

# WEEDS

# TREES

# and TURF

FORMERLY WEEDS AND TURF

September 1965

How  
Sod Growers  
Ready Soil  
Page 20



## Getting the Most Out of Your Sprayer?

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



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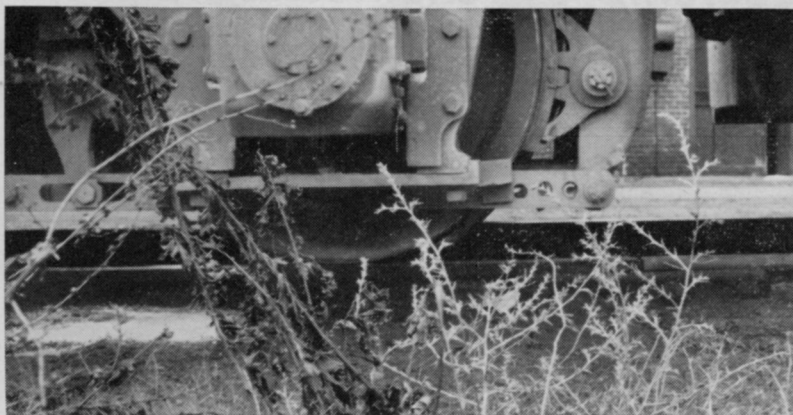
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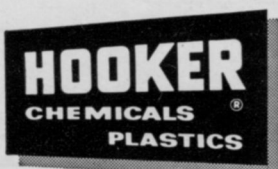
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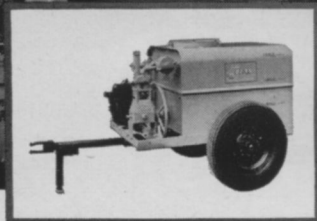
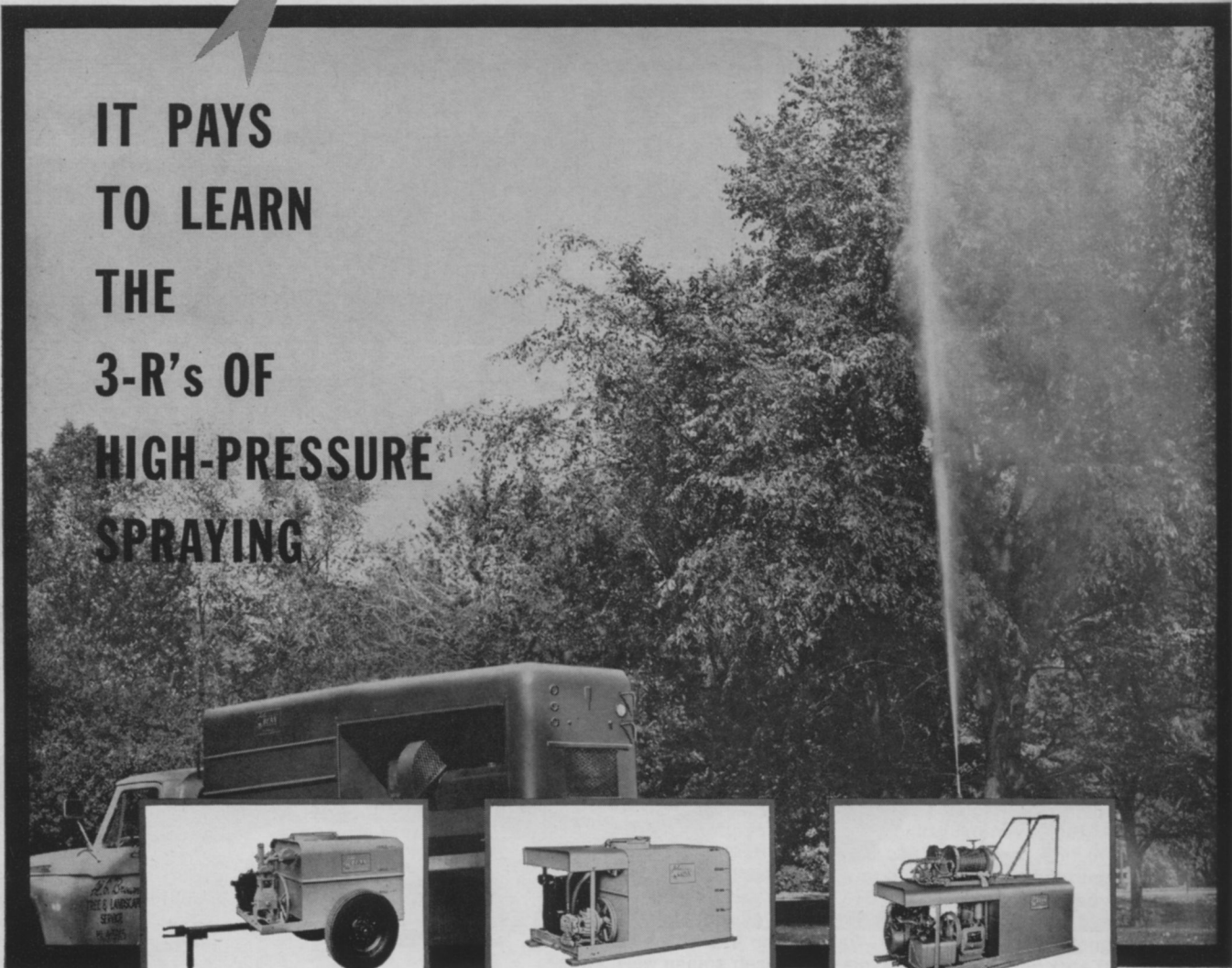
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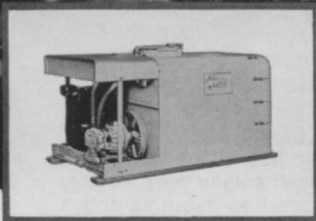
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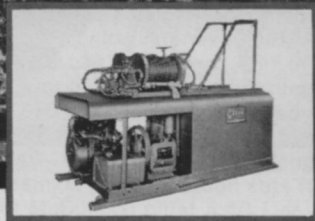
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September 1965  
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<p><b>JAMES A. NELSON</b>          Editor and Publisher</p> <p><b>DONOVAN E. HENDRICKS</b>          Staff Biologist</p> <p><b>MICHAEL I. LAH, JR.</b>          Production Manager</p> <p><b>D. BUNKIN</b>          Circulation Supervisor</p>	<p><b>Advertising Representatives          National Headquarters</b>          1900 Euclid Avenue          Cleveland, Ohio 44115          Phone: Area Code 216+771-4169</p> <p><b>Chicago 60601</b>          Peck &amp; Billingslea, Inc.          185 North Wabash Ave., Suite 1809          Phone: 312+DEarborn 2-0292-93</p> <p><b>New York City 10017</b>          Billingslea &amp; Ficke          420 Lexington Avenue          Phone: 212+532-1632</p>
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## What to do about the "Shopper"

Contract applicators are constantly faced with the problem of giving free inspections to prospective customers who may be just shopping around for the lowest possible price. This is the bane of existence in almost every service industry.

Experts in the vegetation maintenance field take opposite stands on this question. Some feel it's a condition we have to live with; others contend CAs should charge for their surveys.

After all, the latter group asserts, it takes the time of their skilled men to properly assess the extent of damage and to prescribe recommended corrective measures. Homeowners who are simply fishing for the cheapest bid aren't really interested in quality anyway, this group feels. If potential buyers of professional services pay for an estimate, they'll have more respect for the expert analysis they receive, and CAs are compensated for having men out on what might turn out to be a wild-goose chase anyway, these industry men maintain.

Those who favor the "free inspection" say this practice is really just another cost of doing business, not too unlike the money they spend for newspaper and direct mail advertising, salesmen's commissions, etc. These CAs do not consider themselves true professionals, in the sense doctors and lawyers are. Rather they regard themselves as expert tradesmen with a specialized service to offer. They say they write more business by

offering free inspections than they do from almost any other form of sales promotion.

There are valid reasons both to support and reject the viewpoints of each group. Their differences in outlook will probably never be resolved. Yet, we can't help but wonder what the most successful contract applicators do. Do they look upon every contact with the public as an opportunity to further their sales aims and to boost their company's reputation for competence? Do they recognize that the buying public has the same right to compare the prices of one service company with those of another, just as they do when they're out looking for a new car?

Our guess is that vegetation service companies which offer free inspections are in the majority and that they just live with the "shopper". Even if the sale is lost to a lower bidder, the reputation of the loser can be strengthened if his salesmen conduct themselves to properly reflect the proficiency of the firm they represent.

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.

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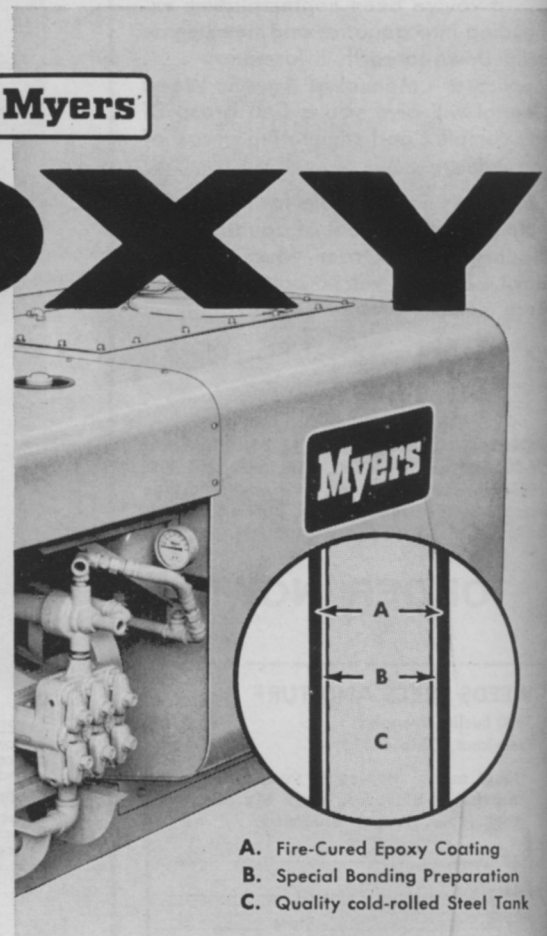
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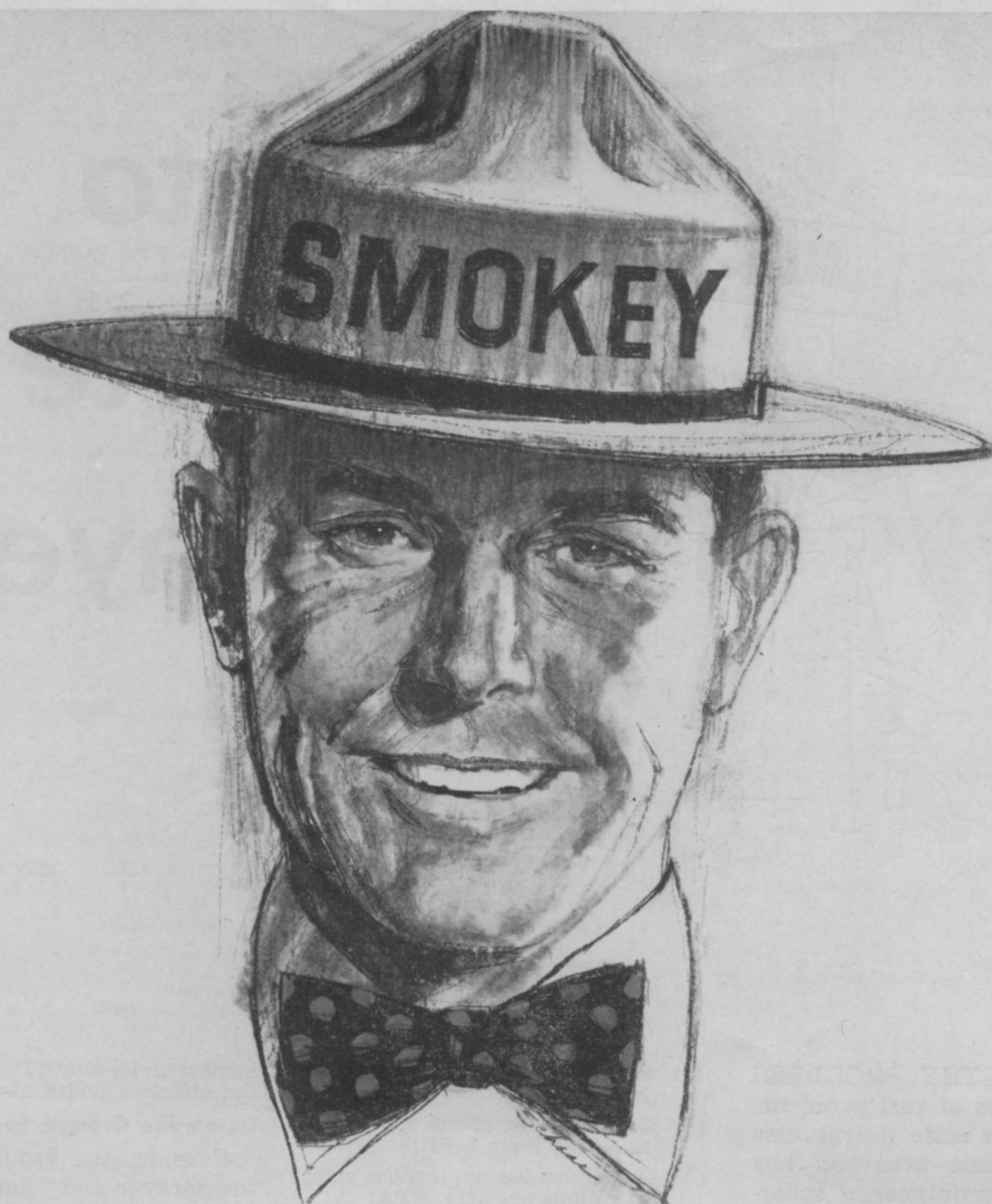
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$$GPAPN = \frac{5940 \times .067}{4 \times 20}$$

# How to

$$\frac{Y \times MPH}{325} = APH$$

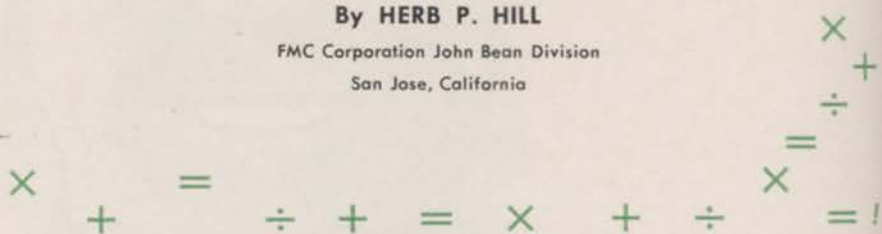
# Calibrate

$$\frac{GPAPN \times MPH \times W}{5940}$$

# Turf Sprayers

By HERB P. HILL

FMC Corporation John Bean Division  
San Jose, California



**NOTEWORTHY PROGRESS** in studies of turf problems by experts at state universities and experiment stations has made good maintenance somewhat easier. Likewise modern chemical technology has developed new chemical sprays which assure good control of both animal and plant pests. Higher costs of modern day chemicals, and critical rates at which they must be applied for best results, make close attention to sprayer calibration important.

Current information, formulas and procedures can help the somewhat perplexing and complicated-appearing task of calibrating sprayers. Correct sprayer and boom calibration are important to the success of a control program.

### Consider Four Factors

There are four major factors to consider in the calibration of a turf sprayer:

- (1) Nozzle spacing on the boom and boom width;
- (2) Ground speed of the sprayer in miles per hour, MPH;
- (3) Recommended application rate; in gallons per acre, GPA;
- (4) Discharge rate per nozzle in gallons per minute, GPM.

Discharge rate of the nozzle depends on the size of the nozzle orifice and the operating pressure of the pump. Consider all of these factors and how you may utilize them to arrive at the recommended rate of application.

### Nozzle Spacing

Nozzle spacing is a known factor, as is the width of the boom. To determine the spray swath, or effective width of your boom, simply measure the distance between nozzles and multiply by the number of nozzles on the boom.

For example, assume you have a boom with 13 nozzles, spaced 20 inches apart. Thus,  $13 \times 20 = 260$

inches, divided by 12" = 21 ft. 9 in., the effective width of the boom.

### Determine Ground Speed

Consider the ground speed of the sprayer and select the speed best suited to the type of terrain. Determination of this speed is made with the tractor and sprayer in motion. When the desired speed is found, drop a marker, a stick or a wrench. Exactly one minute later, drop another marker. Measure the distance between markers to find the number of feet traveled in one minute (60 seconds). With this information, compute the speed of travel, in MPH, with this formula:

$$\frac{\text{Distance in feet}}{\text{Time in seconds} \times 1.47} = \text{MPH}$$

Example: If 360 feet is the distance traveled in one minute, or 60 seconds, the speed of travel is 4 MPH.

$$\frac{360}{60 \times 1.47} = 4 \text{ MPH}$$

In this example, 360 represents the



distance traveled and, according to our formula, is divided by 60, representing the time, in seconds, during which the distance was traveled. This is multiplied by the constant 1.47. Thus;  $60 \times 1.47 = 88.2$  which now becomes our divisor:

$$\frac{360}{88.2} = 4 \text{ MPH}$$

Determination of the speed of travel is the *most important step* in the calibration of a turf sprayer. The method described above is easy to follow. If your vehicle has a speedometer, this step, of course, can be eliminated.

#### Know Proper Rate

The third factor to decide on is the recommended application rate. This is almost always a known factor and should be the gallons-per-acre (GPA) rate recommended by your turf advisor or experiment station. Such turf specialists should be consulted for recommended application rates for various types of spray materials and control programs. They are best qualified to advise you on these subjects.

#### Figure Nozzle Output

A fourth factor to consider is the rate of discharge per nozzle in GPM, or the nozzle output. This can be obtained from

**Eighty degree spray patterns** assure adequate overlap by this boom sprayer system. Conical discharge patterns of the spray marks this boom as well maintained.



sprayer manufacturers, manufacturers of nozzle tips, or from spec sheets that accompanied the equipment when it was purchased.

If such data are not available, or you suspect the nozzle orifices (holes) are worn enough to lose their original output rate, you can determine their actual output yourself.

The following formula is used to determine the GPM per nozzle for a blanket type spray, such as

is used in overall fairway spraying operations, when the rate of travel in MPH, the *desired* application rate in gallons per acre (GPA), and the nozzle spacing, are known:

$$\frac{\text{GPAPN} \times \text{MPH} \times \text{W}}{5940} = \text{GPM per nozzle}$$

First then, the GPA per nozzle (GPAPN) must be determined. Assume for example, that we are using a boom with 13 nozzles, spaced 14 inches apart (W). From previous calculations, we know ground speed is 4 MPH. In this instance, your turf

÷ + = ×



With nozzles set to spray at 65 degrees, this boom spray system delivers even coverage with little drifting caused by wind. Boom is 22 inches from the ground.

advisor has recommended 65 gallons per acre (GPA) as the dosage. The recommended 65 gallons per acre is divided by the number of nozzles on the boom (13) giving 5 GPA per nozzle (GPAPN). Next, multiply GPAPN (5) by MPH (4) and then by the nozzle spacing (W) in inches (14). Divide by the constant 5940 and the answer is .047 GPM per nozzle. Here are the calculations:

$$\begin{aligned} \text{GPM per nozzle} &= \frac{\text{GPAPN} \times \text{MPH} \times \text{W}}{5940} \\ &= \frac{5 \times 4 \times 14}{5940} \\ &= \frac{280}{5940} \\ \text{GPM per nozzle} &= .047 \end{aligned}$$

To apply 65 GPA, using a boom with 13 nozzles spaced 14 inches apart when the ground speed is 4 MPH, each nozzle must discharge .047 GPM.

If the nozzle spacing is 20 inches, which is standard spacing on most booms sold today, use 20 as the value of W.

To determine if your nozzles discharge the correct amount,

× = + ÷



check the discharge of one nozzle in a calibrated container for one minute, while the sprayer is operating at 40 p.s.i. If the output from the nozzle is supposed to be .067 gallons per minute, 8.5 fluid ounces should have been collected during the one-minute discharge time.

To convert ounces to gallons, use the following formula (128 oz. = 1 gal):

$$\frac{128 \text{ oz.}}{1 \text{ gal.}} = \frac{8.5 \text{ oz.}}{Z}$$

$$128 \times Z = 1 \times 8.5$$

$$Z = .067 \text{ GPMPN}$$

If, for example, more than 8.5 oz. are collected in one minute, substitute the number of ounces you collect for the 8.5 in the above formula to get the nozzle output.

These calculations may not appear to be important, but remember that 3/100ths of a gallon excess output per nozzle, multiplied by the number of nozzles on your boom and the number of minutes of use in the field, will total many gallons of wasted chemical.

#### Determine GPA from Worn Nozzle

If the nozzle being calibrated turns out to be the proper size, things are fine. However, in case the calibration does not come out as required, don't throw away the nozzles. Here is another formula which reveals what gallons per acre application they will give.

$$\text{GPAPN} = \frac{5940 \times \text{GPMPN}}{\text{MPH} \times \text{W}}$$

For example, multiply the constant 5940 by the actual GPM measured from each nozzle during one minute at 40 p.s.i. This product is divided by MPH  $\times$  W, and the answer will give you the gallons per acre per nozzle (GPAPN).

Let us say that nozzle discharge was measured to be .067 gal. (8.5 oz.) per minute, that MPH is 4, and the nozzles are spaced 20 inches apart. Putting these values into the formula, we have:

$$\text{GPAPN} = \frac{5940 \times .067}{4 \times 20}$$

$$= \frac{397.98}{80}$$

= 4.9 gallons per acre your nozzle will discharge.

Total GPA is thus found by multiplying the number of nozzles (13) by GPAPN (4.9). The answer is 65 gallons per acre which, in this case, was the recommended rate.

Suppose that the nozzles are

worn, the orifice sizes are enlarged, and the discharge rate is greater but to an unknown degree. This same formula will tell you their exact capacity, as well as the gallons per acre they will apply.

Suppose your one-minute measurement revealed a discharge rate of 12.5 fluid ounces. Convert this to gallons (12.5 fl. oz.  $\div$  128 fl. oz. = .097) and you will come up with a figure very close to 0.10 gal. per minute per nozzle. Use this known result in the above formula to obtain the exact gallons per acre you can

---

#### Abbreviations Used in This Article

GPA	= Total gallons per acre
GPAPN	= Gallons per acre per nozzle
GPM	= Gallons per minute
GPMPN	= Gallons per minute per nozzle
MPH	= Miles per hour
W	= Nozzle spacing in inches
APH	= Acres per hour
Y	= Boom width in feet
8.25	= Constant for APH
5940	= Constant for GPMPN

---

expect to obtain from worn nozzles. In this example, the calculations look like this:

$$\frac{5940 \times .10}{4 \times 20} = 7.4 \text{ gallons per acre per nozzle}$$

Multiplying this result by your 13 nozzles, 13  $\times$  7.4 = 96.2 GPA, the output these 13 nozzles produce. This higher rate per acre results directly from the worn orifices in the old nozzles. If the rate per acre is satisfactory for your program there is no reason why they cannot still be used. But, if the rate is too high, discard the nozzle tips, and buy new ones of correct size. Depending on the abrasives in your water supply, nozzle wear is not uncommon, even within a short time.

It is possible to reduce the GPA rate even with worn nozzles by increasing the ground speed. However, for most courses a speed much more than 4 MPH is not too practical.

#### What Nozzle Numbers Mean

When you see a nozzle tip which reads 650067 or 65015 or 73039 or 800067 or 8002, have you ever wondered just what these numbers mean to you? Actually nozzle numbering systems are easy to understand once they have been explained.

First thing to remember is that the first two numbers *always* indicate the angle of spray discharge. Thus any nozzle beginning with 65, such as 650067, has a 65 degree spray angle; any nozzle beginning with 80, such as 8002, has an 80 degree spray pattern. The reason for these different angles is to provide a 25% overlap in spray pattern for even coverage when the nozzles are used at various heights from the ground.

For example, when spraying height is 17 to 19 inches from the ground, the wider angle, 80 degree nozzles are recommended. When spraying heights are 19 to 21 inches, an intermediate nozzle, 73 degree series, is recommended. When spraying heights are from 21 to 23 inches, the 65 degree series is recommended. This last series is most widely used today.

Risk of drift is greater at wider angles. Narrower, 65 degree nozzles, provide a coarser droplet size and reduce the risk of drift.

What do the rest of the numbers mean? They indicate the GPM of that particular nozzle at 40 PSI (which is the standard from which all other calculations are made).

Take, as an example, nozzle tip No. 650067, which happens to be the same nozzle used in our previous examples. To know the GPM of this nozzle at 40 PSI, simply count three decimal points from the left and place a decimal point. We find we have the decimal .067, which is the GPM of this nozzle at 40 PSI.

If you had a nozzle numbered 65015, you would count over three places from the left and place the decimal point between the zero and the 1. You would then have the decimal .15, which represents the GPM at 40 PSI of this nozzle. If you had a nozzle carrying the number 73039, you'd place the decimal point three places from the left between zero and three; the nozzle would have an output of .39 GPM at 40 PSI. Now let us say you have some nozzles marked 800067. Counting three places from the left, you'd place the decimal point



between zero and zero. The remaining decimal is .067 GPM at 40 PSI; the same as nozzle No. 650067 used in an earlier example, but in the 80 degree series. Thus the GPM capacities of various spray angles, can be duplicated.

### Set Pump Pressure

Up to this point we have not discussed pump pressures. To maintain the gallonage requirements per nozzle, pounds of pressure per square inch must be known. When a nozzle chart is not available, this can pose a problem because it is necessary to maintain exacting pressures in order to obtain an accurate rate of discharge from a nozzle.

The formula to obtain the GPA per nozzle has been shown. From our example, we determined that .067 GPM per nozzle was required. To determine the proper pressure setting at the relief valve, or regulator, the following steps should be taken:

- (1) Install all nozzles in the boom.
- (2) Start the sprayer and run at factory-governed speed if engine driven; if power-take-off (PTO) operated, set tractor throttle at predetermined position for the proper ground speed we have selected and the proper PTO speed. This should be the equivalent of 560 RPM on the PTO shaft.
- (3) Set the sprayer relief valve or regulator at an approximate setting of from 40 PSI to 60 PSI.
- (4) Start spraying, open the boom valves to full capacity. Catch the discharge from two or more nozzles in separate containers for exactly one minute.
- (5) Measure the material discharged and compare it with the quantity needed. As we have previously determined, this quantity should be .067 gal., or 8.5 fluid ounces per nozzle. If the quantity discharged is too little, increase the pump pressure slightly and recheck; if the quantity is too great, lower the pressure slightly and recheck.

Several settings may be required the first time this pressure calibration is made, but with a little experience, much less time may be required for later calibrations if they become necessary.

### Formula for Acres per Hour

Still another formula we have not discussed is quite useful to determine manpower distribu-

tion for spraying programs. This formula calculates the number of acres sprayed in one hour. The formula to determine this factor is as follows:

$$\frac{Y \times MPH}{8.25 \text{ (constant)}} = APH$$

With the symbol Y, representing the boom width in feet, we multiply the ground speed (MPH), divided by the constant 8.25. The product is the APH, or acres sprayed in one hour.

As an example, let us say you are using a Model 308 John Bean Duo-Flex Boom which has 13 nozzles

spaced at 20 inches and provides a spray swath of 21 ft. 8 inches or 21.67 ft. You have decided on a spray program which requires a ground speed of 4 MPH. This would be your calculations:

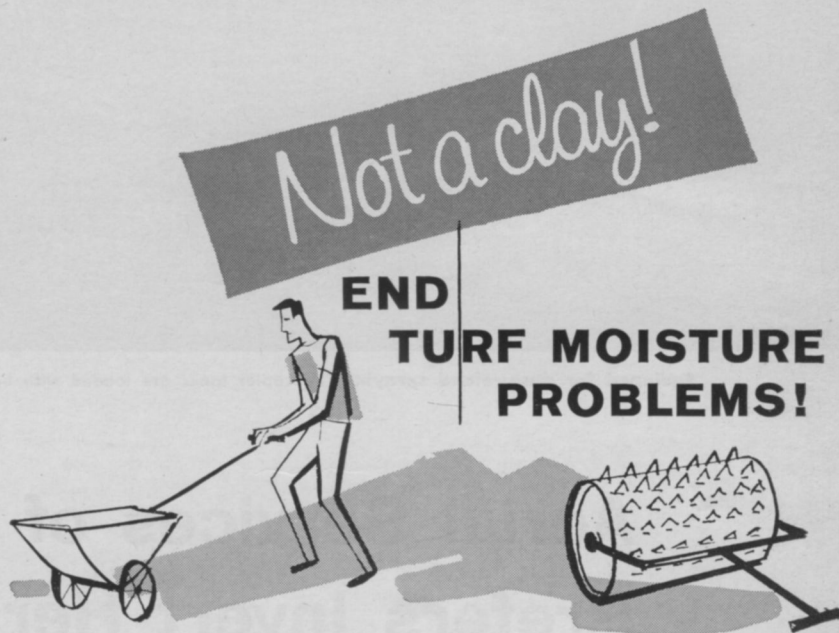
$$APH = \frac{21.67 \times 4}{8.25}$$

$$= \frac{86.68}{8.25}$$

$$= 10.5 \text{ acres per hour}$$

Calibrating sprayer equipment is important in your overall operation. Experiment stations

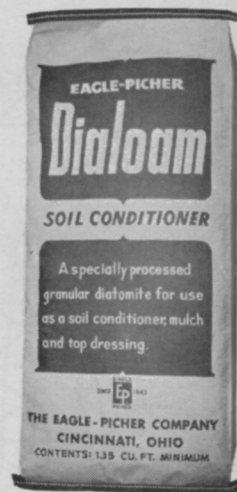
*(Continued on page 28)*



## New DIALOAM

Soil Conditioner Absorbs 150% of its weight in water, provides controlled release of moisture, won't compact.

At last here's a soil conditioner/mulch/top dressing that ends turf moisture problems. Won't cake, won't leach away. DIALOAM is a granulated, diatomaceous earth composed of millions of microscopic water-life plants and fossils. DIALOAM absorbs up to 150% of its weight in water. Moisture release is gradual, just right for healthy grass . . . a life-saver in dry weather. Particles tend to work into the earth giving it a porous, loamy texture that leads to strong, healthy turf. Try DIALOAM on your turf this year! Write for more information.



SINCE 1843



## EAGLE-PICHER

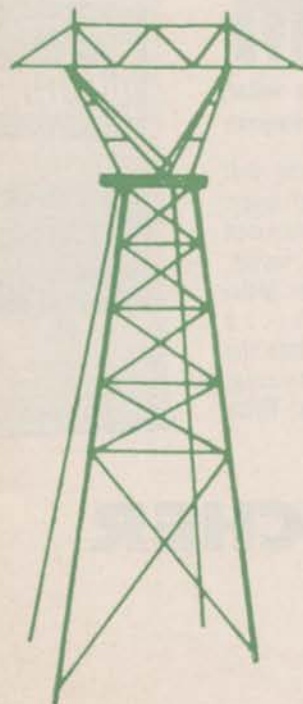
The Eagle-Picher Company  
American Building, Dept. W-8  
Cincinnati, Ohio 45201



Equipped for pastureland spraying, helicopter tanks are loaded with herbicide from companion service truck.

## Aerial Services of Roanoke Prefers Invert Herbicides

### for *Whirlybird* Applications



**H**AROLD F. BROWN, president of Aerial Services Corp., Roanoke, Va., says his personnel were engaged in the aerial application of herbicides when they were still applied in straight oil, or oil-in-water emulsions, long before the advent of the invert, water-in-oil emulsions. It was found that oil was very subject to drift, and in late 1956 and '57, water-borne herbicides were applied.

During application in mid- and late-summer, his men found that straight water and herbicide did not do so well. Water-borne herbicides worked early in the summer, but during dry weather they were subject to drift and caused damage off the rights-of-way.

In 1958, Brown's men began working with Amchem Products on the development of the invert (water-in-oil) emulsion and Spra-disk. Many of Amchem's improvements and refinements made the invert and Spra-disk a workable combination. Today, Brown says, it is one of the most sophisticated systems for aerial application available for





use with helicopters. Since that time, 90% of Aerial Service's applications have been with invert material, and it has applied invert material extensively to utility rights-of-way. Seven valuable years of experience have been completed with this type of application.

ASC sprays over 210-foot power line towers for brush and weed control, virtually eliminating rights-of-way damage and claims by 80%. Sprink application of invert droplets gets more chemical where it is supposed to be, killing brush. Aerial Services works over the entire Mid-Atlantic, Northeastern, and Midwestern United States.

This aerial applicator operates Bell helicopters having a minimum VO435 (vertically opposed, 435 cu. in.) engine with 260 h.p., and also has a STC (Supplemental Type Certificate) for switching to a VO540 engine. These ships carry a payload of 1,100 lbs, and a maximum useful load of 900 lbs.

In the past year Aerial Services has built new hangars and offices and hired personnel that can service up to 10 helicopters. It now owns enough property to build a 2,200-foot, fixed-wing strip. This strip and heliport is located just three miles from the corporation limit of Roanoke, off Route 220, south.

The staff of Aerial Services has been engaged in flying helicopters for 52 years with an accumulation of over 25,000 hours of flying time, and has completed a total of over 6,200 hours of aerial, chemical application since 1956. Besides aerial application to utility rights-of-way, this active applicator is engaged in many other fields of helicopter work, such as: power and pipeline patrol, carrying cargo, aerial photography, forest spraying (both herbicides and insecticides), pastureland fertilizing, fire patrol, fire fighting, aerial surveying, and private charter or lease for corporations.

**It is clear to see** the applicator was on the right track when his 'copter left a trail of invert spray along this right-of-way.



✓ A new idea for lawnmowers

# *Air Cushion Mowing*

By

DR. ROBERT W. SCHERY

Director

The Lawn Institute, Marysville, Ohio

**Air cushion mower** glides forwards, backwards, and sideways easily if terrain is level and grass is not too rough. In this rather tall Kentucky bluegrass note there is just a tinge of wind-rowing with the clippings.



TORO'S Flymo introduces an intriguing new idea for lawn mowers. The machine operates on a cushion of air, much like the "hover vehicles" widely publicized in recent years. This new concept won't supplant the conventional wheeled units, but the mower is a surprisingly better mowing device than one might suppose from mere description.

No matter how clever as a piece of machinery, a mower must above all fit its grass and the practicalities of turf care. Kentucky bluegrass, and the fine fescues from Oregon, constituents of most northern lawns, cut well with this air cushion mower. But in many cases they should receive a taller cut than is possible with this new machine.

At high elevations, and in more northerly regions, Kentucky bluegrass survives reasonably well mowed only about 1¼ inches tall. But for middle latitudes, it is questionable whether the new mower would be as advantageous as one which cuts 2 inches or taller. The Flymo blade is not recessed sufficiently for mowing higher than about 1¼ inches, though spacers lower it easily for even shorter cut. And the fact that the machine oper-



ates on a cushion of air, with a "down draft" around the periphery, rather than sucking the air (and grass) up into the cutting area, suggests that this machine is suitable primarily for low-cut turf.

Among the other fine turf-grass species used in more northerly areas, the bentgrasses are outstanding. No rotary, the Flymo included, does as neat a mowing job with closely clipped bent grass as the reel machines do. However, we have been able to achieve satisfactory mowing with the air cushion machine on the more erect Highland type of Colonial bentgrass. Fortunately, Highland is the most used bentgrass in this country, and often a constituent of seed mixtures for areas where bentgrass is adapted.

#### Light Weight Is Feature

One of the plus features of this new mower is its light weight. The housing of fiberglass is shaped so that a rotor-fan blows a curtain of air down against the ground around the edge, holding the mower consistently level just above the soil. There is scant danger of one's toe slipping into the cutting blade, so close to the ground does the housing ride. Pebbles and other detritus are unlikely to be hurled from the machine, a hazard with some rotaries.

The small two-cycle motor is also light weight. It is designed with a gas tank shutoff nipple, so that the mower can be carried tipped sidewise without gasoline



**Design** of air cushion mower is simplicity itself. Note the rotor, that throws out a curtain of air, is deflected downward by housing. In the calm center is the rotary cutting blade, activated by the same driveshaft.

drip. The machine is easy to glide from place to place when operating, and is almost as easily lifted for carrying, weighing as it does only 30 lbs.

The mower is best suited to level terrain. We find it more difficult to push than a wheeled mower in tall grass or over uneven soil, for the outer flange of the housing catches on irregularities. Because the air curtain that lifts the mower is out beyond the cutting blade, this mower will not approach as closely to obstructions (for trimming) as will most wheeled rotaries.

One can argue either way about the "reverse" air flow of the Flymo as compared to the "sucking action" of most rotaries.

It does raise dust where the turf is not tight, and it won't cross loose gravel well. On the other hand, it does not blow a jet of grass clippings out of the side, but retains them for rechopping within the housing.

For tidying up around the yard, I would suggest that chemical edging accompany use of this air cushion mower. Cacodylic acid (or some other general vegetation killer that is inactivated by the soil) sprayed around the base of trees and along extremities creates "mulch" that needs no mowing. The wheelless mower can then approach closely enough so that hand trimming is not necessary.

The air cushion mower represents the first revolutionary departure in lawn mowers in years. Toro is to be congratulated on willingness to risk such an extreme product to provide a radically new choice for the public. It should stimulate new ideas in a field where progress has been confined mainly to refinement of existing principles. So far as our experience extends with this air cushion mower, we are pleased with its simplicity, the ease with which it starts and handles, even if not being entirely satisfied with its inflexibility in mowing height and inability to approach obstructions closely.

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Dr. Schery's frank appraisal of Toro's new wheelless mower reveals both its advantages and limitations. Suitability, he says, depends upon grass species, cut height required, and kind of terrain.

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# Tree Beauty: A Necessity for National Welfare, Theme of 41st ISTC Washington Meet Last Month

"Trees in Modern Municipal Beautification" was keynote topic of the week-long International Shade Tree Conference Convention, held in the Washington, D.C. Hilton Hotel, August 16-20. Numerous panel sessions, devoted to the maintenance and preservation of the nation's trees, revealed modern techniques and concerns that have branched from our present-day tree of knowledge.

Deep-rooted motivations to better beautify America were obvious among the more than 800 conferees who were in complete agreement with Mrs. Lyndon B. Johnson's remarks at the White House Conference on Natural Beauty in May. She proclaimed, "Our peace of mind, our emotions, our spirit—even our souls—are conditioned by what we see. There is growing feeling in this land today that ugliness has been allowed too long, that it is time to say 'Enough,' and to act."

Underscoring President Johnson's interest in trees was an impressive ISTC convention ceremony in Lafayette Park, across the street from the White House, during which Secretary of the Interior, Stewart L. Udall, and other Washington dignitaries planted a Scarlet Oak.

Leading authorities from commercial and governmental organizations, and scientists from horticultural and agricultural institutes discussed many problems that exist to conserve and manage one of America's great resources, trees.

## Vaydik Reviews Kansas City Streetscape Methods

"A new awareness of the wonderful selection of available plant materials is currently sweeping the country," Frank Vaydik, Supt. of Parks, Kansas City, Mo., said during a panel on "Planting and Replacements of Trees in the Modern City." "We have for many years attempted to restore trees and flowers to our city, and welcome the recent backing from Washington. The simple beauty of grass, trees, shrubs, and flowers is needed in all of our towns and cities.



**A tree for The President's Park.** Mrs. Orville Freeman, wife of the Secretary of Agriculture, swings an expert spade as she applies finishing touches to the planting of a Scarlet Oak, official tree for District of Columbia, at the "Unity Through Trees" ceremony opposite The White House during opening ceremonies of ISTC meet. Standing to her left is Interior Secretary Udall. To her right is Joseph A. Dietrich, '64-'65 ISTC president. Similar tree-planting ceremonies took place simultaneously in 30 states with their governors participating.

Beauty of any city is limited only by imagination and initiative.

"In Kansas City, we have and prefer to plant trees in nice, wide strips of sod between curbs and sidewalks, but direct planting is often handicapped by concrete.

"We recommend tree wells built into sidewalks that are designed well before construction or reconstruction. If plans for installing tree wells are not made ahead of time, concrete saws provide openings in already-constructed sidewalks.

"Where areaways and utility pits are located under concrete walks, we use fiberglass or concrete boxes for tree planters. Even though the confinement of relatively small boxes is not ideal, planters are often the only solution to provide greenery on a crowded city sidewalk. On a job where three blocks of downtown Kansas City were streetscaped, we used fiberglass planters (30" x 36") that cost \$160.00 each.

"We plant balled and bur-

lapped (B&B), 2- to 3-inch trees. Youngsters sometimes swing on newly planted trees, and bare-rooted trees become damaged easily. Guy wires aren't necessary if you use B&B trees, and water loss is minimized. Although bare-rooted trees are cheaper, we feel the added expense is well justified. Our average cost of 2- to 2½-inch B&B trees is \$27.00.

"A hydraulic log loader is used to lift trees from trucks to holes. After trees are oriented in the hole, we peel back the burlap, and fill the hole with a mixture of peat moss and topsoil. Then we make a ring from excess soil around the tree base and add water.

"Planting is not complete," Vaydik added, "until the tree is tagged. One side of the tag reads: Your Tax Dollar Bought This Tree . . . The Park Department Planted It. A street tree provides eye appeal, shade, comfort and makes for a City Beautiful. This tree was planted by the Park Department to help restore Kansas City's famous forest. This is a fine specimen, well branched, vigorous and planted with care. The Park Department will spray, prune and care for it. This is a (specimen name) tree.

The other side of the tag begins with the statement, "You Can Help." It gives watering instructions and warns that damage is caused by lawnmowers, autos, vandalism and too much fertilizer.

## Personnel More Troublesome Than Trees

"To have a well-managed tree replacement program you must have qualified personnel handling the municipal reins without political involvement," Frederick Micha, Monroe Tree Surgeons, Inc., Rochester, N.Y., stated as he listed a few trouble spots encountered by tree companies.

From his conversations with other arborists, Micha found that, "The first basic error is lack of sufficiently qualified people, on the average, with



whom arborists must work." He discovered that in smaller communities, knowledge of tree species is inadequate, and municipal workers are too busy to devote the time required for municipal tree maintenance. "In large cities, tree maintenance supervisors are often appointed politically, and most lack knowledge of requirements for a good tree care program.

"Inspectors and inspections are where we get into the untenable situation of unqualified people making decisions. Here is where all the hard work that went into making the specifications is neglected. Backfills with good topsoil are ignored, peat moss mixtures eliminated, and certain sized stakes and trees forgotten, to name a few.

"Bid limitation is also a problem. Not advocating a great raise in bid limits, I do feel municipal bid limits are too low since plant material is different from a tangible snowplow or truck. Plants are living things that must be nurtured. Also, 5- or 10-year contracts should be considered by professional arborists so that contractors can plan well in advance for scheduling and ordering material as well as know how to plan their work," Micha continued. "For a well-developed program of replanting trees in the modern city, we have to make detailed plans to insure conception, development, and delivery of sufficient quantities of quality trees for our local municipalities."

"Modern homes require many electrical appliances, but combinations of electrical wire and natural beauty conflict," Donald Switzer, Vice President, Electric Operations, Hartford Electric Co., Hartford, Conn., revealed during the panel discussion. "Thirty percent of our service runs are for tree trimming. We find that with sufficient clearance, strong, healthy trees are compatible with power lines. When we have to remove a tree because of power trouble, we buy the replacement. With residential expansion comes an increased need for electric power service. This often means that high voltage cable must be added to serve new areas, and trees under lines of very high voltages must be trimmed to provide extra clearance."



**Vegetation chemical control research and techniques** to reduce rights-of-way maintenance was topic of this ISTC panel of experts. They are (from left to right): Dr. T. O. Evrard, Dept. of Plant Pathology and Physiology, Virginia Polytechnic Institute, Blacksburg; Herbert O. Drennan, Carolina Power and Light Co., Raleigh, N.C.; Fred A. Ashbaugh (moderator), Supervisor of Forestry, West Penn Power Co., Greensburg, Pa.; Richard E. Abbott, Ohio Power Co., Canton; Hyland Johns, Asplundh Tree Expert Co., Jenkintown, Pa.; and Glen Fuller, Battelle Memorial Institute, Columbus, Ohio.



**"Safe tolerances, not useless exercises in mathematics,** should be goal of residue detection," Louis A. McLean (left), Velsicol Chemical Corp. secretary, stressed in this group's authoritative review of pesticide use in modern society. Other participants were (from the left, seated) Dr. Richard J. Campana, University of Maine Dept. of Botany and Plant Pathology, Orono; Walter W. Dykstra, Reserch Staff Specialist for Pesticides and Control Methods, U. S. Dept. of the Interior, Washington; and Dr. Paul B. Pearson, President of the Nutrition Foundation, Inc., New York City.



**Contract tree work from both tree company and utility viewpoints** were put forth by these executives from both interests. Speakers, from the left, were Robert J. Kelly, Detroit Edison Co., Detroit, Mich.; Steve Pugh, Bartlett Tree Expert Co., Stamford, Conn.; R. Larry Rowse (moderator), Portland (Ore.) General Electric Co.; H. J. Cran, Jr., Connecticut Light and Power Co., Hartford; and Keith L. Davey, Davey Tree Surgery Co., Ltd., San Francisco, Calif.

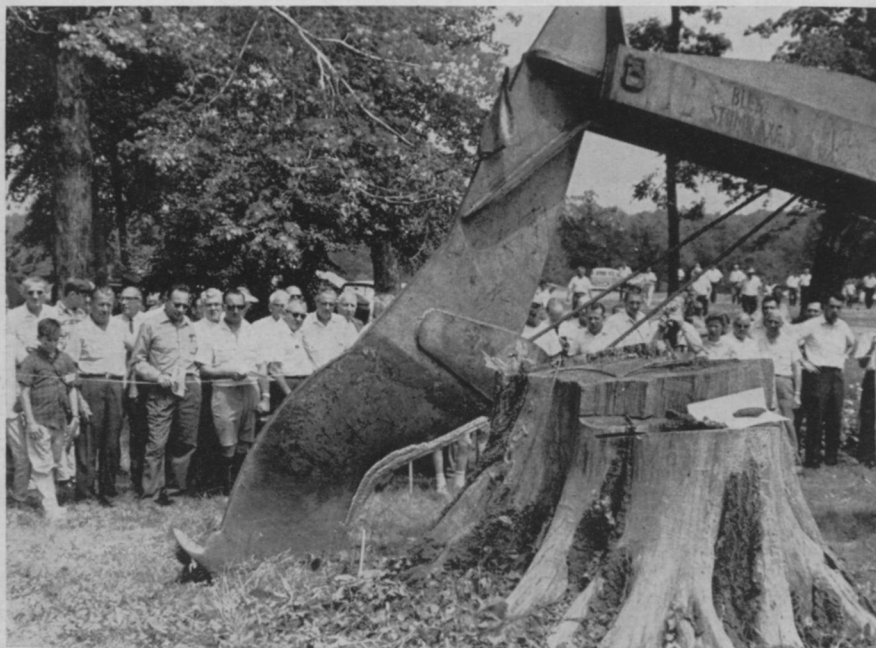
**Growth Retardant: Keynote on Chemical Control Panel**

Chemical control by growth retardants was the topic of a panel discussion moderated by Fred A. Ashbaugh, Supervisor of Forestry, West Penn Power Co., Greensburg, Pa.

"There was an obvious difference in the growth of elm, mulberry, hackberry, and boxelder tree sections treated with MH-30T (maleic hydrazide) when compared with untreated portions," H. O. Drennan, Carolina Power and Light Co., Raleigh, N.C., told a group of utility



**Events for the entire family** is the way ISTC program planners arrange activities. This was especially true this year with convention being held in the Nation's Capital. These early arrivals lined up to register and obtain details for trips scheduled for the wives and youngsters.



**Over 20 suppliers demonstrated their equipment** at U.S. National Arboretum for ISTCers. Shown here is a massive stump axe made by Bles Stumpax Co. Arborists watched this unrelenting claw dig out the huge stump in under one hour, a job that would otherwise have taken three men three days to accomplish. Also shown were skylifts, chippers, sprayers, dusters, chain saws, and stump cutters. Shade of trees protected spectators from 98° temperature during the activity.

arborists. "Also sweet gum and wild cherry showed less growth after treatment, but new growth in treated areas was, after a time, quite vigorous. Various effects resulted from sugar maples treated with MH-30T, and the chemical showed no outstanding effect on honey locust, American elm, and pecan. Stem growth of sycamore, red maple, aspen, Chinaberry, oaks, magnolia, tulip tree, and crepe myrtle was irregular and not reduced by MH-30T treatments.

"Our experience with MH-30T in Raleigh indicates that weather conditions (rainfall and humidity) and soil conditions, as well as choosing the right time to apply, may greatly influence the results given by MH-30T used as a growth inhibitor," Drennan concluded.

"MH-30T at the 10,000 parts per million rate (4 lb./50 gal.) caused some burning of leaf tips of elms and maples in growth inhibition tests in Roanoke in 1964," Dr. T. O. Evrard, Dept. Plant Pathology and Physiology, Virginia Polytechnic Institute, Blacksburg, added. "Leaf tip burning was not severe, however, nor was it objectionable when viewed from the ground.

"American and Chinese elms, Norway maples, silver maples, and linden trees were markedly inhibited by MH-30T. Tulip trees, sprayed in full bloom, apparently weren't inhibited, and no toxic effects were noticed. Sycamores showed some inhibition, and more was expected, but rain washed the chemical from the foliage."

One of the main objectives of

growth inhibition tests in Virginia is to search for a chemical method to regulate regrowth after trimming. Both frequency of tree trimming and highway maintenance costs would be reduced.

Glen Fuller announced that tree growth retardant research is surging forward at Battelle Memorial Institute, Columbus, O. "A test compound that can be incorporated in a lanolin-base wound dressing has given promising results during Puerto Rico experiments. Puerto Rico tests were initiated to facilitate rapid testing by gaining a season over the temperate U.S. The new retardant, in its lanolin base, was applied to cut plant surfaces. Results show that dormant buds are inhibited. In tests using 1% inhibitor dressing, 3½ feet of growth emerged from the pure lanolin check, and only 12 inches grew from treated-cut surfaces. In Connecticut on silver maple, and sycamore in Philadelphia, Pa., there was up to 6 feet of growth on the control and only 6 to 12 inches formed on treated stock."

The new compound, still anonymous, was screened from 150 prospective growth retardants, many of which were declared ineffective during preliminary greenhouse and field tests. Edison Electric Institute initiated the Battelle Institute research program on growth retardants.

Hyland Johns, Asplundh Tree Expert Co., Jenkintown, Pa., discussed problems involved with chemical vegetation control. Johns outlined the necessities for a successful chemical control program which includes continuity of service, adoption of long-range programs, and adequate supervision.

"Chemical control," Johns explained, "is like tree trimming and other phases of line clearance, it's only a tool. Frequently we are prisoners of past experience which limits our concepts and methods.

"Postponement of needed sprays saves short-term dollars, but is costly in long-range economy and public relations. Budget problems, of course, are always with us, but a long-range management program leads to a satisfiable control schedule and reduced cost. Year-round service has several benefits not found with only seasonal operations.



Personnel can be trained and selected less frequently, and work crews may be cut to one-third the number needed for a three-month schedule to do the same amount of work.

"Even though a chemical crew is more profitable than a trimming crew, chemical crews need closer supervision. Careless drift and volatility damage, poor coverage, and complaints are the usual result of inadequate supervision."

#### Contract Controversy Solved

Speakers on various aspects of tree maintenance contracting were introduced by panel moderator R. Larry Rowse, Portland General Electric Co., Portland, Ore.

"The argument on contracting versus utility crews is resolved by recognizing two points," Keith L. Davey, Davey Tree Surgery Co., Ltd., San Francisco, Calif., told the arborists. "One point is that a contractor must prove his right to tree maintenance work by his reputation and ability to justify his costs to the satisfaction of the utility. Second, utilities should use every opportunity to contract line clearing because today



Untold opportunities now exist as a result of the White House Conference on Natural Beauty, new ISTC President, Olaf J. Andersen, reminded members after taking office. A past president of the group's Southern Chapter, and '64-'65 President-Elect, he knows well the association's responsibility in the new national tree planting and tree care program.

we are living under a private enterprise system. Privately owned utilities should fight for the private enterprise system and continue its good job. Pacific Gas and Electric Co., the largest private utility, has contracted almost all of its work for 30 years with happy results to the public and company."

"In Hartford, Conn., we have found that itemized schedule and bidding forms help foremen

and contractors get together on what to expect from contract tree maintenance arrangements," H. J. Cran Jr., Conn. Power and Light Co., said from the utility arborists' panel. "Schedules should include a record of the present number of plants, time allowed for tree trimming, and plans for additional trim work in future cycles. Our tree trimming report includes: year last trimmed, miles covered, areas trimmed, and total man-hours. For brush control we note the last year sprayed, miles covered, number of sections sprayed, and total man-hours. With man-hour and schedule requirements on record, contracting utilities and tree maintenance operators can see clearly the facilities needed for an economical and satisfactory maintenance program."

In a detailed report on contract line clearance methods used at Detroit, Mich., Robert J. Kelly of Detroit Edison Co. said, "For scheduling and record-keeping purposes, tree service is divided into numbered trimming areas that have geographical township, city, and village boundaries.

"Field operation in each area

*(Continued on page 26)*

## The Amazing New Combination Saddle from Harder



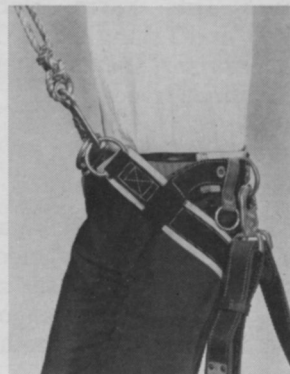
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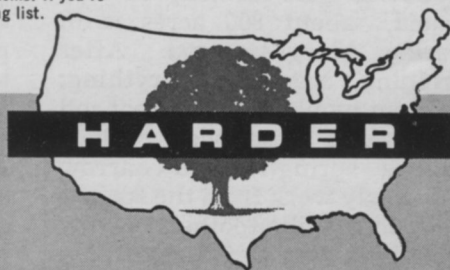
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## How To Ready Soil for the Next Crop

After sod is carted off to the market, growers have to dive right in and start all over again. Soil preparation is the foundation for a fertile, healthy stand of lush sod and maximum profits.

Most fields are made ready for the next crop in two steps: (1) cultivating, and (2) adding fertilizer. Irrigation is used before seeding as a cultural practice on some farms, depending on local climate and soil type. Does every grower follow the same techniques? We wanted to find out.

How do you plow and work the soil before reseeding your favored variety? How much fertilizer and lime do you put on your fields? Do you pre-irrigate? During the past few months, WTT staffers asked these and other questions of cultivated sod growers throughout the nation.

Professional growers WTT talked with included: Bill Johnson, Halmich Sod Nursery, Brown City, Michigan; Wilco Sod Nursery owner Allan DeMuth, Monee, Illinois; Edward Jacobsen, owner, West-Turf Co., Tehachapi, California; Wiley Miner of Princeton Turf Farms, Cranbury, New Jersey; Mel Rich, Richlawn Turf Farm, Denver, Colorado, and Triangle Sod Company supervisor, Lonas Amerine, Belle Glade, Florida.

### Michigan Peat Seed Bed Not Irrigated

"In Brown City, Michigan it rains enough so we don't need to pre-irrigate, although in areas west of us around Chicago, irrigation is standard procedure," Johnson told us.

"Of our 1,200 farmed," he continued, "about 800 acres is in Merion bluegrass sod. After stripping, we use everything; start out by plowing our peat soil to break it loose, then pack it with a spring-toothed harrow and slowly work from the spring-tooth to a spike-toothed harrow to make a fine bed for seeding,

working the soil as much as time and weather allow.

"We use around 1000 lbs. fertilizer per acre of either 5-20-20 or 5-10-30 (nitrogen-phosphorus-potassium). Years ago we started out with 400 lbs. per acre, and I've been increasing it every year. I don't use lime because we've found that it's unnecessary in our peat soil.

"After the fertilizer is down,

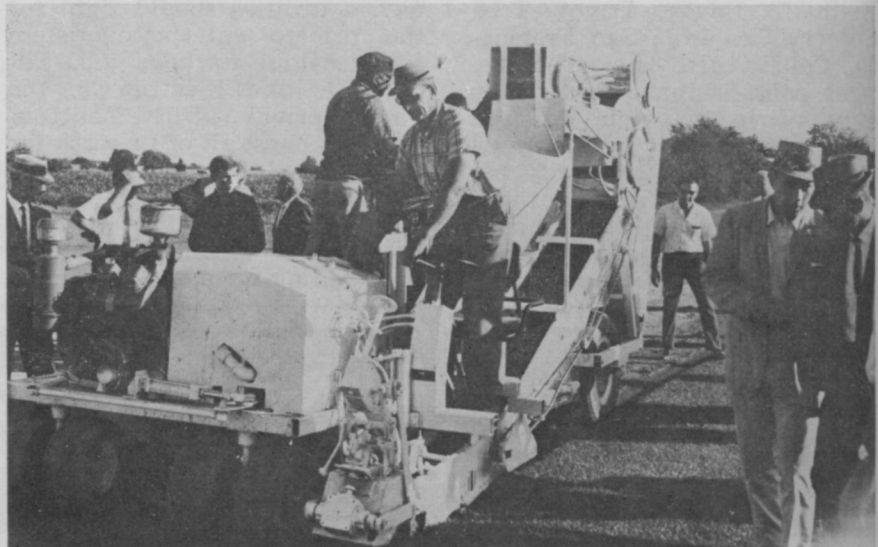
we roll our cullipactor to pack the soil just before seeding."

### Fluffy Loam Packed by Rolling in Illinois

"I use a Graham, seven-tine plow to rip up the dirt here in Monee, Illinois," DeMuth explained in telling us about his post-harvest techniques.

"Our soil is a loam type underlain with black dirt. We usually

## Princeton Turf Shows Its New Sod Harvester



Demonstration of new sod harvester was big event at recent sod growers meeting in New Jersey.

At a recent meeting of the Cultivated Sod Association of New Jersey, Inc., the first public viewing and demonstration of a self-propelled mechanical sod harvester was held. Unveiling of this new equipment was a giant step forward in the mechanical harvesting of sod. The sod harvester has been developed by Princeton Turf Farms of Cranbury, New Jersey.

Manned by a crew of 3 men, the sod harvester will "lift" and palletize sod at a rate three times as fast as the method of harvesting commonly in use today. In addition, another unique feature is the uniformity and thinness of cut in spite of undulations or depressions in the soil surface.

Striving for further improve-

ment of the current model, Wiley Miner of Princeton Turf Farms already has another model on the drawing boards incorporating additional automated features.

The demonstration attracted a group of 70 individuals comprised primarily of sod producers from New Jersey and neighboring states. The demonstration was followed by a chicken barbecue and a business meeting of the association. Arrangements for the demonstration, barbecue and meeting were under the direction of Dr. Henry W. Indyk, extension specialist in turf management, Rutgers—The State University, and presently secretary of the Cultivated Sod Association of New Jersey, Inc.



put out 10 to 15 acres of Merion bluegrass. It seems to be ready for harvest sooner than Kentucky bluegrasses we've tried before. They took four years to get ready for harvest!

"We use the Graham at least twice, and usually three or four times. It cuts two to three inches deep each time. Our old S-30, International tractor, made in the thirties, still does a fine job in this operation. After the loose dirt is exposed to a few rains, I use a regular mobile plow to turn it over.

"Leveling is the next step. We use the disk for this, but find that after going over the field several times, our loam soil becomes fluffy in spots; tractor wheels sink in these soft depressions, often 20 to 40 feet long. To compact the soil so that our low-slung seeder won't drag, we use a roller and a weighted harrow on the field after discing.

"My last operation, just before seeding each year, is adding fertilizer. About every three or four years we add lime according to soil test results. I put on either

1,000 lbs. of 10-10-10, or 700 lbs. of 14-14-14 per acre. Usually put on 10-10-10. After the fertilizer is applied, I go over it once lightly with a harrow and then start seeding," DeMuth said.

#### **Plowing Starts August 15th in New Jersey**

Miner, in Cranbury, New Jersey, begins his new-start schedule this way: "We're growing Merion bluegrass now, and this fall we'll have about 1,500 acres out. We also grow mixtures of Kentucky, Merion, and Amron fescue on the loam soil here.

"In this area, we have two heavy cutting seasons. One starts in late March and continues through June. Another is around the middle of August.

"After cutting, we begin to plow. This starts about the 15th of August. Then we disc the fields and add fertilizer.

"Fertilizer, 0-20-20, usually runs from 300 to 600 pounds per acre. We use one to four tons of lime every two years or so according to results from soil tests.

"After the fertilizer is worked into the soil by discing, we bring out our spring-toothed harrows to level the fields. Our farm continues harrowing and constantly keeps the soil clean and ready to seed in the fall.

"Just prior to fall seeding, we put on 100 lbs. of urea per acre for nitrogen. After seeding and during the growing season, urea is added at 80 lbs. per acre," Miner reported.

#### **Californian Pre-Irrigates to Settle Soil**

Jacobsen in Tehachapi, California says, "We always reseed our 150 acres for sod production. Our soil is classed as a loam, and we grow hybrid bermuda varieties as well as bluegrass combinations.

"The first pre-seed operation here is chiseling, or plowing, which tears the soil loose about 12 to 14 inches deep. Next, we springtooth harrow the ground and then pre-irrigate.

"By pre-irrigating, we saturate and settle the soil. Our irrigation mainlines are the permanent

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surface type, and the laterals are moveable.

"After we irrigate and harrow once, we do it again. Then we add fertilizer, using 16-20-0 at 250 lbs. per acre, put on before seeding. Ammonium sulfate is applied monthly after seeding. We don't add lime because soil here is not acidic.

"After the fertilizer is applied, the fields are cultivated at very shallow depths. Then we put the seed in."

#### **Bluegrass Seeded on Colorado Loam**

"We always reseed our 465 acres out here in Colorado," Rich said in Denver. "Our soil is sandy-loam, and we grow Merion, Clark and Kentucky bluegrasses.

"The bulk of our stripping is in early spring, from March through June. July and the first part of August are slack. In September and October, stripping picks up again, when we average two acres a day.

"After the stripping operation is finished, soil is turned with a Reason plow, and we use a 12-foot rotavator to work the surface. A 121 h.p., 5010 John Deere

tractor and a 84 h.p., 4010 John Deere pull our equipment. Afterwards the Rototiller goes to work to break the chunks and level the soil. Then the field is rolled twice with a regular cul-pactor to break and pack the soil. It's rolled once more and we start to seed.

"We don't put on fertilizer before we seed, but apply nitrogen at 7.6 lbs. per acre through irrigation water after the grass is growing. No lime is added.

#### **Florida Muck Irrigated by Canals**

"We never reseed," Amerine at Belle Glade, Florida points out. "We grow primarily St. augustinegrass here with some bermuda varieties, zoysia, and centipede. We strip sod from our muck soil about every 13 months. The sod is cycled on our 1,200 acres so we can strip periodically all year round. This way some sod is ready for harvest while more is in the growing stage.

"After stripping, we roll the muck soil and wait for regrowth from root systems left in the ground. While waiting, we add about 100 lbs. of lime per acre.

"Our fields are consistently ir-

rigated by a canal system laced through the farm. Water level in the canal is maintained so the muck soil can be saturated at any depth. Plenty of water is supplied to roots left in the ground, and seeding is not necessary here for succeeding good stands of sod."

It's apparent, representative sod growers devise cultivation practices to coincide with prevailing climatic and edaphic (soil) conditions. In Michigan, Johnson found pre-irrigation unnecessary this year since rains supplied enough water for proper soil moisture. But, irrigation is commonly needed near Chicago where rains are not sufficient for adequate sod moisture.

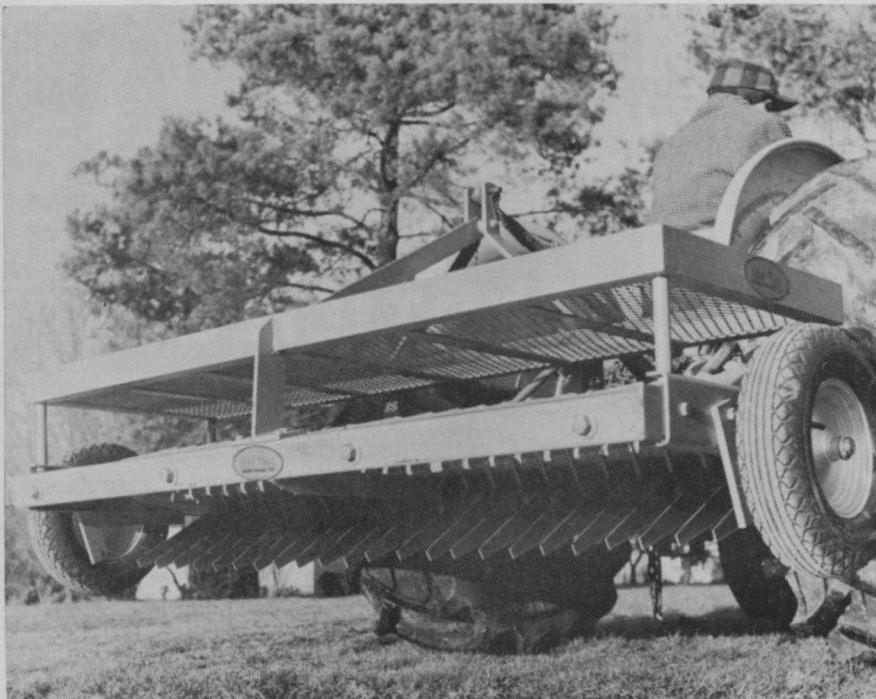
Methods of leveling, cultivating, and sod growing are governed by soil type, water availability, acreage, and personal preference. Sod is propagated from roots in rich, well-irrigated muck in Florida, while seeding is favored on loams in New Jersey, Colorado, California, and Illinois.

In California, irrigated water is used to settle the fields as a regular cultivation practice; rollers or rotavators are put to work elsewhere to make the soil compact before seeding where rainfall is adequate.

Generally, growers that reseed, cultivate by first breaking the soil loose with a plow. Discing or light plowing may follow several times, depending on how often it rains or to what extent the soil clots. Finely tilled beds for seeding are prepared by repeated cultivation with spring-toothed and spike-toothed harrows.

Sod fields in Florida are rolled level after sod is stripped. Since propagation is from root growth, fields are not plowed or harrowed, but the roots are left undisturbed to sprout anew.

Fertilizer rates are determined by two methods. Soil samples are sent to agricultural testing stations to detect deficiencies that can be replaced by recommended amounts of fertilizers. Need for fertilizer, and sometimes even relative rates, can be determined by the trial and error method over a period of many years.



**Verti-Slicer** has 23 tempered-steel blades which knife through a 70 inch swath of turf at depths up to 2½ inches. The tractor-drawn unit produces continuous "fine-line" turf slicing of fairway grasses as it prunes grass roots and provides water and air penetration of turf. Verti-Slicer can be used throughout the season, does not disturb grass surface, and allows uninterrupted play, according to West Point Products Corp., West Point, Pa., which can supply further information.



# Stolon Harvester Found at 4th Annual Cal-Turf Field Days

A new stolon harvester which can harvest up to 1,200 bushels of hybrid bermudagrass stolons per hour, was on display at the Fourth Annual Field Days, sponsored by Cal-Turf, Inc. at its Camarillo, Calif. farms, July 21-24.

The harvester was developed by Cal-Turf to reduce the cost of stolons and thus make hybrids more saleable for use on athletic turf facilities.

Nearly 300 architects, contractors, and recreation personnel attended the four-day affair intended to acquaint prospects and others with the latest in methods, varieties, and equipment within the turfgrass field.

Shown also was a planting machine for greens, developed by Cal-Turf president Tobias Grether. Of particular interest to golf course superintendents, the planter distributes stolons evenly and simultaneously presses them into the soil. A disc roller pulled behind is interchangeable with a solid roller, used to dress bentgrass at Cal-Turf.

Ability of hybrid bermudagrass sod to withstand abuse was demonstrated by retaining sod

for seven days before installing it on soil. Visitors saw sod at varying stages of recovery after the test had been prepared prior to the Field Days.

"While bermudagrass can withstand misuse, I do not recommend it," Grether commented. He warned viewers that they should not abuse bluegrass in California either or they would have sodding recalls and unhappy clients.

Tests being conducted on various grasses by Cal-Turf in several plots include daily compaction by a 700 lb. roller. A portion of each plot on display was covered with shade cloth to show degree of shade tolerance.

Salinity (salt) tolerance of bluegrass and Tifgreen hybrid bermudagrass was shown in specially constructed bins filled with various test soils. Soil having a high salt content won't support bluegrass unless the soil is corrected. Thus, the importance of matching turf varieties with the right soils was pointed out, according to Dick Morrow C-T field representative.

Need for extra nitrogen when sawdust or chips are added to soil at high rates was also shown.



**Salinity tolerance** is being checked here by Cal-Turf representatives Ed Mutoza (left) and Dick Morrow. Bluegrass on the right was completely brown 23 days after being sodded on high-salt-content soil. Tifgreen (left) on same soil survived. These boxes were built for the meeting.

Stolons were planted on varied soil mixes, ranging from all soil to sand with high rates of sawdust. The mixtures were planted on June 7th, and received no fertilizer after planting. Turf planted on pure soil was lush and green, but turf planted on plots containing sawdust was chlorotic, red stemmed, and very sparse. President Grether said, "No attempt is being made to encourage growers to plant in 100% soil, but when sawdust is incorporated, extra fertilizer must be added if turf is to establish fast and perform satisfactorily."

Presently the company is testing 23 different varieties of grass from all over the U.S. In the future, many of these will be tested on 20,000 square feet of play area at a local school. Wear and recovery from wear will be checked under persistent usage by active school children.

Cal-Turf was established in 1959 with one acre of turf. That was the year the Dodgers moved to Los Angeles and ordered all the turf the company had. It was sold out before it really started. Today the company has 300 acres in two locations: Camarillo and Patterson, California.

Coordinator for the educational affair was William Gourley, Jr., who told WT&T, "It was the most successful Field Days show we've ever held."



"Toby" Grether, Cal-Turf president (center), took visitors on tour of test plots at firm's Camarillo sod farm. Growing habits of new varieties of bent, bluegrass, and bermudas were seen, as well as their ability to withstand compaction and shade.

# Banvel-D and Bandane for Turf Weeds

By RICHARD N. CROWL  
Velsicol Chemical Corp., Chicago, Illinois

Phenoxy herbicides have long been of economic importance for post-emergence control of many broadleaf weeds in turf. The phenoxy family of herbicides is undoubtedly the best known group of weed killers presently on the market.

However, with the advancement in strains of grass and increased problems in turf from weeds not controlled by the phenoxy group, demand for new herbicides has increased. For example, greater soil compaction from the use of larger equipment and electric golf carts has increased the population of knotweed in turf. Also, clover, sometimes considered a desirable plant, has become undesirable in many areas.

New herbicides are also in demand for other reasons. Many weeds, such as chickweed, grow when temperatures are between 45 and 50°. It is important to control these weeds in their early stage so the desirable grasses will have less competition.

Banvel-D 4-S was introduced by Velsicol to the turf market to meet this demand. This chemical has given excellent control of weeds in turf that were previously hard to control without injury to desirable grasses.

The herbicide (4 lb./2-methoxy-3, 6-dichlorobenzoic acid per gallon) is a water soluble material for ease of dilution in sprayers. It is a dark-colored liquid in formulation and is stable at temperatures to -5°F. Any increased density at lower temperatures will decrease as the temperatures increase and the chemical will return to its original soluble state without heating or agitation as temperatures rise. Also, Banvel-D 4-S remains stable in direct sunlight.

Control of knotweed, chick-

weed, white clover, sheep sorrel, curly dock, and dogfennel, can be obtained anytime the weed is actively growing in bluegrass, bermudagrass, St. Augustine, centipedegrass or bentgrass with Banvel-D 4-S at rates from ½ to 1 pound per acre. Also, promising results have been obtained in many areas on control of dandelions, creeping-charlie, and henbit.

Desirable grass seed may also be sown one month before or after application of this weed-killer. This permits contract applicators to seed previously weed-infested areas during the same growing season.

Another cultural practice that has grown rapidly in the past

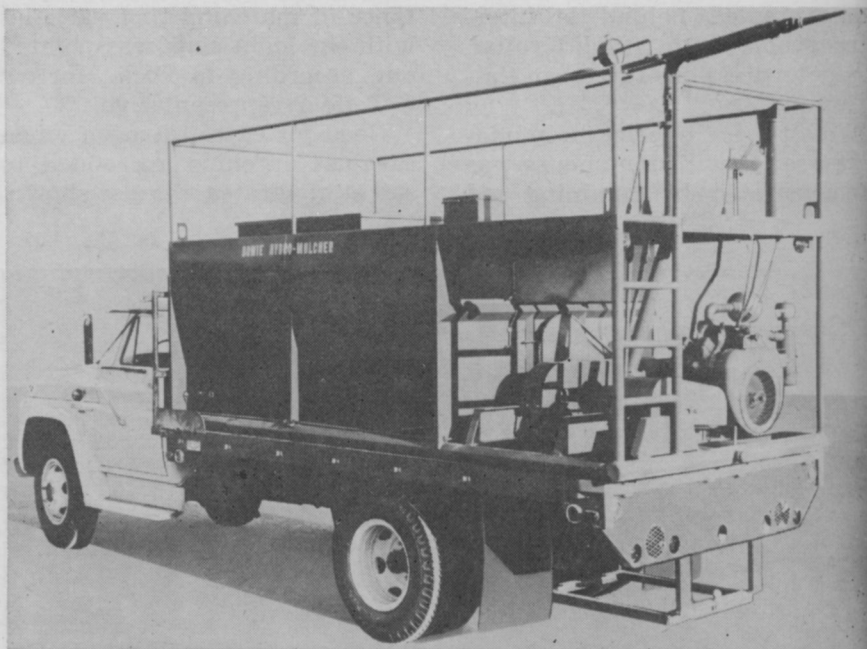
few years is pre-emergence control of crabgrass. Because of the thousands of seeds produced by one crabgrass plant, this problem needs constant attention.

A formulation containing Banvel-D, Velsicol's broad spectrum herbicide, plus 2,4-D for use on lawns, turf (not pastures) and golf fairways, aprons, tees and rough has just been approved.

Bandane, (polychlorodicyclopentadiene isomers) a pre-emergence herbicide developed by Velsicol Chemical Corp., is available to turf growers in granular form. It combines crabgrass control, insect control, safety to desirable grasses, into one chemical for better turf.

Bandane applied at rates of 30-35 pounds actual per acre has given crabgrass control without injury to grasses such as bentgrass, bluegrass, bermuda, zoyzia, St. Augustine and centipede.

Bandane is a chlorinated hydrocarbon and has little or no post-emergence activity, therefore, it must be applied before crabgrass germinates.



**Seeds, fertilizers, Turfiber and sprigs can be applied with Bowie's new Hydro-Mulcher.** The device, called the 1500 Gallon Chief, can cover up to half an acre in 8 minutes with its spray reach of 200 ft. Equipped with a 60.5 horsepower, 154 cu. in. air cooled engine complete with starter, generator, and main drive clutch, the Hydro-Mulcher has a 108 Dodge pump clutch and a heavy duty skid of 4 in. pipe. A catalyzed epoxy coat inside the tank and an agitator help prevent rust and corrosion. Other features include a gate valve inside the tank to hold slurry away from the pump, belt and chain drive throughout, a horn signal device and a choice of either 3500/IB/F Bowie Pump or 4 by 3 in. centrifugal pump (for seeding operations only). Ball bearing support and top mounted controls add to the machine's usefulness, according to Bowie. Five nozzles for close, medium and long range spraying and auxiliary gas tanks for all day operations round out the Hydro-Mulcher's equipment. Bowie Machine Works, P.O. Box 630, Bowie, Tex. will furnish more information to WIT readers who write the company.



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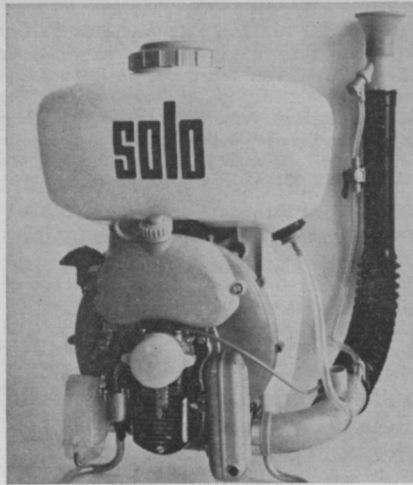


## BRUSH CONTROL

left: the Solo Mistblower  
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above: Solo Chain Saw 70-A  
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## ISTC Washington Meet Report

(from page 19)

is broken down into a series of descriptive units. Presently, we have contractors bid on these units by division. Unit divisions, used for contract references, should be well defined with few variables. Tree trim units are based on line voltage, and tree cut units are based on tree diameter.

"We get more miles of lines cleared for less cost by using the unit bid system. Supervision requirements of the company have increased but the cost per unit is less and total expenditures have fallen."

Continuing with the subject of expenditures and profit, Steven Pugh, Bartlett Tree Expert Co., Stamford, Conn., added, "A company should make enough profit to reduce service costs to future users through tolls and research progress. What is profit? It's both a compass and a goal. In a company, profit is the measure of service and proficiency."

### Pesticides: Integral Part of Modern Society

"The subject of our panel presentation, 'Pesticides in the Modern Society,' may be best described by the terms complexity, ignorance, confusion, and misunderstanding," Dr. Richard J. Campana, President-Elect, ISTC, University of Maine, Orono, told the attentive delegates. "Man can contaminate his environment in many ways, however man's life is now geared to use of pesticides. The role of insecticides today is complex, and we'll hear much more of them in the future."

"Large scale usage of pesticides in the manner recommended by manufacturers and U. S. government regulations is consistent with sound public health policies," Dr. Paul B. Pearson, President of the Nutrition Foundation, Inc., New York, N. Y. cited. "This was the general conclusion of the World Health Organization, U. S. Public Health Service, and the Food Protection Committee of the National Research Council after reviewing the public health aspects of proper pesticide usage." Pearson agreed with other panel members that it is important to recognize a potential pesticide danger. However, used properly, pesticides contribute greatly to man's health and wel-



Deep go the roots of this "official" ISTC slate of officers responsible for the coming year's activities. They are (from left to right) Editor Paul Tilford, Executive Secretary, National Arborist Assn., Wooster, Ohio; Dr. Richard Campana, President-Elect, University of Maine, Orono; Joseph A. Dietrich, '64-'65 President, Park Superintendent, Greenwich, Conn.; Olaf J. Andersen, '65-'66 President, from Trees of Houston, Houston, Tex.; Vice President C. Elmer Lee, Alhambra, Calif., Line Clearing supervisor of the Southern California Edison Co.; and Dr. Lewis C. Chadwick, ISTC Executive Secretary at Ohio State University, Columbus.

fare by protecting foodstuffs and vegetation from pest invasion, and they aid in disease vector control.

"Losses of food from insects, plant, and animal diseases are much greater in less industrialized countries. Estimates in India show that 18% of the food produced is destroyed by insects and an estimated 8,800,000,000 rodents before it reaches the table. The U. S. would probably be an underfed rather than an overfed country if it were not for the widespread use of pesticides and other agricultural chemicals," Pearson contends.

"The dose solely makes the poison," Louis A. McLean, Secretary, Velsicol Chemical Corp., Chicago, told the delegates. "Doctors learn that every drug, every food, every material, if over-dosed can be lethal. Conversely, minute amounts of highly toxic materials which are added to, or occur naturally in, foods are safe; some even benefit good body function. Emphasis should be on proper usage rather than substitution of one thing for another. Truly, it has been said, there are no safe materials, merely safe ways of using them.

"Much controversy both before and since the advent of Rachael Carson's book, 'Silent Spring,' has brought forth the importance of intelligent usage and precise measurement of both doses and pesticide residues recovered. The National Academy of Science re-

port on chlordane determined it is a safer product than believed when tolerances were set in 1950. The report concluded that there is no evidence available to indicate that chlordane constitutes any real or potential hazard as a residue in foods or as a contaminant in other environmental aspects."

Today, pesticide residue contamination is based on traces recovered from food, soil, and water by very delicate instruments such as gas chromatographs. Pesticide traces are recovered from numerous parts per million to immeasurably small amounts.

"Scientifically, zero is merely the detectible limit of the instrument. Unfortunately, through recent history of pesticide detection of controversial materials, rules of the game changed as each new and more accurate instrument was developed," McLean continued.

"The objective has always been safety, not useless exercises in mathematics causing perfectly good milk to be sewered because infinitesimal amounts of pesticides could be detected by the newer instruments. Many people have been worried by reports of residue findings of billionths and trillionths which, if true, should be reassuring instead of alarming.

"The National Academy of Science reports that 'zero' tolerance should mean 'negligible' and permissible residues should



be determined on the basis of actual acceptable daily intake. Thus, the scientific community has spoken and pointed the path to assure adequate food supply and health protection.

"However, you cannot erase imaginative fears by merely stating the considered judgment of experienced scientists. The National Academy report emphasizes it is wrong to create alarm where a residue is negligible. It is wrong to shout 'fire' in a crowded theater, and it is criminal to so shout because analytical instruments indicate that someone in the lobby lit only a cigarette," McLean told the arborists. "There have been some misuses and there are health situations where a small calculated risk to wildlife is necessary. Lack of substantial injury, however, is seen by the increasing numbers of song birds and wildlife population explosions in Delta country which has been most heavily treated."

"Just what do we know about effects of pesticide chemicals on fish and wildlife resources?" Walter W. Dykstra, Research Staff Specialist, U. S. Department of Interior asked. "We do know that some species are

highly sensitive to certain pesticides. Generally, crustaceans, mollusks, and fish are most sensitive, followed in order of decreasing sensitivity by amphibians, reptiles, birds, and mammals. Residues from one or more of the chlorinated hydrocarbon insecticides, including DDT and its degradation products, are now found in practically all specimens examined by the Fish and Wildlife Service." Dykstra pointed out that residues of chlorinated hydrocarbons have been recovered from penguins and seals from as far away as the Antarctic. Residues detected by highly sensitive instruments vary from only a few parts per trillion to several thousand parts per million.

After summarizing case histories of residue incidents, Dykstra outlined rules of safety and conservation for use of chemical pesticides. "Resort to chemical pest control after considering carefully their use in terms of need, anticipated results, and possible harmful effects. Use only those chemicals registered for a particular pest and follow label instructions. When selecting materials, regard safety as the primary consideration rather

than cost. Limit pesticide treatments to target areas and avoid contaminating community interest spots. Use the most selective chemicals at minimum dosage rates, and avoid large scale use of pesticides that are known to concentrate in living organisms. The overall success and efficiency of a chemical control program hinges on the intelligent use of pesticides."

"Pesticides and public policy is the real concern in Washington, D. C.," Jerry Sonosky, Special Assistant to Senator Abraham Ribicoff, explained as he addressed the arborists. "Pesticides and their use are involved in public policy, and both are matters for public debate. Who is going to decide what the proper pesticide policy is: industry, agriculture, or 'Capitol Hill'?"

Sonosky promoted intelligent, integrated use of pesticides, not discontinuance. "Be concerned where we're going next; this is more important than past pest damages."

Next year's ISTC convention will be held in Cleveland, O., Aug. 28-Sept. 2, probably at the Cleveland Sheraton Hotel, but exact scheduling will be announced later, WTT learned.

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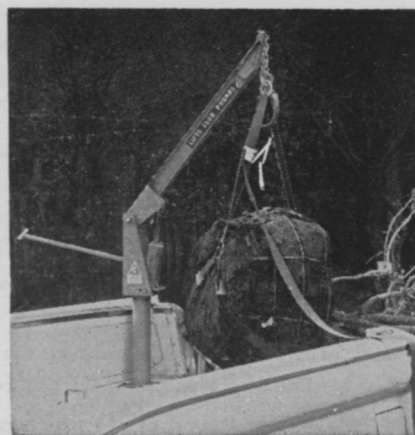
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## CHICORY

(*Cichorium intybus*)



Chicory is a perennial which reproduces by seed; it is also known locally as wild succory and blue daisy. This native of Europe is common across the United States with the exception of the Deep South. It may be found along roadsides, in pastures and meadows, on vacant city lots, and other waste places.

Initial plant growth is a rosette which resembles dandelion, having deeply scalloped leaves. Sometimes these leaves are cultivated and harvested for salads or greens, since chicory is a close relative of endive. Later the rosette sends up an erect stem which may reach to 7 feet high. The stem (2) is smooth and much-branched in the upper portions. The hollow stem center is filled with a bitter-tasting milky sap.

Leaves on the lower portion of chicory retain the dandelion shape, but upper leaves are small, tongue-like and sit directly on the stem.

Flower heads are borne on stalks which grow from the axils of leaves. Each flower head is made up of many tiny disc flowers (3), each with its single yellow petal. The conspicuous blue petals are called ray flowers; they are sterile and produce no seeds. The ray flowers open in morning and evening, and close over the disc flowers during the day.

Seeds are dark brown and wedge shaped; they are  $\frac{1}{8}$  inch long and have a row of bristlelike scales along the top (4).

The root is a white fleshy taproot (1) which grows deeply. It is sometimes cultivated, harvested, dried and used as an addition to or substitute for coffee.

One or two sprayings of 2,4-D will selectively kill this weed. Three or four mowings per year likewise will kill it. It should not be permitted to drop seed.

*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)

## How to Calibrate Turf Sprayers

(from page 11)

and turf advisors should be consulted for their recommendations before a spraying program is started. If their recommendations are followed faithfully, your spraying program will be successful. If not, the best sprayer made cannot do the job for which it was intended.

Another important point to consider is the choice of spraying equipment. Be sure the sprayer has sufficient capacity to carry out your full program. Make sure it has a tank and piping system which are protected against the ravages of modern day chemicals. Be certain it has a good filter or ample capacity; plugged nozzles will upset your rate of application. Be doubly sure it has a pump that can withstand abrasive and corrosive chemicals you will be using. It should have an accurate and reliable pressure gauge and pressure regulator or relief valve. Make sure also that the boom is protected inside against rust and corrosion.

Buy your sprayer from a reliable source, preferably your turf equipment supplier. He has access to factory warranty and service programs which can be very helpful. Take good care of your spraying equipment; keep it in good condition. Periodically check nozzle capacities. Follow closely the recommendations of your turf advisors, and your spraying program will be successful.

## Elm Beetles Scavenge Kansas

Elm leaf beetles reportedly defoliated Chinese and hybrid elm trees throughout Kansas this summer. Dr. Hugh E. Thompson of the Kansas State University Extension Service said leaves chewed by the beetles dropped to the ground. "Fully grown elm beetles are crawling down the trunks of trees and going into tree crevices or into grass and other hiding places," he noted.

Thompson added that the insect has three or four generations in Kansas. The second generation is working at present and



will soon go into the third generation. Tree surgery potential increases with each generation of beetles as their number increases.

Information on the elm leaf beetles is contained in Kansas State University Extension Bulletin 386, "Control of Elm Leaf Beetles." Copies are available in County Agricultural Extension offices and from the Kansas State University, Extension Service, Manhattan, Kansas.

### Outlines Woody Plant Control

"Chemical Control of Wood Plants," a recent publication by two University of California botanists, explores methods for removal of plant pests such as poison oak, chamise, and other shrubby vegetation (chaparral).

Authors O. A. Leonard of UC's Davis Department of Botany, and W. A. Harvey, Agricultural Extension weed control specialist, claim that removal of these wood plants would be an economic boon to California. "Some of the land now covered by this brush is suitable for conversion for range and crop purposes, other areas may be cleared for watersheds, and still others eventually will be partly cleared for rural living and recreation," they foresee.

Chief chemicals listed in the pamphlet are 2,4-D and 2,4,5-T and various formulations of the two. The publication, Agricultural Experiment Station Bulletin 812, is available from county offices of the UC Agricultural Extension Service and from the Division of Agricultural Sciences, University of California, Davis, Calif. 95616.

### Bean Turfkeeper Displayed

Turfkeeper is a specially designed, high-flotation turfgrass sprayer with a 28 ft. 4 in. plastic boom, John Bean Div., announces. Built in 5, 10, or 20 gpm pump sizes, Turfkeeper is said to eliminate the problems of tearing, gouging, or rutting the turf. Models for 9.00 x 8 Terratires and bomber tire combinations are available. John Bean Div., FMC Corp., Lansing, Mich. 48909 has more information.

## Meeting Dates



- Northeastern Weed Control Conference Turfgrass Field Day**, Virginia Polytechnic Institute, Blacksburg, Va., Sept. 8-9.
- Sixth Annual Alabama Turfgrass Short Course**, Auburn University, Auburn, Ala., Sept. 9-10.
- Illinois Turfgrass Field Day**, University of Illinois, Urbana, Sept. 10, 13.
- Mississippi Turfgrass Assn. Fall Meeting**, Jackson, Sept. 14.
- Northern Michigan Turfgrass Field Day**, Traverse City Country Club, Traverse City, Sept. 14.
- Mississippi Valley Golf Course Superintendents' Association Monthly Meeting**, Field Day and Equipment Demonstration, Westwood, C.C., St. Louis, Mo., Sept. 14.
- Northeastern Weed Control Conference Mountain Lake Right-of-Way Maintenance Conference**, Mountain Lake Hotel, Pembroke, Va., Sept. 14-16.
- Colorado Turfgrass Assn. Annual Equipment and Materials Exposition**, City Park, Denver, Sept. 15.
- Penn State Turfgrass Field Day** on campus, University Park, Pa., Sept. 15-16.
- Northeastern Weed Control Conference Forestry Herbicide Tour**, Mountain Lake Hotel, Pembroke, Va., Sept. 17-18.
- Northwest Nurserymen's Indian Summer Session**, Salishan Lodge, Gleneden Beach, Ore., Sept. 17-19.
- Tennessee Nurserymen's Assn. Convention**, Holiday Inn, Nashville, Sept. 19-20.
- Washington Association of Ground Sprayers, Inc., Sprayarama '65**, Seattle Civic Center, Seattle, Wash., Sept. 20-21.
- California Association of Nurserymen Annual Convention**, Riviera Motel, Palm Springs, Calif., Sept. 21-23.
- Northwest Turfgrass Association Conference**, Hayden Lake Golf and Country Club, Hayden Lake, Idaho, Sept. 22-24.
- Florida Nurserymen and Growers Association Trade Meet**, Naples Beach Club Hotel, Naples, Fla., Oct. 1-3.
- Montana-Wyoming Turf and Nursery Assn. Annual Meeting**, Montana State College, Bozeman, Oct. 3-5.
- Florida Turf-Grass Management Conference**, Ramada Inn, Gainesville, Oct. 5-7.
- Central Plains Turfgrass Foundation Meeting**, Kansas State University, Manhattan, Oct. 20-22.
- Nebraska Association of Nurserymen Annual Convention**, Cornhusker Hotel, Lincoln, Nov. 15-16.
- Pennsylvania Grassland Conference**, Nittany Lion Inn, State College, Nov. 22-23.
- National Weed Committee of Canada, Western Section Meeting**, Palliser Hotel, Calgary, Alberta, Nov. 30-Dec. 2.
- Illinois Turfgrass Conference**, University of Illinois, Urbana, Dec. 2-3.
- North Central Weed Control Conference**, Broadview Hotel, Wichita, Kans. Dec. 5-7.
- Connecticut Nurserymen's Assn. Annual Meeting**, Hotel Statler-Hilton, Hartford, Dec. 30.
- North Carolina Nurserymen's Assn. Annual Meeting**, North Carolina State University, Raleigh, Jan. 3-4, 1966.
- Western Association of Nurserymen Annual Convention**, Hotel Continental, Kansas City, Mo., Jan. 3-5.
- Rutgers Winter Turf Course**, College of Agriculture, New Brunswick, N. J., Jan. 4-Mar. 11.
- Northeastern Weed Control Conference**, The Hotel Astor, New York, Jan. 5-7.
- Indiana Association of Nurserymen Annual Winter Conference**, Claypool Hotel, Indianapolis, Jan. 5-7.
- Iowa Nurserymen's Assn. Annual Convention**, Hotel Roosevelt, Cedar Rapids, Jan. 7-9.
- National Landscape Nurserymen's Assn. Convention**, LaSalle Hotel, Chicago, Ill., Jan. 8-9.
- North Carolina State Annual Pesticide School**, North Carolina State University, Raleigh, Jan. 10-11.
- New York State Arborists Assn. Winter Meeting**, Ithaca, Jan. 16-18.
- Rutgers Lawn and Utility Turf Short Course**, College of Agriculture, New Brunswick, N. J., Jan. 17-19.
- Maryland Nurserymen's Assn. Annual Meeting**, Washingtonian Country Club, Gaithersburg, Jan. 18-19.
- Southern Weed Conference**, Hotel Robert Meyer, Jacksonville, Fla., Jan. 18-20.
- Oregon Association of Nurserymen Annual Convention**, Eugene Hotel, Eugene, Jan. 18-20.
- Wisconsin Nurserymen's Assn. Annual Convention**, Red Carpet Inn, Milwaukee, Jan. 19-21.
- Rutgers Golf and Fine Turf Short Course**, College of Agriculture, New Brunswick, N.J. Jan. 20-21.



## Michigan Turfmen See Research in Thatch Work, Turf Management, Soil Evaluation, at Field Day

Participants at Michigan State University's Turfgrass Field Day in July viewed long-term scientific investigations such as Prof. Leyton Nelson's study of optimum management practices to minimize thatch build-up. Nelson, an MSU extension specialist, is evaluating factors such as cutting height, clipping return, and nitrogen rates in the development of thatch.

"Thatch has only recently become a problem in lawns and is not widely known or recognized yet," Nelson commented. "The lawn owner notes a disease or drought problem rather than the major role of thatch."

Nelson's display was one of 16 projects which dotted the East Lansing turf research plots as over 400 turfgrass professionals toured the four acres of experiments and demonstrations of recent developments in turf management. Dr. James Beard, MSU turfgrass researcher, and Dr. Paul Rieke, MSU soil scientist, coordinated the Field Day, and headed a roster of speakers composed mostly of MSU staffers.

Among the other exhibits were Beard's evaluation of 14 bentgrass varieties and his exhibit on the comparative rates of establishment with various sodding and seeding practices. MSU extension specialist Prof. Stuart Hildebrand displayed bluegrass

and red fescue variety evaluations.

Rieke's exhibit of soil mixtures and relative infiltration rates indicated the effects of coarse sand, fine sand, fine sandy loam, and peat on growth. Rieke noted that soil mixes prepared for putting greens must possess properties of rapid infiltration and drainage, reasonable water holding capacity, resistance to compaction, and ability to hold a well-played ball.

"Control of Diseases of Turfgrasses," a massive report by Dr. Nicky Smith, described organisms and diseases, their most likely victims, and control measures available. Such diseases as rust in Merion, snow mold in bentgrass, and helminthosporium in bluegrass were covered.

Dr. William E. Wallner of the MSU Extension Service described turfgrass insect control. He divided turf insects into two groups based on their feeding habits: root feeders and leaf feeders. "Generally chemical control measures for one group are not effective for the other," he emphasized. Among the root feeders he cited white grubs and wireworms. Webworms, cutworms, chinch bugs, and leafhoppers fall into the leaf feeders category.

Extension agent Dr. Carter Harrison handed out tips on key plant structures for the identi-

fication of problem lawn weeds such as quackgrass, tall fescue, and nimblewill.

"Effects of Pre-emergence Herbicides on Desirable Turfgrass Species" were viewed by Dr. William Meggitt, weed researcher. His work, which began last year, will eventually evaluate several herbicides.

Other events in the busy day-long schedule included a visit to controlled-climate chambers where biochemical mechanisms of high temperature growth stoppage in Merion bluegrass are being studied, and a stop at Extension Agent Dr. Robert E. Lucas' display of "Watering and Water Sources for Turf." The latter exhibit recommended that water be applied to wet soil to a depth of six inches with each irrigation to encourage deep rooting.

### New Nematode Attacks Florida St. Augustinegrass

A new nematode pest causing severe damage to St. augustinegrass in Florida has been discovered by nematologists with the state's Gainesville Agricultural Experiment Stations.

Specialists say the glossy white, lemon-shaped nematode was discovered in a sample of grass from Boynton Beach, south of West Palm Beach.

The parasite was identified as a cyst nematode, a type not previously known to cause economic damage in the state.

Detailed study of the nematode indicates that it's a new species.

This species has since been discovered in other locations on the lower east coast of Florida, always infecting St. augustinegrass.

Researchers point out that infected grass turns yellow and growth slows down as the nematode damages roots.

Studies are continuing on control methods. But until satisfactory chemical control can be worked out, Dr. V. G. Perry, who has co-authored a technical bulletin on the new species with Dr. A. A. DiEdwardo, suggests St. augustinegrass under attack by the pest should be replanted with another kind of grass.



Soil infiltration rates are explained to Turfgrass Day visitors by Dr. Paul Rieke (right), MSU soil scientist, who poured water into different soil mixes to show rate of movement through them.



## NW Turf Meet, Sept. 22-24, Studies Winter Damage

"Winter Damage and Disease Control Problems" headline the Northwest Turfgrass Association's Sept. 22-24 conference at the Hayden Lake Golf and Country Club, Hayden Lake, Idaho. James Beard, Michigan State University, and Dr. V. C. Brink, University of British Columbia, head the speakers roster with their talks on ice and winter damage to turfgrass.

Conference chairman Dr. Roy L. Goss, Extension Specialist in Agronomy at the Western Washington Experiment Station, summarizes current research at his station, including weed control and "What Happens to Fertilizer Elements After They Have Been Applied to Turf." Alvin G. Law, Washington State University,

views *poa annua* control and Dr. C. J. Gould, WSU plant pathologist, discusses disease control problems.

Other speakers and their topics include Ken Morrison, Washington Extension Agronomist, on bluegrass varieties; Jack Daniels of the Washington Association of Ground Sprayers, on "Control of Insects and Diseases in Ornamental and Shade Trees"; and Bill Bengeyfield from the U. S. Golf Course Association Green Section, Garden Grove, Calif., on "Are You a Good Boss?"

Reservations for the conference are available from Goss at the Western Washington Experiment Station, c/o Washington State University, Puyallup, Wash. 98371.

## "Water" FT-GA Conference Theme, Oct. 5-7

With drought and near-drought conditions in South Florida and many other areas of the nation, "Water" is a timely theme for the 500 turf professionals expected for the 13th annual Florida Turf-Grass Management Conference, Oct. 5-7, at the Ramada Inn, Gainesville. The "Water" theme, of continuing interest to turfmen, will be explored by speakers discussing water resources in Florida, soil and water relationships, water functions and requirements, and relationship of water and turf disorders to insects, nematodes, diseases, and fertilizers.

Many out-of-state experts have been invited to join two dozen Florida turf professionals and researchers as speakers. Roger Thomas of Jacobsen Manufacturing Co., will discuss "Preventive Equipment Maintenance"; turf consultant O. J. Noer, speaks on "Diagnosing Problems on Golf Courses"; and James Watson of the Toro Manufacturing Co., describes "Soil and Water Relationships."

"Equipment for Turf Maintenance" is theme for the Industry Hour when exhibiting firms outline the latest developments

and improvements in turf equipment currently on the market.

Elections and a business meeting follow the Industry Hour. Outgoing officers of the Association are Gene C. Nutter, president; James L. Blackledge, vice president; and L. N. Clark secre-

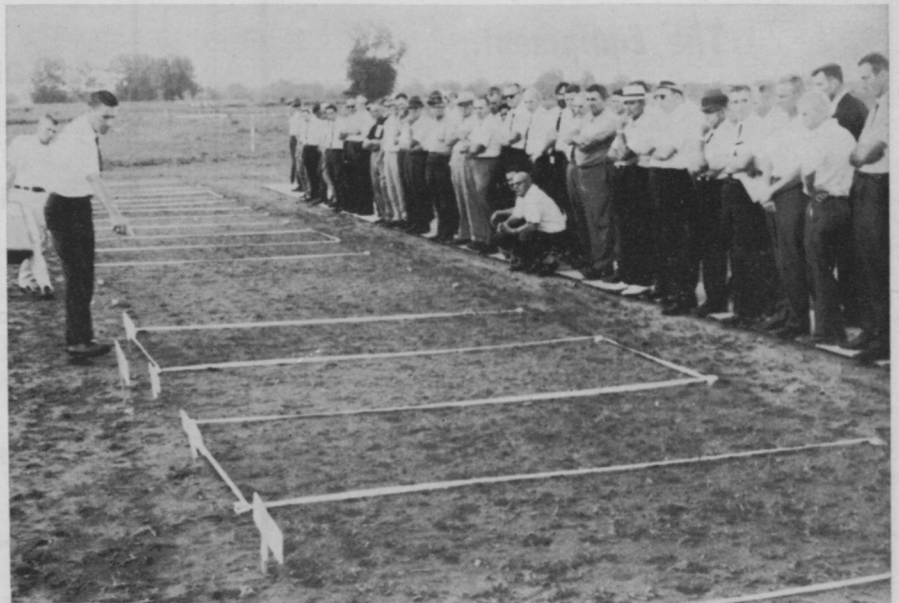
tary-treasurer. All three are completing their second term.

Directors retiring from the Board are William O. Ballantine, Charles P. Johnson, and Berrian W. Rouse.

FT-GA members will vote on changes in the association's by-laws recently recommended by the Board of Directors. These changes are designed to expand representation for Florida turf interests by adding five members to the Board of Directors.

Professional Management Workshops continue the "Water" theme as participants break into four concurrent sections to study items of particular interest: "Golf," "Industrial Sites, Athletic Fields, Parks, Cemeteries, and Sod Growing," "Horticultural Spraying and Lawn Service," and "Retail Dealers and Garden Supply." Each section features topics about irrigation systems and equipment of particular value to that field.

Research tours to turf projects conclude the conference being coordinated by Dr. G. C. Horn, associate turf technologist at the University of Florida, and Walter Anderson, FT-GA Executive Secretary. Anderson has information about registration and accommodations, and can be reached at 4065 University Blvd. North, Jacksonville, Fla. 32211.



Mississippi Turfgrass Conference members watch Dr. Cy Ward (left) point out the results of an establishment study for bermudagrass, zoysia, centipede, and St. augustine. This event, part of the group's recent seminar at the Mississippi State University campus, preceded business and education sessions. Topics at these meetings included management of bermudagrass, golf greens, turfgrass nutrition, and nematode research. A panel discussion studied "Overseeding Golf Greens and Recreation Areas." The Conference holds its fall meeting in Jackson, Sept. 14.

## 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

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### FOR SALE

**CUSTOM SPRAY BUSINESS.** Two (2) rigs, complete with hoses, guns, etc. One rig equipped with booms for field work. Both rigs mounted on trucks, run from power take-off. Austin James, 321 South 12th St., Payette, Idaho.

### Over-watering Yellows Leaves

Yellow-tipped shrubbery in mid or late summer may indicate too much water rather than too little, according to Douglas Bryant, New Mexico State University extension horticulturist. A

yellow tinge on leaves can mean poor drainage, high soil alkali content, or over-irrigation. He advises that soil around large plants should be soaked to a depth of 8 to 12 inches every five to seven days and in some cases only every 10 days.

Frequent sprinkling is not a good practice, he notes, since it causes shallow rooting and the growth of feeder roots near the surface. Trees in sandy or light soils should be watered more often, he adds.

Shrubs are heavy users of water in early summer, but later their moisture requirements drop.

### Offers Tree Pruner Cords

Seymour Smith and Sons has introduced a 100% polypropylene cord to replace worn ropes on long reach tree pruners. Lightweight, the bright orange cord comes in 18½ foot hanks in a rope diameter sized to fit all tree pruners.

Seymour Smith and Sons, Inc., Oakville, Conn. has details.

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## Miles Takes Minn. Post

Neil W. Miles has been named extension horticulturist at the University of Minnesota, St. Paul. Agricultural extension programs related to the use of pesticides for control of insects and diseases on horticultural crops come under his control.

Miles earned B.S., M.S., and Ph.D. degrees in horticulture at Minnesota, where he also worked as an assistant in extension programs while doing graduate work.

## USDA Registers Mirex Bait

Mirex 450 pelleted bait has been registered for control of the Texas leaf-cutting ant by the U. S. Department of Agriculture. Allied Chemical Corp.'s General Chemical Division developed Mirex 450 in cooperation with USDA's Forest Service. Field tests have proved 100% effective in eliminating both small and large nests, Allied reports.

The bait can be used to control harvester and fire ants, relatives of the Texas leaf-cutters, Allied adds. Since Mirex 450's toxic effects are delayed, larger ant pop-

ulations can be reached. More news on the pelleted baits is available from Allied Chemical Corp., 40 Rector St., New York, N. Y. 10006.

## Releases Residue Analysis

Kensington Scientific has prepared a free bulletin on materials, apparatus, and accessories useful in clean-up and detection of pesticides in residue analysis. The 20-page brochure describes materials for detection by thin layer, paper, and gas chromatography. It also contains selected references.

Bulletin #130 is available free from Kensington Scientific, 1165 67th St., Oakland, Calif. 94608.

## Grants \$500 for Turf Study

With a recent \$500 grant from the Massachusetts Turf and Lawn Grass Council, the University of Massachusetts will further its turf research work. Dr. Joseph Troll, chairman of the Council's advisory board and a member of the University's plant and soil sciences department will administer the project.

## Trimmings

**How the other half lives.** Word from W. B. Black, president of Braehid Sod Supply Ltd., in Waterdown, Ontario, Canada, is that 20 members of the Nursery Sod Growers Assn. of Ontario took a two-day tour in the States to study the problems of growers in the USA. This is the third year this industry group has come "south" to see how the other half lives. This year they spent a day at McGovern's Sod Farm in Long Island, N.Y., and the other at Princeton Turf Farms, New Jersey.

\* \* \*

**Recent passings.** We have just learned of the recent death of Harry S. Bartlett, president of Bartlett Manufacturing Co. in Detroit, and W. J. Burger, vice-president of Bluegrass Turf Farms, Ltd., Stouffville, Ont., Canada. Both had been active in their specific areas of the vegetation maintenance field, taking part in industry meetings to bring about more education in tree and sod practices.

\* \* \*

**Editor retires.** Dr. C. J. Willard, longtime editor of *Weeds*, technical publication of the Weed Society of America, retires in December. A committee comprised of Dr. R. Behrens, University of Minnesota; Dr. F. L. Timmons, University of Wyoming; and Dr. R. A. Fossee, Amchem Products, Fremont, Calif. is attempting to find a successor. It'll be difficult to find as devoted and capable an editorial director as Dr. Willard who makes his office on the campus of Ohio State University in Columbus.

\* \* \*

**Harder airs.** Frank Harder, president of the Harder Arborist Supply Co., Hempstead, N.Y. recently was interviewed by Ruth Alampi on her WNBC (New York city) radio program, "Around Your Home and Garden." He spoke on pest control and lawn care, a subject he's become an expert on through actual in-field experience since graduating from Purdue's Ag School.

\* \* \*

**AAN award.** Dr. F. L. S. O'Rourke, professor emeritus in Michigan State University's horticulture department has received the Norman Jay Coleman Award for his outstanding contribution to horticulture research. The award, made yearly by the American Association of Nurseryman, cites O'Rourke's work over the past 25 years in projects dealing with various aspects of plant propagation and nursery stock production.

\* \* \*

**In all modesty.** Denver Loupe, public relations committee chairman for the 1966 Southern Weed Conference, writes their Jan. 18-20 meeting at Hotel Robert Meyer in Jacksonville, Fla., will be THE weed control affair of the South next year. A big attendance is expected.



**Exceptionally low center of gravity** has been built into this 60-inch rotary mower for turf maintenance operations on steep hillsides. Called the Super 60, the mower can safely and easily climb and traverse grades up to 45° steep, says Pennington Mfg. Co. Features assuring this performance, it is said, are positive traction differential, wide tread, rigid frame, engine over rear wheels and heavy duty truck-type steering assembly. Center of gravity is so low that mower will slide down hill before it will tip over. Power source: 2-cylinder, 16.5 hp Onan engine. Optional accessories include a 48" snow blower, snowplow, leaf mulcher, rotary broom, and sprayer. Complete data may be obtained by writing to the Pennington Mfg. Co., Addison, Illinois.





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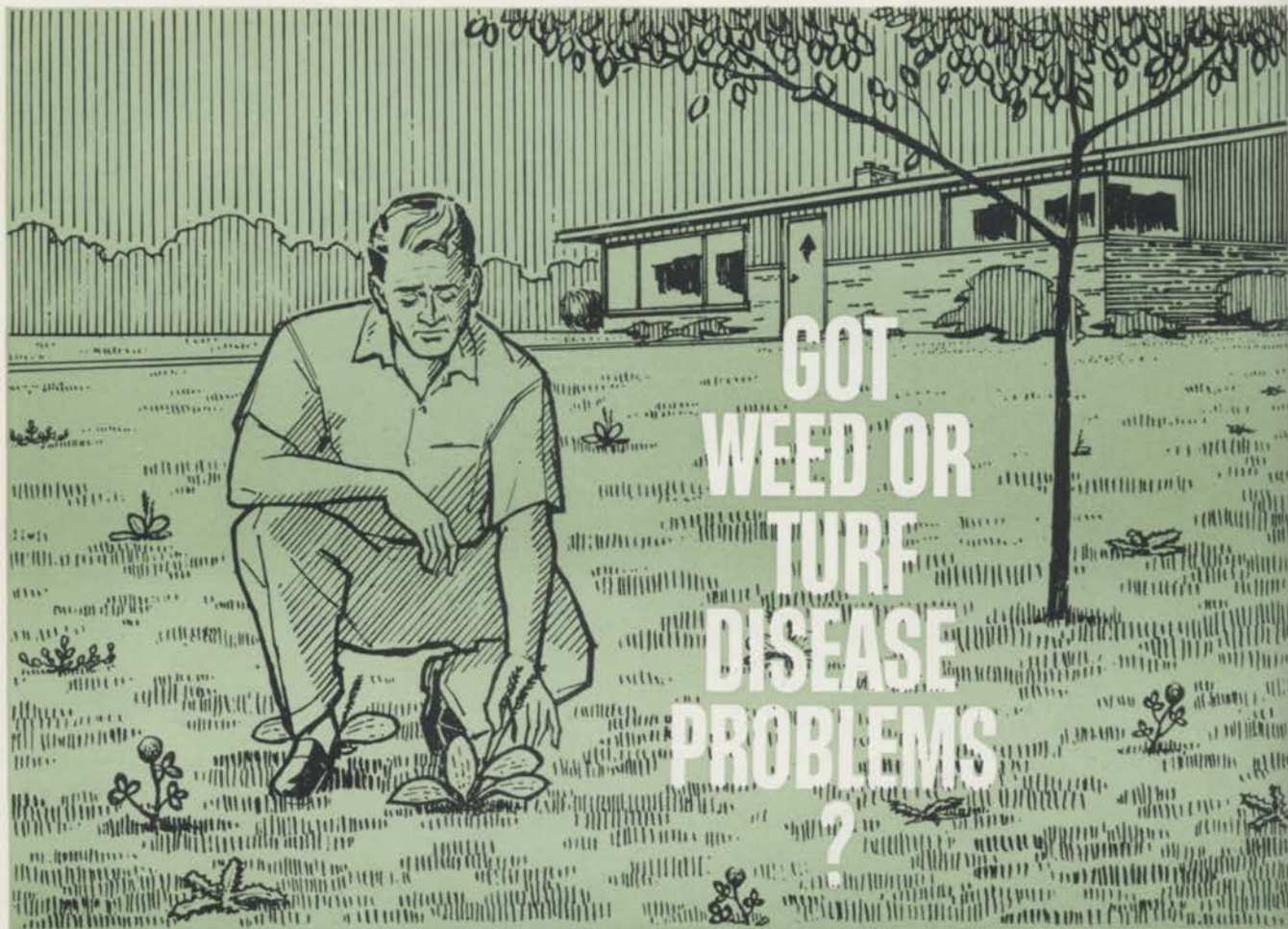
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