

# **WEEDS**

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# **TREES**

---

and **TURF**

FORMERLY WEEDS AND TURF

July 1965



● *BEGINNING THIS MONTH:*

● **Sod Industry Section . . . . . 20**

ALSO  
IN  
THIS  
ISSUE

**Ala. Highway Weed Test . 12**

**A New Turf Nematode . . 14**

**More TVA Brush Tips . . . 16**

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

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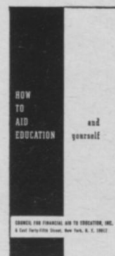
This is everybody's job, but especially industry's.

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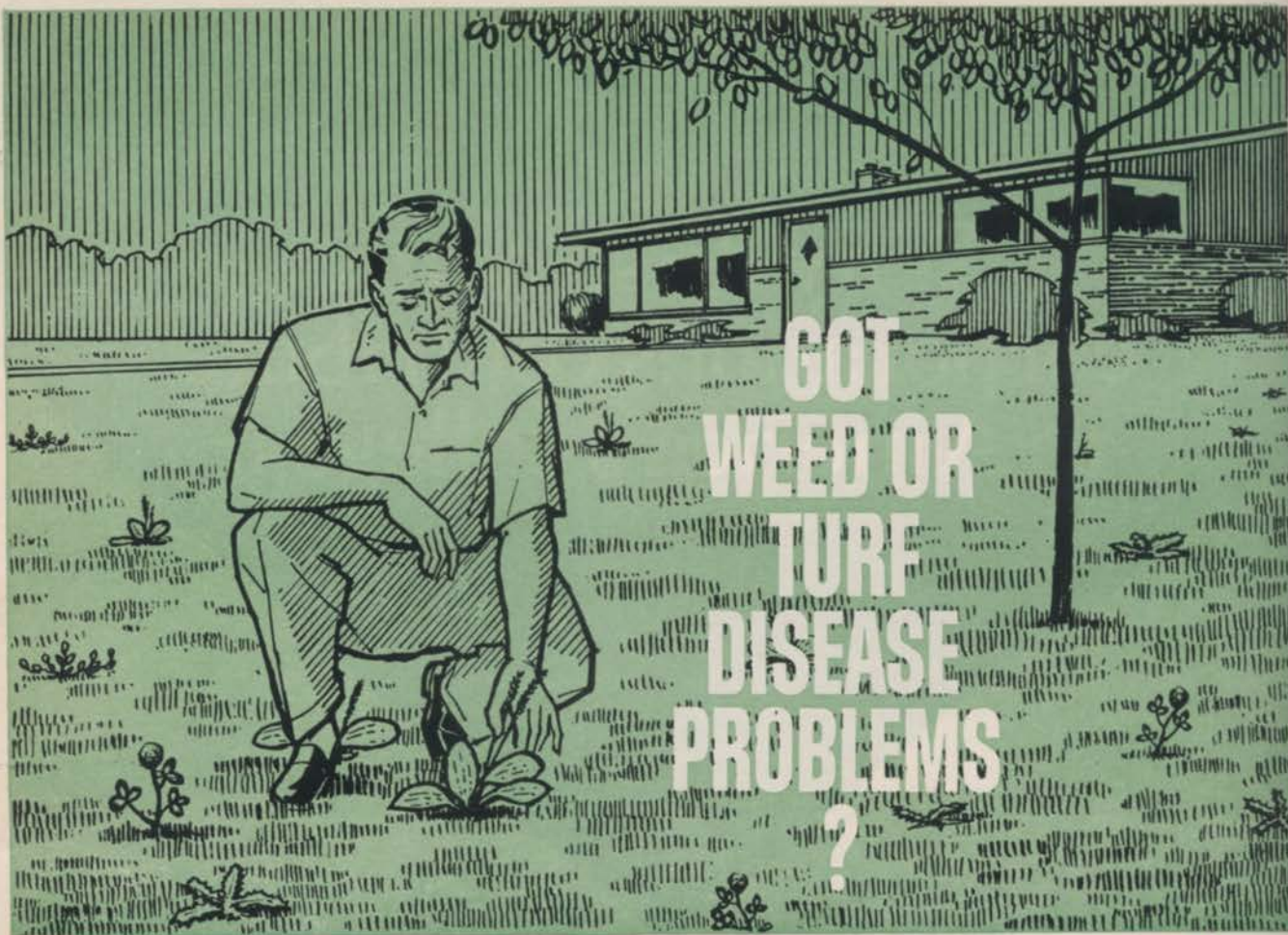
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# WEEDS TREES and TURF

FORMERLY WEEDS AND TURF

July 1965

Volume 4, No. 7

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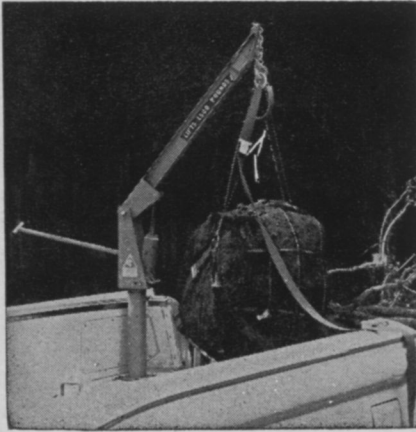
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## Congratulations to the NSA!

This magazine, since its very inception, has urged the establishment of a national association of contract applicators engaged in weed and brush control, tree service, and turf management. And we note with pleasure the foundation, at long last, of such an organization, the National Spraymen's Association (WTT, June, pg. 26).

There were a great many pitfalls encountered in setting up this trade group; there were frustrating delays, and complications brought about by the great scope and geographical diversity of the industry nationally. But through continued efforts of several leaders from various sections of the country, and in particular through the continuing drive of a group of applicators in Florida, the association is now a reality and, we hope, is well on its way to success.

We were particularly happy to see that the initial members of the NSA have not precluded changes in their constitution and bylaws. In fact, they invite modifications during their first national meeting, which may take place yet this year; and we're glad to see that the headquarters and state of charter may be moved from Florida to a more central location. This is good thinking on the part of the charter members, and shows an earnest willingness to put aside regional differences and work for advancement in a rapidly growing, complicated, highly technical field.

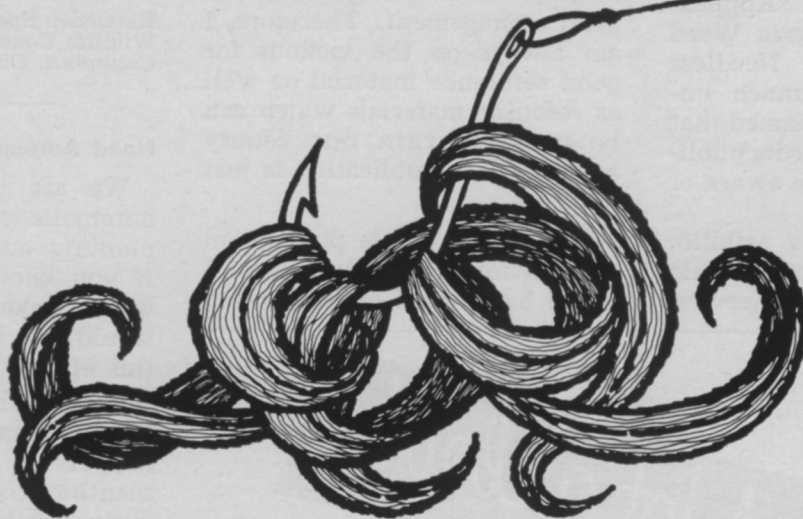
We urge our readers to consider whether or not the NSA can be a valuable asset to their activities. Those who engage in any of the contract services implied by this magazine's name no doubt have many questions which a national could answer, questions of legal issue; of technological significance; or of marketing and business management nature.

The road from here on, for the National Spraymen's Association and its members, will not be a smooth one; there are many roadblocks, many hurdles. But the start has been made, and progress will come in direct proportion to the efforts and abilities of the members themselves. We wish them well!

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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## WTT Mailbox

### He's Impressed

Recently a reprint of your excellent series entitled "Applicator's Manual of Aquatic Weed Control" reached me. Needless to say, I was very much impressed and a little ashamed that it was over a year after its publication before I became aware of it.

In my capacity as wildlife specialist on the staff of the Ohio Cooperative Extension Service,

one of my major educational programs is farm pond management. The control of aquatic vegetation is, as you are well aware, the major problem in pond management. Therefore, I am always on the lookout for good reference material as well as resource materials which can be used to train our county agents. Your publication is just that.

Never, in a single publication written for layman use, have I found basic pond ecology, weed

identification, and control so digestibly presented. Congratulations on an outstanding job!

Thomas M. Stockdale

Extension Specialist  
Wildlife Conservation  
Columbus, Ohio

### Need Automatic Planter

We are trying to locate an automatic fairway planter for planting our hybrid Bermudas. If you know of any companies which make such a machine, we would like to hear from you to this effect.

This machine should be capable of planting sprigs from a hopper or shredding sod and planting the sprigs simultaneously, while carrying a supply of material.

Leo W. Klarr

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Hattiesburg, Miss.

We can't recommend any specific manufacturer to the exclusion of another. You may consult our Suppliers Guide which appears in the December 1965 issue, and we are printing your letter here so others may write directly to you if they wish.—Ed.

### "Surfactant" Reprints Depleted

I have had the opportunity to review a series of your recent issues of *Weeds Trees and Turf*. There are many interesting articles included which would be of real assistance to me in my program, which is primarily aimed at the nutrition and fertilization aspects.

I would like to know if reprints are available on the articles, "Surfactants," and "How to Use Your Soil Test Kit," which appeared in the January, 1964, issue of your magazine.

Paul E. Reike

Assistant Professor in Soil Science  
Michigan State University  
East Lansing, Mich.

Sorry, our January supply is depleted, and the last "Surfactant" reprint has been sold. There was an unprecedented demand for this popular issue.—Ed.



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### of **WEEDS TREES AND TURF**

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### 2. Handy Reader Reply Card

★ Automatic Inquiries! Bound into each issue will be a *Reader Inquiry Card* listing each August advertiser. To get more information about advertised products, *WTT* readers simply check the advertiser's name and drop the pre-addressed card in the mail. We compile inquiries weekly and send neatly typed lists to each advertiser. Readers also like this service which makes it easier to get data.

### 3. Bonus: Extra Circulation

★ Copies of the August issue will be available to delegates to the International Shade Tree Conference Convention (expected to be the biggest ever) when it meets in Washington. This means a minimum of 750 extra copies will be circulated, and there's no increase in rates for this bonus mileage for your ad dollar. (Total distribution of this issue will be over 10,500!)

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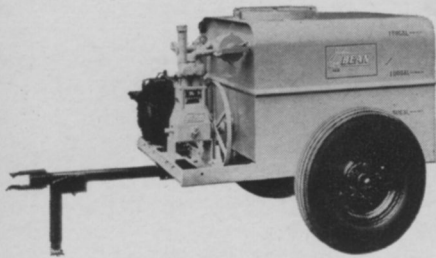
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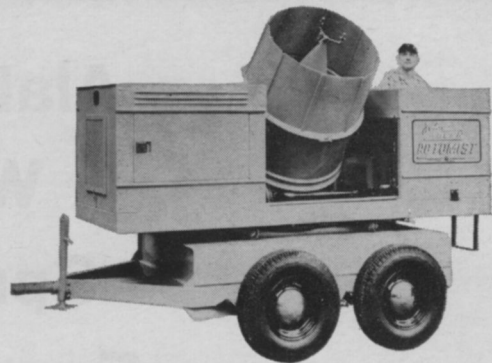


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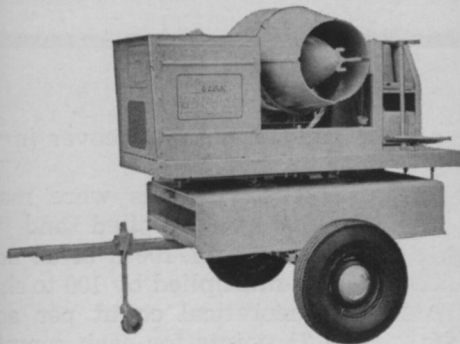
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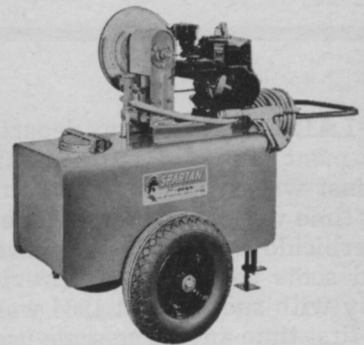
"Big Daddy" of the mist-type sprayers. 40" fan, 60,000 c.f.m. air volume. Tackles the biggest, toughest jobs.



**91 ROTOMIST**

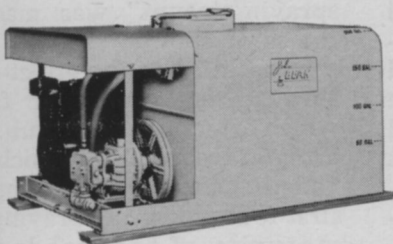
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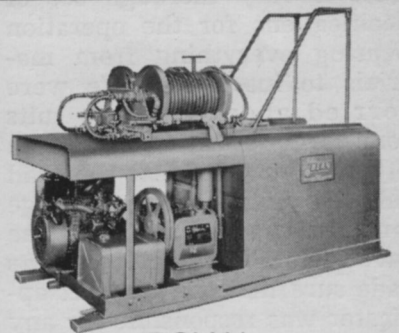
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# Alabama's Weed Spraying Experiment

By C. W. HIMES  
and HOLLY MITCHELL

Landscape Engineers  
Alabama State Highway Department  
Montgomery, Alabama

ALABAMA'S highway department had its usual war against weeds last summer, but this time we tried a new weapon—herbicide spraying. We have used some soil sterilants previously with success, but 1964 was the first time any large-scale use of chemical spraying for weed and brush control was attempted.

The Landscape Engineer wrote a very thorough set of specifications for the operation covering everything from materials to insurance. We were worried about damage suits from farmers who might have cotton or peanuts near the road and who might notice a strange convoluting, or curling of the leaves. So the specifications made sure that the contract applicator was responsible for any damage, and as a supplement to the specification, a table was made up for the inspector to keep, and it includes instructions for him to halt the spraying when the wind exceeds 8 to 12 mph. (A list of wind velocity descriptions from the Weather Department is on the form.) The inspector stays with the spray truck and fills out a new form for each half day, or oftener if conditions change. A psychological factor we had working for us was the sign on the back of

the spray truck which said *Fertilizer*.

In order to be able to assess intelligently the results of the spraying, we needed to know what was growing along the roads before and after the operation. A survey was made of the areas to be sprayed which had been chosen by the various highway divisions. They were located in nearly every section of the state. Total mileage involved was 604, but because some of it required treating two shoulders, some the shoulders and the median, and some the median only, the total miles of 20-ft. strip was around 1600.

The survey before spraying consisted of making an actual weed count at 21 points along the highway concerned. At each point a strip 1 ft. wide and 20.5 ft. long was measured and the weeds within this area counted. For our purposes, a count of the six or eight major types of weeds in the area was sufficient, with the remaining minor weeds shown in "other." Grasses and clovers were shown as a percent

of the total groundcover in the 20.5 ft. strip.

After 21 counts were made, they were compiled and the totals, being 1/100th of an acre, can be multiplied by 100 to show the theoretical count per acre. The 21 points for each compilation were chosen at random except when the character of the vegetation changed, then a count was made to reflect the change. The locations of the points were kept on the field notes so that the return survey or "after spraying count" was made on the same spot.

In addition to the effect of the spray, there are other factors which affect the end results: (1) *drought conditions*, which prevailed before and during the first four weeks of spraying; (2) *maturity* of the weeds when sprayed; (3) *mowing* of sprayed areas after spraying.

It is well known that the younger and more vigorous a weed is, the easier it is to kill with a herbicide. Consequently, those which were mature, or nearly so when we began spraying—like plantain, fleabane, and mild mint—and were, in addition, nearly dormant from drought, were hardly affected by the spray, in the amounts used. However, if we had sprayed

(Continued on page 30)





↑  
**Weedfree medians** like this are goals of America's highway supervisors and contract applicators. This one is just outside of Birmingham, pictured after just one spraying.

↓  
**Pensacola bahiagrass** has taken root vigorously in this weed-free Alabama highway median strip south of Birmingham, where much of the state's weed control experimental work was done.



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# A New Nematode In Turf- grass

By DR. L. R. KRUSBERG

Botany Department  
University of Maryland, College Park

IN 1959, A NEMATODE resembling the root-knot nematodes, *Meloidogyne* species, was encountered several times in Florida attacking roots of st. augustinegrass. Only slight swellings of the grass roots occurred where the nematodes were attached. The parasites were usually completely embedded within root tissues although they were sometimes found with the body completely outside the root with only the neck and head penetrating the root. Large populations of this nematode in grass roots and in surrounding soil were associated with circu-

lar or irregularly shaped patches of dead and dying grass.

Detailed examination of these nematodes indicated that while they were closely related, they were not identical with root-knot nematodes. The adult female nematodes are white and less than 4/100 of an inch in diameter, or considerably smaller than the head of a pin. Similar to root-knot, the females extrude many eggs in a gelatinous mass from the posterior end of the body to the outside of the plant root. The nematode has been given the scientific name *Hypsoperine graminis*.

A nematode identified as being a root-knot species was encountered several years ago on zoysiagrass and more recently on bermudagrass in Maryland. Recent comparisons of this nematode, however, with the one from st. augustinegrass in Florida indicate that they are identical or closely related. The new pathogen has been detected in several zoysia lawns in the Washington, D. C. suburbs in nearby Maryland during the past year. It now appears that this nematode is present in several southeastern states of the United States and California. There is now considerable concern that the nematode may become an important pathogen of certain lawn grasses.

Limited host range investigations indicate that the nematode

can reproduce on several bermuda and zoysia grasses, Pensacola bahiagrass, st. augustinegrass, and crabgrass. Certain bermuda and zoysia grass strains appear to be resistant. No dicotyledonous plants tested or corn supported the parasite. Additional host range tests are needed to fully determine its spectrum of host plants. Also, host ranges of populations from various parts of the country need to be compared to determine if physiological races exist; this would be important from the standpoint of control through developing or selecting plant varieties resistant to this nematode.

## One Nematicide Promising

Only two chemical nematicides have been tested in attempts to control the nematode on established turf. 1,2-Dibromo-3-chloropropane failed to control the pathogen on st. augustinegrass in tests in Florida and on zoysiagrass in tests in Maryland. In limited tests in Maryland, an experimental organic phosphate nematicide (Bayer 25141) showed very good promise of giving adequate control from one application per growing season. The nematicide is not yet available commercially.

Knowledge of the biology and distribution of this nematode are still quite meager. Despite the fact that the nematode appears to be a pathogen of potential importance on certain turfgrasses, there are already indications that feasible and adequate control methods will soon become available.

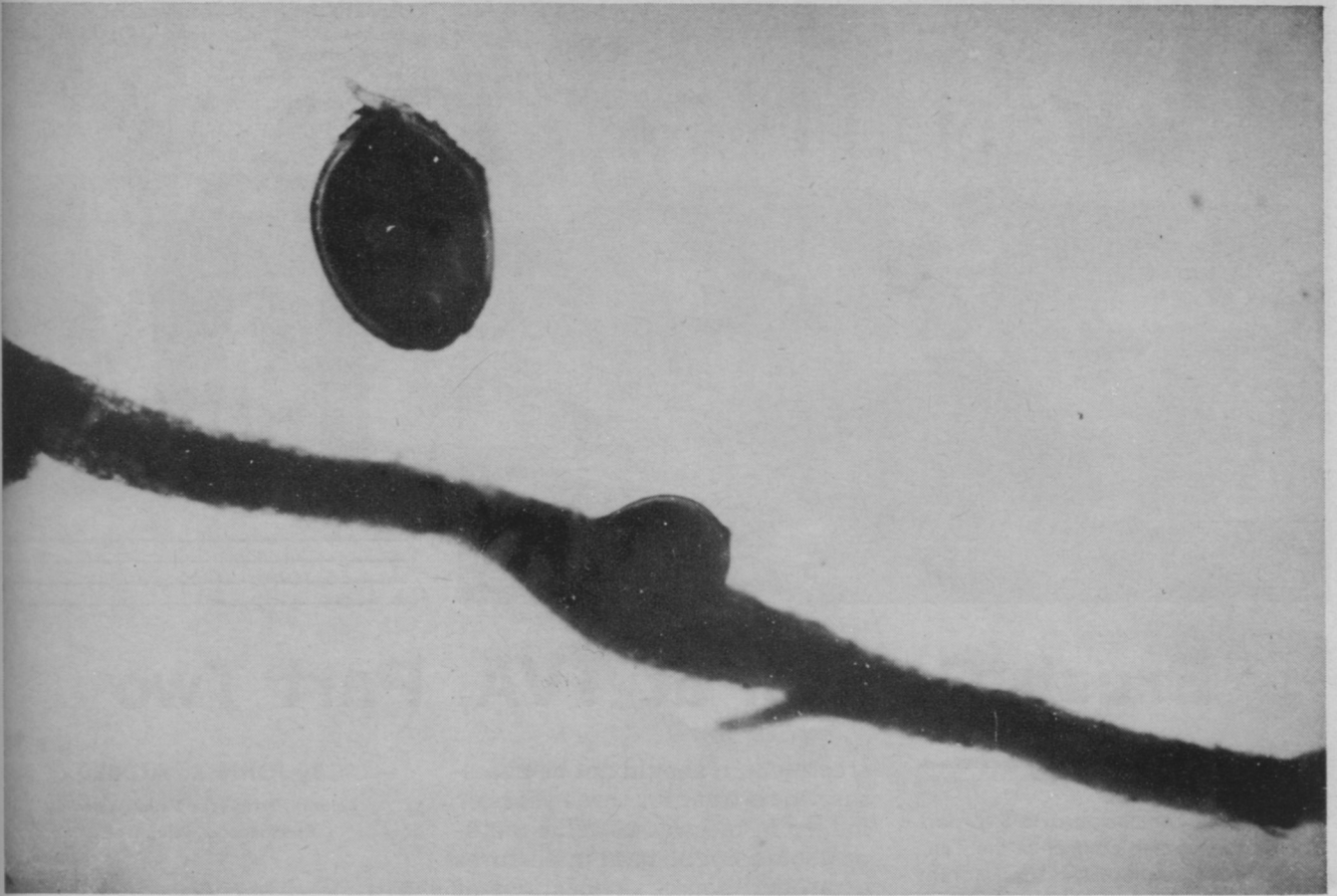
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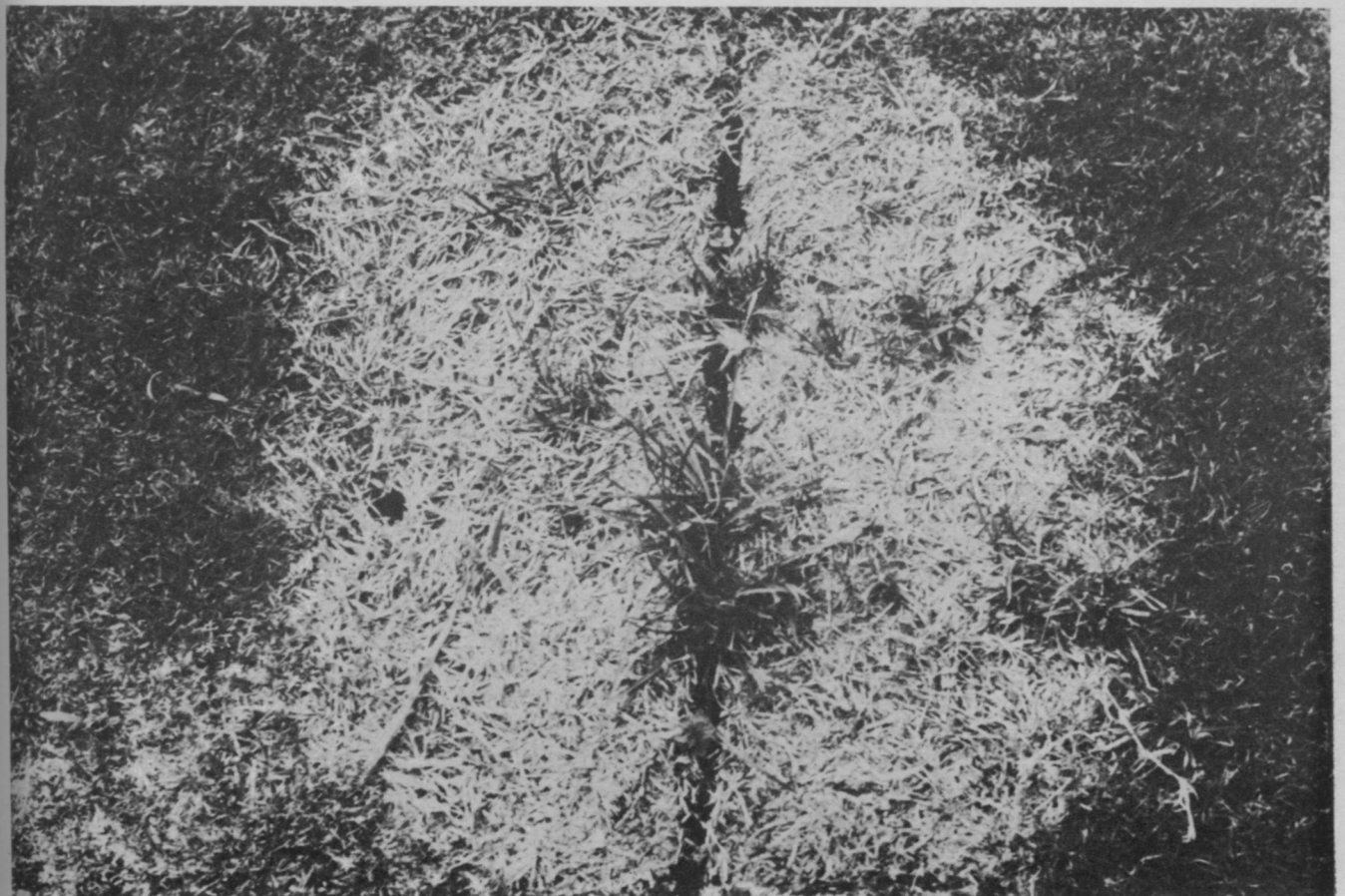
Patches of dead bermudagrass caused by *H. graminis* in experimental fertilizer trial plots. Photograph courtesy of C. W. Laughlin.





Less than  $4/100$  inch in diameter in actual size, the nematode *H. graminis* is pictured here, greatly magnified, as a female (top) and female attached to zoysiagrass root.

Patch of dead bermudagrass below was caused by *H. graminis*. Areas like this, containing a few live plants, are characteristic of nematode damage to turf. Photo by C. W. Laughlin.







Around steam plants, such as these, TVA workers prefer to use soil sterilants to effect weed control.

# TVA

## Brush Control at TVA, Part Two

By JOHN R. ALDRED

Botanist, Tennessee Valley Authority  
Chattanooga, Tennessee

**T**HIS is the conclusion of a two-part article on brush control at the Tennessee Valley Authority. Last month, author Aldred discussed helicopter and basal spraying, application of pellets, and mechanical maintenance. Ed.

### Pole Degrassing

Pole degrassing is considered a necessity on some of TVA's lines or sections of lines where past history indicates that the areas are burned annually and are so-called "hot spots." Two methods used in pole degrassing are manual "scalping" and chemical treatment.

The former is accomplished by scalping vegetation within a radius of 6 ft. around wooden poles with garden-type hoes. This method gives fire protection for one season and must be repeated annually; however, it should be used in pasture areas.

The chemical method is much more economical. For chemical degrassing, apply 2 lbs. of Chlorea granular or Ureabor to a radius of 6 ft. around the wooden pole, using a hand seeder. One treatment should normally render a sterile condition for about two years. After the second

treatment, it should not be necessary to re-treat for three years or longer in most cases. This method should not be used in pastures or around houses or locations of this type; nor should it be used in areas where fire hazards do not exist.

### How To Remove Trees

Mechanical cutting of dangerous trees is performed extensively and is effective. The one-man power saw is the most effective and economical tool used. This method, like mechanical clearing of rights-of-way, has its place; when more economical methods and techniques are adaptable, they should be used. All trees that could hit the line should be mechanically cut.

Various chemical methods may be used for removal of dangerous trees, and are more economical in some areas. Chemical methods should never be used in residential areas. If there are a number of trees in an area along main highways, the mechanical method should be used. Conifers, such as pine and cedar, should be cut. The two most common methods of chemical application are "frilling" and using a tree injector.

Generally, the most economical method of controlling dangerous trees is by application of

a low concentration of 2,4,5-T esters (3%) in diesel oil to a frill, or overlapping axe cuts, encircling the tree at a height of not more than 12 in. above the ground line. Mix thoroughly 1½ gal. of 2,4,5-T esters in 48½ gal. of diesel oil in a used 55-gal. chemical drum. A knapsack sprayer should be used to wet exposed wood areas in the frill thoroughly at approximately 1 qt. to each 12-in. diameter tree, allowing the chemical to overflow freely from the frill and wet the bark and root crown below. The crew for this method consists of a foreman and two laborers, using a jeep for transportation. One laborer carries the axe and does the frilling of the tree, while the other man carries the knapsack sprayer.

For the tree injector method mix 2 qts. 2,4,5-T esters in 4½ gal. diesel oil or kerosene for a total mixture of 5 gal. Shake the container vigorously for one to two minutes in order to obtain a thorough mix. The tree injector is filled by pouring the mix into the cylinder of the injector at the top. Material is applied by jabbing the blade through the bark



near the base of the tree, forming a pocket and tripping the trigger; allow material to fill pocket before removing injector. These jabs should be placed approximately 2 in. apart.

### Initial Stump Treatment

As a result of rising costs of labor, transportation, and materials, TVA was searching for some way to reduce unit cost and the total right-of-way budget. While reviewing the right-of-way program, it was found that many tracts of land (farms) were cleared several months before line construction was completed and the line energized. This interval resulted in a medium-to-dense stand of brush ranging from 6 to 20 ft. in height on the right-of-way at the time the line was energized, and a foliage treatment was required during the first summer the line was in service. Initial stump treatment on newly cleared rights-of-way was begun on an experimental basis in 1954 and resulted in a kill of 81% at a cost of \$57 per acre of brush. In 1957, TVA established a stump treatment program, which has resulted in treating 12,517 acres of brush at an average cost of \$65 an acre.

Chemicals consist of the 2,4,5-T esters and 97 gal. of diesel oil, applied at an average rate of 100 gal. of mixture per acre of brush.

The crew consists of a foreman, a truckdriver, and five laborers. Transportation consists of a 1-ton stake-body truck with no-spin differential and dual wheels to haul chemicals and a 6x6 IHC or Reo 1,000-gal. tank truck equipped with a Hypro pump operated from a PTO. A manifold is installed at the rear of the truck about 7 ft. from the ground to provide an individual hose attachment for each spray gun. This manifold eliminates use of wyes and extra hose lengths, and it also prevents delays due to hose failures and malfunction of guns. They use Bete spray guns attached to a 3/8-in., lightweight neoprene hose. Protective clothing, consisting of neoprene overalls, overshoes, and neoprene-coated



For initial stump treatment, TVA crew members apply specially formulated chemicals with equipment like that shown in this photograph.

cotton gloves, are provided for these workers.

The truck is driven down the center of the right-of-way with men walking behind and spraying small sections of the right-of-way. Where the truck cannot be driven, as is the case on a small percentage of our rights-of-way, hose is laid out or knapsack sprayers are used. All small growth is wetted thoroughly to the ground line. Stumps up to 12 in. in diameter are wetted to the ground line, including the cut surface. When stumps are 12 in. or larger in diameter, they are wetted thoroughly down the side to the ground line, including

all exposed roots. The cut surface on larger stumps need not be sprayed except for a distance of 4 in. in from the edge of the stump. Spraying pressure should not be more than 50 psi to save material and to prevent splattering material on areas which should not be sprayed. Low pressure will also help eliminate drift to susceptible plants off the right-of-way.

In the early days of the stump treatment program, some people believed this method had to be used within 72 hours after trees were cut, while it was the opinion of others that it could be deferred two weeks. However,



Danger trees are removed from TVA grounds by using a tree injector which is filled with chemicals to remove unwanted, hazardous trees.



Soil sterilants are applied around steam and hydro plants by a mechanical spreader such as the one that is here operated by TVA crewmen.

TVA has treated stumps at various periods ranging up to a year later, treating all visible stumps and sprouts after the growing season. Results have been highly satisfactory, regardless of the length of time since the brush was cut. Rights-of-way treated by this method have not required re-treatment for at least three years. Work can be performed any time of year, even when the temperature is below freezing, except when ground is covered by snow or sleet. At present, stump treatment is scheduled when right-of-way crews are not engaged in foliage work; however, it is preferred that work be done shortly after the right-of-way has been cleared and before roads and fences are repaired after construction work.

#### TVA's Weed Control

In June 1959, TVA initiated a chemical weed and brush control program at 28 hydro plants and eight major steam plants. Steam plants have an average of 25 miles of railroad and approximately 20 acres of area which require weed and brush control,

including switchyards, transformer yards, fences, and riprap on intake and discharge channels. Hydro plants have an average of four acres that require control.

In order to have an effective soil sterilization program, areas must be surveyed to determine plant growth, species, and density. Annual rainfall, temperature, and soil conditions are also important. We have found that Chlorea granular or Ureabor used at 1½- and 2-lb. rates per 100 sq. ft. are more effective and longer lasting than other soil sterilants. Numerous other chemicals are used in small quantities for treatment of specific problem areas. In projecting a long-range program, it appears that spot treatment will be required each year after initial treatment, using Chlorea granular, Ureabor, or similar material, with the major part of treated areas requiring a re-treatment every two years at a reduced rate of chemicals.

During the last few years, TVA has increasingly relied more heavily on herbicide chemicals for control of woody growth

along transmission line rights-of-way. In order to maintain these rights-of-way in the most efficient manner and at the lowest cost, TVA conducts a year-round research program. This program includes studying and experimenting with various chemical formulations, application rates and techniques, equipment, and other conditions to determine methods and procedures for improving the program. It keeps currently informed of research and development of chemicals and equipment by chemical formulators, research institutions, manufacturers, and other utilities. In cooperation with various formulators and other research institutions, TVA establishes field test plots using various chemicals, formulations, and rates to determine their effectiveness on various species of brush. Various types of equipment are also tried on an experimental basis to determine their adaptability to the right-of-way program.

Considerable research has been done with invert or thickening materials, using both air and ground equipment; however, this has not been adopted into our program for large-scale use, since it is more expensive than standard spray mixtures. At present, one of the main concerns of the program is a study of resistant species now remaining on the rights-of-way.

#### Public Relations

TVA has derived considerable benefit from careful and regulated use of chemicals to control brush on rights-of-way. In con-

(Continued on page 28)

#### Acres Maintained and Cost Per Acre

The following tabulation is a summary of the right-of-way maintenance work performed since fiscal year 1956

F.Y.	Helicopter		ASN		Conventional		Basal		Mechanical	
	Acres	Acre Cost	Acres	Acre Cost	Acres	Acre Cost	Acres	Acre Cost	Acres	Acre Cost
1956	—	—	—	—	9,894	\$78	1,885	\$62	2,005	\$62
1957	—	—	—	—	7,232	94	1,663	96	1,179	61
1958	—	—	171	*	6,106	95	3,481	85	1,611	59
1959	3,199	\$23	6,603	\$26	3,038	94	1,153	63	727	67
1960	7,558	19	6,891	24	2,452	55	1,976	63	459	58
1961	10,968	13	5,727	28	2,492	58	1,854	70	612	66
1962	10,079	10	5,575	25	2,708	59	1,287	71	1,265	49
1963	8,126	11	5,266	27	2,337	50	3,096	64	881	46

\*Work performed on experimental basis.





## How to put the finishing touch on any insect control program

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

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

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

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

To ensure safety and effectiveness throughout your program follow these simple steps: (1) read the label on any pesticide carefully, before you

start, (2) follow the directions and precautions exactly, (3) make sure your application goes only on the crop to be protected; drift to neighboring cropland or streams is bad business, (4) never clean or flush out your equipment near a stream, and (5) complete the job by crushing and burying all small empty containers.

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

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

**NATIONAL AGRICULTURAL  
CHEMICALS ASSOCIATION**

# Current Trends in Sod Production

AMERICA'S cultivated sod industry has seen at least two milestones which have been major stimulants to its growth. The development of the powered sod cutters in the late 40's and the introduction of Merion bluegrass in the early 50's contributed tremendously to the expansion of sod growing. Staying ahead of today's business may help to develop other milestones and to correctly evaluate proposed changes as steps forward or backward.

While such changes in the past have arisen without pressure from our industry, more and more such changes should be industry stimulated. Constant evaluation of growing and handling techniques should reveal many places for improvement. With the size the industry is achieving, we should be increasingly successful in encouraging equipment manufacturers to develop machinery designed for our needs.

The labor-consuming job of rolling sod seems to be coming closer to a solution. The entire

By **BEN WARREN**

Warren's Turf Nursery, Palos Park, Illinois



**Progressive sod producers** like Ben Warren (center) perform extensive research on their sod farms. The structure above enables Warren personnel to test new shade-growing Kentucky bluegrass under various sunlight intensities. Looking on above are Robert Warren (right) and marketing advisor W. P. Pettit. Building is in Palos Park, Illinois.

## WTT's Sod Industry Section to Be Monthly Feature

HERE IS the first of a new monthly feature of *Weeds Trees and Turf* devoted exclusively to production and marketing of cultivated turfgrass sod in America.

This section is being initiated because of the growing importance of sod farming, and because there is presently no regular coverage of problems unique to sod growers available in other media.

While the section will be of particular value and interest to sod growers themselves, other *WTT* readers will also find these articles helpful. Those who sell or install sod, those who are called on to treat lawns grown from sod, and those who buy sod for installation will find the articles in *SIS* of note.

Many months in preparation, *SIS* is the result of extensive surveys of state agricultural departments and turf agronomists, trade associations, turfgrass producers, and others. During the months when data on sod

production were being gathered by *WTT*'s market research staff, other personnel were assembling comprehensive articles from some of the best minds in the industry today.

In the coming months, this section will deal in detail with such topics as new methods of harvesting sod; advantages of automatic irrigation; new concepts of transporting sod from farm to market; labor management on the sod farm; and other such subjects.

In addition to these feature articles, *SIS* will contain a number of news and product stories, along with advertising pertaining specifically to sod production.

The editors feel this new portion of *WTT* is a necessary addition because of editorial policies, which have dictated that *WTT* become the single authoritative national monthly covering all three phases of nonfarm vegetation maintenance and control.



**FOR SMALL JOBS** — 5'4" unit puts seed in top ¼" of soil, the ideal depth for closely controlled moisture and growth conditions.



**FOR BIG JOBS** — 8' and 10' seeders-tuck seeds at ½" depth, as recommended for parks, golf courses, free ways, sod farms and other large acreage seedings where natural moisture and growth conditions prevail.



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A Brillion crushes the small lumps, presses down small stones and gently packs the soil into a firm, clod-free seedbed — in one operation. One man can seed up to 50 acres per day. No extra equipment or operations are needed for seedbed conditioning.

Large hoppers minimize re-fills. And you can hug fences, trees and building foundations to keep hand broadcasting to a minimum. Options include acreage meters and transport wheels for the 8' and 10' seeders. So to seed more lawn and save more money, include a Brillion Landscape Seeder in your budget. Send coupon for complete information.

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operation of moving the products from the field to the consumer's location should undergo many changes. The patent office has issued several patents on machines for forming sod into rolls in the past several years, and it would seem that in the near future a reliable machine should be on the market. However, there seems to be a rising interest in the North in handling sod flat, as has been the southern practice. There has been some work done by individual growers in flat handling and mechanical placement of sod on pallets. Palletizing and mechanical loading and unloading of deliveries is a minor factor in the industry today and will be subject to much serious appraisal.

#### One-Crop Acreage

Most of the new acreage in sod production has been a "one-crop" endeavor. In the North, much of this has been devoted to Merion bluegrass. Consideration for the future indicates an investigation of diversification. Merion is an excellent grass



Demonstration beds like these, on view at Warren's Palos Park (Ill.) farms, let customers see the exact type of sod which they will purchase from this major turfgrass producer. Customers for cultivated sod may be landscapers, nurserymen, golf course superintendents, highway landscape maintenance supervisors, or those who retail to homeowners. Characteristic of the phenomenal growth of the sod production business is the adoption of modern marketing techniques such as these demonstration plots. Warren's Turf Nursery also carries out experimentation to develop techniques to solve the many problems in harvesting, storage, and transportation of sod.

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# Here's how easy it is to get long-lasting control of nematodes and soil insects that ruin turf

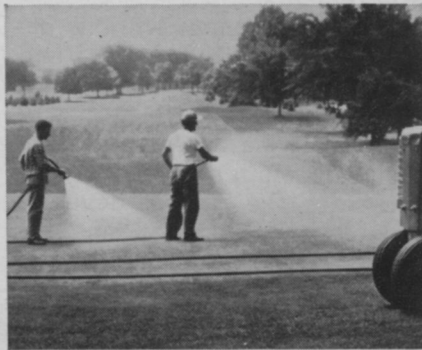
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THE FACTS that follow quickly explain the essential value of controlling soil pests with Nemagon and dieldrin; their flexibility and ease of use; why the root protection they provide far outweighs the cost of treatment.

## Nematode control with Nemagon

Nemagon works as a pre-planting application or on established turf. It fumigates the root zone to kill the nematodes (microscopic worms, not insects) that can infest soil in fantastic numbers. All damaging species are controlled and reinfestation will normally not occur for a year or more.

Without the root knots and lesions caused by nematodes, water and soil



Protecting a golf green with Nemagon eliminates any chance of unsuspected nematode infestation causing costly damage and disrupting play.

resodding.

*Nemagon is easily drenched into soil following a spray application. There's no need for special equipment and grass isn't disturbed. Easy-to-follow directions are printed on every package.*

## Soil insect control with dieldrin

Dieldrin controls all species of grubs, including the larvae of Japanese and June beetles. It can be used ahead of time to prevent damage from ever starting. Or you can apply dieldrin to stop an infestation when discolored turf indicates that soil insects are pruning roots and limiting the crop's access to fertilizer and water.

*Dieldrin can be applied any time after soil warms up. Effectiveness usually lasts 3 to 5 years. Control is so thorough that grub-eating moles and rodents can't find food in the treated area and leave.*

Dieldrin can be put on in fertilizer, or in granular form. Liquid concentrates and wettable powders are available for spray use and drenching.

Full details on using dieldrin for



This root-chewing white grub can kill turf or make it look sick. So can a host of other grubs and soil insects. Dieldrin stops them all.

control of soil or surface insects are on every package label.

Nemagon and dieldrin are both available as branded products of well-known manufacturers and sold where you normally buy insecticides, and other turf maintenance products.

For more information, write Shell Chemical Company, Agricultural Chemicals Division, 110 West 51st St., New York, New York 10020.

Follow label directions carefully when using any pesticide.



A Nemagon spray knocks out nematodes fast, and thoroughly. Turf isn't disturbed. And nearby plants won't be injured.

nutrients can pass freely through roots. Turf can respond fully to fertilizer and irrigation. Risk of stunting, poor appearance and dead patches is eliminated. So is the risk of a reseeding or

**Shell Chemical Company**  
Agricultural Chemicals Division





Foundation beds of named strains of creeping bent, maintained to retain varietal trueness, are typical of the advanced technology found on America's professionally managed cultivated turfgrass sod farms.

when used in the proper environment, but there are many areas in which it will not perform satisfactorily.

Locations such as highway rights-of-way, shaded lawns, and athletic fields are illustrations of areas poorly or questionably served by Merion. Evaluation of turf species available now and their adaption to these uses reveals opportunity to diversify. The breeding and selection work

underway in the country should broaden the possibilities of better serving many of these new requirements.

This development work is being done by both industry- and tax-supported programs. New releases from the former will most likely be accompanied by efforts to retain a degree of control, since the cost of development is substantial. Plans for the future should include the

possibility of licensing or franchising arrangements which could be part of a varietal release.

Arrangements of this kind are common in other industries and should find ready acceptance among sod growers. The advantages are two-fold. Enabling the developer to maintain exclusive rights to a variety follows the philosophy of our patent laws and encourages investment in this kind of progress. And the growers should benefit by avoiding over-production.

Active promotional programs directed towards increasing volume through advertising, public relations, and sales effort is expanding in the industry and in a few years should become a universal practice.

Developments such as these should see the production more and more in the hands of well-rounded turf nurseries producing a complete line of grass for all purposes and less growing of sod by farmers who shift from crop to crop depending on variations in the markets.

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Merion Bluegrass, other Bluegrass, Fescues,—no matter what your requirements, Mock Seed Company has select lots of extra quality grass seed. More than ten years ago, when the infant sod industry was demanding seed free of bentgrass, *poa annua*, timothy, and other pesky crop grasses, Mock was able to supply. And we still are, despite the fact that the industry has become a lusty, vigorous man. Write, or phone collect for latest quotations on identical lots of Mock's Seed for Sod.

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## Tensiometer Cuts Water Bill In Half, Survey By UC Turf Expert Proves

Millions of gallons of water are saved each month by using tensiometers, new moisture-measuring devices, according to recent research by Wayne Morgan, University of California turf expert, Riverside, Calif.

Tensiometers, relatively new instruments which tell if plants or soil need water, are closed tubes filled with water. On the lower tip sits a piece of ceramic with a porous wall, and at the top is a vacuum gauge. The device is inserted into the ground, and as soil dries, moisture is sucked through the ceramic tip, creating a partial vacuum inside. The gauge registers this soil suction, and gives a reading of relative soil wetness.

Morgan supervised installation of tensiometers at five golf courses, four bowling greens, two parks, and three cemeteries in Los Angeles County during the past two years. He returned to check watering records after the inexpensive (\$10-20) tools

were placed, and here's what he found:

Water use down 50% at Holmby Park Bowling Green (West Los Angeles), 40% reduction at

**Tensiometer**, new water-saving device, gets close scrutiny here at Victoria Club Golf Course, Riverside, Calif., from Wayne Morgan (right), UC turf expert, and Rod Barker, Victoria superintendent. The latter said his facility saved \$1,200 in 1963, and \$1,500 last year by using this water measuring instrument. Today many sod producers are experimenting with forms of irrigation to increase harvests, and the possible use of tensiometers to cut down on water bills could be promising for these sod growers. With water shortages experienced in many parts of the country during summer, this could be especially important.

Deauville Country Club (Tarzana), and down 57% on a section of UCLA campus. Other facilities reported even larger savings with tensiometers.

"It's not just a matter of saving water," Morgan asserts. "Better irrigation promotes healthy, attractive grass."



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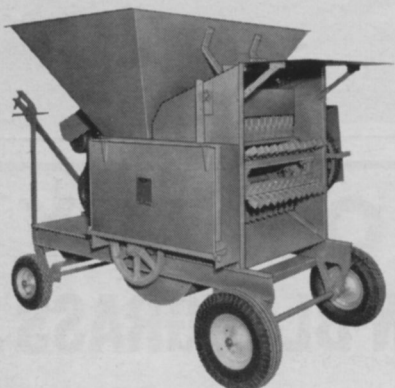


## Shreds 101 Cubic Yards An Hour NEW KING KEMP

Growing demand for topsoil, sod, peat, humus and mulch is being met by more and more topsoil producers with the aid of the new King Kemp, which spews out soil at the rate of 101 cubic yards an hour.

Shredded, aerated, stoneless, rubble-free topsoil is ready when needed with this rugged Shredder, powered with a Ford 58½ hp four-cylinder engine.

Kemps are used to shred mulch for roadside maintenance, phosphate rock, sewage sludge, brush, vines, palm fronds, sod, wood chips and other matter. A Kemp soon pays for itself.



There's a Kemp Shredder for every professional use. Capacities from 4 cu. yds. to 101. No. 2 Gladiator, above, shreds 30 cu. yds. an hour.

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## Sod, Sprigs of New Centipede Variety

### Available to Certified Growers for '66

A new drought-hardy, shade-tolerant centipede turfgrass has been approved for release by the agricultural experiment station of Oklahoma State University, Stillwater. It is named Oklawn.

Sod and sprigs of the new variety will be available to certified seed growers for the 1966 season. Thereafter, it is expected that enough sod and sprigs will be produced to supply public demand.

Called a "lazy man's grass" by Dr. Wayne Huffine of Oklahoma State, Oklawn does not require high management practices. It is adapted to all of Oklahoma, with the possible exception of the high plains. It should also do exceptionally well in southern and southeastern states, University officials said.

Oklawn is a bluish-green, medium-textured, slow-growing perennial which spreads by above-ground runners. The runners root at the nodes, forming a dense sod which resists bermudagrass and weed invasion. It grows to a maximum height of 3 to 4 inches above the soil surface. Propagation may be either by sod or sprigs.

Oklawn is resistant to insects and diseases, the school's spokesmen maintain. It grows well in partial shade as well as in full sunlight. It has shown excellent heat and drought tolerance, surviving temperatures ranging from 15° below zero to 115° F.

Oklawn grows well on moder-

ately acid, medium-fertile soils and actually is not its best on highly fertile ground. For more information, sod producers and seed growers may write to the Agricultural Information Services, Agricultural Experiment Station, Oklahoma State University, Stillwater.

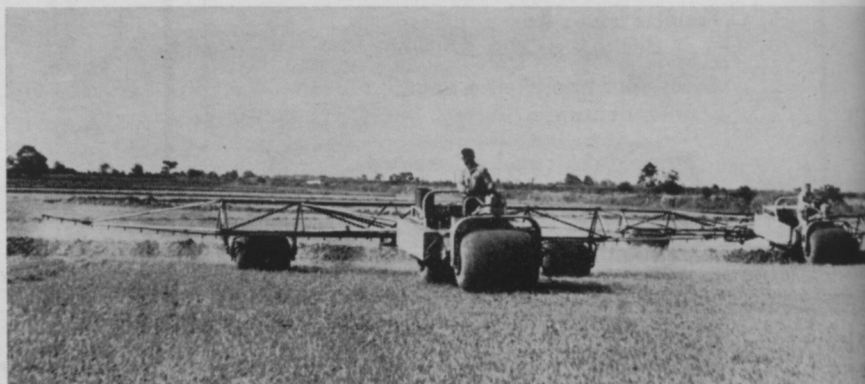
## Soft-Treading Sprayer Rig Uses Air Bags for Traction

Contract applicators can now increase and diversify their spraying service with the addition of a ground spraying vehicle which can be used on windy days and at night when airplanes are grounded.

Called the Rolligon Two-Bagger Model 2251, this soft-treading vehicle, equipped with air bags instead of wheels, and accompanying spray boom, averaged 25 acres per hour when used on Texas rice fields. The machines can double their capacity by conducting another 10-hour shift at night, spraying an average of 500 acres every 24 hours, says Rolligon Corp., Houston, Texas.

Use of air-inflated rubber bags for wheels allows the Rolligon Two-Bagger to traverse soft grounds with less impact than the step of a man walking, the company says.

Complete details on this product are available from the Rolligon Corp., 1602 Old Spanish Trail, P.O. Box 20096, Houston, Texas 77025.



Operating when wind gusts were up to 25 mph, this ground spraying equipment has dispensed spray solution to crops with no spray drift, says Rolligon Corp., Houston, Texas. Forty nozzles on the 46-foot-wide spray boom are only 27 inches above the ground.

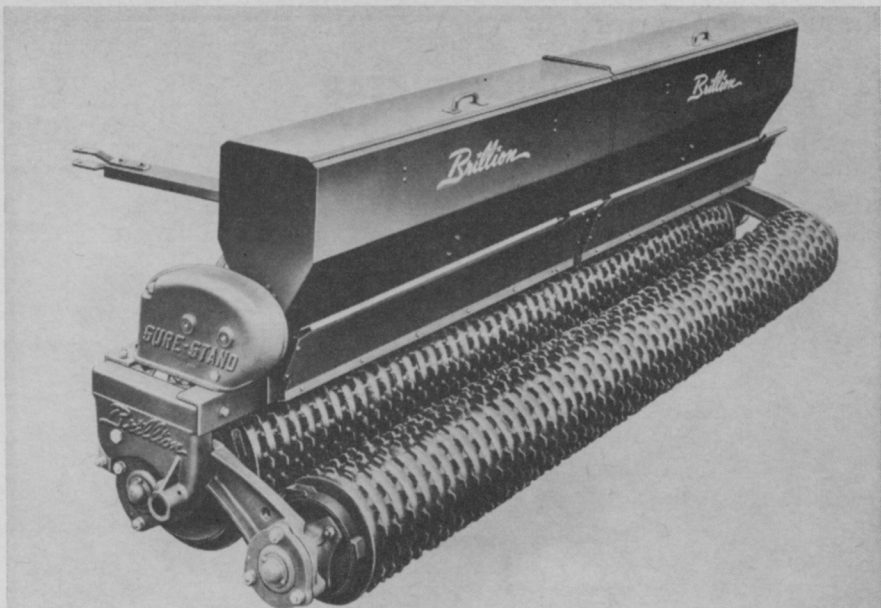


**Brillion Machines Designed  
For Big Landscape, Sod Work**

Machines that reportedly enable one man to prepare the seedbed and plant seed in one operation, at a rate of 50 to 60 acres a day, are now manufactured by Brillion Iron Works, Brillion, Wis. These SSL, 8- and 10-foot seeders have built into them brush agitators and precisely calibrated seeding devices said to provide additional savings of up to 50% on expensive seeds.

A double set of notched semi-steel rollers press down small stones into the soil, crush lumps, and eliminate air pockets to form a clodfree seedbed. The precise seeding mechanism accurately meters seed at preset rates into the small furrows formed by the front rollers. The smaller rear wheels are offset to split the ridges and furrows and tuck the seed into the desired top half-inch of the moist soil for fast germination.

Named SRS pulverizers, sin-



Preparing seedbed and seeding major landscape projects and sod farms in a single one-man operation is possible with SSL model seeding machines, manufacturer Brillion Iron Works says. These machines are built in 8- and 10-foot sizes, and have brush agitators.

gle-gang models have 9-, 10½- and 12-foot rolling widths. Triple-gang pulverizers are available in rolling widths from 15 to 20 feet.

The pulverizers incorporate semi-steel cast iron wheels, 21 inches in diameter and 6 inches

wide, weighing 60 pounds. Wheels are carried on a 4-inch pipe axle and have triple-sealed, lifetime, lubricated bearings.

For further information on this equipment write to Farm Implement Div., Brillion Iron Works, Inc., Brillion, Wis. 54110.

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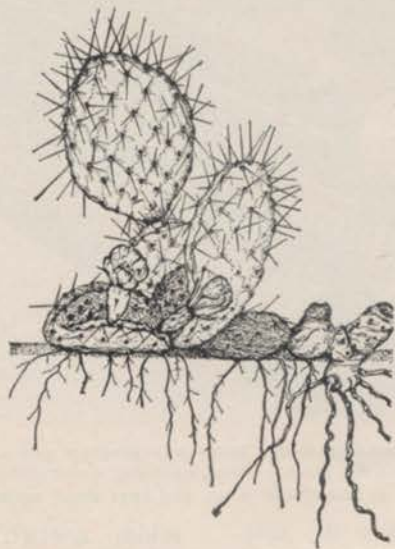
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Bound Brook, New Jersey

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## PRICKLY PEAR

(*Opuntia* spp.)



Prickly pear is a cactus found on dry, sandy soils, but not restricted to arid regions. The cactus is a perennial and reproduces by seeds and by rooting stems (pads). Its growth characteristics are prostrate or semiprostrate. It sometimes ascends up to 3 feet. Prickly pear may be confused with other cactus species. Species of this plant may be found in Massachusetts, New York, west to British Columbia, and south to California, Texas, and Florida.

Stems of *Opuntia* cactus are flattened and fleshy; they may be described as padlike. There are no true leaves of cactus, but leaves are represented as sharp yellow spines, 1 inch long.

Flowers are bright yellow with long succulent petals. Some species have red centers. After pollination and maturation, the fruit is formed; this is a pear-shaped, fleshy protuberance on the spiny stem. Inside are many hard seeds.

This pest is troublesome on many overgrazed pastures and ranges. In extreme infestations, prickly pear may be plowed under and the area reseeded to grasses after one or more years of intertilled crops where the climate and soil are adapted to this practice.

Prickly pear cactus is resistant to sprays of 2,4-D. Sprays of 2,4,5-T in diesel oil will kill it on an individual-plant-treatment basis. Recent work indicates 2 to 4 lbs. per acre of silvex spray on prickly pear that had been run over by land roller gave good control.

Heavy infestations of this cactus in Australia in the 1930's were brought under control biologically, predominantly by importation of an Argentinian cactus moth, *Cactoblastis cactorum*. There are many other predators of cactus but their own predators in turn prevent them from being very effective.

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)

## Brush Control at TVA

(from page 18)

trast, careless and indiscriminate use of the same chemicals can result not only in unsatisfactory control but also in actual damage to desirable crops.

We believe that users of herbicides have a definite responsibility to the general public to exercise extreme discretion when using these chemicals, especially along rights-of-way conspicuously exposed to public view. This is particularly true in those areas where garden clubs, civic organizations, or government agencies have made special efforts to improve the landscape.

Use of discretion in applying these chemicals should result in public acceptance and reduced pressure for restrictive legislation. When inquiries are received concerning chemicals being used and reasons for using them, we should always discuss them thoroughly with the public or the person making the inquiry. We should explain our chemical program and economics involved in this type of maintenance.

### Summary

Value of chemical brush control on rights-of-way has been definitely proved during the past few years. There are several effective methods that have been in use for herbicide application. These methods all have their merits and should be given consideration in planning an effective and economical chemical brush control program.

Today we know that chemical brush control is not a "one-shot cure-all" for the majority of our rights-of-way. Chemical brush control may be accomplished by several methods, from the ground as well as from the air, depending upon the specific problem. After the specific brush control problem has been determined, a successful right-of-way maintenance program at a reasonable cost will depend upon selecting the proper chemicals and equipment and making certain that the crews are thoroughly trained and adequately supervised in their proper use.



# Tree Dedication by LBJ to Highlight Int. Shade Tree Conference, Aug. 15-19

President Lyndon Johnson is expected to dedicate a scarlet oak (official District of Columbia tree) adjacent to the White House grounds at noon, Aug. 16, highlighting activities of the 41st annual International Shade Tree Conference convention in the nation's capitol, Aug. 15-19.

Site for the planting and dedication, selected by U. S. Secretary of the Interior Stewart Udall, is Lafayette Park, opposite the President's living quarters. The First Lady and other government officials also plan to attend, according to ISTC president Joseph Dietrich (Parks Superintendent, Greenwich, Conn.).

Unique corollary feature to this event will be simultaneous plantings of state trees on each of the nation's 50 state capitol grounds at noon, in respective time zones.

Theme for the five-day conclave at Washington-Hilton Hotel is "Trees in the Beautification of the Modern Municipality." Timely panel discussions will include: "Trees for City Streets, Malls, and Other Public Areas," moderated by Edward A. Connell, Supt. of Parks & Trees, Stamford, Conn.; and "Cooperation With Civic Groups,

## Rohm & Haas Markets 'Fore'

A new turf and ornamental fungicide called "Fore" is now available from Rohm and Haas Co., Philadelphia.

Fore, a Dithane M-45 product, is said to control such grass diseases as dollar spot, Fusarium blight, red thread, slime molds, copper spot, Helminthosporium melting out, Rhizoctonia brown patch, and Fusarium snow mold.

Ornamental diseases it knocks out are black spot of roses, and Botrytis petal spot of chrysanthemums, the company says.

Additional information will be sent those who write to A & SC Dept., Rohm & Haas Co., Independence Mall West, Philadelphia, Pa. 19105.

Departments and Others on Municipal Tree Programs," led by Harold Gray, chairman, DC Commissioners Planning and Urban Renewal Advisory Council.

Also offered delegates and guests will be a prognostication of things to come when Cy Parimier, landscape architect for Johnson, Johnson and Roy, Inc., Ann Arbor, Mich., speaks on "City of the Future."

Convention agenda also lists excursions to Washington's many historical sites.

## Geigy Makes New Nematocide

Sarolex, a new nematocide that reportedly kills both nematodes and soil insects, has been introduced by Geigy.

This nematocide-insecticide also greens-up turf severely damaged by nematodes, chinch bugs, and other lawn pests, the manufacturer says.

Long residual action (one treatment all season), low phytotoxicity to surrounding ornamentals, compatibility with other materials, and no corrosive effects on equipment are other listed Sarolex advantages.

Tests with the new product have proved there is gradual growth of new grass in infested areas after treatment on most southern turfs, Geigy claims.

More detailed information is available from Geigy Chemical Corp., Saw Mill River Road, Ardsley, N. Y.

## Chemical Mixer Produced

Multi-Film Compex, a new chemical mixer, said to be completely soluble in liquid solutions, is now marketed by Colloidal Products Corp.

Compex provides contract applicators with an inexpensive aid to treat soil with liquid fertilizers, insecticides, or herbicides in a single operation, Colloidal says.

For further details write Colloidal Products Corp., P. O. Box 667, Sausalito, Calif. 94965.

## Meeting Dates



Mississippi Valley Golf Course Superintendents' Assn. Meeting, St. Louis Country Club, St. Louis, Mo. Aug. 3.

Indiana Assn. of Nurserymen Summer Meeting, Richmond, Aug. 3-4.

Massachusetts Nurserymen's Assn. Summer Meeting, Mahoney's Rocky Ledge Nursery, Winchester, Aug. 4.

New Jersey Assn. of Nurserymen Summer Meeting, Lovett's Nursery, Little Silver, Aug. 4.

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

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

Midwestern Nurserymen, Summer Seminar, J. V. Bailey Nurseries, St. Paul, Minn., Aug. 9-11.

Michigan Assn. of Nurserymen Annual Conference, Kellogg Center, East Lansing, Aug. 11-12.

Rutgers University Lawn & Utility Turf Field Day, New Brunswick, N.J., Aug. 11.

Rutgers University Golf & Fine Turf Field Day, New Brunswick, N.J., Aug. 12.

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

International Shade Tree Conference Annual Convention, Washington-Hilton Hotel, Washington, D.C., Aug. 15-20.

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

Iowa Nurserymen's Assn. Summer Meeting, Iowa State University, Ames, Aug. 16-17.

Nebraska Assn. of Nurserymen Summer Meeting, Nebraska Center for Continuing Education, Lincoln, Aug. 24-25.

Pennsylvania Grassland Council "Forage Progress Days," Milton Hershey Farms, Hershey, Aug. 27-28.

Arkansas Nurserymen's Assn. Annual Meeting, Arlington Hotel, Hot Springs, Aug. 29-31.

Illinois Turfgrass Field Day, University of Illinois, Urbana, Sept. 10, 13.

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

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.



## Alabama's Weed Spraying Equipment

(from page 12)

them four weeks earlier, the same spray might have killed them easily.

The spray used was 2,4-D, or 2, 4, 5-1 in water, or both, with a surfactant, at 4 lbs. active ingredients to 100 gal. of water. The rate of spray was to be "in an amount sufficient to thoroughly wet, to the point of runoff, all exposed foliage surfaces." The amount needed was found to be not less than 25 gal. per acre (which spread 1 lb. of active ingredient per acre).

After the 23rd of June, when rains came to most of Alabama, the effect of the spray could be easily seen soon after the spraying operation. On the areas which were sprayed during the drought, the effect was not noticeable for two or three weeks.

The second spraying began August 10 and plants were growing vigorously from the frequent rains. Summer weeds including bitterweed, ragweed, and spurge were principal targets for this operation. The worst pests, crabgrass and Johnsongrass, were not affected by the spray; in fact, they were probably helped by the reduced competition. A second generation of dockweed and plantain was caught by this spray, but there are no doubt still plenty of seeds remaining to germinate later.

**Table I. Weed count in 1/100 of an acre in unsprayed area as compared to 1/100 of an acre in adjoining sprayed area.\***

Aug. 19—Unsprayed Area	
Ragweed	1155
Goldenrod	189
Nodding Spurge	84
Poison Ivy	126
Blackberry	147
Dallisgrass	20%
Common Bermuda	5%
Crabgrass	189
Sprayed (One Time)	
Blackberry	2
Buttonweed	51
Ragweed	14
Bindweed & Briar Vines	10
Crabgrass	460
Dallisgrass	10%
Common Bermuda	20%
Broomsedge	10%
Bahia	5%

\*Grasses are represented in percent of area covered.



**Blackened and dead horseweed** and other weeds in the 20-foot strip alongside this Alabama highway show effectiveness of the state's weed control experiment carried out by the authors.

The effect of the spray on certain tall weeds such as wild (tall) lettuce (*Lactuca canadensis*) and blue vervain (*Verbena hastata*) was a disappointment to the maintenance people. The weeds were blackened and most of them were killed; but the strong stalk stood long after it was dead and made an unsightly appearance along the road. They had to be mowed along with those portions which had not been sprayed.

One of the purposes of spraying is to reduce the cost of roadside maintenance. To do that it should eliminate the need to mow at least one time. In our case, the spraying did not eliminate the need to mow. Each scheduled mowing was required in both sprayed and unsprayed areas.

At many spots along our highways, the kudzu or honeysuckle vines growing exuberantly on steep fills or backslopes are growing onto the shoulders of the road and even to the pavement. The spray was very helpful in controlling these vines, particularly with the second application. The first spray seemed to kill the leaves but not the vines; while the second evidently killed the plants within the 20-ft. strip. This is a great help to maintenance crews who are relieved of the difficult mowing or swing-blading in those situations.

On the other hand, one mowing crew foreman told me that the spray made the grass and weeds much tougher and harder to mow, and that his tractors

used 5 gal. more gasoline per day when mowing behind the spray trucks.

A good control area was obtained on Highway US 82 between Montgomery and Tuscaloosa. The entire length of this road was to have been sprayed; however, a construction project was begun which eliminated a 3-mile stretch of the road from both spraying and mowing. The weed count made in this area showed very clearly the difference in weed population between sprayed and unsprayed roadsides adjacent to each other, as shown in Table I.

### Effects on Clover

The reseeded crimson clover, of which we have a great deal in Alabama, was mature before the spraying started on May 18. On the example of U.S. 231 south of Dothan, the crimson clover seed was being harvested the week before spraying began. The spray did not affect the germination of the seed later in the year, as is shown by the postspray counts on both July 13 and September 15 when crimson clover seedlings were observed in abundance.

The hop clover observed on May 18 at the same location was also mature at the time of spraying. No germination of hop was observed on the postspray counts.

Common lespedeza showing in most prespray counts, was killed by the spray.

*Sericea lespedeza* was killed by the spray. In most cases the *Sericea* within 20 ft. of the road has to be mowed anyway, and



very little drift occurred to damage the growth beyond 20 ft. *Sericea* seed will seldom germinate when it is not covered; therefore, it is doubtful if any *Sericea* will return to the spots where it was killed by the herbicide.

Other small clovers and legumes, such as black medic and white dutch were killed by the spray.

The records kept by the inspector who accompanied the spray truck show the material used, the rate of application, the wind, the location, and the plant conditions (vigorous or wilting).

These records were correlated to the "weed count" field notes to show why a good kill was obtained in some areas while in others it wasn't so good.

Table II shows the total count of weeds in 1/100 of an acre in 60 test areas; meaning that each figure, if multiplied by 100, would be the theoretical number of weeds in 60 acres located on the roadsides in 60 different areas of Alabama.

Plantain normally declines in midsummer, and then begins to show again in the fall. The figures above show that the spray decreased the number that could be expected on the third count. The horseweed and ragweed population was drastically reduced by the herbicide. Fleabane's demise was accelerated by the spray and no late invasion of the 20-ft. sprayed strip was noted — although a number of fall daisy fleabane was seen beyond the strip. Wild garlic was not much affected by the spray due to the timing of the operation. The spring crop was on the way out when the first spray was applied; the midsummer count showed none because they were dormant — then the fall count showed those which had sprung up since the second application.

Pepperweed control coincided with the normal growth cycle, so no conclusions are drawn.

Dockweed normally reappears in October. In this case the spray decreased the population of new dockweed as compared with the area beyond the 20-ft. strip.

Buttonweed (poor joe), bitter-

weed, and spurge are all weeds that appear in midsummer and flourish until fall. Good control of these three was obtained by the spray as the figures indicate.

The grasses were not affected by the application of 2,4-D or 2,4,5-T. Common and coastal bermuda, pensacola bahia, fescue, dallisgrass and broomsedge are the principal grasses while "other grasses" include wire grass, smut grass, millet, foxtail, tickle grass, wild oats and carpet grass. The average of all reports in Table III shows the percentage of desirable grasses in the 20-ft. strip on the shoulders or median of roads throughout Alabama.

Table III shows that the percentage of the bermudas and the bahia increased throughout the summer, and the fescue declined, both as expected. The broomsedge increased slowly, while the dallis is strongest in the middle of the summer. "Other grasses" included wild oats and other winter types at the first count—then decreased—then increased again as the tickle grass, smut grass, etc., became more prominent. The stands of coastal bermuda and bahia are generally weedfree so no conclusions can be drawn relating their increase to the weed spray. However, the common bermuda which is widespread and not usually in a pure stand, was definitely helped by

the decreased competition of weeds after the first spray.

## Conclusions

1. The spraying operation eliminated most of the annual weeds within the 20-ft. strip next to the roadway.

2. Damage to desirable clovers and legumes was confined to common lespedesa, *Kobe lespedesa*, *Serecia lespedeza*, and white dutch clover. The specifications were purposely written to time the spraying so as to minimize the damage to the crimson, hop, and burr clovers.

3. Damage to crops did not occur, again due to the specifications, which spelled out conditions under which the inspector would halt operations.

4. No damage to desirable grasses occurred.

5. Not much economic advantage accrued from the spraying operation, because it did not eliminate the need for mowing.

6. A more lasting benefit from the spraying would have been realized if the entire roadway from right-of-way to right-of-way had been covered. As it is the weeds left beyond the 20-ft. sprayed strip will reseed the entire area within a short time.

7. Spraying of steep slopes near the road to control kudzu and other vines is very helpful and practical.

Table II: The Eleven Most Numerous Weeds

Species	Before Spraying	After 1st Spray	After 2nd Spray
Plantain	3616	608	491
Horseweed	2878	356	13
Ragweed	1771	665	123
Fleabane	2076	0	0
Wild Garlic	403	0	366
Dog Fennel	397	234	15
Pepperweed	302	15	0
Dockweed	302	8	41
Buttonweed	0	711	273
Bitterweed	0	331	56
Spurge	0	529	220

Table III: Desirable Grasses Remaining on Roadside

Species	Before Spraying	After 1st Spray	After 2nd Spray
Common Bermuda	9.96%	13.51%	14.64%
Coastal Bermuda	13.57%	13.66%	14.01%
Pensacola Bahia	13.11%	21.23%	22.78%
Fescue	16.37%	9.66%	8.17%
Broomsedge	3.47%	4.41%	5.21%
Dallisgrass	1.55%	6.91%	5.00%
Other Grasses	5.69%	3.15%	4.16%

## 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.

### POSITION WANTED

**AGRONOMIST—M.S., with 12 years experience** in weed control and the turf grass field. Desires a position in research or development. Willing to relocate. Write Box 9, Weeds Trees and Turf Magazine.

### FOR SALE

**TREE SPRAYING EQUIPMENT:** One three-piston, 60-gpm, Hardie high-pressure pump, \$400; 400-500 ft. 3/4-inch high-pressure hose, used one season, \$400; one complete tree spraying unit (37-gpm pump, 500-gal. tank with above hose, two Nelson long-distance guns, Leroy industrial engine), \$1900. P. O. Box 71, Commack, L. I., N. Y.

### Improved Stump Cutter Manufactured by Brooks

A specially designed cutting head which permits close splitting is a main feature of the new "Stump-King" stump cutter recently introduced by Brooks Products.

This new machine is capable of cutting out 4 1/2-ft. to 5-ft. diameter stumps to a depth of 24 in., according to the manufacturer.

Designed for a trailer frame which can be pulled by a light pickup truck, Stump-King is mounted on two standard 7.00 x 15 truck tires. The hydraulically controlled cutting head is situated at the rear of the machine.

Brooks says the Stump-King has eliminated the complete 180-degree rotation and individual locking of wheels required to set up other types of stump cutters.

Powered by a 36-hp gasoline engine, the Stump-King is completely lever-controlled by the operator, including lateral travel, cross-feed, and depth of the cutting head.

Other features include a 12-gal. hydraulic tank which takes commercial grade oil, and a special hitch designed for simple at-

tachment to a truck, Brooks claims.

Electric brakes are available for the Stump-King that has a 12-volt electrical system.

Detailed information of the new stump cutter is available to those who write Brooks Products Div., The Tool Steel Gear & Pinion Co., Township Ave. (Elmwood), Cincinnati, Ohio 45216.

### How To Assure Better Aircraft Spray Patterns

A formula that aerial applicators can use to predict the downward drift of pesticides sprayed from aircraft has been developed by University of California agricultural engineers.

Engineer Wesley E. Yates, UC, Davis, in a recent report on aircraft spray research to the State Board of Agriculture in Salinas, outlined this formula:

"Scientific measurement of drift under many weather conditions and application methods showed significantly more measurable drift when: (1) atmospheric conditions were relatively stable with temperature inversion; (2) spray nozzles were pointed down, instead of backward; and (3) there was more nonevaporative oil in the spray mixture."

Latest research is pointing the

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way to "notable improvements in spray deposit patterns," Yates said in the report. University engineers are currently trying to devise new ways to spread fertilizer from planes faster, and in wider and more uniform swaths.



**Troublesome stump** in foreground was delaying landscape job until Stump-King came along. Makers of this new machine say it is ready to begin cutting as soon as it's backed up to a stump; no need to reposition unit's wheels. Blade is lever-controlled.



## Louisiana Site of Diamond's New Herbicide Demonstration

A new broadleaf herbicide formulation that promises to solve the problems of spray drift and volatility will be publicly demonstrated in Louisiana this spring by Diamond Alkali Co., spokesmen report.

The new formulation acts as a liquid when sprayed or agitated but sticks to the plant in a gel state right after it has been applied, the company says. The outside surface hardens just enough to encapsulate the active ingredients and hold them in contact with the unwanted brush long enough to effect the kill.

Robert Hopkins, Diamond agricultural chemicals representative in California, said the new chemical "showed great promise for reducing or eliminating problems which occur because we feel that this formulation will

## Snow Improves S-2C Ag Plane

A longer wing span, greater structural strength, and larger fuel tanks are principal improvements offered in the 1965 Snow S-2C agricultural airplane.

Wing span has been increased to 44.6 feet, and is said to have been structurally tested to CAM-3 standards for 6,000 pounds gross weight. The wing is of cantilever design which eliminates the need for external struts or wires. The plane is of all-metal construction. Two 55-gallon, burst-proof, integral wing tanks give the S-2C a longer working time between refuelings, the company says.

New optional equipment and wide range of dispersal systems give the plane added utility for ag operators. Liquid dispersal systems feature full-span booms available as low, medium, high, and extra-high density systems. Dry systems feature large and small Transland spreaders and a new stainless steel Snow high-volume spreader for seeding, fertilizing, and dusting operations.

A new brochure with a technical data insert is available from Snow Aeronautical, P.O. Box 516, Olney, Texas.

fill a definite void in the brush and weed control industry."

Hopkins went on to say that "use of 2,4-D and 2,4,5-T for weed and brush control presented the industry and consumer with two problems—volatility and drift. The volatility problem was solved by the use of the amine salts of 2,4-D and 2,4,5-T, and more recently by the oil-soluble amine salts of these two materials.

"Spray drift has been more difficult. One answer to this was the development of invert emulsions. However, the use of inverts has been limited because the material is highly viscous and requires special spraying equipment.

"The problem facing us was to turn out a chemical that would answer the need and yet could be applied by ordinary means. We feel that we have just that kind of chemical," Hopkins concluded.

He said the formulation will be marketed as a powder for application with conventional equipment.

## Suppliers Personnel Changes

The Ansul Company's board of directors recently elected Morris L. Neuville as a vice president. He continues with his responsibilities as general manager of the company's Chemical Products Division. Neuville joined Ansul in 1948 as a research chemist.

California Chemical Co., Ortho Div., has promoted Warren Lewis to regional sales manager of the Hawaiian Islands. With 14 years service, Lewis was formerly branch sales manager in Bakersfield, Riverside and Thermal, Calif. Lewis is now responsible for Ortho pesticides marketing.

Hercules Powder Co., Wilmington, Del., has established an agricultural chemicals sales office in Orlando, Fla. New offices, in Suite 301, Orlando Professional Center, 22 W. Lake Beauty Dr., will be staffed by two Hercules agricultural chemicals technical representatives, Bryson L. James and Paul R. Cohee.



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**Studios Couch.** Well-known turf disease expert Dr. Houston Couch, whose book on the subject is just about the last word, has left his Penn State professorial and research post to head the Department of Plant Pathology and Physiology at Virginia Polytechnic Institute in Blacksburg, a school already noted for its contributions to vegetation maintenance and control studies. Our congratulations to Dr. Couch on his new responsibility!

**Sod a'Plenty!** In this issue of WTT we begin our first Sod Industry Section, so we were particularly pleased to have a chance to talk recently with Richard A. Plent, a Cleveland, Ohio, nurseryman and longtime reader of ours who also grows a little sod and sells a lot of it. He maintains a full acre of bentgrass, which he tends and harvests with his own staff, and also sells hundreds of thousands of square yards of Merion bluegrass from Michigan each year. Dick says he's been in the sod business for 40 years, and that he welcomes this new monthly feature of WTT.

**Astrogass Periled.** The big Astrodome, Houston's skylit stadium, is posing some unusual problems. For one thing, the glare through the skylight is giving baseballers some trouble spotting flies, and when it was suggested an acrylic lacquer be used to paint the top and cut down on glare, a turfgrass manager suggested this may possibly harm the bermudagrass in the outfield. Somebody else suggested the grassy outfield be replaced with a type of dirt, a suggestion which most turf lovers will probably not favor!

**Western Treemen Unlimber.** We understand last month's meeting of the International Shade Tree Conference Western Convention in Santa Barbara was a howling success, both from a standpoint of lectures and discussions, and from the social angle! There were dinners, social hours, and side trips, and we imagine much of the delegates' gratitude went to local arrangements chairman William J. Griffin, who took charge of the affair this year. He runs Griffin Tree & Landscape Co. in Santa Barbara. Watch WTT next month for a write-up of the convention program.

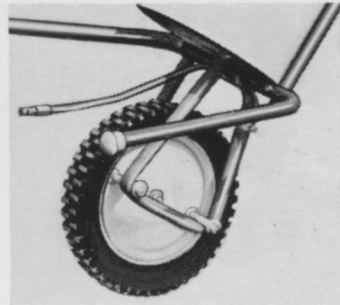
**To Each His Owen.** Had a call recently from Bill Owen of the Pesticide Sprayers Association of Portland, Oregon, who phoned to tell us about the formation of a regional group of contract applicators called the Pacific Northwest Regional Sprayers Association. Bill, who runs General Spray Service in Portland, has been active in various groups in his area for a long time, and has been most helpful in giving WTT advance news about events in the Pacific Northwest. We'll have more information about the new regional association and its activities in forthcoming issues. Meanwhile, congratulations again to Bill for helping get this project launched!



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