

WEEDS

TREES

and TURF

A TRADE MAGAZINES, INC. PUBLICATION

May 1966

**Why Plants
Need Minor
Elements
Page 18**

**How to
Diagnose
Tree
Diseases
Page 14**



**Do Herbicides In
Asphalt Work?
Page 22**

**Clipping Bluegrass
At Two Heights
Page 26**



**Is A Sod Growers Assn.
Needed? . . . Page 32**

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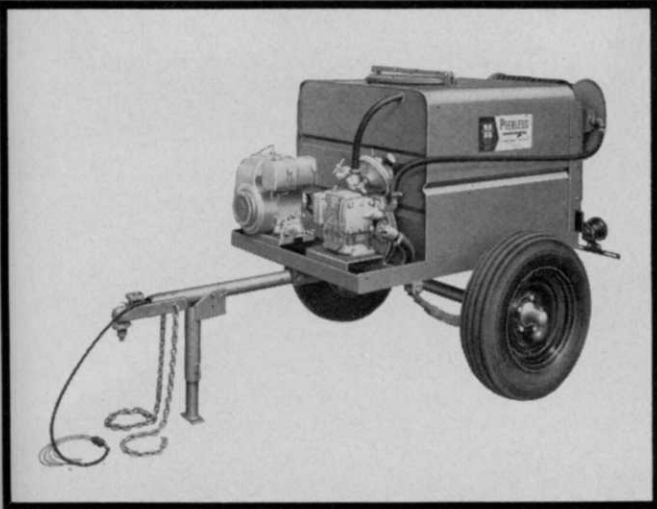
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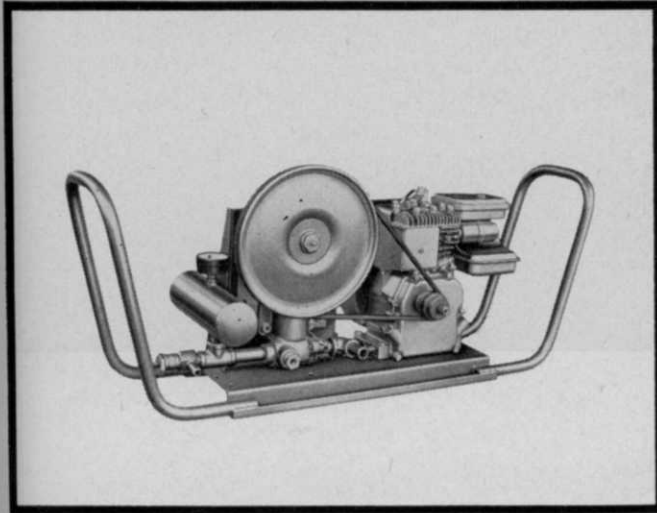
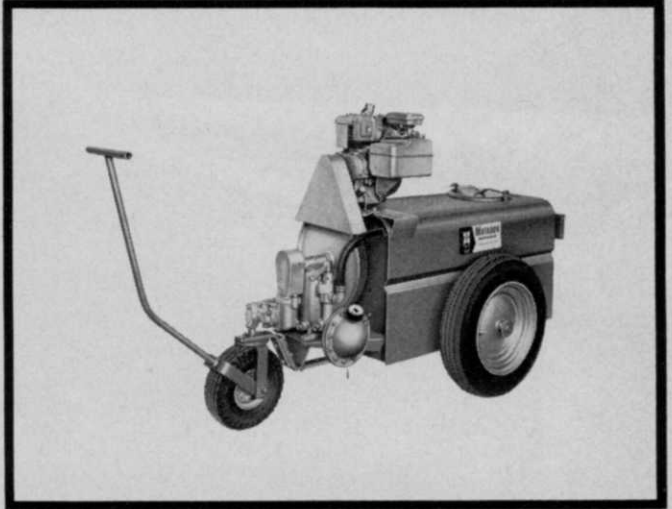
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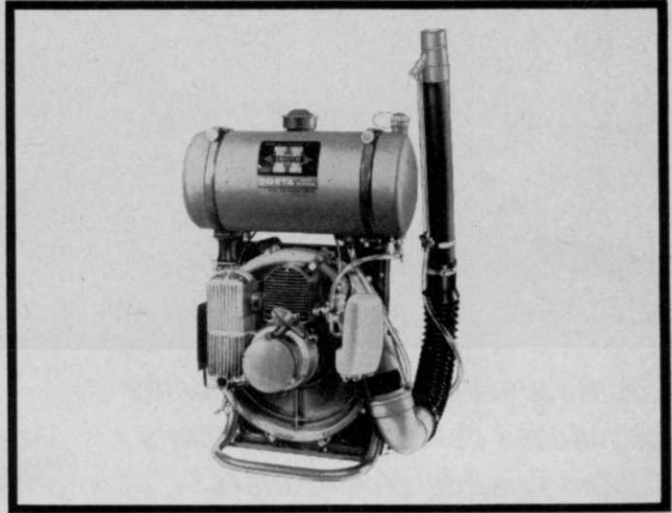
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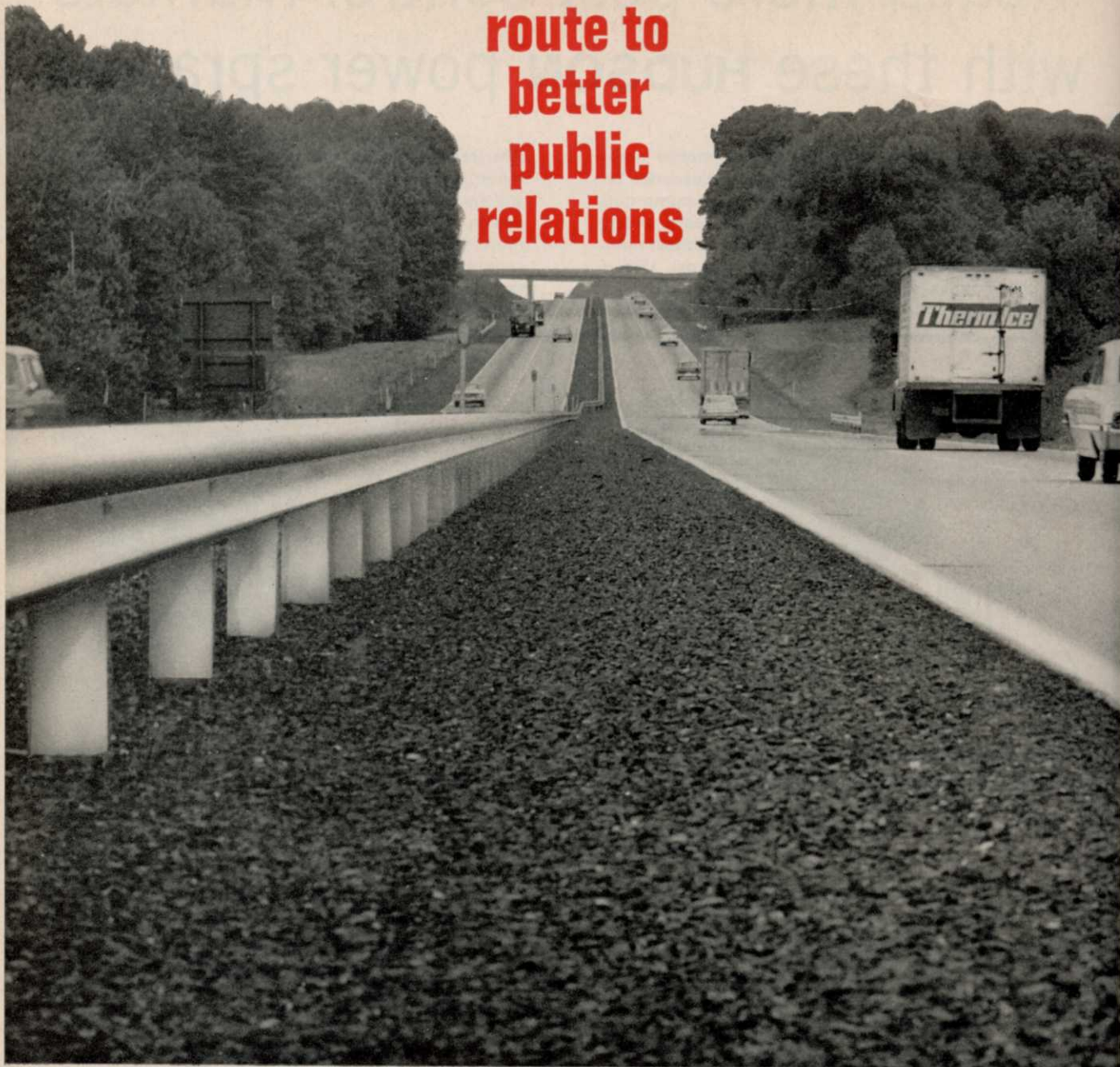
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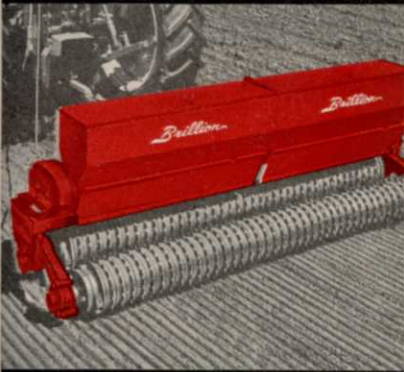
WEEDS TREES and TURF

May 1966
Volume 5, No. 5

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Features:

How to Diagnose Tree Diseases By Dr. P. P. Pirone and Dr. Robert S. Halliwell	14
Plants Need Minor Elements By Vernon W. Olney	18
Can Herbicides Be Effectively Impregnated Into Asphalt? By William J. Bowmer and Wayne G. McCully	22
Faulty Construction Is Cause of Problems in Athletic Turf Duich Tells Minnesota Turf Management Short Course By Josephine B. Nelson	24
Performance of Bluegrass Varieties Clipped at Two Heights By A. G. Law	26
What Good Is a Sod Growers Association? By Robert M. Warren	32

Departments:

Editorial: We Wonder at the Wisdom	6
WT&T Mailbox	10
Know Your Species: Witchgrass	34
Meeting Dates	39
Classified Ads	44
Advertisers Index	44
Trimmings	46

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We Wonder At The Wisdom

The other day we came across a suggestion that nurserymen and sod growers might find an answer to complaints about rising prices and taxes on land next to cities by taking advantage of those skyrocketing land values and consider their property as an investment that can be sold at a profit.

Since nursery operators grow their crops in moveable containers, and sod growers strip their land, the counselors say these growers don't have to tie up large amounts of money in permanent improvements on their growing grounds. For that reason, the advice is, these growers might well buy land as it starts to increase in value because of city expansion, and plan to sell it a few years later at a handsome profit.

Higher taxes, which go along with rising land values, should not be a serious problem because nurserymen don't need the tremendous acreage and per-acre income is high compared to surrounding farm land, according to R. Bruce Ricks.

Many a nurseryman now feels he must sell when property taxes begin to rise and move to an inexpensive site, the University of California Graduate School of Business staffer commented recently at an industry meeting. Instead, he recommended, nurserymen should buy close-in land which will be converted to urban use more quickly, land which is entering the "predeveloped" stage of rapidly rising values. At first blush this does indeed look like an easy way to make a relatively fast buck. But we wonder.

In the first place, most nurserymen, and sod growers, have a sizeable investment in the cultivation and development of their land. Not all nursery stock is grown in pots, particularly trees and many ornamentals. And sod growers don't yet raise turf on flats. The land on which these growers nurture their crops requires constant, tender care through fertilization, maintenance of the right balance of chemical elements, and irrigation. They do indeed have a considerable investment in their soil. It isn't always easy to find suitable land on the nearby fringes of promising metropolitan areas, nor to change addresses.

The idea of such land speculation is an intriguing one, but we wonder at the relative costs involved in such maneuvering over the finally-to-be-realized profit a grower would get. And, there is always the risk that property values may drop or that projected population movements may not materialize.

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



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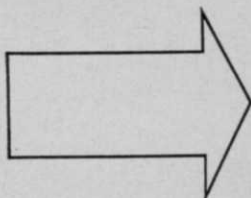
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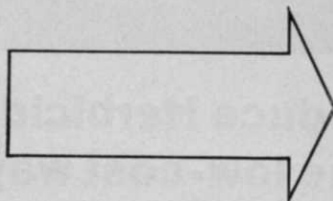
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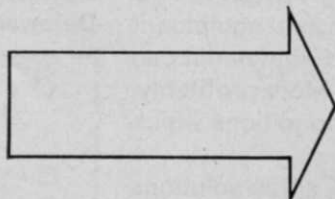
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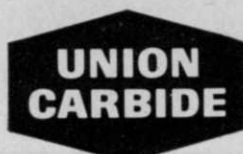
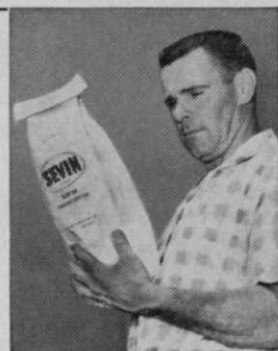


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AGRICULTURAL PRODUCTS

Says It's Safer to Notch Tree

I have just read with interest the article, "Tricks of the Tree Trade," in your Feb. 1966 issue. I certainly wish to take issue with the author, as he is teaching a method of falling a tree that is positively the most dangerous and foolhardy thing a tree cutter could do. Your author calls this a hinge cut and two diagrams and one photo indicate falling a tree with a back cut only. This would get you fired in my organization as a serious violation of safety rules.

It is practical to use a thick hinge to slow the fall of a tree or to make it hang on the stump, but every tree over six inches in diameter should be notched first.

A chain saw operator that attempts to fall a tree with a back cut is placing his person in serious jeopardy. The minute a cut like this is opened, there is the possibility the tree will split up and the butt will shoot back, sometimes at tremendous speed. I know of two fatal accidents in

this area that happened in just this fashion.

I would like to suggest as a first-class safety rule: "Never fall a tree over six inches diameter without first cutting a notch."

I enjoy your magazine very much and am very happy to see that it includes articles of interest to the arborist.

James W. Taylor

Newburgh, N. Y.

* * *

Author Bryan's (Tricks of the Tree Trade, WTT Feb. 1966) first day in any tree crew in this area would be his last day.

Casual reflection brings to mind three men killed in this area by barber chairing of trees or limbs cut by his hinge method. The list of property damage claims from this same cause is fantastic. Our crews can "gentle" a tree down on a properly made hinge incorporated in a felling cut, but our own safety standards absolutely rule out the method described by Bryan.

The unfortunate part of the article is that some person who

is unaware of the danger of Bryan's method might try it since an expert recommended it.

Robert C. Gardner

Manager
Abalene Spray Service, Inc.
Poughkeepsie, N. Y.

We asked for author Bryan's comments to add to this exchange of ideas covering tree felling practices. He answered:

Concerning the "kickback" hazard mentioned in letters from alert tree men, we too have long been aware of this danger. But it is a hazard not only when the "hinge" is used but also with a "fall cut." A tree which is easily split, such as an old hollow Red Oak, which is leaning against the cut or which is tilted with a "pull," is liable to kick back at the butt. And a fall cut is no insurance against a kickback, though in many cases it may prevent it. But the most dangerous kickback is from a fall cut, because the tree will be falling faster, and the kick-back will be sharper.

We feel our article dealt ade-



On Stream

You're "on stream" when you watch, and learn from, equipment demonstrations like the one on the left, staged at a recent shade tree meeting; and you're also on stream if you turn to WEEDS TREES AND TURF each month for how-to-do-it information in all three phases of vegetation maintenance and control: turf management, tree service, weed and brush control. If you don't get WTT every month, or if you have to borrow a copy from your colleagues, why not subscribe today? One year is \$3, two years for \$5.

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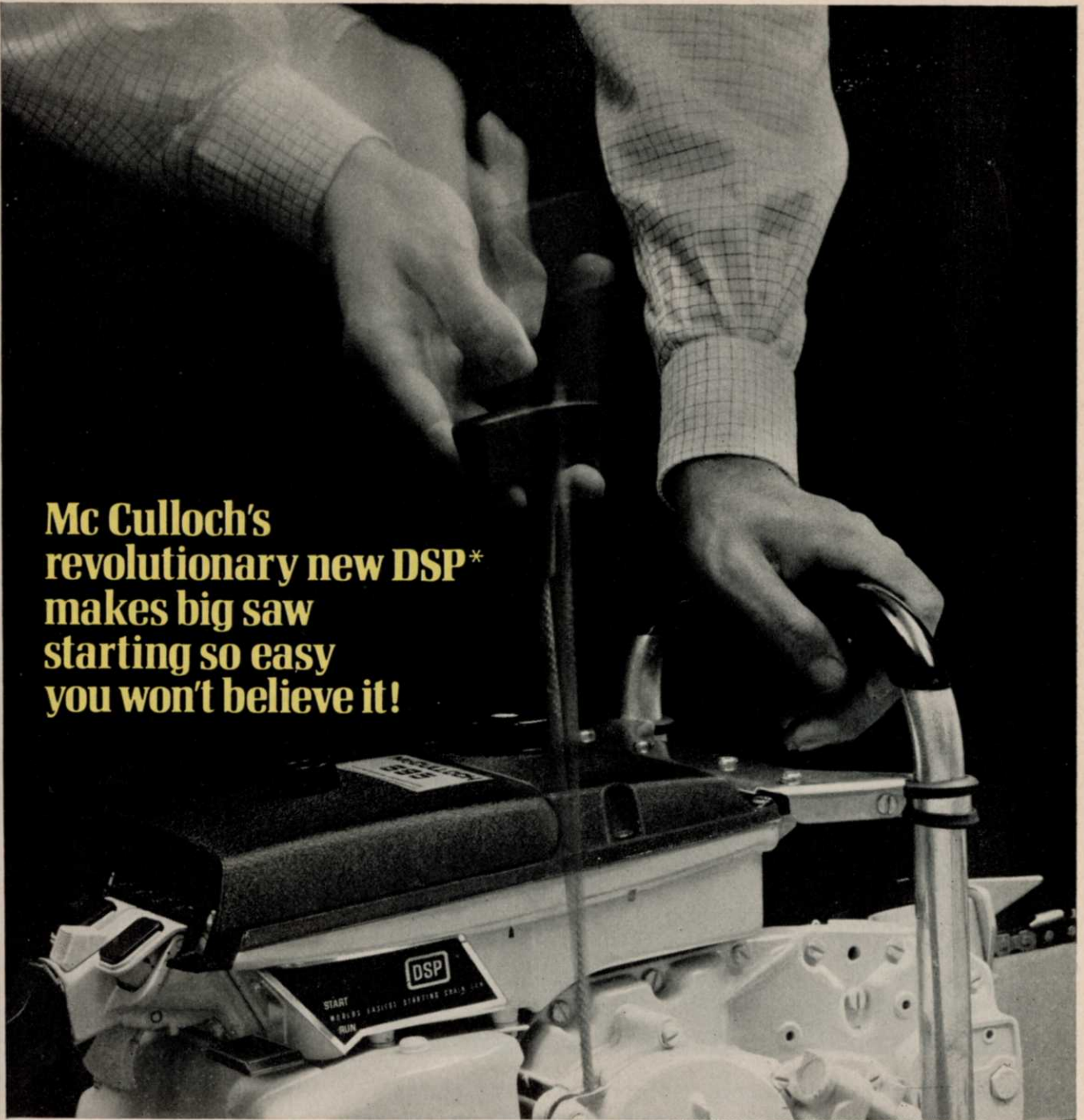
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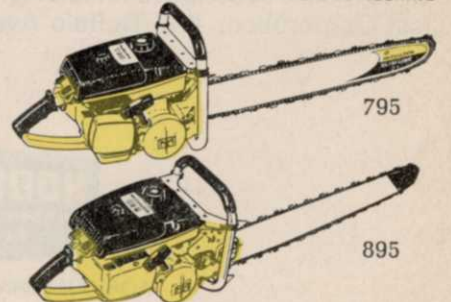
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AGRICULTURAL CHEMICALS

quately with these matters. Re-read it and note the paragraphs stressing the need for knowledge of trees and the qualities of their wood. Also note the types of trees you can "hinge."

We "hinge" a majority of trees, and have for years. Even when we have to "top out" first and lower a part of the trunk, we still "hinge" the remaining snag to lessen the impact of its fall, when this is a consideration. There is no other way to lay a tree down so exactly, and with such ease—with no flip-flop.

Granted, we do not have a man sawing with a power saw on the tree when we pull the tree over. And when we use the fall cut we put a rope in the treetop and pull it over if there is any danger whatsoever that it might split and kick back. We cut until we think the tree can be pulled over. Then we pull. Sometimes we have to go back and cut some more. But we "clear" before the tree starts to fall. Any other procedure is a prime violation of safety rules in our book. Of course we do not try to hinge every tree. Our article on this method was to emphasize the usefulness of the "hinge."

Re: Florida Endothall Release

I would like to call to your attention the article "New Herbicides Show Promise for Southern Naiad Control," which appears on page 23 of the January, 1966, issue of *Weeds Trees and Turf*. The article implies that endothall is toxic to fish, which is not true. In the experiment referred to, the amine salt of endothall, which is toxic to fish, was used. However, there are several other formulations of endothall which are effective for aquatic weed control and are not toxic to fish.

This clearly illustrates that it is necessary in aquatic weed research to be specific as to what formulation was used in the experiment.

Robert D. Blackburn

Research Botanist
Crops Research Division, ARS
U. S. Dept. of Agriculture
Fort Lauderdale, Fla.



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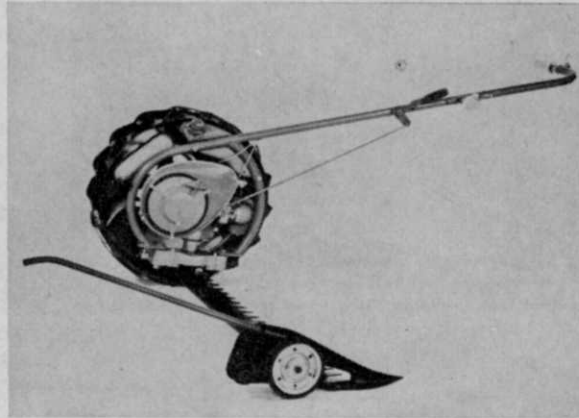
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Fig. 1. Tree dying of oak wilt caused by the fungus *Ceratocytis fagacearum*. The oak wilt fungus may spread locally from tree to tree through natural root grafts, which are common among oaks growing close together. Premature leaf shedding during the growing season is one of the best diagnostic symptoms in red or black oaks.

How To Diagnose

Tree Diseases

By

DR. P. P. PIRONE

Senior Plant Pathologist
New York Botanical Garden
Bronx, New York

DR. ROBERT S. HALLIWELL

Department of Plant Sciences
Texas A & M University
College Station

PLAIN ordinary common sense is the most important qualification of a good plant disease diagnostician. Some refer to this as a knack, or intuition, or good judgment. Diagnosticians must also have a thorough understanding of a so-called "normal" tree, including the tree species being examined. Not only must he know the name of the tree, but it is also necessary to know about the species' resistance to environmental factors such as dry and wet soils or adverse winter weather.

The good diagnostician will not be afraid to ask questions. Some tree owners and park officials, for some mysterious reason, withhold information essential for proper diagnosis. The history of the tree, such as when and how it was planted, and some information on the past climatic history must be known. This can be acquired from original records or by asking the owner or person in charge of the tree. Information about drought periods, severity of previous winters, and prevalence of hurricanes or other unusual weather must also be considered.

The relation between the soil and the tree must be thoroughly understood by the diagnostician. Is the soil properly drained; is it well aerated; does it hold enough moisture; is it fertile? All of these should be considered. Soil fertility can be determined only by a complete soil test. The expert must also have a working

knowledge of entomology and plant pathology.

A reliable arborist will not hesitate to admit his inability to diagnose some abnormalities, nor will he hesitate to recruit the aid of a specialist to help in the diagnosis.

Following are the standard procedures used by specialists in diagnosing tree troubles. They will vary somewhat with the individual and with the plant species. Some diagnosticians consider symptoms above ground more than those below ground. Others feel that the most serious tree troubles and those most difficult to diagnose are frequently associated with below-ground symptoms and factors.

General Exam Comes First

Before examining any one part of an ailing tree, one should study the general surroundings. Are other nearby trees healthy? Have any special treatments been given prior to the discovery of abnormal conditions? Is the tree so situated that a leaf bonfire beneath it, for example, or another diseased tree may have played a part in its decline? After these, and perhaps many other related questions have been answered, one should proceed then with the direct examination of the tree (Fig. 1).

Leaves Show Symptoms First

Leaves constitute the best starting point for examination, because they are the most accessible and are first to show out-



Fig. 2. Black walnut stripped of foliage by tent caterpillars supports only the silken tents left by the ravaging insects which are sure signs of their damage. (Photo by H. P. Bryan).



Fig. 3. Norway maple with a wilt disease, caused by the fungus *Verticillium albo-atrum*, microscopic in size, has lost more than half its leaves.



Fig. 4. Leaves scorched on a sugar maple (center) are caused in this case by lack of water. Extremely hot weather may also give maples a similar appearance.

wardly the effects of any abnormal condition. Here also, a complete understanding of a normal leaf is essential. Size and color of normal leaves vary greatly among different tree species and even among trees of the same species.

Insect injury to leaves is rather easily diagnosed by the specialist, either by the presence of

the pest or by the damage caused when it feeds or lays eggs. Leaves may be partly or completely eaten (Fig. 2), or they may be yellowed as a result of insects sucking sap, blotched from feeding between the leaf surfaces, or deformed from feeding and irritation.

Leaf injuries caused by parasitic fungi are not diagnosed so

readily (Fig. 3), because the organisms that cause the disease are usually visible only with the aid of a microscopic lens. In some instances, tiny, black pin-point fungus bodies in disease areas, visible without a hand lens, give a clue to the type of disease-causing organism. Lesions from fungus attack have a more or less regular outline with varying shades of color along the outer edges. They may range from tiny dots to spots more than $\frac{1}{2}$ inch in diameter. When several spots spread and fuse together, coalesce, the leaves may wilt and die.

Atmospheric conditions preceding the appearance of spots on leaves often can be used to advantage in determining the cause of the injury. For example, when leaf spots appear after a week or 10 days of continuous rainy and cloudy weather, it is safe to assume that some parasitic organism is responsible, because such conditions are favorable for leaf spot development. Following a week or more of extremely dry, hot weather, lack of water (Fig. 4) may be responsible for spotted or scorched leaves. Low temperatures in late spring may also result in much injury to tender, newly sprouted leaves.

Leaf structure, appearance, or function may change because of widely different causes. Some are toxic vapor or fume injury, deficient or excessive moisture, lack of available food, poor soil aeration, root injuries, or diseases. All but the last two causes can be eliminated, if healthy trees of the same species as the one being diagnosed are healthy nearby. In other words, root injuries and diseases may affect leaves of an individual tree without affecting trees of the same species nearby.

Inspect Bark

A careful inspection of the branches and trunk should follow the leaf examination. Sunken areas in the bark indicate injury to tissues which lie beneath (Fig. 5). These injuries may have been produced by fungus or bacterial infection or by



Fig. 5. Cross section of a hackberry tree infected with the fungus, *Phymatotrichum omnivorum*, shows damaged tissue which lies beneath the bark. This fungus species flourishes on more than 2,000 wild and cultivated plants. When it attacks cotton, the disease is called cotton root rot (Photo by H. P. Bryan).



Fig. 6. Wood beneath the bark of a tree diseased by the oak wilt fungus, *Ceratocytis fagacearum*, is matted by a pathogenic growth. The bulbous growths are pressure pads that lift and crack the bark; the gray area around each pad is the fungus mat. Bark has been removed.

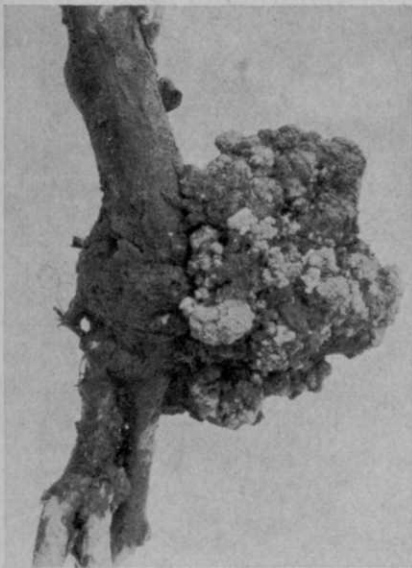


Fig. 7. Crown gall occurs at ground level on many kinds of trees, especially those belonging to the rose family. The malformations of crown gall are caused by bacteria, *Erwinia tumefaciens*.



Fig. 8. Below ground, the fungus *Armillaria mellea*, produces black strands of tissue that resemble shoe strings. Careful manipulation of the soil is required to detect these below-the-ground fungal growths.

nonparasitic agents such as low or high temperatures. The presence of fungus bodies in such areas does not necessarily indicate that the fungus is the primary cause of injury. There are pathogenic species and nonparasitic species, and only a person with considerable mycological training can distinguish between the two.

As a direct result of fungus attack, diseased wood beneath the bark shows a gradual change in color from diseased to healthy tissue (Fig. 6). The injured area

is usually dark brown in the earliest and most severely infected parts. In the more recently affected parts, the color is light green or brown with deeper hues toward the old injury section. On the other hand, injuries caused by low or high temperatures are usually well defined by an abrupt line of demarcation between affected and unaffected tissues.

The bark of the trunk and branches should be examined for small holes, sawdustlike frass, and scars or ridges. These are signs of borer infestations in the inner bark, sapwood, or heartwood. As a rule, most borers become established in trees of poor vigor. Because of this, it is necessary to investigate the cause of the weakened condition rather than to assume that borers are the primary cause. Branches and small twigs always should be examined for infestations of scale insects. Although most scales are readily visible, a few so nearly resemble the color of the bark that they are sometimes overlooked.

Branches and twigs with no leaves or with wilted ones should be examined for discoloration of the sapwood. This is the typical symptom caused by wilt-producing fungi. Because positive identification can be made only by laboratory isolations from the discolored tissue, a

pathologist is needed to determine the species of fungus involved.

Suckers or watersprouts along the trunk and main branches may result from a sudden change in environmental conditions, structural injuries, disease, or excessive, incorrect, and ill-timed pruning.

Microbial parasites and unbalanced water relations between the soil and the tree may occasionally cause galls or overgrowth on the main trunk (Fig. 7). Many such malformations are produced by factors not yet clearly understood.

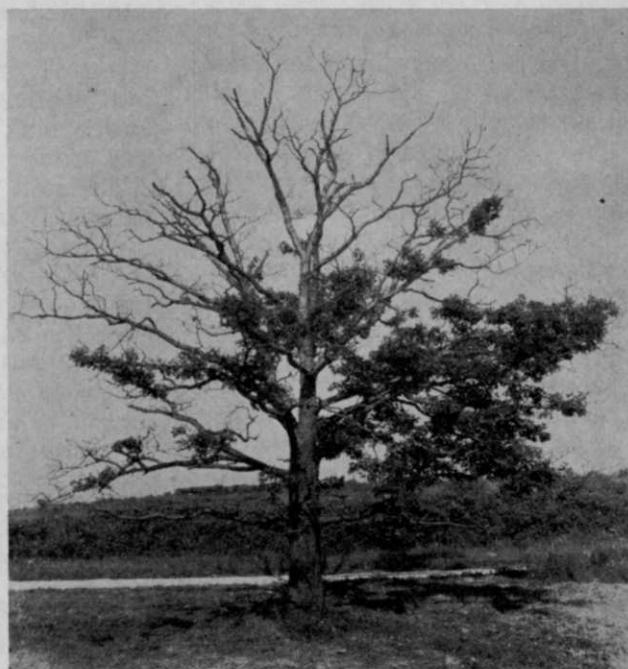
General vigor of a tree usually is revealed by the color in the bark fissures and the rapidity with which a wound callus forms. Fissures are much lighter than the bark surface in vigorously growing trees. A callus roll that develops rapidly over the wound also indicates good vigor.

Injured or Diseased Roots Cause Major Loss

Because of their inaccessibility, roots are rarely inspected by many arborists. To diagnose general disorders, however, the possibility of root injury or disease must be carefully considered (Fig. 8). More than one-half of the abnormalities in the hundreds of street and shade

(Continued on page 28)

Fig. 9. White oak trees become defoliated and die from the top first, then towards the ground. This die-back is a result of an invasion below the ground of the shoe-string root rot fungus, *Armillaria mellea* (Photo by J. C. Carter).



Plants Need Minor Elements

By

VERNON W. OLNEY

Geigy Agricultural Chemicals

PLANTS NEED nourishment in the forms of nitrogen, phosphate, and potassium, the three major food requirements, in order to grow healthy and vigorous. However, plants which have been adequately fertilized can still appear sickly. Plants as well as man and animals need, in addition to the major elements, very minute quantities of certain metals to act as agents to regulate many intricate mechanisms which constitute a living organism. Because these elements are needed in such small amounts, they are called minor elements, trace elements, or sometimes micronutrients.

Yellow Leaves Need Iron

Iron deficiency has long been recognized by the typical symptom of yellow leaves with only the veins remaining green. Iron sulfate has been used as the remedy for this sick condition of plants. There are a number of drawbacks to the use of this form of iron. If used in too strong concentrations, it can burn the foliage. If placed in the soil, much of it becomes tied up with other chemicals and is available to the plants. Iron citrate, a form of chelated iron, gives some temporary correction as a foliage spray, but is of such weak construction that it is rapidly broken down in the soil.

In the early 1950's, ethylenediamine tetraacetate (EDTA)

proved effective and stable for the chelation of iron, zinc, manganese, copper, magnesium, and other metals. The EDTA-iron combination is very effective and is still a major remedy for iron chlorosis of citrus in Florida. This form of iron chelate does not correct iron chlorosis of plants growing in the alkaline soils of western states. Most of the iron deficiency cases in the West can be remedied by using sodium ferric diethylenetriamine pentaacetate, developed by Geigy as Sequestrene 330 Fe. Continuing research, however, has produced a much stronger chelating agent, sodium ferris ethylenediamine di-(o-hydroxyphenylacetate). It has proven safe and effective for treating iron deficient plants in any kind of soil, particularly in alkaline soils.

Chelated minor elements are excellent tools for diagnosing the ills of plants. If a chlorotic plant fails to respond to iron chelate, then we can be quite sure the plant is not deficient in iron, or that there is another minor element so deficient that normal plant processes cannot be maintained.

Iron Chlorosis Uncertain

Soil and climatic conditions which result in iron chlorosis of plants may also cause zinc and manganese deficiencies. The three deficiencies apparently go

hand in hand. Many times, what appears to be typical iron deficiency conditions treated with iron chelate shows up the following year, not as iron deficiency again but as a severe case of zinc deficiency. Treated with zinc chelate, the tree returns to normal. The following year, however, the tree may show symptoms of manganese deficiency. Combinations of all three chelated trace elements, applied either as a soil or foliage application, will prevent the progression of deficiencies and obtain a better and nicer looking, healthy plant.

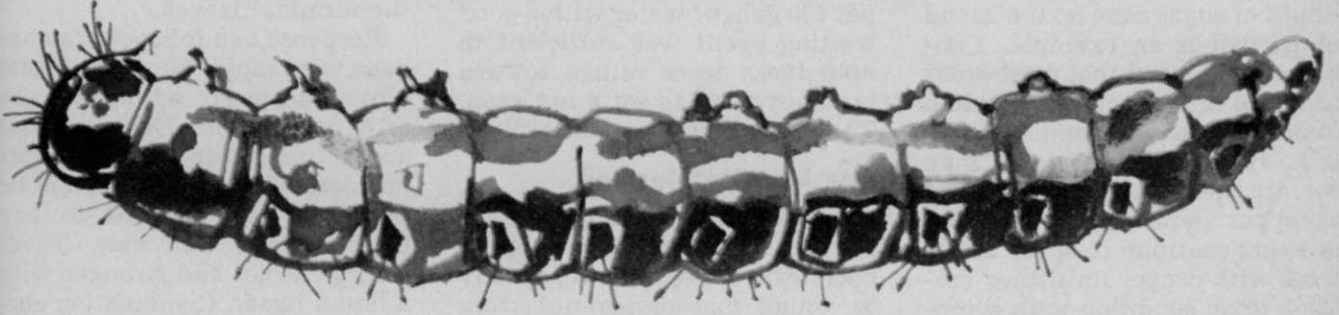
Three years ago, a combination of iron, zinc, and manganese chelates was applied as a soil treatment to selected and paired ornamental trees in Ala Moana Park, Hawaii. One application of 2/3 to 1 lb. of each chelate per tree helped them produce leaves and twigs larger and more luxuriant than on check trees. Differences between treated trees and checks are still evident three years after the one application.

Mild Symptoms Not Seen

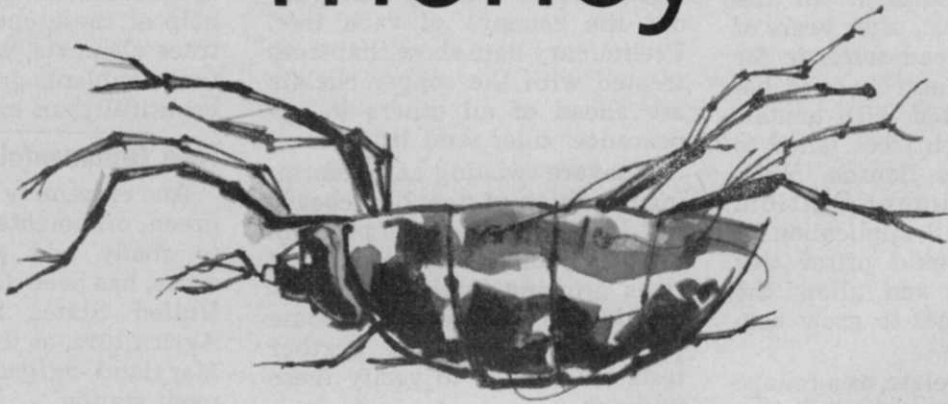
During our travels we find plants, shrubs, and trees of all kinds showing signs of disease. At times, symptoms are so mild that growers are unaware their plant production may be unusually low. Only when deficiencies become so acute that the plant becomes severely chlorotic and



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crop production has fallen, do growers call in a plant disease diagnostician. Applications of chelated minor elements are the quickest and easiest way to determine just what ails the plant if symptoms indicate a nutrient shortage.

In states west of the Rocky Mountains, iron deficiency is severe or pronounced. Slight to moderate and sometimes severe deficiencies of zinc are found in Hawaii. There are only a few areas where plants show signs of manganese deficiency; pahala blight of sugar cane on the island of Hawaii is an example. Conversely, it is said that most areas have too much manganese and a toxic manganese condition exists. Here again, chelates may correct the situation. Because of a copper deficiency in Florida, growers continue to spray citrus trees with copper until they create a toxic condition with symptoms similar to iron deficiency. Iron chelate applications correct this condition by offsetting the excess copper rather than fulfilling an iron shortage. In the Pacific Northwest, after years of spraying with lead arsenate for codling moth control, soils became so saturated with arsenic that young peach trees failed to grow. Dr. Nels Benson, Wenatchee Experiment Station, found that a soil application of zinc chelate would offset this toxic condition and allow the young peach trees to grow normally.

Manganese chelate, as a foliage spray on manganese deficient Yellow Newton apple trees in the Watsonville area of California, gives only partial correction. Zinc chelate has very little effect when applied alone on these trees, but the combination of both manganese and zinc chelates does an excellent job. Dr. K. Uriu, University of California, Davis, found that the soil conditions causing these deficiencies have not been changed; growers must apply manganese and zinc chelate sprays every year if trees of good color and production are to be maintained.

Severely sick almond and apple trees grow in Zee Canyon near San Luis Obispo, Calif. Tests

with the various chelates revealed that a severe copper deficiency was the cause. Copper deficient plants may start new growth in the spring but soon run out of steam; the terminals die, and leaf tips and edges progressively burn and die back.

These same symptoms were noted on lychee and macadamia nut trees growing in the Knudsen Gap area of Kauai, Hawaii. Various chelates were tested on these sick trees. These tests have shown that copper chelate, applied as a foliage spray at $\frac{1}{2}$ lb. per 100 gals. of water with a good wetting agent was sufficient to help these trees return toward normality and to set a nut crop. The check trees are still sick.

Tree Drip Area Sprayed

In December, iron, zinc, manganese, magnesium, and copper chelates were applied separately to young macadamia nut trees on the Honomalino Ranch, south of Kona, Hawaii. These chelates were applied to the soil at 1, 2, and 4 ounces per tree and distributed over the drip area (under the canopy) of each tree. Preliminary data show that trees treated with the copper chelate are ahead of all others in appearance, color, and leaf size.

A severe twisting and deforming condition of new branches is fast becoming a serious problem of the young macadamia nut trees growing in this area. Indications are that copper chelate prevents this condition. Further tests are needed to verify these findings.

Three years ago, sick, young slash pine seedlings, at the Kamuela Tree Nursery on the big island, Hawaii, were saved with a foliage spray of copper chelate at $\frac{1}{4}$ -teaspoon per gallon of water.

Homeowners are usually unaware of sick plants in their yards. If they do notice diseased plants, their application of a general fertilizer may not give the green garden envisioned as normal for their part of the country. With this in mind, and using a balanced combination of chelates, concentrate solutions of trace elements have been developed; one is Geigy's "Greenzit." Tests

are now underway to verify the early results of tests with this material. Such concentrates can be applied through a hose sprayer for convenience or by a regular spray machine. They have been applied to a wide variety of ornamental plants, shrubs, trees, and lawns. Tests were established in the latter part of July on golf greens at the Navy Marine Golf Course. So far, only one plant, the poinsettia, is found sensitive to the spray solution. However, new growth more than makes up for slight "burning" of the terminal leaves.

Response to a foliage spray has been very rapid. New leaves and blossoms appear within a week after application. Dormant buds are activated and make plants bushier. Color of old, chlorotic leaves is not changed to any large extent, but new leaves emerge larger and stronger with a liquid luster. Combination chelate sprays intensify any natural color variation of the plant; the reds become redder, the yellows more yellow, and the green a more luxuriant green. With the help of these chelated minor or trace elements, we are now able to make plants greener and more beautiful than ever before.

New Ornamental Developed

An extremely hardy, evergreen, ornamental vine, adapted to shady and partially shady areas, has been developed by the United States Department of Agriculture, at the University of Maryland agricultural experiment station.

Particularly suited for use as a ground cover and as a cover for low masonry walls, the new vine has been named Longwood. A type of euonymus, the vine is a vigorous grower with dark leaves and light-colored veins. Leaf dimension is one-half by three-quarter inches, and is readily propagated from cuttings.

The new ornamental has withstood temperatures from minus 25°F. to 106°F. Grown in full sun, at high temperatures it may scald. Longwood has been distributed for commercial reproduction and will be available on the retail market in 1967.

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Standard type MC-1 cutback asphalt used in Texas A&M study gives a thin film which barely covers the soil surface.

ASPHALT PAVEMENTS often are victims of invasion by Bermudagrass and certain other plants. Sometimes these plants grow through the pavement from plant parts or seeds contained in the base material; or they may originate from vegetative runners from parent plants outside the paved area. They can also arise from seeds washed or blown into the cracks in the pavement.

Regardless of the means by which vegetation becomes established in asphalt pavements, the plants cause a drastic reduction in the life of the pavement, are unsightly, and present a safety hazard by obscuring the pavement edge.

Adjacent Damage Possible

A number of herbicides can prevent growth of plants in pavements when they are applied directly to the underlying base material. However, several of these materials have damaged plants outside the treated area. The damage is caused by roots absorbing material from the treated area or by water carriage of the herbicides away from the treated area and into contact with plant roots.

Mixing the herbicide with asphalt appears to offer several advantages. A sufficient concentration of herbicide should prevent plants from penetrating the asphalt layer. If the herbicide

was contained in the asphalt, damage from leaching or from absorption by plants outside the treated area should be minimized. Oil-soluble formulations which are chemically stable at relatively high temperatures would be desired for this type of treatment. The asphalt-herbicide mixture could be applied as the prime or seal coat, or it could be used around sign posts, under guard rails and in association with other structures.

In August 1964, a cooperative research study by the Texas Transportation Institute at Texas A&M University under sponsorship of the Texas Highway Department and the U. S. Bureau of Public Roads was initiated to study the effect of incorporating herbicides into asphalt.

The experiments were conducted on Easterwood Airport, College Station, Texas, where vegetative growth around run-

way lights is a safety hazard and requires continual maintenance. Bermudagrass was the predominant plant but other plants such as Johnsongrass, *Sorghum halapense* (L.) Pers., and Dallisgrass, *Paspalum dilitatum* Poir., were also present.

The soil material on the experimental area was a mixture of surfaces and subsoils used as fill to elevate and level the runways. The soils involved were characteristically fine sandy loams on the surface with tight clay subsoils. Herbicides were applied as surface treatments only, not incorporated into the soil.

Six Herbicides Tested

A square yard area, centered on each light, was scraped bare of vegetation prior to treatment. Six herbicides were selected for application. Application methods for the herbicides were: (1) Applied to the open soil area and

Can Herbicides be Effectively Impregnated Into Asphalt?

By WILLIAM J. BOWMER and WAYNE G. McCULLY

Texas A&M University, College Station

Based upon a paper presented at the Nineteenth Annual Meeting of the Southern Weed Conference in Jacksonville, Florida on January 18-20, 1966.

left exposed; (2) Applied to open soil and covered with an asphalt cap; and (3) Mixed with and applied in the asphalt. Two rates of each herbicide were used, and each treatment was applied around four lights. Herbicides and rates were: (1) TCA, sodium salt, at 100 and 200 lbs. per acre; (2) TCA ester at 100 and 200 lbs. per acre; (3) prometone at 10 and 20 gals. per acre; (4) erbon at 40 and 80 lbs. per acre; (5) fenac at 6 and 12 lbs. per acre; and (6) tritac at 8 and 16 lbs. per acre.

The asphalt used was standard type MC-1 cutback, applied at the rate of 1 gal. per 4 square yards. At this rate, a thin film was obtained which barely covered the soil surface (see illustration). Only oil-soluble herbicides were mixed with the asphalt. All treatments were made using a knapsack sprayer with a fan-type T-jet nozzle. The applications were made with a constant nozzle pressure of 35 p.s.i.

The results shown in Table 1 are from a single study, and present a definite contrast with earlier work in presurface application of herbicides in which all materials applied effectively prevented Bermudagrass and other plants from emerging through new pavements. Of the materials in the present test, only sodium TCA and erbon were included in the earlier presurface experiments.

The higher rates of all materials applied to bare soil except tritac and TCA ester gave better control than did the lower rates (Table 1). The same materials applied to the soil surface and then covered with an asphalt cap performed similarly, except fenac. Of the six materials used, only the higher rates of TCA sodium salt and prometone showed an improved performance when the treated area was covered with asphalt. The lower rate of fenac showed some improvement with capping, but the higher rate was somewhat less effective. Both rates of Tritac were less effective covered than when applied to bare soil.

Three of the materials were oil soluble, and were diluted in asphalt for application. Results

of mixing erbon and TCA ester in the asphalt were disappointing. Erbon failed to perform better than when applied directly to the soil at either rate of application. The lower rate of TCA ester was more effective applied in the asphalt, but there was no improvement in effectiveness using the higher rate. Although the lower rate of prometone was somewhat less effective applied in asphalt than directly to the soil surface, the higher rate of prometone applied in asphalt not only was more effective, but gave the best control of all the treatments used.

Bermudagrass was present in all treatments where regrowth was recorded. The reinfestation of Bermudagrass was from emergent plant material rather than encroachment from outside the treated area. Yellow woodsorrel, *Oxalis dillenii* var. *dillenii* also was present in many of the treated areas. Of the plants previously listed as being associated with Bermudagrass, none was present to any degree within any of the treated areas.

Herbicides Must be in Top ¼ Inch of Asphalt

The standard treatment, 200 lbs. per acre of sodium TCA, was somewhat less effective than

usual under the conditions of this study. Prometone and erbon were the most persistent of the materials applied to the soil surface. The poor results noted in this experiment may be due in part to the relatively low volume of application used. Past experience has shown that herbicides applied to the base material should be distributed through approximately the top one-fourth inch to be most effective.

The results of this experiment indicate that some herbicides which are oil soluble may be effective when applied directly in asphalt. Although the asphalt solution used in these tests was applied at ambient air temperature, asphalts without solvent usually are heated to temperatures of at least 300°F for application. Consequently, any herbicide dispersed or dissolved in undiluted asphalt would have to be stable at relatively high temperatures. Thickness of the asphalt layer, not a consideration in this test, probably should be treated as an independent variable in future testing. While recommendations cannot be made on the basis of this limited study, further research may develop specifications for applying materials in the surfacing material.

Table 1. Relative control of Bermudagrass and other plant species with herbicides applied on bare soil, on soil and capped with asphalt, or mixed in the asphalt.

Herbicide	Rate/Acre (Lbs. active) ingredient or gallons	Method of Herbicide Application		
		On Bare Soil	Capped With Asphalt	In Asphalt
TCA, Sodium Salt	100#	1.00	1.00	
	200#	1.25	1.75	
TCA ester	100#	1.00	1.00	1.75
	200#	1.00	1.00	1.00
Prometone	10 gal	1.25	1.25	1.00
	20 gal	1.75	2.25	2.75
Erbon	40#	1.50	1.50	1.50
	80#	2.00	2.00	1.50
Fenac	6#	1.00	1.25	
	12#	1.50	1.25	
Tritac	8#	1.50	1.25	
	16#	1.50	1.00	

*The treated area around each light was evaluated by the following scale.
1.0—No control (Plots not visible)
2.0—Some control (Plots visible)
3.0—Good control (Plots with no live vegetation)

Faulty Construction Is Cause of Problems in Athletic Turf Duich Tells Minn. Turf Management Short Course

By JOSEPHINE B. NELSON

"Many of the most serious problems encountered in maintenance of satisfactory turf on athletic fields and golf courses are the direct result of faulty construction," according to a university agronomist.

Speaking at the University of Minnesota's Turf Management Short Course on the St. Paul Campus, March 16, J. M. Duich, associate professor of agronomy at Pennsylvania State University, declared that among the built-in mistakes that create future maintenance problems are failure to provide for adequate surface and subsurface drainage, poor root-zone mixtures subject to severe compaction, inadequate soil preparation and shoddy seeding methods. Expensive major reconstruction or renovation is often necessary to correct these errors.

The building of a modern golf course or athletic field is a specialized operation, Duich emphasized. Preparation of a complete and concise set of specifications is the first step in protecting a substantial initial investment against future unnecessary outlays of additional funds and of insuring against permanent mediocrity of playing conditions.

Dense Sod Essential

In discussing athletic fields and play areas, the Pennsylvania State University agronomist pointed out that a dense, wear-resistant sod is essential on athletic fields and play areas to provide playing safety, good footing, and pleasing appearance.

Production and maintenance of such a turf depend on the kinds of grasses used, proper design and construction, good soil drainage and preparation, adequate fertility and a maintenance program that recognizes the special nature of the care involved.

To insure athletic field turf of satisfactory quality, a good main-



Dr. J. M. Duich (right) listens to comments on an athletic fields bulletin he prepared. Holding the bulletin is D. B. White, coordinator of the short course program, and associate professor of horticultural science at the University of Minnesota. Duich is associate professor of agronomy at Pennsylvania State University.



"Here's a valuable session . . ." Paul Stegmeir (seated) tells Robert Hokanson (right) manager of Camp Courage crippled children's camp, Maple Lake, Minn., as they look over the short course program. Stegmeir is with the University of Minnesota Agricultural Short Course department.

tenance program is just as necessary as sound establishment methods. Duich listed these essentials of a good maintenance program:

- That it produce tough grass with maximum wear resistance.
- That it be designed to maintain high density to resist weed

invasion and encroachment of undesirable grasses.

- That it encourage deep rooting to provide good anchorage and firm footing.

- That mowing height be adjusted to both grass requirements and playing demands.

- That fertilizing and watering be done at such times and in such manner as to provide steady growth and maximum quality.

- That consideration be given to the endurance limits of the turf in scheduling use of the field.

- That provision be made for repair of injuries due to wear and other causes.

Many Subjects Presented

Other speakers at the short course included University of Minnesota staff members G. R. Blake, professor of soil science, who spoke on "What is a Good Soil"; D. B. White, associate professor of horticultural science, on "Cultural Methods of Weed Control"; and T. B. Bailey, graduate assistant in horticultural science, on "What Kind of Turf Equipment Do You Need?"

A panel moderated by L.C. Snyder, head of the Department of Horticultural Science, reported on research at the University of Minnesota in horticulture, agronomy and plant genetics, plant pathology, soil science, agricultural engineering and entomology.

Program coordinator for the short course was D. B. White, who commented that it was "another highly successful Turf Management Short Course." The short course was attended by some 200 people professionally interested in the care and management of turf for golf courses, sodding, parks, institutional grounds and recreational areas.

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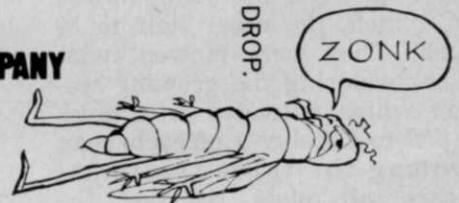
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Performance of Bluegrass Varieties

Clipped at Two Heights

By

A. G. LAW

Agronomist
Department of Agronomy
Washington State University
Pullman, Washington

WITH the availability of several so-called "dwarf" bluegrass varieties has come an interest in their use for specialized turf.

Bluegrass varieties generally are well adapted for use on many soil types in the inland empire area of the Pacific Northwest. These varieties are used widely in parks, cemeteries, lawns, and on golf course fairways. Also Kentucky bluegrasses are used throughout the northern one-third of the United States. This widespread adaptation has prompted a more intensive study of the response of these grasses to intensive management practices.

Grass Response to Clipping Tested

To test the response of bluegrass varieties to clipping, turf research tests were plotted. Seven varieties were seeded in turf trials in the spring of 1962. They were clipped to 1 inch during the establishment year and fertilized with 4 lbs. of actual nitrogen per 1,000 sq. ft. High phosphorus and potassium levels were maintained based on soil tests. Plots were irrigated as needed to keep the soil moisture above the wilting point.

In 1963, 1964, and 1965, the plots were split, one half being mowed to 1 inch, the other half to 1/2 inch. They were mowed twice weekly during the growing season which extended from mid-April to October 1 of each year. During the three treatment years, all plots received the

Can the newer varieties be used on golf course tees where mowing heights are 1/2 inch or even less? Can they be used on fairways where the golfer insists on close mowing? Do the dwarf varieties perform in a superior fashion to erect-growing bluegrasses now under intensive management treatments?

equivalent of 10 lbs. of available nitrogen in ammonium sulphate form.

Root Production Sampled from Plugs

In June and September 1965, the plots were sampled with a core sampler that cut a plug 4 inches in diameter and 6 inches deep. These plugs were carefully washed out and root production was recorded (Table 1). Additional data obtained in both the fall and spring of each year included color and density ratings. We can consider the numbered varieties, 602, 402, and 205 in Table 1, as "Cougar," a recent variety released from the Washington Agricultural Experiment Station.

The erect-growing variety, Delta, shows the lowest production of roots at the 1-inch height compared to all other varieties cut to the same height. Dwarf

types, 0217, 602, 402, 205, and Merion produced more roots at the 1-inch height both in June and September.

Considering the 1/2-inch height, Delta, a tall-growing bluegrass, produced fewer roots than any of the other varieties. Tall-growing bluegrasses such as Delta, Park, Troy, and most of the common bluegrasses on today's market typically respond this way to close mowing.

As with the 1-inch clippings, plots cut 1/2 inch high produced more roots by September than they had in June with the exception of 0217. With this variety, production was essentially the same for both June and September.

Variety 0217, an experimental line developed by the Jacklin Seed Co., shows one other characteristic different from the other dwarf bluegrasses in this test. It took almost twice as much

Table 1. Average root production in grams under bluegrass varieties cut at two heights and harvested at two dates in 1965.

Variety	One Inch		One-Half Inch	
	June g.	Sept. g.	June g.	Sept. g.
0217	17.2	19.8	14.9	14.1
602	11.5	14.0	10.1	18.7
205	17.5	20.0	14.4	15.9
402	16.0	24.6	9.7	19.8
Merion	12.2	20.3	10.3	14.4
Newport	10.7	17.4	9.6	16.9
Delta	11.0	12.9	7.1	10.5
Cougar ¹	14.9	20.6	5.8	9.2
Nebr. blend ¹	4.2	19.7	7.4	9.6

1. These varieties in the second cutting year; all others in third cutting year.

time to wash soil from the root plugs of 0217 as it did from other dwarf bluegrasses. This longer washing time is apparently related to the greater amount of fibrous roots and, conversely, a lower amount of rhizomes in the upper 6-inch profile of the 0217 plugs. Density readings at the turf surface indicate that there was approximately 50% reduction in density of Delta compared to the low-growing bluegrass cut at the 1/2-inch height.

**Tall Delta Can't
Take Close Clip**

Root yield, percent rhizomes, and surface density of bluegrass varieties grown in trials at Pullman, Wash., are shown in Table 2. These plots were clipped at 1/2- and 1-inch heights and were irrigated to prevent wilting. Root data from these plots were taken in the fall of the second clipping year. Here again, Delta, the tall-growing variety, produced much less root growth under both the 1-inch and 1/2-inch cut. Also, surface density of Delta is significantly less than that of dwarf varieties, indicating that this variety can not tolerate close clipping for any extended period. In addition, the percent rhizomes, as determined by Dr. R. L. Goss, shows a highly significant difference between the 3 dwarf varieties, Newport, Cougar, and Merion, compared with the tall-growing variety, Delta. Similar data have been reported by other workers with many plants. In every case, dwarf plants consistently withstand closer defoliation than erect-growing plants.

Data obtained from this study and those of Dr. Goss are in agreement. They show that many of the failures of bluegrass plantings on such specialized

Table 2. Root yield, percent rhizomes, and surface density of bluegrass varieties grown in 1957 and 1958¹

Variety	Yield in Grams		% Rhizomes	Surface Density
	1" cut	1/2" cut		
Newport	5.5	4.1	47	100
Cougar	4.8	3.8	48	100
Merion	3.4	3.1	40	92
Delta	2.4	2.2	12	65

1. Data adapted from Ph.D. thesis by Dr. R. L. Goss, 1960

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sites as golf course tees can be attributed to the use of tall-growing varieties rather than the modern, dwarf types currently available.

Data reported for Cougar and "Nebraska blend" in Table 1 are from plots seeded in the fall of 1963. These plots were cut to ½- and 1-inch heights in the spring of 1964 and during 1965. Note particularly the root production of these two varieties; they were not allowed to become well established before cut to the ½-inch height. Bluegrass must be well established before clipping back to ½-inch. At the 1-inch height, Cougar root production was comparable to that of the varieties in the older trial.

Research Seeks Growth Habit Difference

Seedling characteristics of 4 bluegrass varieties are shown in Table 3. In the laboratory we attempted to identify some structural characteristic that could be measured to define the difference in their growth habits. Number of tillers and leaf sheath length have been proposed as possible distinguishing factors. We have not yet arrived at a satisfactory standard in our trials for measuring leaf sheaths (Table 3). Cougar and 0217 in seed production plots have the shortest mature plant stature. Thus, they are considered the most nearly true dwarfs of the varieties in this study. Yet, Delta and Nebraska dwarf have the shortest leaf sheaths. On the other hand, Cougar and 0217 show the greatest number of tillers which is one measure of grass ability to heal after mechanical injury. More refined tests are to be conducted in 1966 greenhouse trials to search for a characteristic that will distinguish bluegrass variety growth habits.

Table 3. Seedling characteristics of four bluegrass varieties in 1965.

	Average Number ¹ Tillers	Average Leaf ¹ Sheath Length (mm)
Cougar	2.0	7.1
0217	2.3	8.0
Delta	0.9	7.0
Nebr. Dwarf	1.7	6.5

1. 9 weeks after planting.

How to Diagnose Tree Diseases (from page 17)

trees examined by the authors have been caused by injuries to roots or diseases of root systems.

The sudden death of a tree usually results from the destruction of nearly all the roots or from the death of the tissues at the trunk base near the soil line. Factors most commonly involved are infection by disease organisms (Fig. 9), winter injury, rodent damage, heavy concentrations of natural gas, lightning, and various types of toxic chemicals. Trees that progressively weaken over a period of years may be affected by girdled roots, decay following nearby pavement work, poor soil or drainage, lack of food, grade changes, natural gas leaks, and excessive planting depths. Any of these factors and several more may contribute to the ultimate death of the tree. Diagnosticians must be ever alert for the symptoms above ground as well as for those not so obvious below the soil.

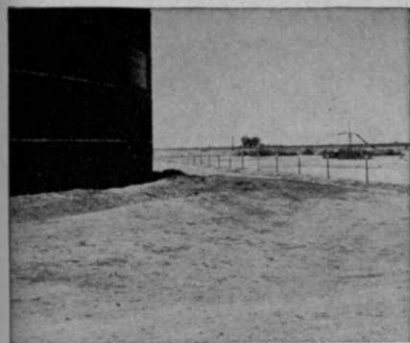
Apply Fungicide Now To Check Snow Mold

Lawn care specialists who applied fungicide to customers' lawns last November or December for snow mold control should plan to make another application this spring.

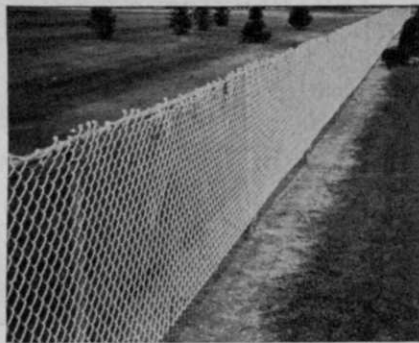
But even if lawns were not treated last fall, applying a fungicide now will help control the disease.

This advice comes from Dr. R. E. Partyka, Ohio State University Extension plant pathologist, who says fungicides containing mercury provide satisfactory chemical control of snow mold. He suggests fungicides with organic mercury such as phenyl mercury acetate, or inorganic mercury as mixtures of mercurous chloride and mercuric chloride. Also effective are Tersan OM, Thimer, Dyrene, and Ortho Lawn plus Turf Fungicide, Partyka says.

Mercury compounds can cause plant damage if applied in heavy doses, the specialist warned. He advises that special attention be given to manufacturer's recommendations for chemical use.



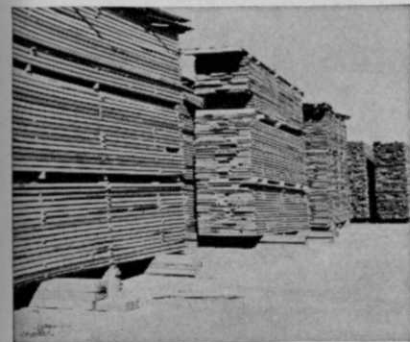
Around this oil pumping station—Hyvar® X bromacil weed killer controlled fire-hazardous vegetation all season. Other products containing bromacil, such as "Hyvar" X-WS, give equally effective control.



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What Good Is a Sod Growers Association?

In numbers there is strength. It makes no difference what the organization—be it the Army, Navy, business, politics or a trade association. A group of individuals or firms carry more weight and can accomplish more than an individual person or firm.

Starting in 1952 Warren's Turf Nursery began to try to convince the Highway Department of the State of Illinois that its sod specifications were wrong. We spent several years making calls on various individuals in the Highway Department and got absolutely nowhere.

Later on, after a sod association was formed, the bureaucrats at the Illinois State Capitol in Springfield changed their minds and listened to the association. Following briefly are the facts.

The Illinois Highway Department had a specification calling for 2½ to 3 inches of soil for sod planted on Illinois highways.

A survey of all state highway departments at this time revealed that the Illinois specifications were the most unreasonable.

For instance, Wisconsin called for ¾ inches of soil, Indiana 1 to 1½ inches. All other states, where sodding was done, were more reasonable than Illinois. No one was furnishing sod for Illinois highways 2½ to 3 inches thick. However, whenever an operator of a turf nursery tried to supply sod at a reasonable thickness his sod was usually rejected. Pasture sod was accepted regardless of the thickness, but not nursery sod. We made numerous calls to the Landscape Engineer at Springfield and to his assistants scattered over the state. Only two fellows, out of 10 or 12, concurred with our claim. They told us we were fighting a losing battle. The Landscape Engineer at Springfield actually tried to discourage us by flatly stating that sodding contractors had all the sod they

By **ROBERT M. WARREN**
Warren's Turf Nursery, Palos Park, Illinois

needed and that the idea of nursery-grown sod was ridiculous.

One person implied that thin cut sod, delivered where specifications called for 3 inches of soil was a juicy source of graft for the ward heelers in the Illinois Highway Department. (For a bribe they would approve thin cut sod.) He would not name names nor be specific.

Lobbyist Said, "Form Association."

To make a long story short, Warren's Turf Nursery hired a lobbyist and sent him down to Springfield in an effort to correct this foolishness. He spent the better part of a year on this project and finally came up with the finding that the only way we would accomplish anything was to form a Growers Association. He said the politicians and bureaucrats will listen to a group, but not to an individual

firm. We then contacted Carl Habeneck of H & E Sod Nursery, Roy Muller of Muller Sod Farm, Al Shopper of The Sod Nursery (now out of business), Gerald Dearie of Dearie & Strud (now Thornton's Turf Nursery), and several smaller growers.

We got together for a luncheon and decided to explore the possibility of an association. After two or three more meetings a set of bylaws was formulated, officers elected, and The Sod Growers Association of Illinois was born. This organizational work took place in late 1957 and early 1958.

Our first major effort was to prove to the State of Illinois that its highway sodding specifications were incorrect. This was done by a demonstration planting on the Congress Street Expressway (now the Eisenhower Expressway) in Chicago.

If the association never accomplishes any more than the Congress Street demonstration, the Association will have been worthwhile. As a result of this demonstration, the State of Illinois has changed its specifications and millions upon millions of square yards of nursery-grown sod have been planted on Illinois highways.

Every sod grower in Wisconsin, Indiana, and Illinois has benefited by this work done by the association on Congress Street. Not only have sod growers in these three states benefited but growers from as far away as New York and Denver have been helped. As a result of Illinois findings on Congress Street, other states have followed Illinois in its specification changes. Every yard of sod used on the highways took a yard off the home lawn market, thus helping to keep prices firm.

What An Association Can Do

To have a strong successful organization there must be a motivation or an incentive fac-

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tor. The Illinois sod association's first motivation was the Congress Street experiment. And there are many places where a strong association can help the industry. Some of them are:

Correcting specifications on the part of the Army and Navy which use a lot of sod, and correcting specifications by landscape architects. The association can and should advise landscapers on sodding problems; the association is in a position to warn the public and landscapers against unscrupulous marketers of questionable lawn or turf products. An individual firm cannot, in good taste, do so.

A financially strong association will aid various universities in research grants, which will return benefits to every sod producer in the nation.

At this very moment a producer of fertilizer, seed, and chemicals is promoting a new strain of bluegrass as seed and sod. This new bluegrass has not been proven. An association can warn the public of this coming flood of high-powered, mislead-

ing advertising of an unproven product. A single firm or individual cannot do so.

Another place where a strong association fits is the exchange of credit information. The American Association of Nurserymen has been highly successful in credit information exchange, and our own association is doing a fair job in credit control. It can do a better job with more members.

Can Advise Neophyte Growers

A strong association can advise people planning to enter into sod production as to their possibilities and costs. Altogether too many people with a few acres of land, little or no working capital, with a big wishbone, and *no backbone* are entering this field. They are going broke themselves and helping to depress sod prices at the same time.

Now, I don't care how you slice it; it takes at least \$250,000.00 of capital to establish a 200-acre turf nursery when land values are at or near \$600.00 per acre. If

more people were made aware of this cost, less of them would be jumping into the sod business, and prices would be more stable.

III. Assn. Attracts Out-of-State Growers

Getting back to the Illinois sod association, it was noticed about two years ago that growers were joining from outside Illinois. We had attracted Wisconsin, Indiana, and Michigan growers. So the word "Illinois" was deleted and "Mid-America" inserted. Today the organization is known as The Sod Growers Association of Mid-America.

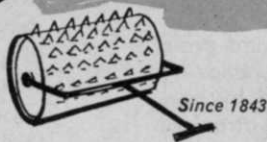
My personal opinion is that the name should again be changed to The Sod Association of America because today we have members from New York to California and until recently, a Canadian grower. Incidentally the Canadian got angry and resigned when, in self defense American growers, working through the association, were influential in getting duty collected on sod moving into the States from Canada. The associa-

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WITCHGRASS

(*Panicum capillare*)



Witchgrass, known also as tumble panicgrass, witches hair, and ticklegrass, is native to the United States but has spread to several countries in Europe. In the U.S., it is found growing along roadsides, in gardens, flower beds, and near parks particularly where soil is sandy and dry.

This grass is common in the north central states and is not frequently found in the West. Witchgrass is a shallow-rooted (1), annual species and reproduces only by seeds.

Seeds (3) are $\frac{1}{16}$ inch long, shiny, smooth, and grayish or greenish. They are borne singly at the tip of small, stiff branches of the flower head (panicle) which is from 8 to 14 inches long and often one-half the length of the entire plant. When mature the panicle is large, bushy, and greatly spread. Its branches are brittle and threadlike. Often the panicle (2) is snapped off by a breeze and carried by the wind with the seeds intact. Seeds are distributed widely by this means being easily separated from their hulls when ripe.

Depending on the length of the growing season and soil fertility, stems grow from 2 inches to 2 feet tall. They are hairy, especially at the nodes. Stems branch mostly from the base of the plant, which habitually spreads as it grows, giving a bushy appearance.

Soft hairs are found on both sides of the leaves, and are very dense and long on the leaf sheaths. Leaves are 6 to 12 inches long and $\frac{1}{4}$ to $\frac{1}{2}$ inch broad.

Witchgrass flowers between July and October at most U.S. latitudes, depending upon the local climate.

If this weed is not controlled by cultivation in stubble and grain fields, seeds blow to roadsides or areas not maintained, and the plant becomes established. Germinating seeds are killed by pre-emergence treatments of 2,4-D at 1 lb. per acre, DCPA, atrazine, and other herbicides. Close mowing as soon as seed begins to develop will destroy the plant and prevent it from seeding elsewhere.

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)

tion accomplished this quickly. An individual firm would have had difficulty slowing up the importation of cheap Canadian sod. Landscapers in the Buffalo and Cleveland areas are now reporting difficulty in bringing in Canadian sod because of lengthy tieups at Customs.

There is no grower anywhere in the United States that has not benefited one way or another from the efforts of The Sod Growers Association of Mid-America. And the association is still sitting on the taxi strip waiting for a clearance to take off!

As I mentioned before there must be a motivation, a stimulant, a common cause to bind and hold an association together. The Congress Street experiment was the original spark. The field day held at Warren's Turf Nursery in August of 1964 helped, and our Newsletter has served to a small degree to keep the light burning. For your own self preservation, for the good of the profession that feeds you, you should be a member. If you are not one now, you should join. If you are a member, you should give willingly of some of your time to help make the association a vital, strong organization.

Nothing is gained without effort. The men who have served as officers and directors of the association, since its birth in 1958, have given willingly of their time. All growers have been helped in one way or another. So why not throw in with the leaders and help your own bank accounts by becoming a full-fledged Class A member?

Rompers to Knee Pants

The sod industry is still in its infancy. It is just now beginning to get out of rompers and into knee pants. In the next 10 years it will grow to undreamed of proportions and those of you who are a part of the industry should help yourselves by helping your association into a strong organization that will carry weight with Federal, state and local governments and with builders, architects, contractors, and other commercial organizations everywhere.

For a moment, let's take a look at the potential of the sod mar-

Cold facts about a hot new line of weed killers!

Admittedly Ansul has more than an academic interest in telling you about its new ANSAR and PHYTAR herbicides . . . but if you're a grower, dealer, sprayer, formulator, educator or consultant in the field of agricultural science, we think you should know that:

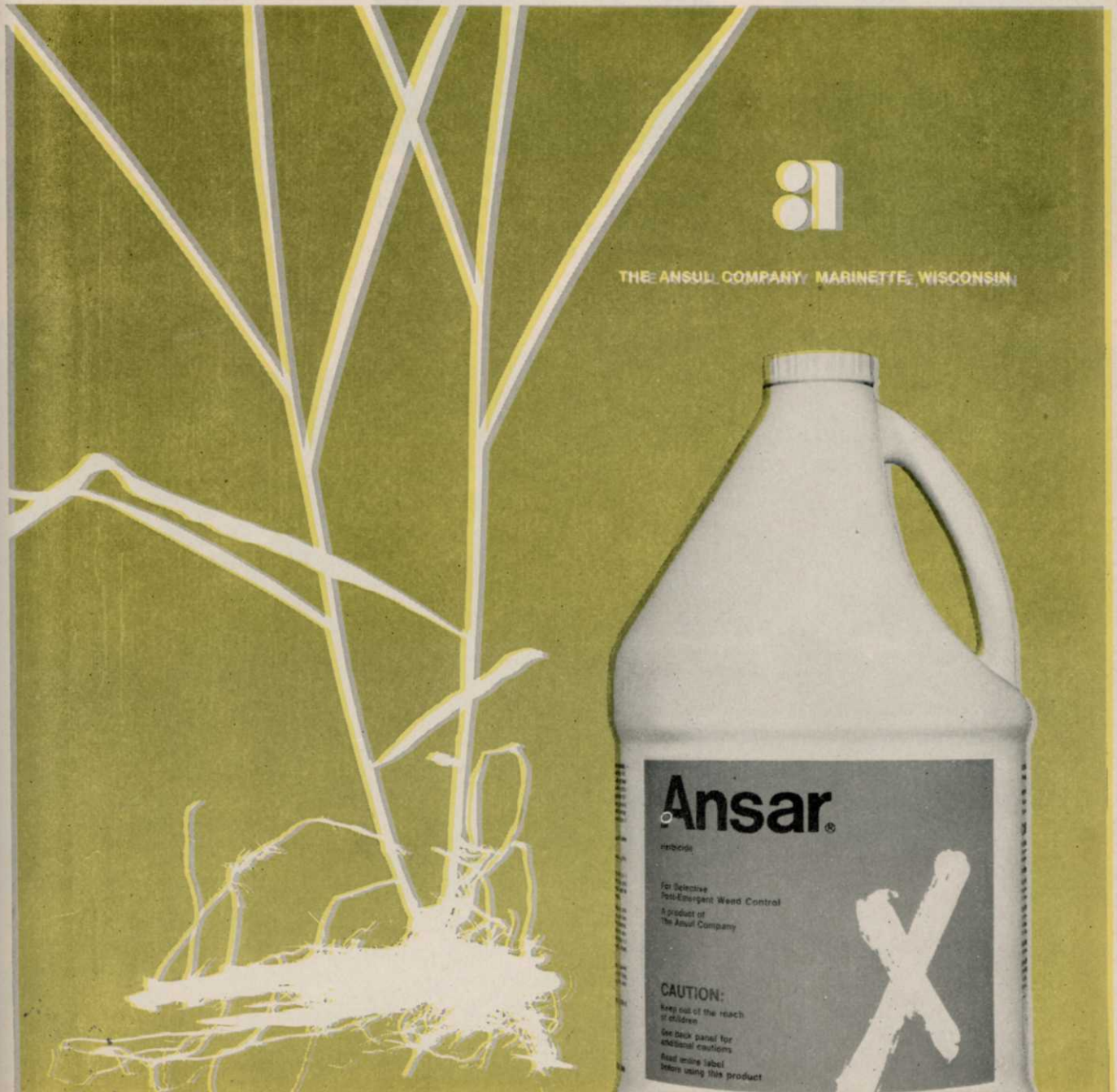
ANSAR 529 is the first weed killer that has been able to effectively control Johnson Grass! It's approved and proven for use in cotton. It's easy to

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won't stain, won't corrode spraying equipment and solves the storage problem (one gallon of PHYTAR mixed with water when you're ready to apply it is equivalent to 50 gallons of weed oil). In the final analysis it's cheaper and more effective.

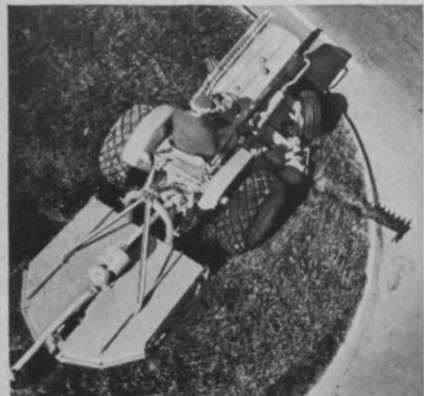
As you get ready to face another weed season, tuck these ideas away. They may save you a lot of time and trouble . . . and might make you a lot of money.



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

Dual range Hi-Lo transmission with 1.4 to 14.4 mph speeds in even steps. Eight forward speeds and two reverse



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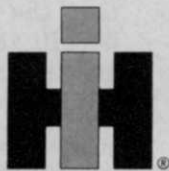


Wide, high flotation tires. Wide stance. Low center of gravity.

The husky engine keeps torque up even on precision, part-throttle jobs. And it's purring quiet. Too well-mannered to bother nearby golfers or nearby neighbors.



The new International 2424 is a turf tractor well worth a study at your IH dealer's. And easy to own. Your dealer offers one, two and three-year financing. Deferred payments—up to three a year with no extra charge. Leasing. Leasing with an option to buy. Or *you* suggest something. He wants to make a deal!



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ket. By the year 2000, just 34 years from now, there will be a population in the United States of at least 400 million, probably more, if the population explosion continues during the next one-third of a century as it has in the last third of a century. Are you aware that the population of the United States has almost doubled since Herbert Hoover ran against Al Smith in 1928?

This expected population increase will mean at least 50 million new homes, with an average lawn area of at least 1,000 square yards, a total of 50 billion square yards. When we sell the public hard enough on sod (and we will sell them) as opposed to seed, making certain that all these new lawns are sodded, the annual national requirement for sod will run between 1½ to 2 billion yards for a total of from 1 to 2 billion dollars. This does not include sod needed for public buildings, highways, schools, golf courses, cemeteries, factories, etc.

This is big business. It will be highly competitive and will no

doubt incur governmental control. There never has been a business that developed a sizeable dollar volume that did not attract government bureaucrats and leeches to it. The sod industry is no exception. These government inspectors will never have been called upon to meet a payroll or sell a bill of goods, but you'll have to live with them. In self defense, from governmental regulations alone, we will need a strong association of turf growers to meet with and pacify these "busybodies" who carry the authority of government in their brief cases.

Here are just a few things that the association can do to benefit the industry as a whole and that needs doing now.

1. Correct incorrect specifications.
2. Warn the landscapers against questionable lawn products.
3. Discourage articles of misinformation such as one university professor's claim in a magazine article that sod growers net \$1500.00 per acre. Such articles should be challenged and the association should do the challenging.
4. Put pressure on chemical firms who are gouging growers pricewise.

One chemical manufacturer is today charging the grower retail prices. A garden store buys for less than the grower.

5. Put pressure on Congress to increase tariffs on sod imported from Canada at ruinous prices.

6. Put pressure on the Federal and State Departments of Agriculture on unreasonable plant quarantine laws.

7. Promote the use of sod on highways rather than the planting of excess nursery stock which eventually makes a jungle and calls for more expensive maintenance.

8. Make contributions and grants to various universities for grass research work.

9. Explore the advantages of sod certification such as seed certification. I am not sure we need certification, but we should explore the advantages and disadvantages of certification.

10. Educate the public on the use of sod as opposed to seed.

11. Report to growers the merits of various equipment such as sod rollers, conveyors, palletizing, etc.

12. Advise and assist growers in marketing programs, costs, mark-ups, pricing policies, accounting, sales, and advertising practices. And above all, stimulate better distributor, dealer-grower relationships.

13. Arrange for and carry out a national convention or field day to be primarily supported by vendors to the sod industry through the purchase of exhibition space.

14. Warn and advise farmers against cow-pasture sodders who are usually under financed and are often found stripping a farmer's bluegrass pasture and then skip out without paying the farmer.

There is always of course the tendency to "Let George do it." There are just not enough hours for 3 or 4 men to do the entire job and still manage their own businesses. A good example is the compiling and editing of the Newsletter. It usually takes a day or so to get it together. This time has got to come from somewhere. In my case it has been evenings and Sundays simply because I've too many other duties in connection with Warren's Turf Nursery.

One thing the association needs badly is a full-time executive secretary. His efforts will help cement and firm up a stronger organization and in the long run develop the association into one of the more aggressive trade associations.

Look about you at other professions and business operations. See how they have benefited themselves. The AAN, American Association of Nurserymen, and its affiliated state organizations,

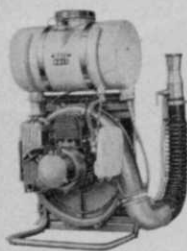


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Whether you need a motor-driven atomizer or a plunger sprayer, there's a Platz model to do your job best. Motor-driven models can be used as sprayers or dusters without changing the plastic tanks and have flame-throwing lances for burning weeds or thawing. You can't find greater efficiency or more versatility at a lower price.

2-HP PLATZ — \$149.50 F.O.B. Youngstown. Weighs 15 lbs. 2½-gallon tank. Horizontal range 26 feet, vertical 20 feet. Throttle controls stepless dusting rate. Sprayer has 4 delivery speeds.



3-HP BOSS — \$239.50 F.O.B. Youngstown. Weighs 30½ lbs. 2½-gallon tank. Horizontal range 46 feet, vertical 30 feet. Has long range nozzle and twin nozzle for simultaneous spraying of two rows.

FRANKONIA — \$69.50 F.O.B. Youngstown. Weighs 20 lbs. 4-gallon tank, made of heavy-gauge sheet brass. Powerful brass pump. Robust suction filter. Self-cleaning valves.



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have sold the Federal Government lock, stock, and barrel on its "Plant America" sales pitch; even got Lady Bird chasing around the country buying nursery stock, with your money, to plant-out signs and automobile grave yards. I understand she's a good saleslady; we ought to get her selling sod instead of shrubbery.

And examine the trade unions. You are at their mercy because they stick together. *They are organized. You are not.*

Let's just see what could be accomplished when the *Sod Growers of America* takes a page out of the nurserymen's book and begins to sell lawns instead of shrubbery. We've got a lot stronger selling pitch in the way of maintenance cost than the bush peddlers have. Are you aware, that some of the new expressways are being planted so heavily to nursery stock that within ten years all the grassed areas will have to be hand mowed. Right there is one fight sod growers can tie into and in so doing add profits to your individual operations. But it takes an association to do the spade work. An individual firm cannot do it alone.

Competition Looms

Sooner or later the seed boys are going to wake up and start hitting back at us sod busters. They are going to find ways to produce lawns faster with seed and when that day comes, unless we are prepared, they will jerk the rug right out from under us and we are going to be in trouble. In areas such as Detroit, Milwaukee, and Chicago, it is of course, unusual to see a lawn being seeded. Naturally this cuts into grass seed sales. Some smart cookie in the seed business is going to start snipping at us and if we are not prepared it will be our fault. *A strong association can help sell the public so strongly on sod that it will be difficult for any seed producer or seed association to ever catch us.*

We, in the profession of growing grass which is to be marketed as turf or sod, can use as a guidepost or beacon light the advice of the renowned architect, Daniel Burnham. It went something

like this: "Make no little plans; they have no magic to stir men's blood; make big plans, aim high, remembering that a noble diagram once recorded will never die."

In my early days of selling, a highly successful salesman, a Frenchman, used to advise me, "aim at ze stars young man; you may hit ze moon."

"As a man thinks, so he goes."

Wetting Agent Doesn't Guarantee Weedkilling

The common notion that a surfactant or wetting agent makes a chemical weedkiller work better because it more thoroughly wets the plant is only partly true.

University of California Botanist David E. Bayer, speaking at the 18th annual California Weed Conference held recently at Riverside, reported that "it has been found that the wetting of plant surfaces does not correlate with the increase in toxicity of the herbicide."

It is important to wet the plant well, he said. However, tests have shown that maximum wetting takes place when the amount of surfactant ranges from one-hundredth to one-tenth of one per cent of the total solution. But the most effective concentration of surfactant is always higher than that. Bayer says that 2,4-D-type weedkillers generally show most toxicity at from one-fourth to one-half of one percent, while most others—such as dalapon, amitrole and paraquat—work best at the one-half to one per cent level.

Many factors influence effectiveness of a chemical herbicide, Bayer said. Characteristics of the plant, position and size of leaf, type of leaf surface, age, and condition of the plant, all are important.

Weather makes a big difference, too. "In areas of high humidity, cool temperature, the need to include a surfactant in the herbicide spray solution is much less than in areas of low humidity and high temperatures," Bayer said. If it is extremely hot and dry, the benefit of using a surfactant will be somewhat less, he concluded.

Meeting Dates



- International Shade Tree Conference, Western Chapter, Annual Meeting, Towne House, Fresno, Calif., May 15-18.
- Kansas Arborist Assn. 1966 Field Day, Independence, June 6.
- Mississippi Turfgrass Conference, Mississippi State University, State College, June 6-7.
- 18th Annual Nurserymen's Refresher Course, Cal-Poly College, San Luis Obispo, Calif., June 7-8.
- Mississippi Valley Golf Course Superintendent's Assn., Meeting, Greenbriar Country Club, St. Louis, Mo., June 8.
- Plains-New Mexico Nurserymen's Assn. Convention, Sheraton Inn, El Paso, Texas, June 12-14.
- Hyacinth Control Society, Annual Meeting, Ramada Inn, Lakeland, Florida, June 19-22.
- New Jersey Society of Certified Tree Experts, Meeting, Essex County Highway Dept., Verona, June 20.
- Cornell University 1966 Short Course for Arborists, Nurserymen, Landscapers, Ives Hall, Ithaca, N. Y., July 6-8.
- Connecticut Nurserymen's Assn. Summer Meeting, Cuzz-Acres Nursery, Orange, July 13.
- Mississippi Valley Golf Course Superintendent's Assn., Meeting, Westborough Country Club, St. Louis, Mo., July 13.
- American Association of Nurserymen, 91st Annual Convention, Palmer House, Chicago, Ill., July 16-20.
- West Virginia Nurserymen's Assn. Meeting, White Sulphur Springs, Aug. 3-4.
- Joint Convention and Trade Show, by Southern Nurserymen's Assn., Louisiana, Alabama, Mississippi, and Arkansas Nurserymen's Assns., Jung Hotel, New Orleans, Aug. 7-10.
- Indiana Association of Nurserymen, Inc., Summer Meeting, Purdue University, West Lafayette, Aug. 8-11.
- Midwest Turf Field Days, Purdue University, West Lafayette, Ind., Aug. 15-16.
- Texas Assn. of Nurserymen, Annual Convention, Nursery and Garden Supply Show, Dallas Memorial Auditorium, Dallas, Aug. 21-24.
- Penna. Grassland Council, Materials Handling Field Day, John Rodgers (Plum Bottom) Farm, Belleville, Aug. 26.
- Hawaiian Turfgrass Management Conference, University of Hawaii, Honolulu, Aug. 25-26.
- International Shade Tree Conference, 42nd Annual Convention, Sheraton-Cleveland Hotel, Cleveland, Ohio, Aug. 28-Sept. 2.

Memphis STA Conference Sees Record Attendance

Attendance records were shattered when 301 turfmen congregated for the recent Southern Turfgrass Conference at the Sheraton Peabody Hotel in Memphis, Tenn., Feb. 28-Mar. 1.

Discussions on the agenda ranged from maintenance and design of golf greens, to talks covering new chemicals.

Elected president for the association's 1966-67 term was Marcus Wilson, president of the Turtle Point Yacht & Country Club, Florence, Ala.

Other officers elected to head the association for the coming year include: vice-president, Norris Morgan, Greenwood Country Club, Greenwood, Miss.; secretary-treasurer, Reg Perry, Turfaid, Inc., Memphis, Tenn. New directors are: Bill Curtis, Decatur Country Club, Decatur, Ala.; Paul Lewis, Rebsamen Golf Course, Little Rock, Ark.; D. H. Baird, Fulton Country Club, Fulton, Ky.; Marvin Perry, Shreveport Country Club, Shreveport, La.; Tom Lundy, Greenville

Country Club, Greenville, Miss.; Bob Reed, Kennett Country Club, Kennett, Mo.; and Daniel "Kayo" Mullen, Poplar Meadows Country Club, Union City, Tenn.

Next year the association's conference will be Feb. 27-28 in Memphis, Tenn.

Vandermolen Announces New "26" Sprayer-Duster Series

A new 26-cc. engine that develops two horsepower and delivers a blast of 350 cu. ft. of air per minute has been introduced by The Vandermolen Co.

New carburetion, expanded exhaust system, new plastic tanks, and other refinements have been incorporated into its new Model 26-M and 26-TT knapsack-type sprayer-duster. A new metal fan housing is also featured.

The Model 26-M is available with a 2½-gallon polyethylene tank, said to be corrosion free and stronger than former brass tanks.

Model 26-TT sprayer-mist

blower is a twin-tank model and has a capacity of 3½ gallons, liquid, or a dust capacity of 15 pounds. The unit weighs 27 pounds, has an effective range of up to 40 feet for applying dust, and a mist penetration of up to 30 feet, the company says. Replacement parts are available for immediate delivery.

Complete details on this new line of knapsack sprayer-dusters can be obtained by writing to The Vandermolen Co., 378 Mountain Ave., N. Caldwell, N.J. 07006.

High Concentrate Spraying Movie Offered by Marlow

A motion picture on high concentrate spraying has just been completed by the ITT Marlow, Division of International Telephone and Telegraph Corp., and is available to readers.

Entitled "A Fact Of Life," the film compares, illustrates, and demonstrates the advantages and disadvantages of both high concentrate and conventional type spraying, according to Marlow. The production, in color and with sound, uses a grower's operation in Hancock, Md., as setting for the comparison.

Marlow makes the film available free of charge, except for return postage. Write to: "Econ-O-Mist," ITT Marlow, Box 200, Midland Park, N. J.

Vapam Uses Told

Use of Vapam to combat spread of Dutch Elm Disease, to control roots in sewers, and to prepare tree replant sites is explained in information sheets recently released by Stauffer Chemical Co.

Fungi-spread through roots of elm trees growing close together is a chief factor in spread of Dutch Elm Disease, one sheet reports. Another describes root control problems in sewers. Both suggest methods of control using Stauffer's Vapam. The chemical can also be used to fumigate soil to remove nematodes and soil fungi prior to planting of young trees, according to the third news piece. Copies of the three publications are available from Stauffer Chemical Co., 380 Madison Ave., New York, N. Y. 10017.



SPRAY IT SAFE . . .

Specify PRATT products to give your trees the level of pest-proofing protection and horticultural health that their value warrants. Arborists and custom spraymen—the professionals who have to be certain of the right results—depend on the complete, premium quality line of safe and sure PRATT dormant and summer oils, emulsifiable concentrates for hydraulic and mist blowers, and oil base concentrates for thermal fog equipment. Send for the circular that tells you why—and how: "PRATT'S SHADE TREE SPRAY BULLETIN." It's free.

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Weed-free turf

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

 **Diamond Chemicals**

When Writing to Advertisers Please Mention WEEDS TREES AND TURF

August 25-26 Set for Hawaiian Turf Conference

Over 150 turf specialists from the Hawaiian Islands and the mainland are expected at the second annual Turfgrass Management Conference for the state of Hawaii at the University of Hawaii, Aug. 25 and 26.

"Beautification and Community Appearance" with special interest on "Weeds and Weed Control" is the theme of this year's conference.

Superintendent of Maintenance, Hawaii Highway Dept., Edwin B. Andresen, is conference director. His co-chairman will be Major Robert Bohan, past secretary-treasurer, U. S. Army Golf Association.

The conference is designed to be of interest to professionals faced with landscaping problems or yard maintenance decisions. All interested parties are invited to the conference.

Committee chairmen include: Program, David Akana; Registration and Refreshments, Major Robert Bohan; Publicity and Banquets, Charles McCrary; Exhibits, James Kim and Makoto Takahashi; Proceedings, Jean Gutierrez; Housing, Roy Sato; and Tours, Allan McKay.

Protect Elms, Is Appeal

If more people realized the true value of their elm trees, they would be more concerned with protecting the shade trees from Dutch Elm disease.

According to standards set by

the International Shade Tree Conference, an American elm having a diameter of 14" at breast height, in reasonably good health and in a desirable location, is worth approximately \$300 to \$350.

Dr. Ray Keen, department of horticulture, Kansas State University, Manhattan, urges a sanitation program that will control bark beetle breeding in dead trees and provide protection by spraying DDT.

Bulletin Aids Tree, Shrub Insect Identification

Ornamental tree and shrub insect pest identification is covered extensively in an illustrated research bulletin just published by Ohio Agricultural Research and Development Center.

The bulletin, to aid nurserymen and arborists, is titled "Insect and Mite Pests of Trees and Shrubs." It was written by Dr. Ralph B. Neiswander, professor emeritus of zoology and entomology at the Research Center. Dr. Neiswander, who retired in 1964, specialized in insects of ornamentals and greenhouse varieties during his 38 years with the Center staff.

Descriptions, habits, and life histories of 86 destructive pests in Ohio are included in the bulletin. Its pages discuss 28 suckling pests of foliage and twigs, 14 gall makers, 7 leaf miners, 7 defoliators of conifer and deciduous trees, 17 wood-boring insects, and 2 root feeders.

Five full-color and 92 black

and white photos in the 56-page publication illustrate insect and mite damage, and various life-cycle stages of most pests described in the bulletin.

Copies of Research Bulletin 983, are available for \$1, from Mailing Room, Ohio Agricultural Research and Development Center, Wooster, Ohio.

"Expressway" Locke Mower Has 60-inch Blade Swath

Grass as tall as a man and 40-degree slopes reportedly don't stop the recently developed "Expressway Patrol" mower.

Developed by Locke Mfg. Co. to meet needs of highway maintenance on hillsides and long strips of grass, the 700-lb. mowing machine is said to cut up to 3 acres of grass per hour. A safety feature stops the heavy mower after 7 ft. of free travel. With the engine only 5" off the ground for low center of gravity, and dual wheels for stability, the rig is virtually untippable manufacturers claim. More details on the "Expressway Patrol" are available from Locke Mfg. Co., Inc., 1085 Connecticut Ave., Bridgeport, Conn.

Four-Stage Lawn Rig Introduced by Adt Co.

Complete grading, pulverizing, seeding, and fertilizing of a 7-ft. swath of ground for grass all the way from Baltimore to Washington, D. C. (40 miles) would take only 80 hours with the "Grader," a new John B. Adt Co. tractor-mounted processing machine, the company reports.

Designed to simultaneously perform all four operations, the unit can treat up to 25,000 square feet of roughly prepared ground an hour, the firm claims.

Featuring a dual hopper with capacity for automatically seeding and fertilizing up to 8 acres per load, the "Grader" is said to be useful for seeding lawns, golf courses, parking areas, playgrounds, or other turf areas.

Inquiries about the new device may be addressed to "Grader," John B. Adt Co., 110 West Timonium Rd., Timonium, Md., 21093.



Inventor of the Adt "Grader," George Ulsh, demonstrates his new lawn machine.

Dry Form Panogen, Drinox

Panogen liquid seed fungicide and Drinox liquid seed insecticide are now also available in dry forms from the Morton Chemical Co.

The new, dry seed-treatments are named Panogen PX Seed Fungicide and Drinox PX Seed Insecticide. Dry formulations are said to give users the opportunity to treat seed quickly and conveniently right in the drill or planter-box just prior to sowing.

For more information, write, Morton Chemical Co., 110 No. Wacker Dr., Chicago, Ill. 60606

Roller Applies Weedkiller

A damp roller technique has been applied in the development of a new weed control unit which reportedly distributes herbicide without danger to adjacent flowers, shrubs, and ornamentals.

Named "The Drip," the unit has a 36-inch applying roller, above which is fixed a 15-gallon tank. Six adjustable valves control drip of liquid onto roller.

The unit weighs 140 pounds and is said to be easily towed with small garden-type tractors and riding mowers. A smaller, self-propelled hand model is also made. A multiple model combines three or more for wider coverage.

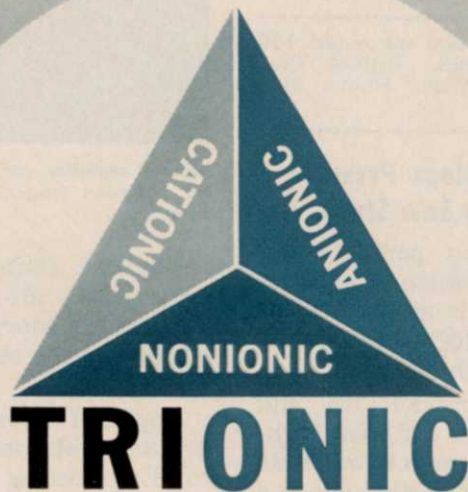
Complete details on "The Drip" will be sent if you write the Lakes Supply Co., Inc., P.O. Box 101, Dundee, Ill. 60118.



Liquid weedkiller drips onto "The Drip's" 36-inch applying roller which in turn presses it onto undesirable weeds without "drift" to shrubs, Lakes Supply claims.

new!

NON-FOAMING ADJUVANT MATERIALLY REDUCES FOAM OF MOST HERBICIDE SPRAYS



...another helpful
Colloidal product

TRIONIC is a new 3-in-one non-foaming adjuvant—*anionic—nonionic—cationic*—formulated to minimize foaming common to most herbicidal sprays. Completely water dispersible. Substantially improves wetting and distribution of the spray on the plant. Enhances penetration of waxy cuticles. Try TRIONIC—the new **non-foaming** spreader-activator for systemic herbicide sprays. For further information, write:



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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.

FOR SALE

ONE MODEL 1200 and one Model 150 Dyna-Fog machines. United Tree Service, Byron, Mich. Phone 313-266-4363.

McCulloch Develops Pressure Release for Easy Saw Starts

A "de-stroking port," which acts as a compression release for easier starting, is an innovation on two new McCulloch power chain saw models.

Direct-drive model 795 and gear-drive model 895, the highest powered one-man saws made by the company, both have the easy-start feature.

McCulloch reports that the "de-stroking port" permits fullest use of the high compression ratios needed to achieve maximum power, yet it sharply decreases effort required to pull the starter rope. The device is actuated by a lever near the pistol grip of the saw. As the lever is pushed up, it opens a port in the combustion chamber. When the operator pulls the starting rope, heavy compression is released through the port.

Other engineering advances on the heavy-duty power saws include, automatic chain oiling systems, fingertip primers for quick starting, an idle governor for smooth idling, and ball and needle bearings throughout.

Inquiries about the new models can be sent to McCulloch Corp., 6101 W. Century Blvd., Los Angeles, Calif. 90045.

"Economy Tractor" Detailed

Description and specifications of "Economy Tractors" produced by Engineering Products Co. are offered in a new 12-page catalog which includes information covering a wide selection of attachments and optional equipment.



Sidehill stability and traction are added to the "Economy Tractor" by dual rear wheel option.

Producers claim the 10 to 12 horsepower all-gear-drive tractors weigh more and are more rugged than other tractors in their class.

Copies of the information piece are available on request. Write to Engineering Products Co., 1005-HF, Anoka Ave., Waukesha, Wis.

Pramitol 5P Introduced For Noncrop Weed Control

Long-term weed control on noncrop lands is easy with new, fast-acting pelleted herbicide Pramitol 5P, says its developers, Geigy Chemical Corp.

This broad-spectrum, nonselective weedkiller for use before or after weeds emerge, is for application around buildings, in equipment storage areas, or along fencerows and roadways, the company reports. It is said to be particularly effective against such tough perennials as Johnsongrass, Bermudagrass, and bindweed, as well as annual broadleaf and grassy weeds.

Recommendations are to use 1 to 2 lbs. of the herbicide per 100 sq. ft. of soil surface. A higher rate is suggested for deep-rooted perennial control, or for use in areas where there is a heavy rainfall and long weed-growing season. For broadleaf weeds and grasses, 1/2 to 1 lb. per 100 sq. ft. is effective, Geigy claims.

Once weeds are eliminated, the manufacturer notes, weed-free conditions can be maintained

Advertisers

INDEX TO ADVERTISEMENTS

Amchem Products, Inc.	4
The Ansul Co.	35
Bowie Machine Works	6
Brillion Iron Works, Inc.	5
Burton Supply Co., Inc.	38
Chemagro Corp.	45
Chevron Chemical Co.	21
Colloidal Products Corp.	43
Diamond Alkali Co.	41
E. I. du Pont de Nemours & Co., Inc.	29
Eagle Picher Co.	33
Fairfield Chemicals	19
Hercules Incorporated 7, 3rd Cover	
Hooker Chemical Co.	12
H. D. Hudson Mfg. Co.	3
International Harvester Co.	36, 37
McCullough Corp.	11
Morton Chemical Co.	4th Cover
Robert B. Peters Co., Inc.	6
B. G. Pratt Co.	40
Solo Industries, Inc.	13
Stauffer Chemical Co.	30, 31
Thompson-Hayward Chemical Co.	25
Union Carbide Corp., Chemicals Div.	8, 9
Universal Metal Products	28
Velsicol Chemical Corp. 2nd Cover	

from year to year by making supplemental applications of Pramitol 5P at a lower rate.

Address inquiries for further details to Geigy Agricultural Chemicals, Div. of Geigy Chemical Corp., Saw Mill River Rd., Ardsley, N. Y.

Unveils Granular Herbicide

Borolin granular weedkiller combines proven herbicides in a free-flowing granulated material intended for dry application by shaker cans or cyclone type spreaders, U. S. Borax reports. The granules, formulated for the destruction of deep root systems of noxious weeds, are applied over the surface of weed-infested areas.

It is recommended for use on perennial broad-leaved weeds like bindweed, Canada thistle, leafy spurge, bur ragweed, Russian knapweed, larkspur, and poverty weed. Because of its high potency, Borax claims a low application rate is possible. Write U. S. Borax, 3075 Wilshire Blvd., Los Angeles, Calif. 90005 for details.

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

Dyrene's broad spectrum effect combats or prevents all major turf diseases. When used as recommended, it controls: brown patch • copper spot • dollar spot • leaf spot • melting-out • rust • snow mold (*typhula* sp.).

Under normal weather conditions, apply Dyrene at the rate of 4 oz. per 1,000 sq. ft. every 7-10 days. During weather particularly favorable for disease, such as high temperature and humidity, Dyrene may be applied more frequently (5-7 day) or at higher dosages (6-8 ozs. per 1,000 sq. ft.) to keep disease under control with no injury to fine turf grasses. Frequently

**Do you use
the proven
fungicide that
offers golf course
superintendents,
park
superintendents
and other lawn
and turf
professionals
unmatched
effectiveness
in the control of
major fungus
diseases?**

**Your dealer
stocks
it.**

golf course and park superintendents use a Dyrene program of 3-4 ozs. per 1,000 sq. ft. of turf on a 12-14 day schedule. This has resulted in disease-free turf all season. When using Dyrene to clean up a disease condition in turf, use 6-8 ozs. per 1,000 sq. ft. for best results.

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

For complete instructions, read the label or send for folder DY4. 1552



**CHEMAGRO
CORPORATION**
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Suppliers Personnel Changes

Allis-Chalmers Farm Equipment Division has named Harry Hanley sales manager for its Columbus, Ohio, branch. Hanley, a native of Floral Park, Long Island, N. Y., was district representative in the firm's Syracuse, N. Y. branch since 1963.

Appointment of B. C. Brandenburg as midwest manager of Colloidal Products Corp., Sausalito, Calif., was revealed recently. A graduate of Iowa State University, Brandenburg's knowledge and understanding of midwest agriculture is expected to further the Colloidal program of research and development of spray adjuvants. Brandenburg's background is in the field of agricultural resources and chemicals.

Elanco Products Co. promoted three men from field sales manager to regional sales manager positions and chose two chemical sales representatives for field sales manager duties. Advancing to regional sales managers are: Robert W. Collins for the East Central Region, headquartered in Indianapolis, Ind.; William L. Hopkins for the Western Region, headquarters in Fresno, Calif.; and A. Mincher Hillis for the Southwest Region with headquarters in Dallas, Texas. Promotion to field sales managers were given James H. Dunn III for the Pacific Northwest area, and Bill G. Page, for the states of

California, Arizona, Hawaii, and a section of Nevada.

Smith-Douglass division of Borden Chemical Co. appointed Donald O. Newhart area manager of sales for S-D's Turf and Garden Products division. Newhart will manage sales in Illinois, Wisconsin, Minnesota, Iowa, Missouri, and Kansas, from his Chicago office. He is a graduate of Ohio State University and has been with S-D since 1963, when he started as sales supervisor. More recently he has been the firm's Midwest Pesticide Specialist for its Turf and Garden Division.

Power Feed Aids Mulching

Power Feed automatically loads bales of mulch to Finn Equipment's Model P Mulch Spreader and eliminates the need for an extra man to handle the bales, Finn claims. The Power Feed unit, run by the mulch spreader's engine, allows one man instead of two, to transfer mulch from the truck and feed it to the spreader. Another man operates the machine.

The new device feeds one to eight bales per minute into the spreader at an even, controllable rate, according to Finn. Bulletins describing Finn Mulch Spreaders and Power Feed are available from W. L. Schulze, Sales Manager, Finn Equipment Co., 2525 Duck Creek Road, Cincinnati, Ohio 45208.

Trimmings

Works Like a Beaver. We've been receiving carbon copies of letters "Tricks of the Tree Trade" (WTT, Feb. '66, pg. 8) author Horace Bryan has been writing to his "fans" who've questioned his hinge-cut method of falling trees. (See this month's "Letters" column.) In one reply, Bryan writes: "Did you ever notice how a beaver falls a tree? Now there you will find the perfect worker with the hinge-cut. Do you think that beaver just haphazardly falls trees without knowing where they're going?" Bryan, a Texas treeman who's swung on hickories when he was a lad, warns fellow arborists to be sure of the kind of tree they're working with. Some are too old or too brittle to use the hinge-cut on.

* * *

The other morning, on the way to work, we heard a clever (??) disc jockey announce that he was accepting memberships in the Weed Society of America. The only one requirement, he said, was that the person had to be a garden club dropout!!! Oh, what fools these mikesters be!

* * *

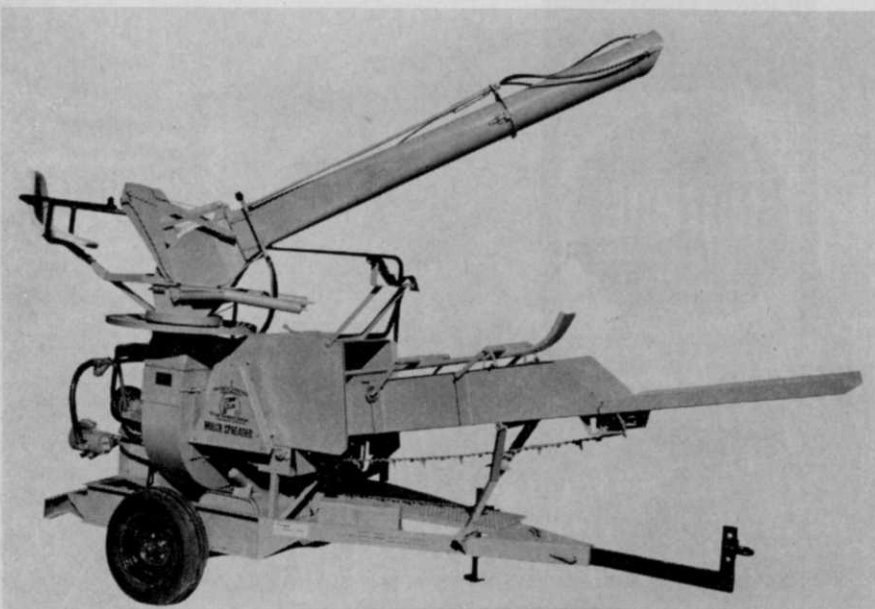
Washington in Cleveland. Committee men Chadwick and Milchalko have been using their influence with success to land as the keynote speaker for their International Shade Tree Conference, in Cleveland, Aug. 28-Sept. 2, Ohio Senator Frank J. Lausche, one of the more highly respected on Capital Hill. Complete arrangements for the program are to be announced in WTT next month.

* * *

Missing a Bet? In a recent survey we conducted, we asked contract applicators to check off which of the kinds of customers we had listed that they do work for. We itemized: homeowners, industrial firms, municipal areas, utility rights-of-way, and residential building contractors. A West Coast respondent commented: "You left out the most important customer—the farmer. The second most important users of our services are military installations." How many other CAs have cultivated these potential customers?

* * *

Northeast Weedman Dies. News just reached us at presstime that Dr. Donald A. Schallock, 46, extension specialist in weed control at Rutgers University, died of a heart attack at his home on April 3rd. Don had been a member of the executive committee of the Weed Society of America, and was a past president of the Northeastern Weed Control Conference. Before joining Rutgers in 1954, he had been an assistant professor of agronomy at the University of Rhode Island, and had previously taught at the University of Wisconsin and the New York State Agricultural and Technical Institutes in Delhi. Don, whose jovial presence and always-willing help will be missed, served five years in the Army and was discharged as a captain.



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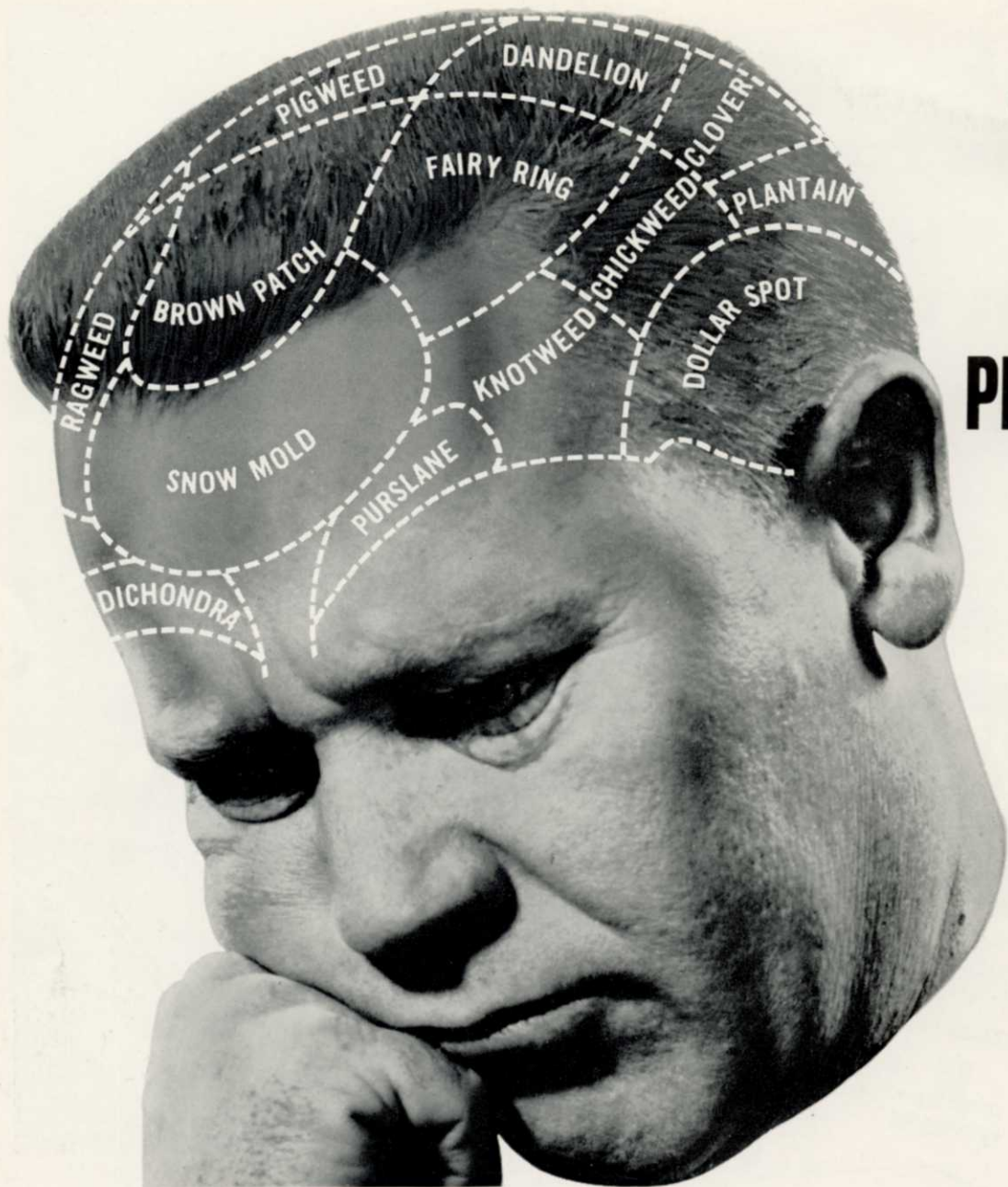
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