

crownvetch named among other useful plants.

*Mrs. Fred V. Grau*  
Secretary-Treasurer  
Grasslyn, Inc.  
College Park, Md.

**A Knotty Problem**

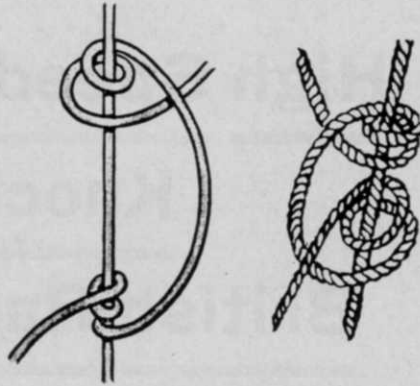
In your October issue, Mr. James W. Taylor brought out the fact that Mr. Bryan's climbing knot was tied wrong in the picture in your August issue. Mr. Taylor's knot is just as wrong. Attached is a picture of the correct way to tie a taut-line hitch. (Left in illustration below).

*Noah J. Green*

Green's Tree Service  
Savannah, Ga.

\* \* \*

Reading through your October "Mailbox," the picture of the taut-line hitch caught my eye be-



cause, instead of showing the correct method of tying this hitch, it illustrates clearly the results of improper tying. Enclosed is a copy of the taut-line hitch as published by the National Arborist Assn. in its safety booklet. (Right in illustration above).

*Ellis N. Allen*

President  
Massachusetts Arborists Assn.

We asked the advice of Dr. Paul Tilford, veteran tree expert, on this knotty problem. He replied:

I refer you to "Rope, Knots and Climbing," Tree Preservation Bulletin No. 7, National Park Service, for information on the taut-line hitch or tree climber's knot:

"The short end of rope protruding from the bowline-on-a-bight is then tied into a taut-line hitch around the ground rope . . . as follows: About 6 in. from the

bowline knot, wrap the short end counterclockwise twice around the ground rope, making the secondary wrap below the first. Then, continuing in the same direction around the rope, make 2 turns above the first 2, feeding the end under the short cross rope. When completed, the wraps should be—with reference to the time of wrapping—No. 3 on top, No. 4 next, No. 1 next, and No. 2 at the bottom. With the knot tied and tightened, the sling should be tested before swinging free. Always tie a figure-of-eight knot in the ground end of the safety rope to prevent the end from being pulled accidentally through the taut-line hitch."

The taut-line hitch illustrated in the National Arborist Association booklet, "Safe Practices for Arborists" is tied in this manner, and I am sure this is the generally accepted method.

**Organizing New Spray Group**

In your October issue, I read with interest reports concerning activities of spraymen's associations.

Several professional spraymen, including myself, have been working for the past three years to set up a local association here in Cincinnati. We feel there is finally sufficient interest to start things actively moving, and will soon be calling a meeting to organize.

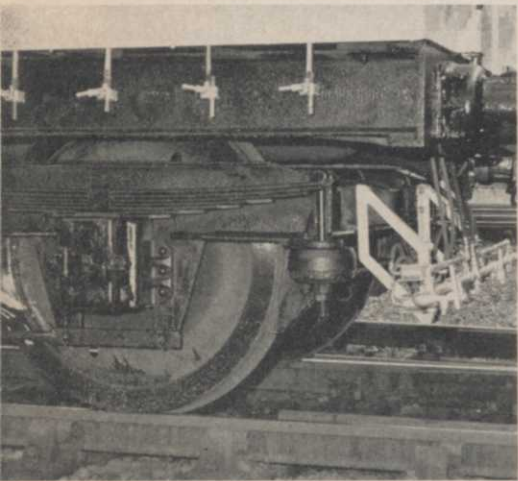
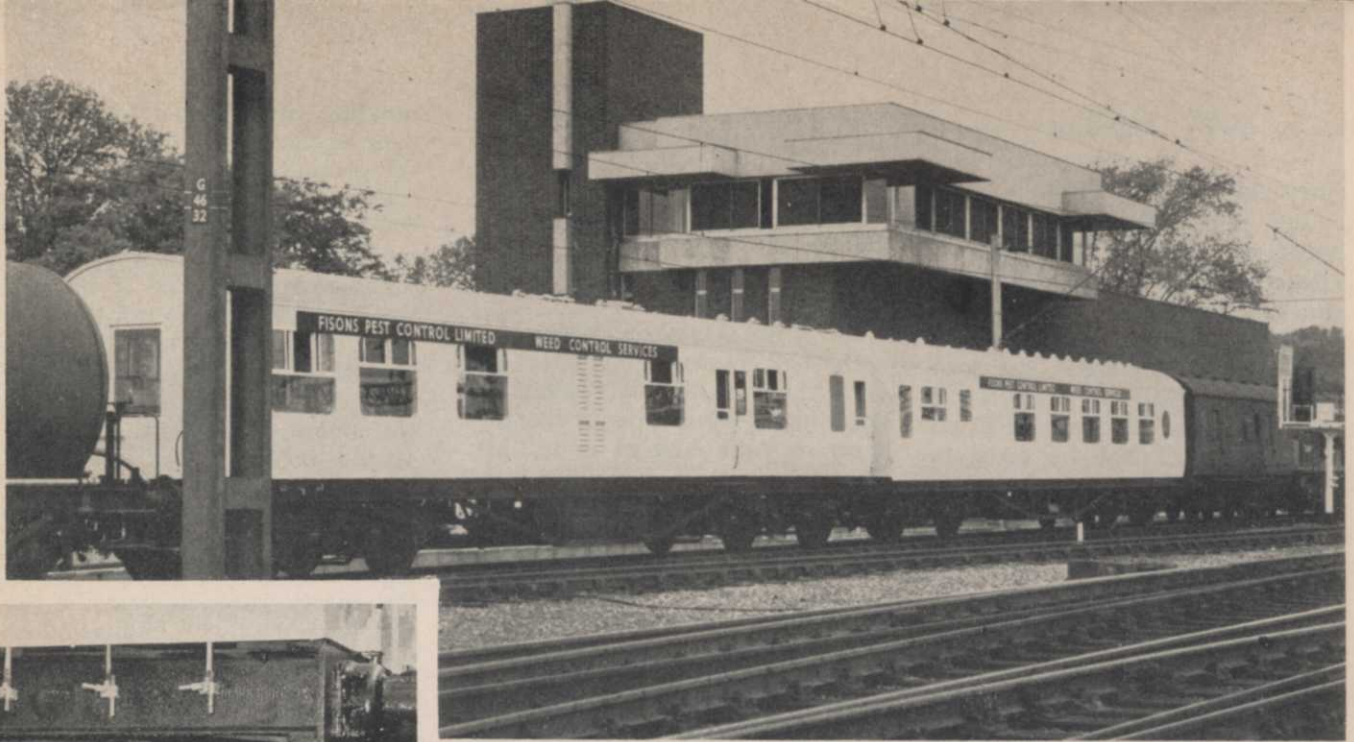
I am happy to see that progressive individuals and groups within our field are starting educational programs so that spraymen become fully aware of the importance of exercising rigid safety precautions when mixing and applying chemicals, and the need for keeping up-to-date on new methods and safer chemicals.

Congratulations on the excellence of your highly informative magazine.

*Ted M. Daalhuizen*

The Gro-Green Spraying Co.  
Cincinnati, Ohio

*Weeds Trees and Turf welcomes expressions of opinions from its readers. Send ideas and comments briefly as possible to James A. Nelson, Editor, Weeds Trees and Turf, 1900 Euclid Ave., Cleveland, Ohio 44115.*



Top photo shows general view of spray coach (left), and living coach (right). Underslung spray boom and adjustable side nozzles are seen in cutout detail.

# High Speed Spray Train Knocks Out British Railway Weeds

By

**GORDON FISHER**

Fisons Pest Control Limited  
Cambridge, England

BRITAIN has an intensive railway system, intensively managed. About one-sixth of the mileage of railroads in the U.S.A. is squeezed into an area less than that of the State of Illinois, and every mile has an average of 27 trains a day passing over it.

Sometimes in industrial areas traffic is so dense, and track maintenance so continuous, that weeds will fail to get a foothold, but this is exceptional. Generally, the moist climate and long growing season encourage a generous cover of weeds across the ballast and adjoining "cess" on either side—unless something is done about it.

The cess (like the berm on American railroads) is at a lower level than the stone ballast on one side and the grass edge on the other, and collects and holds weed seeds, soil particles, and moisture. Not surprisingly,

it favors a wide variety of weeds. Fortunately, the stone ballast beneath the track itself has much less moisture and organic matter, and is less of a weed problem.

### **Broadleaf Perennials Pose Biggest Problem**

Regular use of modern residual herbicides on British Railways has greatly shortened the list of offending weeds, which are now mainly broadleaf perennials, often with roots that penetrate beyond the range of surface applied chemicals, or with a creeping habit that allows them to readily invade the cess from the grass edge.

Horsetail, mainly *Equisetum arvense*, is probably the most

troublesome of all, with roots several feet below the surface and a high degree of resistance to residual herbicides. Other deep-rooted problem perennials are hogweed cowparsnip (*Heracleum sphondylium*), dandelion (*Taraxacum officinale*), coltsfoot (*Tussilago farfara*), and such creeping weeds as cinquefoil (*Potentilla* spp.), brambles (*Rubus* spp.), and especially field bindweed (*Convolvulus arvensis*). Grasses are seldom a problem, with the possible exception of couchgrass (quackgrass, *Agropyron repens*).

The range of weed species found and their susceptibility to herbicides is only part of the problem of railway weed control, which is as much concerned with application equipment, chemical supply, and above all with the varying daily and seasonal demands of railway traffic.

On the busy lines surrounding London, a very early start is needed to avoid rush hour traffic. We are typically on the job around 1:30 a.m. and finished with these lines by 5:30 a.m. There is a somewhat different, but no less urgent, traffic problem on Britain's newly electrified trunk route from London to the North via the west coast. One hundred and forty trains a day, most of them travelling at nearly 100 m.p.h., do not leave much time for a leisurely spray train, even though we have increased the speed of spraying up to 50 m.p.h. when necessary.

#### **Mechanization, Long-Term Contracts Replace Hand Work**

Chemical weed spraying trains have been used in Britain for nearly 40 years, but until recently weedkillers have usually been supplemented with some hand weeding by maintenance gangs. High labor rates and improved herbicides have made hand weeding increasingly unprofitable, and it is now disappearing completely. Mechanized track maintenance and the rapid spread of long-term weed control contracts relieve the railway engineer of most of his previous responsibilities for a specialized technique, which is, after all, little akin to track engineering.

Fisons Pest Control entered into weed control spraying on British Railways ten years ago, coinciding with the introduction of such residual herbicides as the substituted ureas and triazines. Spray trains existing at that time could deal only with solutions and new equipment was needed to suspend wettable powder formulations of the new herbicides.

Until a few years ago, spray trains were hired by British Rail solely to put down specified dosages of furnished chemicals. But, in 1964, the first two long-term weed control contracts on a "supply and apply" basis were introduced.

Once started, these contracts spread rapidly. The miles under contract speak for themselves: 2,000 in 1964, nearly 4,000 in 1965, over 8,000 in 1966, and a further substantial increase expected in 1967. Mechanization of track

maintenance and the proven ability of herbicides to control weeds throughout the year from one application have been the main factors causing this change.

Most of the contracts so far let cover between 500 and 1,500 miles of track, each for a period of three, four, or five years. On main lines, they require 98% weed control in the stone ballasted track, and 95% in the cess. British Rail's contribution is limited to programming spray trains once a year over all lines and to providing motive power.

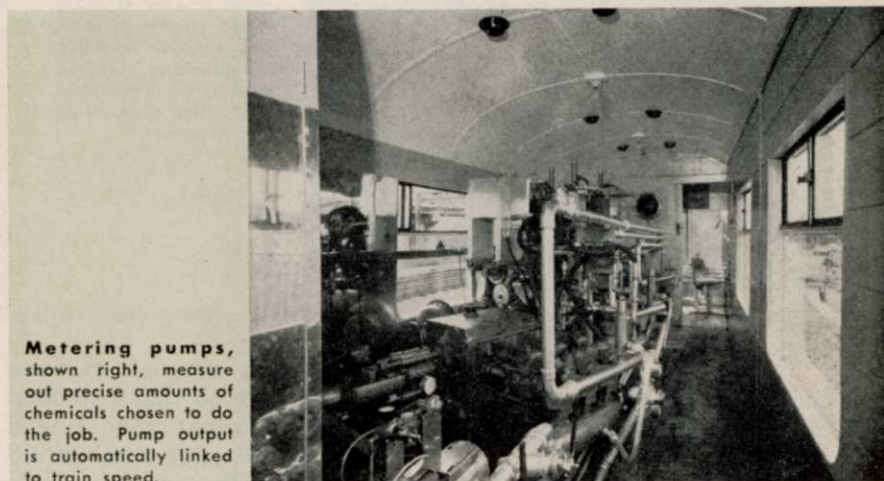
For the chemical supplier, these changes have emphasized two major requirements. First, the contractor must use the most efficient and economical mixtures of chemicals. And, second, he must have equipment to apply chemicals in the right place at correct dosage rates, and at all practicable speeds.

Chemicals we use are mainly atrazine plus amino triazole, with other additives when weed conditions demand them. Rates of atrazine application vary widely from as little as 3 lbs. active ingredient per acre for purely preventive control in stone ballast, up to 14 lbs. or more per acre when spraying heavy stands of weed in the cess, or berm. Rates are designed to give a full year's control to avoid being called back for expensive touchup treatment with hand sprayers.

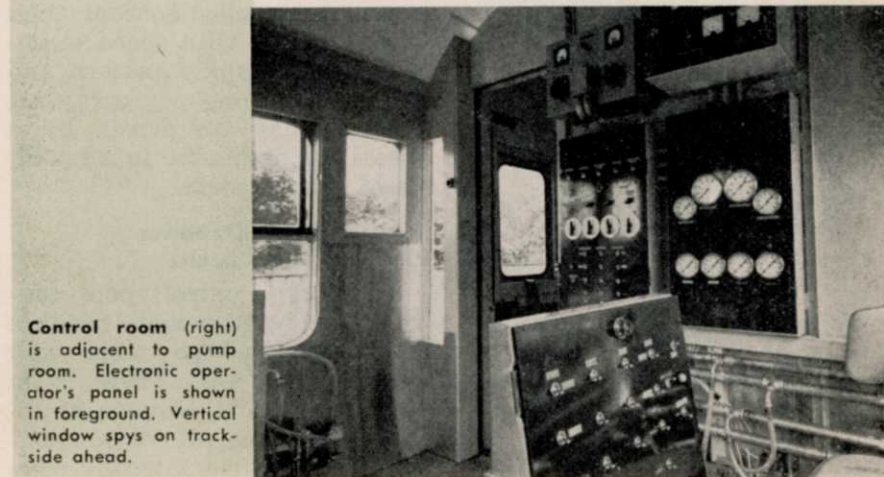
#### **Spraying Delayed Until Midsummer**

Weed growth in Britain's erratic climate starts any time from early March to mid-April, but we prefer to spray in June or July when even latecoming species have emerged and can take up the foliar-acting part of

### **Inside the Spray Coach:**



**Metering pumps,** shown right, measure out precise amounts of chemicals chosen to do the job. Pump output is automatically linked to train speed.



**Control room** (right) is adjacent to pump room. Electronic operator's panel is shown in foreground. Vertical window spys on track-side ahead.

chemical mixtures in such cases.

No pesticide is fully effective unless applied properly and seldom is this more true than with railway weed control. Aggravating the problem is the frequent conflict with railway requirements for minimum interference with traffic operations. Spraying usually involves a set daily program of 10 or 12 hours at varying speeds with limited stops for replenishing water and chemicals.

#### **Mark IV Train Offers Latest Spray Advances**

Successive spray trains developed by Fisons over the last 10 years have culminated in the Mark IV, recently built at a cost of over \$56,000. Comprising two 60-ft. coaches and three 40-ton

duce large-droplet sprays, and all nozzles point backwards to reduce shearing action of the wind on droplets at higher speeds. Varying wind pressures due to speed, change of direction, etc., can be compensated for at once by manual adjustment of the side nozzles. This design produces a very stable spray pattern that keeps drift to a negligible minimum.

Inside the spray coach, up to three different chemical concentrations are prepared in paired mixing tanks, each tank being used alternately. Any desired combination of chemical concentrations can be selected for various parts of the track and cess.

Chemicals are drawn from the mixing tanks by four metering

trical circuits. Special windows and cutaway portions allow operators controlling the side nozzles to have a clear view of the cess ahead. Any variation in weeds can be met by almost instant changes in chemical type or dosage.

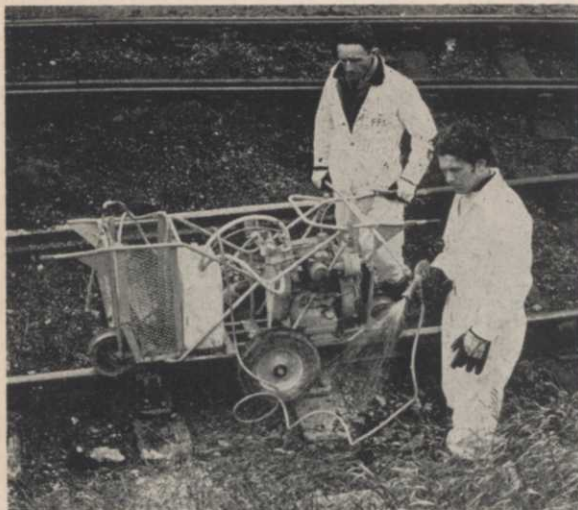
During a seasonal program, the spray crew can be virtually cut off, with "nowhere to go" even though they may cover 5,000 miles in the process. The 60-ft. living coach is designed to provide reasonable comfort for long trips, and contains a well-equipped kitchen, living room, and four separate bedrooms.

#### **Contract Work Extends To Yards and Sidings**

The trend towards long-term contracts on British Railways has not been confined to running lines. Weed control on many rail yards and sidings is now dealt with in this way. Here the problem is entirely different. Weeds are similar, but they often grow more strongly in a ballast fouled by soil and rubbish. In yard treatments, we usually use Kagolin, a one-pack mixture of atrazine, TBA, and MCPA, which gives foliar knockdown as well as residual effect.

Access for wheeled vehicles is a major problem in yards. Track centers are only 12 ft. apart, and some or all may be occupied by rail cars, leaving just enough space between for a man to walk. For treating these yards, we have developed a new self-powered barrow sprayer, which carries two 5-gal. cans with enough spray to cover  $\frac{1}{2}$  acre.

Output is from a single flood-jet nozzle on the front, which covers a 16-ft. swath and can penetrate between wheels of cars, etc. Alternatively, output can be from a hand spray gun with or without an extension tube. When working between occupied tracks, the barrow sprayer runs on rubber-tired wheels, but if tracks are clear these can be retracted and the sprayer steered along a single rail using the double-flanged wheels in front and back. Carts of the same type are used to take additional cans of spray mix from supply vehicles to sprayers.



**Barrow sprayer**, here shown in action, was specially designed to meet problem of heavy weed growths in yards and sidings. Operable on ground or track, the highly maneuverable cart shuns obstacles to get at weeds.

water tankers, the locomotive, two cabooses, and chemical storage cars are supplied by British Rail.

Mark IV has a three-man spray crew and can spray at speeds up to 50 m.p.h. Water capacity is 23,417 U.S. gals., giving a range of 250 miles at an average speed of 30 m.p.h. At the business end of the coach, there is an under-slung spray boom plus four long-throw nozzles set at floor level on each side. These can cover up to 10 ft. beyond the coach.

During operation the combined output of water and chemical from each nozzle is constant, giving the same spray pattern and droplet size at all speeds. Low pressures are used to pro-

pumps, which are driven from the coach axle so that chemical output is automatically linked with speed. Though total liquid output of each nozzle remains constant, chemical concentration varies widely with speed to ensure desired spray pattern and chemical volume per acre. All other pumps are driven by a diesel engine housed in a sound-proof compartment.

#### **Control Room Operates On Electrical Circuits**

The main control room contains nearly all remote controls for operating the train and spraying systems. There is an almost complete absence of levers and valves, all controls and systems being actuated by elec-



## Survey '67:

# New Herbicides for Noncrop Areas



Dr. F. L. Timmons, noted weed authority, discusses herbicides recently made available for noncrop applications, and offers some suggestions for their use.

By

**F. L. TIMMONS**

Research Agronomist  
Crops Research Division  
U. S. Department of Agriculture  
Laramie, Wyoming

AT LEAST 16 new herbicides and herbicide uses have been registered for weed control on noncrop, turf, and aquatic areas in recent years. Also, at least six new spray surfactants and systems of increasing droplet size in spray applications have improved the effectiveness of herbicides, or reduced the hazards of spray drift onto desirable vegetation, in or adjacent to the treated noncrop areas.

A number of restrictions have been made on uses of herbicides in noncrop areas, especially with regard to contamination of water for irrigation or domestic use. Many labels have been clarified and made more complete with regard to method, rate, time of application, and precautions for use.

The new developments I shall discuss have all occurred during the 4 years since completion of the manuscript for *Agricultural Handbook 269 "Herbicide Manual for Noncropland Areas,"* published in March 1965. It can be

Revised by the author from a paper presented on program of Division A-2, Land Use and Management, of the American Society of Agronomy meeting, Stillwater, Oklahoma, August 21-26, 1966. A brief abstract was published in *Agronomy Abstracts* 1966.

ordered from the Superintendent of Documents, Government Printing Office, Washington, D. C. 20250. Information on earlier herbicide developments can be obtained from this handbook. More recent developments, discussed here, will be included in a new agricultural handbook now ready for press.

### Inverts Cut Spray Drift

At least four formulations of invert emulsions of 2,4-D, silvex, and other phenoxy herbicides are now available. These formulations provide a more viscous spray, having smaller percentage of fine droplets. Usually not more than 1% of them are less than 800 to 1000 microns in diameter, and few are less than 200 microns. This greatly reduces the amount of spray drift, consequently reducing the chances of harming desirable vegetation in neighboring areas.

Two of the invert emulsions are applied by patented bifluid nozzle systems, in which the water from one tank and the herbicide from another tank are mixed at the nozzle. Other invert formulations are premixed with water and applied with conventional aerial spraying equipment, or by special devices such as a whirling disc.

A water-swellable polymer has been developed as a particulating agent for greatly reducing the drift of water soluble herbicide sprays. Special instructions given

on the label for mixing the compound with water containing herbicides must be followed for successful use. Spray applications of this material can be made by conventional equipment from which line and nozzle screens have been removed.

The chief advantage of invert emulsion (water-in-oil) and water-swellable polymer formulations is reduction of spray drift. Also, the large droplets dry less rapidly on the foliage and may aid absorption into plants. However, there have been no consistent increases in effectiveness as compared to standard (oil-in-water) emulsions of water sprays. There is a tendency for the more viscous emulsions and particulated sprays to give less complete or uniform coverage of sprayed vegetation. This sometimes results in less effective control.

New polyethylene glycol surfactants have been developed especially for use with wettable powder formulations. These surfactants also improve the effectiveness of some water soluble herbicides and some oil soluble herbicides applied in oil-water emulsions.

### New Herbicides Offer Promise

At least eight new herbicides have been registered during the past 4 years for weed control in noncrop areas such as ditch-banks, rights-of-way, fence rows, industrial sites, and tank yards.

Bromacil (5-bromo-3-sec-butyl-6-methyluracil) is a highly effective nonselective herbicide for control of a broad spectrum of annual and perennial weeds, at rates ranging from 3 to 6 lb/A\* for annuals, 7 to 12 lb/A for most perennials, and from 15 to 30 lb/A for resistant perennial grasses and broad-leaved species. These rates are considerably less than those required of most older nonselective herbicides.

Picloram (4-amino-3,5,6-trichloropicolinic acid) is an extremely potent and versatile new herbicide, available in liquid and pelleted formulations and in several mixtures with other herbicides. It controls such stubborn deep-rooted perennial weeds as Canada thistle, field bindweed, and Russian knapweed, at rates as low as 1 or 2 lb/A active ingredient (a.i.), applied on foliage in summer or on the soil in fall.

Picloram controls most broad-leaved annual weeds at rates as low as 1/2 lb/A a.i. or less. It is highly effective on many woody plants, but is no more effective on some herbaceous and woody species than are 2,4-D and other phenoxy herbicides. Picloram does not cause serious injury to grasses and grass-like plants except at high rates.

Picloram has a very low order of acute toxicity to animal life. However, because of its high potency on plants and its long persistence in soil, it must be used with extreme care to avoid spray drift onto desirable vegetation, contamination of water to be used for irrigation, or contamination of soil to be used for growing broad-leaved crops or ornamentals.

Prometone (2-methoxy-4,6-bis(isopropylamino)-s-triazine), a new industrial herbicide, is available in emulsifiable and pelleted formulations. Suggested rates are 10 to 15 lb/A for annuals and susceptible perennials, and 20 to 60 lb/A for resistant species.

DSMA and MSMA (disodium and monosodium methanearsonates) are recent additions to the

arsenal of herbicides for control of perennial and annual weed grasses, nutsedge, cocklebur, and puncturevine at 4 to 9 lb/A.

Paraquat (1,1'-dimethyl-4,4'-bipyridinium salt), at 1 to 2 qt/A, rapidly kills annual weeds and top growth of perennials. It is often used in combination with or preceding other herbicides that have a slower but more lasting effect on perennial weeds.

Ethylene glycol bis (trichloroacetate) is registered for use at 10 to 20 lb/A, to control annual and perennial grasses and cer-

butol (2,6-di-tert-butyl-p-tolyl-methylcarbamate) for preemergence application at 12 1/2 lb/A for control of crabgrass in established turf.

Bromoxynil (3,5-dibromo-4-hydroxy benzonitrile) has shown promise for control of annual broad-leaved weeds in seedling grasses, at 1/2 to 1 lb/A. One,1-dimethyl-4,6-diisopropyl-5-indanyl ethyl ketone has shown promise for control of crabgrass and goosegrass in established turf. Neither herbicide is registered for use at this time.

*EDITOR'S NOTE: The following list of trade names of herbicides and adjuvants mentioned in the accompanying article is presented for the convenience of readers who are more familiar with trade names than with common or chemical names.*

#### Common or chemical name

ammonium sulfamate  
bromacil  
bromoxynil  
dichlobenil  
dimethylamine salts of endothall  
DSMA  
ethylene glycol bis (trichloroacetate)  
fenac  
invert emulsions (examples)  
    applied with bifluid nozzles  
    applied with conventional nozzles  
MSMA  
neburon  
norea  
1,1-dimethyl-4-6-diisopropyl-5-indanyl ethyl ketone  
paraquat  
picloram  
polyethylene glycol surfactants (examples)  
prometone  
siduron  
terbutol  
2,3,6-trichlorobenzoyloxypropanol  
water-swallowable polymer (example)

#### Trade name

Ammate X-NI  
Hyvar X  
Brominil  
Casoron  
Hydrothol 191, 47  
Ansar 184  
Glytac  
Fenac  
  
Instemul, Visko-Rhap  
Envert, Verton  
Ansar 529, 170  
Kloben  
Herban  
  
Sindone  
Paraquat  
Tordon  
Plyac, WK Surfactant  
Pramitol  
Tupersan  
Azak  
Tritac  
Norbak

tain broad-leaved weeds. Two,3,6-trichlorobenzoyloxypropanol is registered for use at 4 to 9 lb/A for control of deep-rooted perennial weeds.

#### Herbicides for Annual Weeds

Several new herbicides are available for control of crabgrass and other annual weeds in turf. One is siduron (1-(2-methylcyclohexyl)-3-phenylurea), at suggested rates of 4 to 12 lb/A, in new spring seedings, and 16 to 24 lb/A in new fall seedings and established turf. Another is ter-

Neburon (1-butyl-3-(3,4-dichlorophenyl)-1-methylurea) at 8 lb/A, norea (3-(hexahydro-4,7-methanoindan-5-yl)-1,1-dimethylurea) at 4 to 6 lb/A, and dichlobenil (2,6-dichlorobenzonitrile) at 4 to 6 lb/A a.i. have recently been registered for pre-emergence control of annual weeds in woody ornamental, shelter-belt, and nursery plantings. Dichlobenil at 4 to 6 lb/A a.i. applied as a granule formulation in midwinter is also recommended for control of quackgrass, nutsedge, and mugwort in

\*Rates of application are of commercial formulations unless specified as active ingredient (a.i.).

shrub and tree plantings.

A granular formulation of dichlobenil is registered for control of certain submersed aquatic weeds. Applications of 7 to 10 lb/A a.i. are recommended on exposed bottoms or shorelines of ponds or lakes. Rates of 10 to 15 lb/A a.i. are recommended for applications made over the water surface in early spring before the weeds begin rapid growth.

A liquid formulation of fenac (2,3,6-trichlorophenylacetic acid) is registered for control of submersed aquatic weeds in ponds and lakes from which water is not used for irrigation. Applications of 10 to 13 gals. of fenac per acre in 50 to 100 gals. of water are recommended on exposed bottoms or shorelines of ponds and lakes. Water should be kept off of treated areas for at least 3 weeks (or longer in regions of low precipitation) to allow time for the slowly soluble herbicide to become thoroughly fixed in the surface soil by rain or snow.

Two new dimethylalkylamine salts of endothall (7-oxabicyclo (2.2.1) -heptane-2,3-dicarboxylic acid) are now available for control of submersed aquatic weeds and algae. They are effective on weeds at much lower concentrations than are the potassium and sodium salts of endothall that have been in use much longer. However, the amine salts are not safe for fish, whereas the potassium and sodium salts do not injure fish.

#### Aquatic Herbicides Restricted

The most important recent development affecting control of aquatic and bank weeds has been the restricted use of herbicides in or near canals, ponds, lakes, and streams. Most herbicides approved for control of aquatic or bank weeds include on the label the warning: "Do not contaminate water to be used for irrigation or domestic purposes." These restrictions are imposed, not because the herbicides are known to be toxic to warmblooded animals, but because not enough information is available to make certain that they are not toxic. One notable exception is a formulation of ammonium sulfamate which is registered for weed and brush control around domestic

water supplies, lakes, and other bodies of water. Copper sulfate, the herbicide used extensively since 1904 to control algae, is still permitted in domestic water supplies at concentrations up to 4 ppmw of copper sulfate pentahydrate, equivalent to 1 ppmw of copper ion.

Some research has been initiated to determine the fate of certain herbicides in irrigation water, bottom soil, aquatic plants, and in certain crops and soils irrigated with treated wa-

ter. Probably much more such research will be necessary before adequate use of effective and safe herbicides will be permitted for control of aquatic and bank weeds.

#### Illinois Turf Course Set

The University of Illinois will conduct its Third Turf Short Course from Jan. 30 to Mar. 10 at the University. Contact Short Course Supervisor, 104 Mumford Hall, University of Illinois, Urbana, Ill., for more information.

## Did you ever use a BUFFALO



for Shade Trees  
Seeding

Weed Control

Mosquito Control

Fly Control

Pest Control

With their minds on economy but yet getting value for every dollar spent, more and more arborists and pest control contractors are turning to Buffalo Turbine Equipment. Whether it's a sprayer, duster, or combination, Buffalo Turbine has a model to fit your needs and your budget.

One machine does the work of several with one man to operate most models. A Buffalo Turbine does not sit idle as there is a need for it most months during the year. Write for details today, giving your needs. We'll be glad to send you full details.



**BUFFALO TURBINE**  
Agricultural Equipment Co., Inc.

Industrial Street  
Gowanda, New York  
Telephone: 716 + 532-2272

# How to Stake A Young Tree

By  
**W. DOUGLAS HAMILTON**  
Farm Advisor  
Alameda County, California

LET'S begin this discussion of staking street trees by assuming that staking is unnecessary. It costs a lot of money; it takes time to stake and restake a tree; farmers rarely stake any of their orchard trees. Why, then, is it necessary or even a good idea to stake landscape street trees?

To get the answer, let's compare orchard with street tree plantings: In both situations, there is a limited root system for the size of the tree. However, farmers often cut new trees 18

The author wishes to acknowledge the assistance of William B. Davis, Extension Ornamental Horticulturist, University of California, in preparing this article.

to 30 in. from the ground at planting time. Street tree planters, on the other hand, often leave all top growth on trees as they come from the nursery, so that the problem of a limited root system is more acute.

Orchardists want low-headed trees. Street trees must be headed high, which presents the built-in necessity of supporting the head against wind and keeping it upright until the root system is large enough to do the job. Also, the long, thin main stem of the new street tree is often simply not strong enough.

An important difference between orchard and street tree

plantings is the "after planting human element." In short, street trees are wide open to frequently unintentional damage or destruction by cars, lawnmowers, children, etc.

## Staking Is Necessary Evil

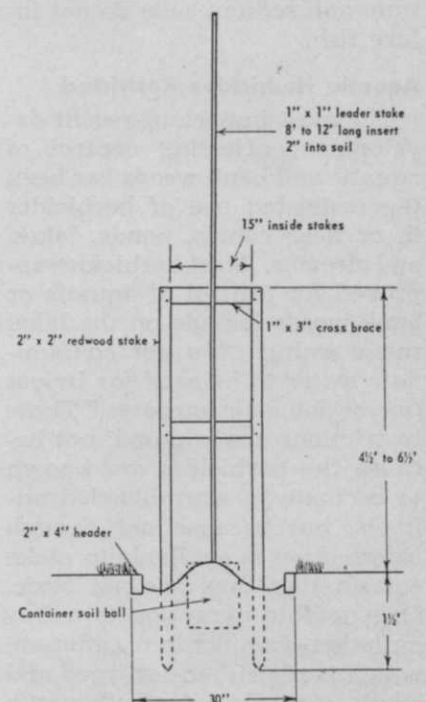
Staking street trees appears to be a necessary evil. Once this is accepted, the next step is to determine how to do the job effectively for the least cost. It is important, then, to consider the requirements for a proper staking job. Effective staking must:

1. Last at least three years in the landscape.
2. Support the young tree, but allow it flexibility, particularly in the head.
3. Be large enough and strong enough to support the tree throughout its training period, and protect it from mechanical damage.
4. Be placed so it will not interfere with growth development of the root system.
5. Not be so large that it overpowers the young tree at time of planting.
6. Be tall enough to support the leader from which scaffold branches will arise.
7. Afford support for protective shade.

Few stakes will meet all of these requirements. For example, the 1-in.-square nursery



Above, author Hamilton describes the double, or "Pomona," stake for protecting a young tree, a method widely used by park departments in the windy San Francisco Bay area of California. Diagrams at right clearly illustrate this effective staking technique.



stake meets the conditions of only 4 and 5. The 2-in.-square stake generally fails in requirements 2,3,4, and 6. The 2-in. by 4-in. stake, or 4-in.-square stake, generally fails in all requirements but 1. The double or triple 2-in.-square stake is an improvement, but fails to meet condition 6, and partially fails in 2 unless the tree is specially secured with loop wire ties.

### Double Support Stake Works

Double 2-in.-square support stakes with rigid cross braces ("Pomona stakes") fulfill these requirements and give trees the support needed for several years in the landscape. A center 1-in.-square leader stake attached to the cross brace affords support required for the trunk and for development of scaffold branches.

By placing support stakes 15 in. apart, they will not interfere with the root ball or damage it at time of planting. When secured 18 in. into the soil and tied together with cross braces, this type of stake is far stronger than any single stake that might be used.

There is no way around the problem of securing the tree to the stake. Again, a small leader stake is most desirable for this purpose. A larger stake, 1 in. by 3 in. or 1 in. by 4 in., will seriously interfere with branch de-

velopment, since the tree must be tied to the stake.

Cheapest and most satisfactory method is to tie the tree to a thin leader with 1-in. plastic nurseryman's tape. Rope or wire, even though protected by a heavy rubber shield, will cause a great deal of damage to trees.

What about kind of wood for the stake? Redwood, long noted for its lasting qualities, is brittle. One park department collected nearly 2,000 redwood stakes that broke off at the ground line for one reason or another. Heartwood from slow-growth timber is increasingly difficult to get. Redwood, sapwood, or heartwood from rapid-growth timber may be little better than pine or other untreated soft wood. Douglas fir is being tried and looks promising.

A protective material, such as copper naphthalate, pentachlorophenol, or creosote, should be used to treat the base of the stake to a few inches above ground to make it last. For best results when selecting lumber for stakes, choose a uniform grade with only small tight knots.

Important as staking a young tree is, it should be realized that this is only one facet of growing potentially beautiful and valuable trees in controlled landscaping.

## AAN Makes Landscape Awards

Thirteen U. S. companies from across the country have received industrial landscaping awards from the American Association of Nurserymen. Presented at a recent luncheon in Washington, D. C., the awards are designed to stimulate interest in industrial beautification.

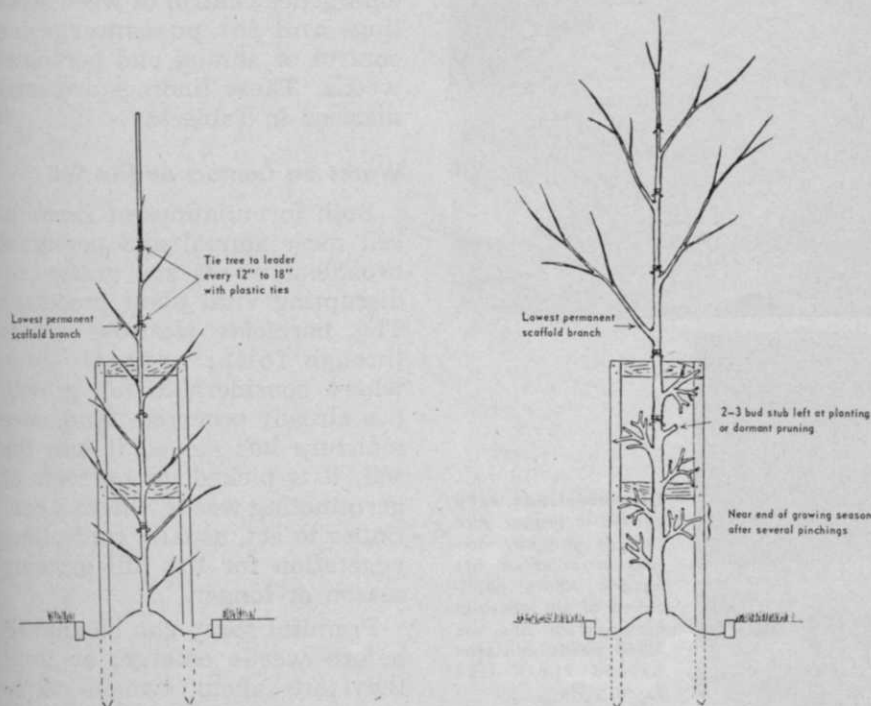
Award recipients for 1966 are Anheuser Busch, Inc., for its Busch Gardens at Van Nuys, Calif.; Atlantic Richfield Co., Arco Chemical Div., Anaheim, Calif.; Bullock's Fashion Square, Santa Ana, Calif.; Capitol Car Distributors, Inc., Lanham, Md.; College of San Mateo, San Mateo, Calif.; First National Bank in Dallas, Dallas, Tex.; International Minerals and Chemical Corp., Skokie, Ill.; Lincoln First Federal Savings & Loan Association, Spokane, Wash.; Peoria County Courthouse, Peoria, Ill.; Prudential Insurance Co. of America, Boston, Mass.; Raleigh Savings and Loan Association, and Wachovia Bank and Trust Co., Raleigh, N. C.; Rossmoor Leisure World, Rockville, Md.; and Washoe County Library, Reno, Nev.

## Ohio Tree, Turf, Nursery Men Meet Together in Jan.

Nearly all phases of nonfarm vegetation management will be covered by the 38th Annual Ohio State University Short Course for Arborists, Turf Managers, Landscape Contractors, Garden Center Operators, and Nurserymen, at the Sheraton-Columbus Hotel, Columbus, Ohio, Jan. 23-26.

Turf topics will highlight one of the split sessions on opening day, with items of interest to commercial, utility, and municipal treemen on the other. Successive days will be devoted to landscape, garden center, and nursery interests. Ohio Nurserymen's Assn. and Ohio Chapter, International Shade Tree Conference, will also hold annual meetings.

For more details, contact Dr. L. C. Chadwick, Department of Horticulture and Forestry, Ohio State University, 1827 Neil Ave., Columbus, Ohio 43210.



# Portrait of an Industrial Weed Killer

By PAUL E. PEDERSEN

**I**N the past several years, weed specialists have been responsible for marked changes in long-established techniques of controlling weeds and undesirable grasses in industrial areas. Bermudagrass, bindweed, and crabgrass no longer need be common

headaches for grounds maintenance crews and contract applicators. Even that hardy perennial, johnsongrass, which weed experts say is about the toughest of all, can be controlled with chemical weed killers.

Chemicals are becoming the widely recognized and accepted method of solving weed problems around industrial plants,

buildings, petroleum tank farms, railway yards, outdoor storage areas, fence lines, along sidings, rights-of-way, above-ground pipe lines, in and around transformers, gasmetering substations, and in fire lanes and ditches. Here, unwanted vegetation can create an industrial safety hazard and contribute to fire or rust and corrosion of machinery, in addition to providing cover for insects and rodents. Quick-seeding weeds may infest not only the industrial property itself, but also neighboring properties.

Pramitol (commonly known as prometone) is Geigy Chemical Corporation's answer to the demand for industrial herbicides equal to these tasks. This non-selective herbicide (2-methoxy-4,6-bis (isopropylamino) - s-triazine) is available in two formulations: Pramitol 25E liquid for spray application, and Pramitol 5P pellets for dry application.

Studies conducted with several industrial weed killers at Texas A&M University's College of Agriculture, under the direction of Professor Homer E. Rae, show that Pramitol is effective for pre-emergence control of weed seedlings and for postemergence control of annual and perennial weeds. These findings are summarized in Table 1.

## Works on Contact and in Soil

Both formulations of Pramitol kill most annual and perennial broadleaf weeds and grasses by disrupting vital plant processes. The herbicide destroys weeds through foliar contact, even where considerable top growth has already occurred. And, once moisture has moved it into the soil, it is picked up by roots of germinating weeds, where it continues to act, usually controlling vegetation for the full growing season or longer.

Pramitol spray can be applied before weeds emerge, or until they are about two to three



**Uncontrolled** weed growth in lumber yard (left) is unsightly, creates a potential fire hazard. Above, application of an industrial herbicide at this site killed weeds, still seen beyond chain link fence.

months old. At rates of 5 gals. to 7½ gals. per acre, the spray controls such annuals as downy brome grass, oatgrass, and goosegrass, and such perennials as quackgrass, puncturevine, goldenrod, burdock, and plantain. To control hard-to-kill perennials like johnsongrass, bermudagrass, field bindweed, and wild carrot, rates of 20 gals. to 30 gals. per acre are recommended.

It is noncorrosive to metal surfaces, and can be removed from conventional spray equipment by flushing with water immediately after use. Caution should be exercised when applying near crop or ornamental areas, since the herbicide is nonselective.

#### Apply Pellets Any Time

Because sodium chlorate and sodium metaborate are added to pelleted Pramitol, it can be applied either before, or any time after, weeds emerge. Adequate rainfall is required to move the chemical into the root zone. It can be spread with mechanical applicators, such as push-type or cyclone spreaders, or it can be applied by hand. No mixing or water is necessary, nor is application timing critical.

Application of ½ lb. to 1 lb. of Pramitol 5P per 100 sq. ft. of soil surface is suggested to control annual broadleaf weeds and grasses. For the tougher perennial weeds, use 1 lb. to 2 lb. for

the same area. In regions of high rainfall or longer than usual growing season, or when extended residual control is desired, the higher application rate is recommended.

#### Herbicide Combinations

Development of an effective weed control program depends on such factors as vegetation and soil type and amount of rainfall. For some of the more difficult weed problems, herbicide combinations are often preferable for faster top kill and longer residual control.

A Pramitol-TCA combination provides these advantages, and can be useful when bermudagrass and johnsongrass are particularly difficult problems. On sandy or light-textured soils, infested areas can be sprayed with a mixture of 10 gals. of Pramitol 25E with 100 lbs. of TCA and 400 gals. or more water per acre. Increasing the amount of Pramitol to 20 gals., with the same rate of TCA and water, is suggested where soils are heavy or high in organic content.

Pramitol and oil combinations can increase the speed and efficiency of top kill. The herbicide goes into solution in most oils, so no agitation is required during application. Recommended rate is 10 gals. to 20 gals. of herbicide and 100 gals. to 200 gals. of oil per acre.

Lower rates can be used when weeds and grasses are small. To control bermudagrass, for example, the lowest rate is usually adequate. As the height and density of vegetation increases, the combination rate can be increased correspondingly. To thoroughly cover dense stands of tough weeds such as johnsongrass, the highest rate is required.

For more spray per acre, water and a suitable emulsifier can be added to the solution to reach the desired volume of spray mixture. Penetration and effectiveness are increased accordingly. Pramitol-oil-water emulsions at 400 gals. or more per acre are not unusual where extremely dense weed growth is to be harnessed.

#### Pramitol and Chlorates

This combination provides good top kill, followed by long-term residual control. It is usually applied as 5 gals. to 10 gals. of liquid herbicide with 125 lbs. to 150 lbs. of chlorate plus sodium metaborate and 200 gals. to 400 gals. of water per acre. Because the chlorates are high in solubility, they move rapidly into the root zone to work on deep-rooted established weeds. For the most part, herbicide remains near the soil surface to kill young weeds shortly after germination. Lower rates will generally control most annual weeds; higher rates are

Table 1. Tests Conducted at Texas A&M University on the Effectiveness of Pramitol 25E

Active Ingredient per Acre	Spray Volume per Acre	Time and Application	Weeds Controlled	Remarks
10 to 16 lbs. in water.	200 to 300 gals. with power gun.	Sept. 15 to April 15, to short weeds and soil.	Delayed control of most emerged annuals and some shallow-rooted perennials. Preemergence control of most seedlings after one or more 2-in rains.	Residual control of 18 to 30 months, except for emerged oxalis and dallisgrass and their seedlings, and most deep-rooted perennials.
10 to 16 lbs. in toxic oil.	150 to 200 gals. with power gun.	Anytime, but preferably when temp. is above 80°. Apply overall and to soils.	Foliage kill of all species. Top kill of most herbaceous species. Preemergence control of seedlings of most species after rainfall of 2 in.	Residual control of 18 to 30 months, except for invasion by oxalis and some emergence of dallisgrass.
30 to 40 lbs. in toxic oil.	150 to 200 gals. with power gun.	Anytime, to all vegetation and soils.	Foliage kill of all species. Top kill of most herbaceous species. Delayed eradication of johnsongrass and bermudagrass after several 2-in. rains.	Residual control of 18 to 30 months, with exceptions of emerged oxalis and dallisgrass, and seedlings of these species.

recommended where tough perennials predominate.

Combinations of Pramitol and hormone-type weed killers are practical where hard-to-kill broadleaf weeds are present with woody vegetation. These combinations work best when applied early in the growing season.

To control woody plants 2,4,5-T or silvex are recommended additives to Pramitol. Application rates will vary from one location to another, ranging from 5 gals. to 10 gals. of Pramitol combined with 2 lbs. to 4 lbs. acid equivalent of 2,4-D, 2,4,5-T, or silvex. Whichever combination is selected, it should be mixed with sufficient water to assure good coverage of foliage.

Addition of 2 lbs. to 4 lbs. of a hormone-type weed killer to a Pramitol-chlorate or Pramitol-oil combination will broaden the spectrum of weeds that can be controlled and hasten top kill.

### Southern Weed Meet Sets Industrial Control Talks

A Report on Practical Organization of an Industrial Weed Control Division, by Irvin A. Berger, vice president, J. C. Ehrlich Chemical Co., Inc., Reading, Pa., will lead off industrial weed sessions at the Jan. 24-26 Southern Weed Conference. Scheduled for the Jung Hotel, New Orleans, La., the '67 meet also offers weed control sessions in such areas as agronomic crops including turf and pastures, horticultural crops, and brush and tree control.

Industrial talks will include "Diversification of Services—A Key to an Applicator's Success," by Tom Graham, president, Graham, Inc., Oklahoma City, Okla.; and "Satisfying Our Industrial Customers' Weed Control Needs," by Glen I. Bounds, industrial herbicide sales, Van Waters & Rogers, Inc., Dallas, Tex.

Vegetation control in asphalt pavements, drainage ditches, river banks, and rights-of-way for power lines, railroads, and highways will also be covered. A new brush killer, tree growth inhibitors, drift control agents, and helicopter application of pel-

lets are to be evaluated for conerees by experts in the field. Eleventh-hour conference queries can be directed to Southern Weed Conference secretary-treasurer, Dr. H. Hanly Funderburk, Botany Department, Auburn University, Auburn, Ala.

### Illini Host Jan. CA's School

University of Illinois will host an anticipated capacity crowd for its 19th Illinois Custom Spray Operators' Training School, Jan. 25-26, at the Illini Union. Activities really begin on the afternoon of Jan. 24, with an informal get-together and early registration for attending applicators.

Program includes a number of discussions on weed control in agronomic crops. Of special interest to noncrop controllers will be planned talks on Fungicides for Lawns and Ornamentals, Weed Control in Turf, and Industrial Weed Control. WTT readers can obtain more information on the course from H. B. Petty, Chairman, Custom Operators' Training School, College of Agriculture, University of Illinois, Urbana, Ill. 61801.

### Calif. Weedmen To Gather In San Diego, Jan. 24-26

Final program arrangements are complete for this month's 19th Annual California Weed Conference at San Diego's Hilton Inn.

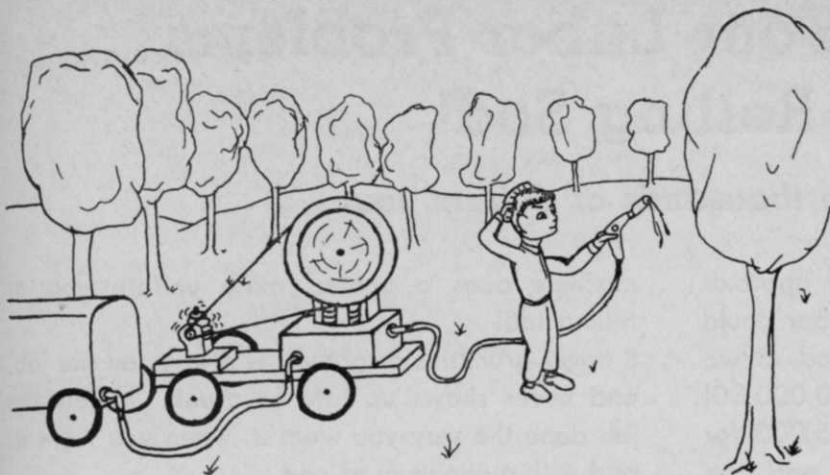
Following a welcoming address by conference president Cecil Pratt, Deputy Agricultural Commissioner, San Bernardino County, Calif., balance of the opening session will be devoted to cropland weed control. Second day's program is entirely focused on noncrop and aquatic weeds, with talks to include "Weed Control in Turf"; "Alligator and Skeleton Weed Control"; and "Application Methods for Aquatic Weed Control and Dissipation of Herbicides in Water."

Jan. 25 luncheon speaker, Stuart Turner, consulting agrologist, from San Francisco, will discuss "What's New in Pesticide Litigation." Research reports are due to be presented at the final morning session. For last-minute details, contact Floyd L. Holmes, Secretary, California Weed Conference, E. I. duPont de Nemours & Co., 118 Blueberry Hill, Los Gatos, Calif.



New officers and directors of the Missouri Valley Turfgrass Association chosen in conjunction with the recent Lawn and Turfgrass Conference at the University of Missouri, pictured here at their first meeting following the election, are (from left front): secretary-treasurer Earl M. Page, Earl M. Page, Inc., St. Louis; president William M. Latta, manager, Princeton Turf Farms, Kansas City; first vice president and retiring president, Robert V. Mitchell, Sunset Country Club, St. Louis; and second vice president, Walter W. Fuchs, Upjohn Co., Glen Ellyn, Ill. Standing are director Donald Clemans, Norwood Hills Country Club, St. Louis; group advisor and consultant, Dr. Delbert Hemphill, professor of horticulture, University of Missouri, Columbia; and director Stan Frederiksen, Mallinckrodt Chemical Works, St. Louis. Not pictured is director Robert Bechtold, Bechtold Lawn Service, Columbia.





## Match Engine Power To Pump Requirements

A power source capable of driving a pump at the volume and pressure for which it was designed is a necessity. When you buy an engine-pump system, manufacturers supply engines with enough power to drive the pump at its maximum output.

Unfortunately, it sometimes becomes necessary to replace an engine or pump. If engine output is not matched to pump requirements, the mismatch may become a troublesome and expensive venture.

Pounds per square inch (p.s.i.) and gallons per minute (g.p.m.) can be measured by gauges on almost every modern pump. These two items may be used to calculate how much power will be needed to drive a specific pump. Maximum p.s.i. and g.p.m. are found also on pump specification sheets.

The following formula may be used to calculate the *minimum* horsepower needed to operate a pump adequately.

$$\text{Horsepower} = \frac{(\text{p.s.i.}) \times (\text{g.p.m.})}{1730 \times (\text{pump efficiency, } 80\%)}$$

To determine the horsepower needed to drive a pump designed to deliver 10 gals. per minute at 400 lbs. per square in., first multiply g.p.m. (10) by p.s.i. (400). This gives 4,000. Next multiply 80% pump efficiency (0.8) by the constant 1730 to get the divisor 1,384. Now the formula is stated:

$$\text{Horsepower} = \frac{4,000}{1,384}$$

Divide 4,000 by 1,384 and you'll find that 2.89 hp. is needed to drive a pump, 80% efficient, to produce 10 g.p.m. at 400 p.s.i. This horsepower value is the minimum needed for a pump that is 80% efficient.

Like many other machines, pumps are not 100% efficient. If they are well maintained, however, 80% effectiveness will remain relatively constant.

### Crownvetch Versatility, Maintenance Ease Told

Crownvetch, a landscape material for beautification, erosion control, or weed control, is most effectively planted in existing soil conditions according to Fred Grau, Grasslyn, Inc., president. Grasslyn markets seed for the groundcover plant.

Grau explains that special slope preparation by applying layers of topsoil should be avoided because the plant roots will concentrate in the topsoil layer; heavy rainfall can then make the layer slide. As crownvetch is not usually mowed, slopes may be left in rough condition, with any rocks, logs, branches, or other debris left in place. Further erosion control will be achieved if seeding is done horizontally across the slopes.

Early spring planting in northern states, and fall or early winter planting in the Deep South, is suggested. And for rapid soil root-binding, the company notes that companion grasses should be seeded with crownvetch. In northern climates, Kentucky 31 fescue at 30-40 lbs. per acre, with 20 lbs. of crownvetch seed can be used. Domestic-grown creeping red fescue or perennial ryegrass may also be used. Kentucky 31 fescue or weeping lovegrass may be used in the South with the cover crop. Lovegrass seed should be held to 3 to 5 lbs./A.

Maximum protection is afforded by the plant when it is allowed to develop without mowing. But where it must be mowed, the company suggests a delay until seed pods are brown. Then it should be cut at 5-inch height with a flail or rotary mower.

Ureaform, a slow-release, insoluble, nonburning long-lasting type of nitrogen fertilizer, is highly beneficial to establishment of crownvetch, Grau points out. Suggested specifications for application are 440 lbs. per acre of granular ureaform.

Additional information on crownvetch can be obtained by writing to Grasslyn, Inc., Box 177, College Park, Md. 20740.

# Eliminate Your Labor Problems In Rolling Sod!

*(and save thousands of dollars, too)*

The machine pictured below has rolled approximately 6,000,000 yards of sod! If labor could have been found to hand roll this much sod, at two cents per yard it would have cost \$120,000.00! The actual cost was approximately \$15,000 for a savings of about \$105,000.00. And the

machine does a neater, more uniform job of rolling too!

It never grumbles or growls, is always on the job, and never shows up late or drunk. It gets the job done the way you want it, when you want it, and with a minimum of cost.

**If you cut over 30 acres of sod per year,  
it will pay you to buy this roller**



## ***The Daymon Sod Roller***

Patent Pending

The Daymon Sod Roller will roll from 1200 to 1500 yards per hour under average conditions—up to 2000 yards per hour under good conditions! It will roll 16 inch, 18 inch, or 24 inch sod in either one yard or one and a half yard rolls. It can be quickly adjusted for varying thicknesses, soil and sod conditions. *It always works!*

# ***Daymon manufacturing Corp.***

7450 Weller Road

Gregory, Michigan 48137

Phone: Fowlerville, Michigan—Area 517-223-9966

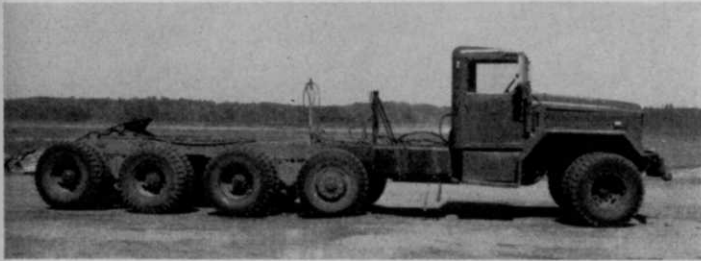
DEVELOPED BY SOD MEN FOR SOD GROWERS

Mr. Sod Grower . . .

# Labor Problems?? Faced with Rising Costs??

We can  
help you  
with these products of

## Daymon manufacturing corp.



### 10 Wheel Mack Trucks

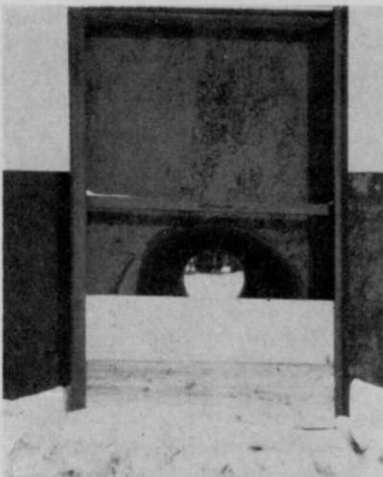
(Modified) Patent Pending

Two live steering axles—all wheels drive!!  
10 Speeds forward—high and low range.  
You can completely load trucks in field.  
Eliminate costly double-handling of sod.

### Truck Loading Conveyor

Patent Pending

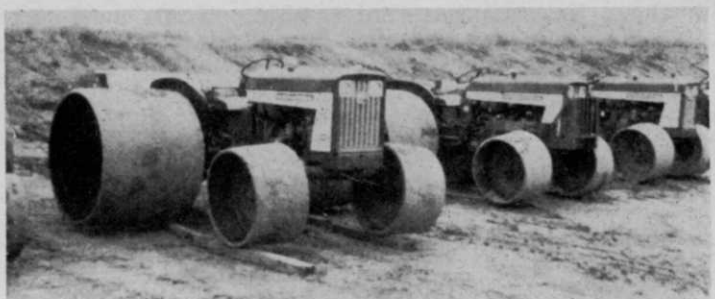
Speeds Production—Cuts Labor Costs.  
Men work better and stay with you.  
Adjustable to use with all semi or  
straight trucks. Ruggedly built.



### Water Control Units

Patent Pending

Quickly and easily raise or lower  
ditch water levels. Making better  
use of available water can mean  
thousands of dollars to you.



### Turf Tractor Flotation Wheels

Patent Pending

Increased flotation and traction helps eliminate turf damage  
and improves turf quality.  
You can cut sod thinner (thinner sod roots quicker).  
Haul larger pay loads—make more money!

## Daymon manufacturing corp.

7450 Weller Road

Gregory, Michigan 48137

Phone: Fowlerville, Michigan—Area 517-223-9966

DEVELOPED BY SOD MEN FOR SOD GROWERS

# Herbicides for Sod Field Weed Control

By

**DR. JOHN A. MEADE**

Extension Specialist—Weed Control  
Rutgers University  
New Brunswick, New Jersey

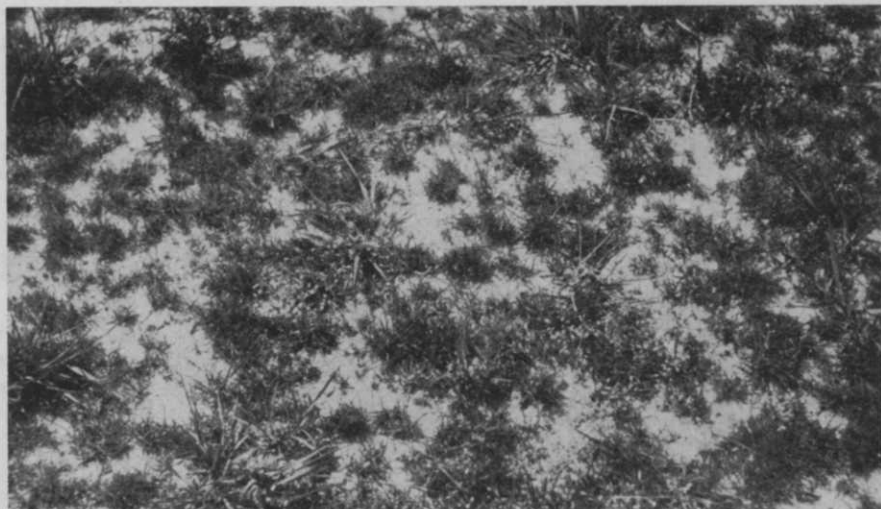
The sod producer is in what is probably the best possible position to make full use of herbicides. He is growing a single crop, has no ornamental plantings or trees to worry about, and has large enough areas to make use of herbicides economically.

The first thing the sod grower must do, of course, is decide whether he in fact has a weed problem or has the trouble spots which lead to weed infestation.

It's worth noting in passing that a good many people make their own weed problems. Any open spot in the turf caused by poor management—scalping by mowers, dead turf due to fertilizer burn, or compaction caused by improper equipment—will be filled in by weeds.

The grower who has the time and persistence to use and make his help use proper management will need herbicides only for isolated problems or areas of severe weed infestations.

Now then, let's assume that through no fault of his own the



Open areas in newly seeded turf are particularly vulnerable to weed invasion, Dr. Meade points out. Bare spots caused by poor management are another invitation to weeds.

grower has a weed problem. What should he use? (We're also assuming this is mostly bluegrass turf. Check company or local authorities for specialty turf.)

## Controls Available For Annual Grasses

First and foremost among annual grasses is crabgrass and fortunately there has been tremendous activity in this field with several compounds available. Next most troublesome species is goosegrass, but since

this is normally a pest in areas of heavy traffic and compacted soil, it doesn't trouble the sod producer too much.

Foxtail (green, yellow and giant) as well as barnyardgrass and the panicums are other annual grasses which show up in turf seedings made on land previously in farms. Annual bluegrass (*Poa annua*) is a special case since it germinates in the fall and early spring. Herbicides for its control must be applied in early fall.

Recommended herbicides for controlling annual grasses are shown in Table 1.

## Selective Herbicides for Perennial Grasses Lacking

We are weak in selective herbicides for controlling perennial grasses. Use of temporary soil sterilants prior to seeding is effective but expensive. A spot treatment of amitrol or dalapon is probably the best approach to most perennial grasses, especially the bunch type. These two are translocated chemicals and should be applied to the foliage. Kerosene, cacodylic acid or paraquat also will knock down the foliage but generally the grass will come back.

The rhizomatous grasses which

**Table 1. Recommended Herbicides for Control of Annual Grasses**

At Time of Seeding:	
Bandane	Has given good results in some tests but control is questionable.
Tupersan (Siduron)	Good control of weedy grasses. No injury to germinating bluegrass. Will need watering in with ½ in. of water. Residual activity is short, so retreatment may be necessary.
Preemergence to Weedy Grasses:	
DCPA (Dacthal)	Still a good herbicide, and economical.
DMPA (Zytron)	Excellent. A little broader spectrum of control. (Recent information indicates Zytron will not be manufactured in 1967).
Benefin (Balan)	A good herbicide.
H-9573 (Azak)	Very good for grass control. May injure bents and fineleaf fescues.
Bensulide (Betasan, Pre-san)	Very good for controlling grasses. Must be watered in. Area cannot be reseeded for one year.
Postemergence:	
DSMA or related Compounds	Be sure they are arsonates, not arsenites or arsenates.

spread rapidly over a wide area pose a special problem. These areas should be treated in summer (July) with dalapon or amino triazole and then worked down two weeks later. Desirable grasses may be seeded in September.

If the area to be treated is of small size the grasses may be smothered out with tar paper or similar material. It takes one-half to two months to kill the grass plants.

#### Nutsedge Left Behind When Sod Is Stripped

Nutsedge, previously called nutgrass, is perennial in nature because of nutlets at the end of rhizomes. In sod production these nutlets are left behind when the sod is stripped and the plant then acts as an annual.

If the nutsedge is too thick in a sod field it can be controlled (not eradicated) with repeat treatments of DSMA (organic arsonate as listed for postemergence crabgrass). Use the rates indicated for mature crabgrass.

For wild garlic and onion, the most economical and efficient control is still 2,4-D applied as a spray in the early spring or late fall. The ester form is preferable. You might want to try treating with 2,4-D in wax bar form. This is certainly more convenient and control has been very good. Dicamba (Banvel-D) has also given very good control.

First problem with broadleaf weeds is to properly identify them, since weed species vary in susceptibility to herbicides. Send a sample in a plastic bag without added water to your local experiment station or extension agent.

There are also some excellent charts available from herbicide suppliers.

A selection of herbicides is available for broadleaf weed control. Choice of the proper one depends on which chemical will do the best job for the least money. For a great many weeds, 2,4-D would be an obvious choice because of cost. But for weeds such as chickweed, henbit, white clover or oxalis, 2,4,5-TP (silvex) is needed.

There are weeds that are resistant to both 2,4-D and 2,4,5-TP but are controlled by dicamba (Banvel-D). Knotweed, sheep sorrel, and spurge come under this category. A good all-around combination is 2,4-D plus Banvel-D at a rate of 1 lb. plus 1/4 lb. This combination should control most broadleaf weeds.

For a more comprehensive list of the reaction of weed species to various herbicides, see University of Maryland Fact Sheet 157, available from the Agronomy Department, College Park, Md.; USDA's Farmers' Bulletin No. 2183, *Using Phenoxy Herbicides Effectively*, available from your local county agent or Government Printing Office, Washington, D.C., for 15¢; or USDA's Home and Garden Bulletin No. 79, *Controlling Lawn Weeds With Herbicides*, available for 10¢.

#### Herbicide Timing Is Critical Factor

Timing is a very critical factor in the success or failure of an herbicide and schedules should be closely followed.

Even such a simple thing as preemergence applications of



Our well-known 5'4" model



and NEW 8' and 10' seeders

are not FREE ...but almost!

The savings on seed alone will often pay for your Brillion landscape seeder in just a few days of use. And that's only the beginning.

A Brillion conditions the seedbed and seeds in one pass — without additional help, equipment, or operations. Its front rollers crush lumps, press down small stones, and pack the soil into a clod-free seedbed — exclusive brush agitators accurately meter out seed even at heavy seeding rates — and the smaller rear wheels gently firm the moist earth around the seeds for fast, complete germination and healthier growth.

So give yourself a Brillion landscape seeder — 5'4", 8' and 10' seeding widths. It pays for itself in a few days of use. Send coupon.

NEW — 3-point Category 2 pick-up now available on 8-ft. seeders.

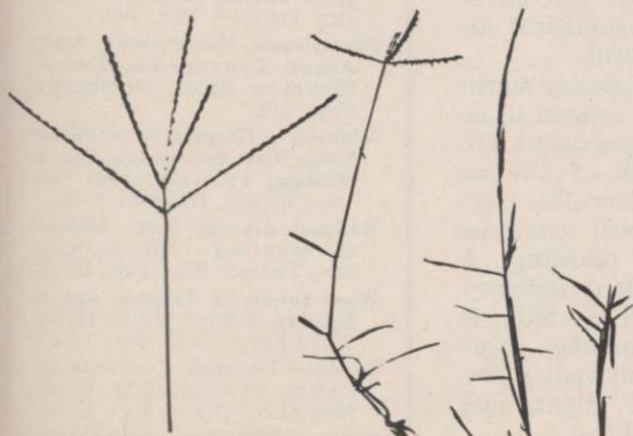
**Brillion**

BRILLION IRON WORKS, INC.  
Dept. LS-59-1, Brillion, Wis. 54110

Please send information on:

- 5'4" Seeder       New Smooth Roll Pulverizer  
 New 10' Seeder  
 New 8' Seeder  
 Name of nearest Brillion dealer

Name.....  
Address.....  
City.....  
State..... Zip.....



Seedheads of three grasses troublesome to sod growers, as shown (left to right), are crabgrass, bermudagrass, and nimblewill.

crabgrass herbicides presents problems. These materials should be in the ground *before* crabgrass germinates, which means late March or early April in most cases.

In general, postemergence treatments are more successful when the plant is very young.

### Rutgers Releases '66 Turf Research Report

Results of studies conducted at Rutgers University on various phases of turfgrass breeding and management have just been published. The 110-page report covers research in soils, fertilizers, weed control, turf diseases, nematodes, and insect problems.

Information was compiled by Rutgers' sizeable staff of research and extension personnel devoted to turfgrass studies. Sample titles: "Performance of Kentucky Bluegrass Varieties as Influenced by Fertility Level and Cutting Height"; "Response of Bentgrass Turf to Dicamba, Mecoprop, and Silvex Herbicides"; "1966 Recommendations for Insect Control on Turfgrass."

Liberalily complimented with charts and tables, this reference report, Bulletin 816, is available from the College of Agriculture and Environmental Science, Rutgers University, New Brunswick, N. J.

Perennial grasses become more resistant as they approach the heading stage.

In the broadleaf group, almost without exception there is a period early in the life of a plant when it is quite susceptible, but as the plant grows, forms cuticle on the leaves, and develops a strong root system, it becomes more difficult *and more expensive* to control.

Knotweed is an excellent example: In the early stage, 2,4-D does an excellent job of killing

it, but within two to three weeks it becomes resistant to 2,4-D and silvex is needed. If application is put off, dicamba becomes necessary and with each step the cost goes up.

Keep in mind that weed seeds will stay viable in soils for long periods of time, and if weed problems arise in a customer's turf, be prepared to discuss this fact as well as advise him on weed control methods. Don't hesitate to call on your local county or state extension service representative for publications and assistance.

You have a veritable arsenal of compounds available and I am sure you can find one to fit your program. Remember: Read the label. Observe all precautions and use herbicides wisely.

### Panels Planned For WSA's Feb. Washington Conclave

Panels on Weed Control in Turf, Techniques and Equipment for Aquatic Weed Control, and Research Needs for Industrial and Right-of-Way Vegetation Control are planned for the Feb. 14-17 Annual Meeting of the Weed Society of America, at Washington D.C.'s Statler-Hilton Hotel.

Other sectional panels proposed include Herbicide Registration, and Progress in Absorption and Translocation Research and Practical Implications for Perennial and Woody Plant Control. Sectional meetings, covering all aspects of weed control in agronomic crops, horticultural crops, and noncrop situations, will also present data on latest developments in equipment and new herbicides, and will cover ecological and physiological aspects of weed control.

Program begins Tuesday morning with a general session to be opened by Society president, Dr. William R. Furtick of Oregon State University, Corvallis. Sectional meetings will continue through Thursday morning. A tour of USDA's Plant Industry Section at Beltsville, Md., is scheduled for Thursday afternoon. Delegates will visit Beltsville's ornamentals, light, and weed research facilities.

## Meeting Dates

**New York State Arborist's Assn.,** The Concord Hotel, Kiamasha Lake, N. Y., Jan. 15-17.

**Rutgers Lawn and Utility Turf Course,** Rutgers University, New Brunswick, N.J., Jan. 16-17.

**Maryland Nurserymen's Assn., Annual Meeting,** Washington Country Club, Gaithersburg, Jan. 17-18.

**Rutgers Golf and Fine Turf Course,** Rutgers University, New Brunswick, N.J., Jan. 18-20.

**Ohio Chapter, ISTC, Annual Meeting; Ohio Nurserymen's Assn., Winter Meeting; and Ohio State University Short Course for Arborists, Turf Managers, Landscape Contractors, and Nurserymen,** Sheraton Hotel, Columbus, Jan. 23-26.

**Virginia Turfgrass Council,** Hotel John Marshall, Richmond, Jan. 24-25.

**California Weed Conference,** Hilton Inn, San Diego, Jan. 24-26.

**Southern Weed Conference,** Jung Hotel, New Orleans, La., Jan. 24-26.

**Illinois Custom Spray Operator's Training School,** University of Illinois, Urbana, Jan. 25-26.

**Rocky Mountain Regional Turfgrass Conference,** Colorado State University, Fort Collins, Jan. 25-26.

**Associated Landscape Contractors of America Annual Convention,** Sheraton Dallas Hotel, Dallas, Tex., Feb. 1-4.

**International Turfgrass Conference and Show,** Washington Hilton Hotel, Washington, D.C., Feb. 5-10.

**Oklahoma Agricultural Chemical Conference, 1st Annual Meeting,** Oklahoma State University, Stillwater, Feb. 6-7.

**Colorado Pesticide Applicators' Short Course,** Western Motor Inn, Denver, Feb. 7-8.

**Pennsylvania Nurserymen's Assn., Annual Convention,** Penn-Sheraton Hotel, Pittsburgh, Feb. 7-9.

**Midwestern Chapter, International Shade Tree Conference, Annual Meeting,** Pick-Congress Hotel, Chicago, Ill., Feb. 8-10.

**National Arborist Assn., Midwinter Meeting,** International Inn, Tampa, Fla., Feb. 12-15.

**Weed Society of America, Annual Meeting,** Statler-Hilton Hotel, Washington, D.C., Feb. 14-17.

**Southern Turfgrass Conference,** Sheraton-Peabody Hotel, Memphis, Tenn., Feb. 27-28.



## "Efficiency" Theme of Jan. Colo. Turf Confab

"Efficiency in Maintenance" is theme for the 13th Rocky Mountain Regional Turfgrass Conference, Jan. 25-26, at Colorado State University, Fort Collins, Colo.

Scheduled speakers and their topics include Wayne C. Morgan, turfgrass advisor, Los Angeles County, Calif., "Building Greens for Performance" and "Efficiency in Irrigation"; E. M. Wolcott, Jr., Climate Control Division, Singer Co., "New Ideas in Establishing and Maintaining Turfgrass"; Dr. John L. McKeever, management chairman, School of Business, Colorado State U., "Efficiency in Management"; Stewart G. Case, CSU community development specialist, "Recreation in the U. S. in the 1970's"; Roger Hansen, Colorado Open Space Coordinating Council, "Legislation for Professional Services' Consumer Protection"; and Dr. James R. Feucht, CSU horticulturist, "Problems Observed in Plant Maintenance."

Other CSU experts are also due to offer progress reports and discuss maintenance problems. Sponsors of the meet are the Rocky Mountain Regional Turfgrass Assn. and Colorado State University. C. M. Drage, extension horticulturist, Plant Science Building, Colorado State University, Fort Collins, Colo. 80521, is contact man. Expected to register more than 175 delegates, the turf meet immediately follows the Jan. 23-24 Colorado Nurserymen and Arborists Short Course and Convention.

## Dixie Turfmen Meet in Feb.

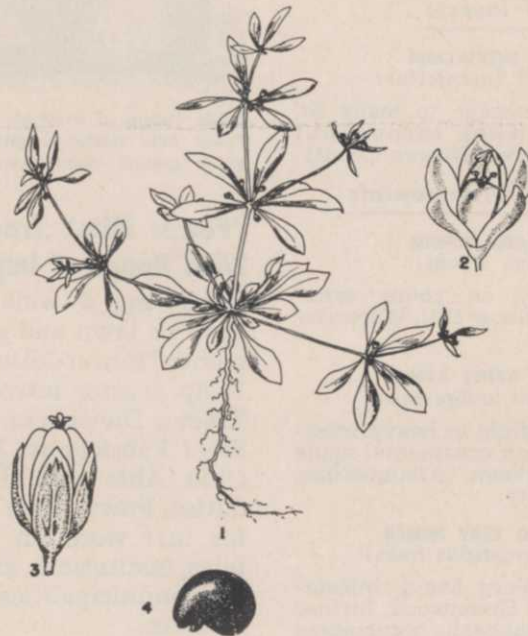
Leading turfgrass authorities from Arkansas, Florida, Georgia, Mississippi, Texas, and other states will address the annual Southern Turfgrass Conference, Feb. 27-28, at the Sheraton-Peabody Hotel, Memphis, Tenn.

"Building for the Future" is to be theme for the gathering, which is expected to attract between 350 and 400 southern turfmen. Additional details are available from Reg Perry, secretary-treasurer, Southern Turfgrass Association, P. O. Box 26305, Memphis, Tenn. 38126.

## Know Your Species

### CARPETWEED

(*Mollugo verticillata*)



A summer annual, carpetweed was introduced from South America and is also native to Africa. This plant is found in the eastern and middle western states, and south to Florida and Texas.

Carpetweed grows in gardens, lawns, croplands, and wastelands, and is especially common in sandy soils. From a slightly branched taproot, it grows along the ground creating a flat mat at the surface. It will quickly fill in surrounding bare soil.

(1) shows the spreading characteristics of the small plant. Whorled leaves grow in groups of 5 to 6 at each joint of the stem. Leaves are smooth and tongue-like.

Several small, white flowers (2) appear in each joint. Pod (3) has 3 sections, each containing numerous small, kidney-shaped seeds. Orange-red seeds (4) are flattened and have a small protuberance in the hollow.

The plant reproduces by seed and is a late starter, growing rapidly from July to September. Other names for carpetweed are Indian chickweed, whorled chickweed, and devil's grip.

Carpetweed frequently causes trouble in turfgrass; however, it can be effectively controlled with herbicides. Dicamba at 1/2 pound per acre, dicamba plus 2,4-D at 1/4 to 1 pound per acre respectively, mecoprop plus 2,4-D at 1 1/2 pound each per acre, and silvex at 1 1/2 pound per acre should all provide excellent control. Good control may also be obtained from 2,4-D at 1 1/2 pound per acre, and 2,4,5-T plus 2,4-D at 1/2 and 1 pound per acre.

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)

# Insect Report

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

## Turf Insects

### A SOD WEBWORM (*Crambus luteolellus*)

**Texas:** Recent damage to many St. augustinegrass lawns throughout Corpus Christi area, Nueces County.

## Insects of Ornamentals

### PINE BARK APHID (*Pineus strobi*)

**Maryland:** Heavy on young ornamental pines at Snow Hill, Worcester County.

### WOOLLY APPLE APHID (*Eriosoma lanigerum*)

**New Mexico:** Medium to heavy infestation reported on ornamental apple trees in downtown Albuquerque, Bernalillo County.

### BOXWOOD LEAF MINER (*Monarthropalpus buxi*)

**South Carolina:** Very heavy infestation observed at Greenwood, further south than normal heavy occurrences in State.

## Tree Insects

### A BARK BEETLE (*Phloeosinus* sp.)

**California:** Heavy in Arizona cypress trees at Dos Palos, Merced County. Increasing buildup in northern areas.

### SOUTHERN PINE BEETLE (*Dendroctonus frontalis*)

**Alabama:** Insects present in epidemic populations. **Louisiana:** Epidemic populations. **Mississippi:** Epidemic, also on Homochitto National Forest. **North Carolina:** Epidemic. **South Carolina:** Epidemic occurrence in Francis Marion National Forest. **Texas:** Unchecked in Big Thicket and Angelina Federal Districts. **Virginia:** Also epidemic populations.

### AN OLETHREUTID MOTH (*Rhyacionia* sp.)

**Florida:** Severely infesting stems of 1,400 pine trees at Dade City, Pasco County.

### OBSCURE SCALE (*Melanaspis obscura*)

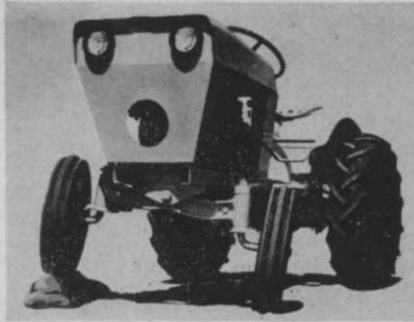
**Maryland:** Heavy on oaks in Silver Spring, Montgomery County.

### YELLOW SCALE (*Aonidiella citrina*)

**California:** Reported heavy on English laurel trees in Sacramento, Sacramento County. Considerable buildup this year on shade trees and other hosts in this area.

### MIMOSA WEBWORM (*Homadaula albizziae*)

**Illinois:** Collected from locust at Deerfield, Lake County, for new county record.



Wide range of available implements makes Power Mite tractor adaptable to suburban-estate ground maintenance and farm work.

## "Power Mite" Tractor Has Wide Range of Implements

Offering a wide selection of farm or lawn and garden implements, "Power-Mite" is a versatile 10-hp. tractor introduced by the Tractor Division of United States Steel Fabricators, Inc., Orrville, Ohio. Able to tackle varied farm duties, Power Mite is also suited for turf work on suburban estates, institutions, airports, parks, and municipalities, U.S.F. announces.

Suburban-estate accessories available for the tractor include a full-size wagon, 60-in. snow blade, lawn roller, 48-in. rotary lawn mower, 5-gang reel mower, and snow thrower. Farm implements include a 10-in. plow, tandem disc, scarifier with cultivators, spring-tooth harrow, and irrigation pump with 1½-in. outlet. The tractor, engineered for use with either a gasoline or kerosene-gasoline mix fuel, is also available with an optional power takeoff drive.

Standard equipment on all Power Mite tractors features a 12-volt electric starting system, headlights, rear implement light, heavy-duty automotive-type 6-in. disc clutch, 3-forward-speed transmission, universal drive shaft, and forged alloy steel differential components. For complete specifications and catalog literature, write Tractor Manufacturing Division, United Steel Fabricators, Inc., Orrville, Ohio 44667.

## Hydro-Mulch Book Out

"Facts About Hydro-Mulching," a 16-page illustrated booklet that discusses the advantages of this technique, has been newly

revised by Bowie Machine Works. With information on the company's hydro-mulching equipment and suggestions for the best northern and southern grasses for hydro-mulch planting, the brochure is available from the Bowie Machine Works, Inc., P. O. Box 630, Bowie, Tex.

## Large Turnout Seen For Feb. Midwest Tree Meet

Attendance of about 500 professional arborists and others interested in trees is seen for the 22nd annual meeting of the Midwestern Chapter, International Shade Tree Conference, at the Pick-Congress Hotel, Chicago, Ill., Feb. 8-10.

Formal presentations will be supplemented by workshop sessions on tree taxonomy, physiology, basic entomology, and fundamentals of home landscaping. Also on the program are discussions on Reference Publications for Arborists, Current Insect and Disease Problems in the Midwest, Grounds Maintenance of Industrial Plants, Accident Prevention, and Problems in Municipal and Utility Arboriculture.

Throughout the meet, supplies and equipment for tree workers will be displayed. For further information on this big gathering, contact Noel B. Wysong, secretary-treasurer, Midwestern Chapter, International Shade Tree Conference, Route 2, Box 107-B, Golconda, Illinois 62938.

## Betasan OK For Ornamentals

Stauffer Chemical Co.'s selective preemergence herbicide, Betasan, has received federal registration for use on 48 ornamental plants. Previously approved for all types of established grasses and dichondra in any stage of growth, Betasan is said to control crabgrass, goosegrass, Poa annua, barnyardgrass, and several annual broadleaf weeds.

Ornamentals the chemical is now registered for include pine, ivy, azalea, boxwood, juniper, and myrtle. Stauffer will provide WTT readers more detailed information. Address is 380 Madison Ave., New York, N. Y. 10017.



## 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

**WEED CONTROL crew supervisor.** Full-time mature man will work in north-eastern states fulfilling contracts for industrial weed control. Travel with crews necessary, ability to manage help, accept responsibility, basic mechanical knowledge of pumps. Advancement to executive possible. Salary, expense, transportation furnished. Firm established 1929. Send résumé including experience, personal data, education, marriage status to Jim MacLachlan, Abalene Spray Service, 1303 Lincoln Ave., Utica, N.Y. 13502; telephone AC-315+724-1556.

### ARBORIST POSITION

Job opportunity available with a major electric utility company. College education in horticulture or arboriculture, with technical knowledge and practical experience in this field required. Excellent opportunities and liberal employee benefits.

An Equal Opportunity Employer  
Contact

Personnel Department  
Ohio Power Company  
Canton, Ohio Telephone 455-8931

**HELICOPTER APPLICATION.** Need technical sales and service representative, prefer college or agricultural background to help in the "explosion" that is taking place in this new division of Ronson Corp. Age no barrier. Help us to exploit helicopter applications and service present work in local area. Write Ronson Helicopters, Inc., Mercer County Airport, Box 1386, Trenton, New Jersey.

**POSITIONS AVAILABLE** as working foremen for growing lawn service firm in New Jersey. Background in turf or supervisory experience necessary. Excellent salary and benefits with opportunity for advancement to a sales and management position. Send résumé to Tech-Turf, Inc., 1859-61 Springfield Ave., Maplewood, New Jersey 07040.

### WANTED TO BUY

**HIGH-PRESSURE sprayers, skid or truck mounted,** prefer 500-1500 gal. tank capacity. Paul Kucik, 17207 Archdale, Detroit, Mich. KE 3-8589.

Classified Ads in

Weeds Trees and Turf Get Results

USE THEM!

## Turfgrass Show Prepares To Pack Huge D.C. Hotel

With delegates expected to occupy more than 1,000 rooms in the huge Washington (D.C.) Hilton Hotel, final preparations are underway for the 38th International Turfgrass Conference and Show, Feb. 5-10.

Sponsored by the Golf Course Superintendents Assn. of America, the super-show will offer more than 20,000 sq. ft. of exhibit space, with the largest assemblage of turf gear ever put together. Along with demonstrations and workshops on equipment maintenance, seven educational sessions will be held during the six-day meet. Of particular interest to many WTT readers will be Tuesday morning's session, scheduled to present latest advances in turf research. A complete sod program has been set for Thursday afternoon.

Advance registration forms can be obtained by writing GCSAA headquarters, 3158 Des Plaines Avenue, Des Plaines, Ill., 60018. Requests for hotel reservations, however, should be directed to GCSAA Housing Bureau, c/o Washington Convention and Visitors Bureau, 1616 K Street N.W., Washington, D.C. 20006.

### New Webworm Reported At Central Plains Turf Meet

A new sod webworm, which has been attacking Kansas buffalograss, was reported at the opening session of the recent 17th Central Plains Turfgrass conference at Kansas State University, by Dr. Hugh Thompson, KSU entomologist.

Unlike most webworms, this still-unidentified species tunnels as deep as 18 in. into the soil, leaving behind holes about 3/8 in. in diameter. As many as 66 caterpillars have been found in a cubic foot of soil. Full-grown larvae are unusually large, about 1 1/2 in. long. No insecticide tested has satisfactorily controlled this pest of buffalograss, which is widely used in southern Kansas for fairways, recreational areas, and lawns.

## Advertisers

### INDEX TO ADVERTISEMENTS

John Bacon Corp. ....	Dec.
John Bean Div., FMC .....	Dec.
Bowie Machine Works, Inc. ....	Dec.
Brillion Iron Works, Inc. ....	21
Buffalo Turbine Agricultural Equipment Co. ....	11
Daymon Mfg. Corp. ....	18 & 19
Diamond Alkali Co. ....	2nd Cover
Finland Div., Finneyfrock's ....	Dec.
Fitchburg Engineering Corp. ....	Dec.
Friend Mfg. Co. ....	Dec.
Garber Seeders, Inc. ....	Dec.
Great Lakes Chemical Corp. ....	Dec.
Green Lawn Laboratories, Inc. ....	Dec.
Hercules Incorporated. ....	Back Cover
Homelite Division .....	Dec.
Ideal Crane, Div. of Bert Parkhurst & Co. ....	4
McCulloch Corp. ....	Dec.
Merck & Co. ....	Dec.
Mitts & Merrill, Inc. ....	Dec.
Nalco Chemical Co. ....	Dec.
S. B. Penick & Co. ....	Dec.
Robert B. Peters Co., Inc. ....	Dec.
Phelps Dodge Refining Corp. ....	Dec.
Ryan Equipment Co. ....	Dec.
Safety Test & Equipment Co. ....	Dec.
Seymour Smith & Son, Inc. ....	Dec.
Smith-Douglass Div., Borden Chemical Co. ....	Dec.
Solo Industries, Inc. ....	Dec.
Stanford Seed Co. ....	Dec.
Universal Metal Products .....	
The Vandermolen Co. ....	Dec.
Whitney Seed Div., W. R. Grace & Co. ....	Dec.

Officers of the Central Plains Turfgrass Foundation, conference sponsor, were also chosen for the coming year. Ellary Bennett, St. Joseph, Mo., is new president; Tom Andrews, Salina, Kans., becomes vice president; and Dr. Ray Keen, KSU professor of horticulture, remains as secretary-treasurer. Foundation directors are Cecil Miller, Lee's Summit, Mo.; Cedric Johnston, Wichita, Kans.; and Ross McCausland, Jr., Wichita.

### Hub States Offers Knock-Out

"Knock-Out," a new weed killer with 2% bromacil has just been introduced by Hub States Chemical and Equipment Co.

Granular Knock-Out can be spread with a crank-operated distributor, or fertilizer-type spreader, or it can be spread by hand if desired. Recommended application rate is 1/2 to 2 lbs. per 100 sq. ft., depending on the type of weeds, amount of rainfall, and length of residual toxicity desired, the formulator claims. For further details, write Hub States Chemical and Equipment Co., 2002 North Illinois St., Indianapolis, Ind.

## Solo 425 Hand Sprayer Is Lightweight, Compact

Plastic construction, reinforced by a steel frame molded into the unit, is a lightweight feature of the recently introduced Jet-Pak 425 hand sprayer from Solo Industries, Newport News, Va. The steel frame provides additional stability and safe balance, while overall weight is kept at 8 lbs.

Jet-Pak 425 is designed for use in gardens, patios, nurseries, forestry work, lawn grooming, and mosquito control. Solo recommends the sprayer for all plant protection spraying, and adds that the unit will take any liquid, including oil-based, water-based, and corrosive chemicals. Tank capacity is 4 gals. and tank pressure of up to 85 p.s.i. can be regulated by various spray jets. Discharge rate of the sprayer is 1 qt. per minute at 29 lbs.

Equipped with a flat, jet-spray nozzle and rapid shutoff lever, the 425 offers, as optional equipment, a double nozzle and a tree spray extension tube, which increases the sprayer's vertical reach from 12 ft. to 16 ft. Solo Industries, P.O. Box 1728, Newport News, Va., will send detailed data on the Jet-Pak 425 to those requesting it.

## Vermeer Adds Truck-Mounted Tree Mover

A self-propelled, truck-mounted tree mover said to hydraulically scoop out trees, transport, and replant them has recently been added to Vermeer Manufacturing Co.'s line of tree moving equipment. According to the



Solo's 425 hand sprayer weighs just 8 lbs. Padded carrying straps are provided for comfortable operation.

Pella, Iowa, maker, the new truck-mounted model has all the features of Vermeer's earlier trailer-mounted unit, plus greater speed and mobility in tree removal and planting.

Both models will handle trees up to 7 in. to 8 in. in diameter, and are equipped with two hydraulically operated cutting cups that scoop out the tree ball, which is then hydraulically lifted from the hole and placed on the trailer or truck for transport to the planting site, where the tree is lifted hydraulically and set into the receiving hole.

The newer model mover is mounted on a modified truck chassis with full cab and power steering included. Additional details can be obtained by writing Carl Boat, sales manager, Vermeer Manufacturing Co., Pella, Iowa.



Vermeer's truck-mounted tree mover speeds hydraulic lifting and replanting of trees up to 7 in. to 8 in. in diameter.

## Trimmings

**Congratulations** to Dr. John A. Meade (author of this month's Sod Industry Section) and the entire weed science group at Rutgers University's College of Agricultural and Environmental Science for the new "Rutgers Weed Science Notes." This four-page newsletter offers up-to-the-minute information on weeds and chemicals that should help to lighten the task of many in the field. First issue has an introduction and some notes on dichlobenil (Casoron), and on nutsedge and prostrate spurge, two weed problems on the increase. We're looking forward to receiving future numbers of Dr. Meade's "brainchild." We only wonder how the extension specialist, who has long been active in the Northeastern Weed Control Conference, finds time to contribute so much to the war on weeds.

\* \* \*

**The alligator and the skeleton.** We did a quick double-take when we saw these together on the program for the coming California Weed Conference, thinking it might be a grisly parable of an alligator whose appetite got the best of him. They're weeds, of course, but it started us thinking of some others we'd like to see on a twin bill: duckweed and quackgrass; povertyweed and moneywort, or if that isn't poor enough, pennycress and beggarweed; pokeweed and speedwell; witchgrass and broomsedge; black nightshade and lanternplant; poison hemlock and liveforever; stinging nettle and porcupinegrass; brassbuttons and needleandthread; dragonhead and fireweed; spleenwort and madder; and for surgical interests, elephant's foot and goutweed, or boneset and black medic. Any others you'd like to see on the program?

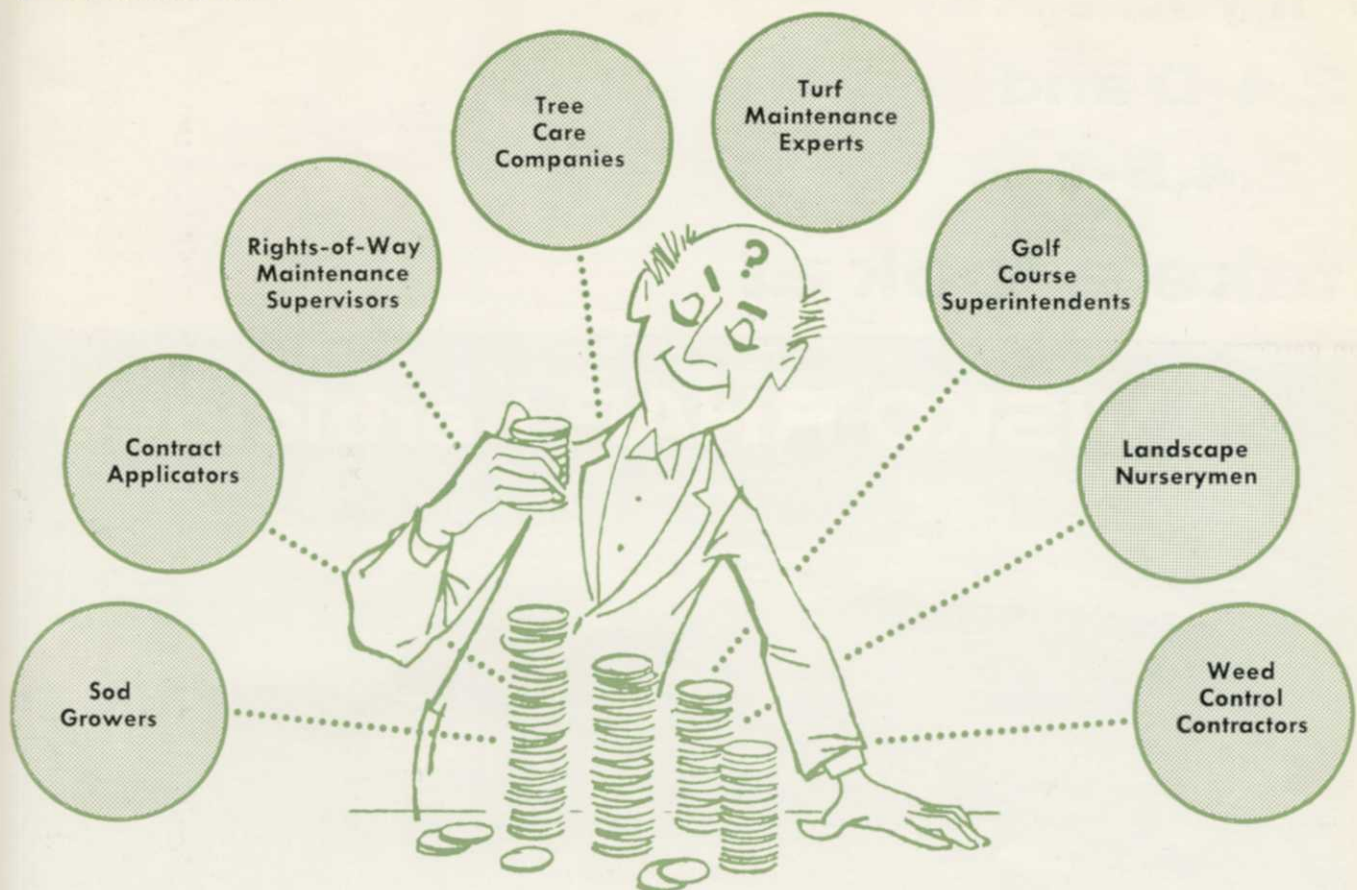
\* \* \*

**Speaking of busy men**, as we were in the first item, our nomination for the busiest must also go to Dr. Lewis Chadwick, executive director of the International Shade Tree Conference, teacher, and researcher. He sends news of this month's Ohio State University Short Course for Arborists, Turf Managers, Landscape Contractors, Garden Center Operators, and Nurserymen. Quite a program is planned for specialists in these allied fields, and as usual, "Chad" is right in the thick of the activities. Lately, we've heard that plans are being laid for a research-scholarship fund in honor of his years of dedicated service. And a well-earned honor it will be.

\* \* \*

**Treeman dies.** William P. Lanphear, Sr., longtime Cleveland arborist, who founded the Forest City Tree Protection Co. back in 1910, died recently. Lanphear was a member of both the National Arborist Assn. and the International Shade Tree Conference, and is survived by two sons, John and William, III. The latter was co-chairman for last year's ISTC Convention held in Cleveland.

## Puzzled ?



## Here's How to Sell the Multibillion Dollar Vegetation Maintenance and Control Market

If you manufacture or distribute equipment, herbicides, fungicides, insecticides, or any other product used in the multibillion dollar vegetation maintenance and control field, there is no more direct way to reach your customers and prospects than through the advertising pages of **WEEDS TREES AND TURF**. There's no waste circulation. WTT goes directly to the major buyers of these products in all the 50 states. It's read by contract applicators; tree service experts; landscape nurserymen; aerial applicators; golf course superintendents; supervisors for rights-of-way with highway departments, railways, utilities; those re-

sponsible for state and county weed and brush control, turf management and tree service; superintendents of large grounds (estates, industrial parks, military establishments, cemeteries, etc.); and the nation's prosperous sod growers. These buyers and users subscribe to *this*, their how-to-do-it, where-to-buy-it magazine, now in its 6th year, because WTT talks their language. Your advertising dollars sell harder and go farther in **WEEDS TREES AND TURF**. If you'd like full details, write us today and we'll send you one of our information-packed Market Fact Files by return mail.

**WEEDS  
TREES  
and TURF**

1900 Euclid Avenue  
Cleveland, Ohio 44115

if you spray  
2,4-D and  
2,4,5-T...  
take a look at



**To Control Drift of Herbicide Spray . . .**

Visko-Rhap\* herbicides form a thick invert spray when mixed in a special chamber in the Rhap-Trol\* spray system. Leaving the nozzle in spaghetti-like streams, the spray resists drift, and breaks up into heavy droplets before hitting the weeds and brush in a uniform pattern.

**To Increase Spray Acreage Per Season . . .**

With drift-resistant droplets, herbicide spraying is made possible many hours when weather conditions would not permit spraying with the fine droplets of conventional formulations.

**To Control Broad-Leaved Weeds and Brush . . .**

Visko-Rhap herbicides are available containing

2,4-D, 2,4,5-T, and silvex. They are giving effective drift control and weed and brush control. The oil-coated invert droplets stick to the leaves even in showery weather and resist washoff.

**To Get More Information . . .**

Contact your Hercules representative; you may want him to arrange a showing of "The Particle of Difference," a new motion picture on this latest spray method for phenoxy herbicides. Or write: Agricultural Chemicals, Synthetics Dept., Hercules Incorporated, Wilmington, Delaware 19899.

\*HERCULES TRADEMARK

SP67-1



**HERCULES**

BOSTON, MASSACHUSETTS • CHICAGO (OAK BROOK) ILLINOIS • DALLAS, TEXAS • GREENVILLE, MISSISSIPPI • MINNEAPOLIS, MINNESOTA • MONTGOMERY, ALABAMA • ORLANDO, FLORIDA • RALEIGH, NORTH CAROLINA • SAN FRANCISCO, CALIFORNIA.