

WEEDS and TURF

JULY
1964

The grass-roots magazine of VEGETATION MAINTENANCE[®]

Fred Ashbaugh on
Rights-of-way
Spraying

page 8



Special report on experiment stations 16

Dr. Robert Schery's guide to
Kentucky Bluegrass Maintenance

page 12





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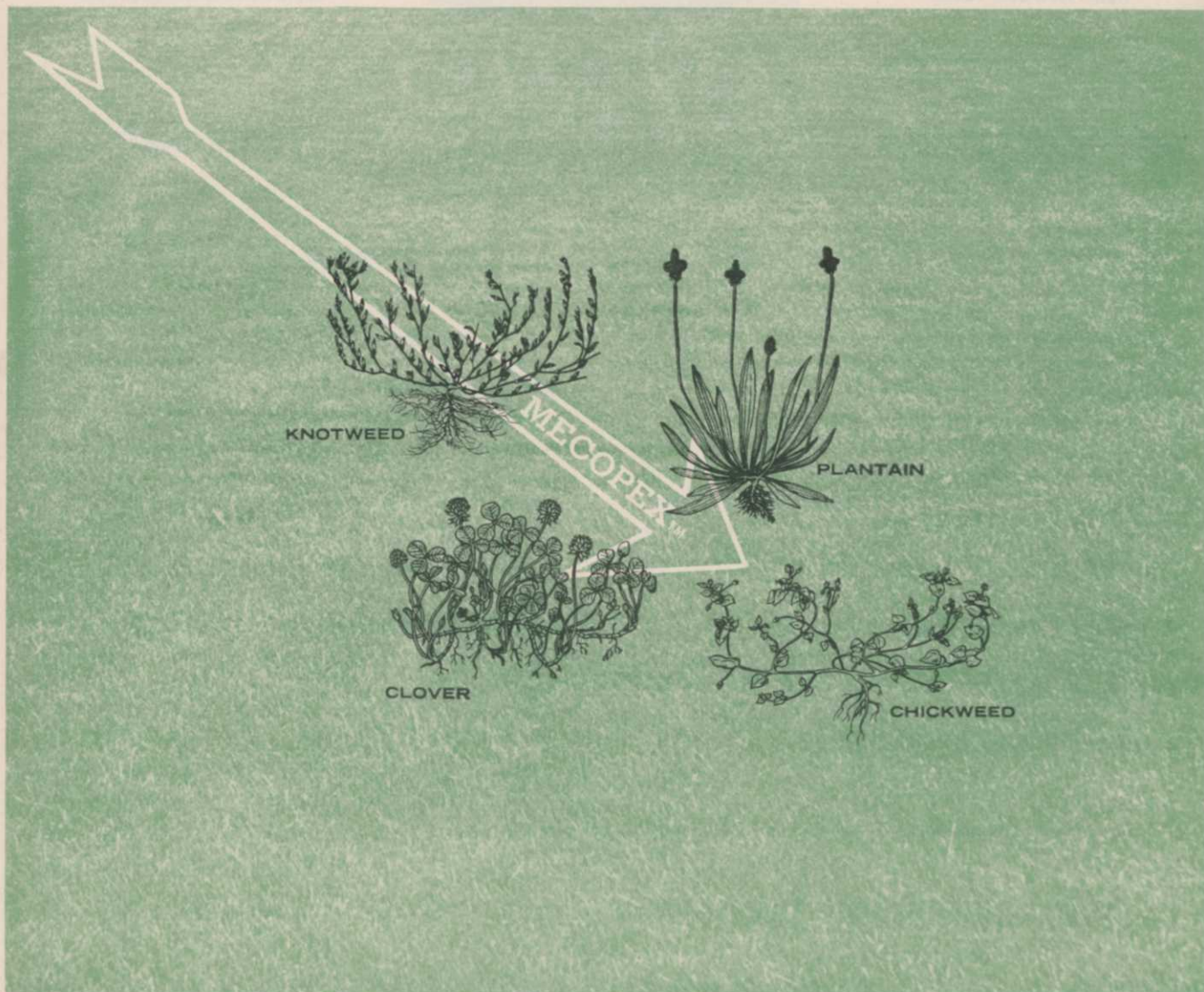
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WEEDS and TURF

July 1964

Volume 3, No. 7

Features:

How to Answer the Critics of Roadside Spraying By Fred A. Ashbaugh	8
Colorado State Lists Results of 1963 Herbicide Tests	10
Turfgrass Portraits I: Kentucky Bluegrass By Dr. Robert W. Schery	12
Field Demonstrations, Sunny Weather, Added Exhibits, Spur 3rd Annual Florida Turf-Grass Trade Show to Success By Walter D. Anderson	14
Use Your Ag Experiment Station	16
Well-Timed Fertilizer Applications Improve Turf in Southern California By Howard H. Hawkins	18
20-Plus Lectures Aim to Draw Record Attendance to 40th ISTC Convention	19

Departments:

Editorial: Care, Skill and Foresight	6
Know Your Species: Lambsquarters	20
Meeting Dates	28
W&T Mailbox	31
Classifieds	32
Advertisers Index	32
Trimnings	34

<p>JAMES A. NELSON Publisher</p> <p>CHARLES D. WEBB Editor</p> <p>DAVID E. SCHNEIDER Staff Biologist</p> <p>R. J. HOFFER Circulation Manager</p>	<p>Advertising Representatives National Headquarters 1900 Euclid Avenue Cleveland, Ohio 44115 Phone: Area Code: 216+771-4169</p> <p>New York City Billingslea & Ficke 420 Lexington Avenue Phone: Area Code: 212+ LExington 2-3667</p> <p>Los Angeles The Maurice A. Kimball Co., Inc. 2550 Beverly Boulevard Phone: 213+DUnkirk 8-6178</p> <p>San Francisco The Maurice A. Kimball Co., Inc. 580 Market Street Phone: 415+EXbrook 2-3365</p>
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WEEDS AND TURF is published monthly by Trade Magazines, Inc. Executive, editorial, and advertising offices: 1900 Euclid Ave., Cleveland, Ohio 44115. Publication office: Corner of East North St. and N. Cadwallader St., Fostoria, Ohio. Send all correspondence to WEEDS AND TURF, 1900 Euclid Ave., Cleveland, Ohio 44115.

Single Copy Price: 50 cents for current issue; all back issues 75 cents each. Foreign \$1.00.
Subscription Rates: U.S. and possessions, 1 year \$3.00; 2 years \$5.00. All other foreign subscriptions, 1 year \$4.00; 2 years \$7.00. **Change of Address:** Three weeks advance notice is necessary for change of address. Both old and new address must be given. Post Office will not forward copies. Third Class postage is paid at Fostoria, Ohio.

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Care, skill, and foresight

A recent news release informs us that the Colorado State Legislature has just amended its agricultural chemicals act so that any person applying agricultural compounds for hire within the state must first obtain an applicator's license from the Colorado Commissioner of Agriculture.

Before this license is granted, the commissioner's office gives applicants a written examination on the use of agricultural chemicals. The applicant must also demonstrate that he has suitable equipment, including storage, mixing, loading, and metering facilities, and safety devices.

Property owners applying chemicals on their own lands are exempt from the licensing requirements.

Most applicators will not object strongly to this new requirement. Many, in fact, will endorse it heartily. After all, it is frequently the professional applicator's contention that he can best apply pesticides *because* he is licensed, skilled, and adequately equipped.

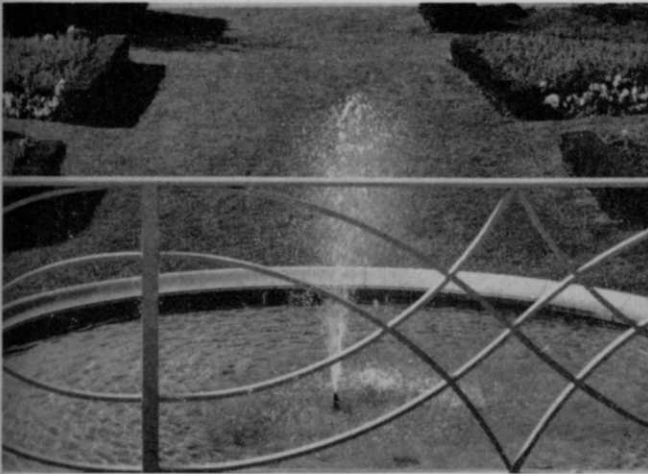
What is disturbing, however, is the legislature's emphasis on custom applicators when it discussed chemical misuse, and the somewhat naive statement, contained in the release, that the licensing law will "preserve public peace, health, and safety."

The legislators allegedly commented that (1) in some instances a small percentage of commercial applicators are not entirely reputable; (2) that these applicators spray plants which do not require spraying; and (3) that these applicators use materials carelessly.

We will admit that there are a few such operators which still obtain spraying contracts in some parts of the country; we welcome prudent licensing laws designed to protect other applicators, and the public, from the irresponsible few.

However, we think it unsafe to assume that misuse of agricultural compounds has now been banished from the State of Colorado. Misuse is evident among private citizens as much as, or more than, among professional applicators. And while we don't propose that each citizen be licensed to apply his own chemicals to his own lands, we must caution that the attention to *public* education about pesticides must nevertheless continue. The small number of custom applicators against whom this new law is supposedly directed accounts for only one aspect of the "pesticide problem." It's still the amateur who must be convinced, cajoled, and constantly reminded that agricultural chemicals are to be used with care, skill, and foresight.

WEEDS 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, landscape nurserymen, and supervisory personnel with highway departments, railways, utilities, golf courses, and similar areas where vegetation must be enhanced or controlled. While the editors welcome contributions by qualified freelance writers, unsolicited manuscripts, unaccompanied by stamped, self-addressed envelopes, cannot be returned.



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IN THESE DAYS, when the cost of everything appears to be rising, it is interesting that frequently the cost of roadside maintenance is actually going down. This is due to the use of herbicides to control or eradicate woody plants and weeds found along so many highways. However, highly vocal elements of our population are screaming that much roadside spraying, especially in scenic areas, results in an ugly and unkempt-appearing roadside. They claim that if conservation groups and similar organizations had control of this work, a much more satisfactory appearance would result.

Interference by outsiders who are not familiar with the entire problem *might* give better results but the opposite can also happen. Complicated procedures or an emphasis on proficiency in botany or ecology, such as is frequently advocated, will certainly increase the cost of the work. There is no need to invite this interference. Instead, we need to develop a greater interest in *public relations*. When the public understands what we are doing, resistance to roadside spraying will not disappear, but it will surely be reduced.

Today, according to government figures, there are about 66 million automobiles. Within 12 years (by 1976), there will be about 100 million automobiles on our roads. These figures do not include trucks. With a larger number of automobiles, more people (there will be about 230 million of us within 12 years), and a greater amount of leisure, the use of our scenic highways will probably double.

What, really, is the matter

How to Answer the Critics of Roadside Spraying

By FRED A. ASHBAUGH

Supervisor of Forestry, West Penn Power Company
Cabin Hill, Greensburg, Pennsylvania

with roadside spraying? In certain areas, but certainly not in all areas, sprayed roadsides actually confirm the claim that "we are making a dirty, brown, dying-looking mess along the sides of our roads." There is hardly a financial reason for the poor work done along some roadsides. Chemicals and procedures in use today are so well understood that there is little reason for making technical blunders. There is really only one reason left—the frame of mind of the persons working in this field. They must truly desire to enhance *both* the usefulness and the appearance of rights-of-way.

We must keep in mind that a spray applicator may become a victim of circumstances. He may be required to do work that he knows will cause public resentment. However, even when it is not the applicator's fault, the net result could be adverse legislation which would produce such strict control that the market for

roadside spraying would surely decrease. Roadside appearance and the future of roadside spray maintenance are closely tied together. It is to the advantage of all that quality standards be set high and that every effort to meet these standards be made.

We ourselves must not forget, and we should remind the public, that more than an attractive appearance is involved in roadside maintenance.

Highway Engineering Factors

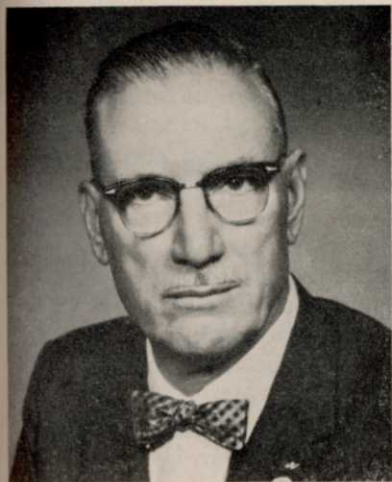
The three major factors which must be considered by the highway engineer are:

Safety—In spite of conservationists, the primary concern when roadside maintenance is performed is *safety*. Spraying, which helps remove woody plants and high weeds on curves, permits the motorist to drive more safely. When woody plants and high weeds are eradicated from the roadside by spraying, animals or birds move farther away from the road edge and can be more quickly seen when they dart across the road in front of a motorist.

Good Housekeeping — Roadsides must be kept neat and free of pop bottles, beer cans, and other trash thrown on the roadside by motorists. This is already a serious and expensive problem and is due to become worse.

When criticism of roadside spraying is heard, we should ask

When contract applicators or rights-of-way supervisors have to spray roadsides or utility lines, public clamor frequently begins to interfere with their progress. This article by well-known expert Ashbaugh tells how to keep the public informed about the advantages of chemical spraying, and outlines, step-by-step, procedures which help applicators avoid both unsightly appearance of roadsides, and the resulting ill will which sometimes is aroused among the populace.



Fred Ashbaugh

the roadside should be in grass. In mountainous areas, the roadside should be in grasses, ferns, or low-growing plants. Only shrubs that grow less than 2' high should be permitted on roadsides. Higher growing shrubs should be located as far from the road as possible.

"Programming" Spray Projects

Roadside spraying should be programmed with the greatest care. What does "programming" mean? It means the planning, scheduling, and required procedures that are necessary to produce satisfactory roadsides. All this must be done at a reasonable cost.

Certain general principles should be considered whenever roadside work is being programmed. The most important of these are:

1. The primary reason for building roads is for transportation.
2. The safety of the users of the road should have first consideration.
3. The roadsides should, whenever possible, show good housekeeping.
4. During all roadside maintenance work, the appearance of the road should never be forgotten.
5. Only properly trained men

our critics if they are doing anything about trash and litter.

Attractive Roadside Appearance—Chemical spraying, when properly done, is the best and most economical means of improving the appearance of roadsides.

The idea of permitting brush and weeds to grow at random over a roadside is not practical or economical. It does not result in roadsides of the best appearance.

To create a roadside which permits the greatest safety for the motorist, the greatest protection for birds and animals, and the most attractive appearance,



Dead brush along roads for as long as three years (as is the case here) causes public resentment. Man in background is holding a six-foot-high marker.

should be permitted on roadside spray crews.

6. The cost of roadside maintenance must be kept within reasonable limits.

Every person involved in any way with roadside spraying should also keep the following rules in mind at all times:

1. *Taxpayers*, not government, supply the funds to enable us to spray roadsides.
2. Within 12 years, there will be about five automobiles using our roads where now there are three.
3. The most modern chemicals and techniques will be used in roadside maintenance.
4. Indifference, carelessness, and lack of training on the part of workmen will not be tolerated.
5. The procedures used to spray roadsides shall be designed to improve the scenic values of the area.
6. No woody plants over 5' high shall be sprayed.
7. Indiscriminate spraying of ferns, wild flowers, and low-growing shrubs shall not be permitted.

8 Safeguards

The following procedure is how one electric utility solves this problem. This procedure is designed to give the best balance



Flowering shrubs (azaleas) and ferns on a roadside right-of-way that has been chemically sprayed twice demonstrate how a pleasant appearance can be retained after a spray program. Electric line is crossing road at this point.



Ironically, the public will complain about appearance of sprayed brush but not about rubbish, author Ashbaugh says. This actually occurred among residents along this road!

between cost, efficiency, and favorable roadside appearance.

1. A careful survey and study is made in all areas where roadside spraying is planned. The procedures specified will depend upon the importance of the roadside from a scenic standpoint as well as the present roadside vegetation.

2. Close cooperation with the state highway department is always maintained.

3. Careful and detailed specifications which leave little possibility for error are written. The electric utility sees that copies of the specification are made available to all workmen.

4. The public and adjoining property owners are informed by leaflets, etc., why the spraying is being done and what the final result will be. Recommendations that the public withhold its decision until the program is completed are constantly made by both spray applicator and the company.

5. Close supervision of the work must be constantly provided by the spray applicator to eliminate careless or slipshod work.

6. The electric company actually checks the training of the workmen and the suitability of the equipment before a spray crew is permitted to begin work.

7. Woody plants over 5' high are never sprayed. Instead, such brush is cut first. When careless work is found, the spray applicator is required to return and do the necessary remedial work to bring the roadside to first class condition.

8. The electric utility is constantly talking to garden clubs, service clubs, and conservation groups explaining company interest in conservation and beautification of the community.

Much of the antagonistic attitude shown by the public is because we do not take time to inform them about what we are doing. When the public understands that the final roadside will be more beautiful after spraying, will be safer for motorists, and that the taxpayer dollar required is less than maintenance by any other method, they will be more willing to accept a temporary brown-out.

Reference cited—ORRRC Study Report 23 "Projections to the Years 1976 and 2000: Economic Growth, Population, Labor Force and Leisure, and Transportation."

Colorado State Lists Results of 1963 Herbicide Tests

Several new herbicides were tested by Colorado State University extension service and experiment station personnel last year. Some of the chemicals have been approved for Colorado conditions, Eugene Heikes, CSU Extension Weed Specialist, says.

Summaries of several of the newer materials tested in Colorado by experiment station and extension service personnel are as follows:

Dicamba (2-methoxy-3, 6-dichlorobenzoic acid). This material, trademarked as Banvel-D, is a broad-spectrum herbicide with some selectivity for use in certain crops. In Colorado, it has been studied for control of some of the harder-to-kill broadleaf lawn weeds. Heikes indicates that the university needs to observe this herbicide for another year before recommending it in Colorado.

Fenac (2,3,6-trichlorophenylacetic acid is recommended for the

control of deep-rooted perennial noxious weeds. It acts primarily through the soil and the root zone of plants. Fenac has given seasonal control of annual weed species such as Russian thistle, puncture vine, and kochia when applied prior to time of germination.

Dacamine is an oil-soluble, water-emulsifiable amine salt formulation of 2,4-D and/or 2,4,5-T. Amine formulations of 2,4-D have been used for many years to control weeds.

Principal advantage of Dacamine is that it can be used in an oil carrier. This is particularly desirable for aerial applications.

Tritac-D (2,3,6-trichlorobenzoyloxypropionol). This product is recommended by the manufacturer for eradication of bindweed, Canada thistle, and other deep-rooted perennial weeds. It is formulated for spray application and registered for use on noncrop land.

It is nonselective in action, may be toxic to all types of vegetation, and may render the treated area totally or partially unproductive for one or more years.

Tordon (4-amino-3,5,6-trichloropicolinic acid). This material is a systemic in plants and is readily absorbed by leaves and roots. It has been marketed on a limited basis in parts of the Midwest for the control of several brush species.

Bandane (trade name of a herbicide for the control of crabgrass) is a preemergence material that has been tested in Colorado and has given good results when applied to lawn or turf at 10.7 lbs. per 1,000 sq. ft.

Timing of application is important, Heikes reminds turfmen. For spring treatments apply in April or early May before any crabgrass germinates. It can also be applied in the fall after Nov. 20.

Next month in W&T

Special

Shade Tree Issue

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WEEDS AND TURF

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Turfgrass Portraits I:

Kentucky Bluegrass

●

By DR. ROBERT W. SCHERY

Director, The Lawn Institute
Marysville, Ohio

●

This is the first in a series of nine articles on basic traits and maintenance procedures for common turfgrasses. Next month author Schery discusses fine fescues.

KENTUCKY bluegrass may have been brought to the Midwest before 1700 by French missionaries. Some claim it was "introduced" into Kentucky, where it acquired its present familiar name in the early 1800's, by Harrison's Kentucky volunteers returning from the battle of Tippecanoe. It's a good guess that today more Kentucky bluegrass clothes America's suburbs than there are corn plants in the Corn Belt. Why this spectacular success?

A combination of traits is responsible, in all of which Kentucky bluegrass rates near the top. Bluegrass spreads by underground stems (rhizomes), and thus is not an offensive thatch-former as are most stoloniferous grasses. It is soft of texture, aristocratic in stance, its arching culms graceful, the bluish-green color luxuriant in the lawn. Kentucky bluegrass is widely adapted, can survive under differing conditions, in distant regions. It is strongly recuperative, revives well after drought, wear, scalping, or disease. Its maintenance is not demanding. It mows neatly (except for a brief span

when seedheads form). It is self-sufficient without being transgressive—pleasantly ladylike at flower bed borders compared to quack or bermuda. And it is durable under pesticide treatment, enabling selective clean-out of most pests in a bluegrass turf.

Growth Pattern

Autumn, with its warmish soils, bright days (but crisp nights), gentle October rains, is very much bluegrass' cup-of-tea. Food reserves build then. Sod thickens with the formation of many fat side shoots (tillers). But, responding to shortening day length, growth is low; mowing is not uncomfortably increased, no matter how much the lawn is fertilized. There is some increase underground right through winter. Come spring, bluegrass is resplendent even before the trees leaf out. Rhizomes spread and tillers fill. Soon the main culms initiate seedheads, are destined to turn stiff, and become a bit of a nuisance for the mowman.

A touch of shabbiness follows seeding season. Each stem that initiated a seedhead withers, and summer finds bluegrass thinning. New tillers won't become robust where summers are hot, and are sometimes not really adequate until autumn. Summer is a trying season for bluegrass, energy often being dissipated faster than photosynthesis can replenish it. It does little good to force bluegrass with fertilizer in hot weather; indeed, too abundant nitrogen then may lead to "disease," and rather complete debilitation.

Adaptation and Preferences

Kentucky bluegrass obviously benefits from a more northerly climate. South of Tennessee or the Texas Panhandle, mountain

elevations excepted, there is just too much hot weather for bluegrass. Perhaps the winters are insufficiently cold, too. Except in the shade, it mostly passes out in summer.

As with any plant, bluegrass performs best in rich, friable soils, well drained and retentive. But it's widely tolerant. A lot of good bluegrass grows on clay almost boggy in spring. It can be perpetuated on sands, if fertilized enough and watered occasionally. It looks starved on infertile soils, but generally persists. It relishes neutral, limy soil, but tolerates acidity. One thing bluegrass does resent is close mowing, scalping; set the mower 1½ inches high, maybe more in middle latitudes. Water? — bluegrass can "sit out" drought, revive when conditions turn favorable. Indeed, there are indications that summer drought is therapeutic to bluegrass (perhaps because competing vegetation is injured more and recuperates less well). But for continuously green sward, irrigate bluegrass whenever it turns blue with incipient wilting and is no longer resilient enough to "wash out" footprints.

Propagation

Bluegrass tenacity, and ability to spread by rhizomes, permit its propagation by plugs (biscuits of sod), or by sod itself. But seeding is simpler, more economical. There is excellent seed production in this country, with a long and honorable history. Between 20 and 30 million pounds of Kentucky bluegrass seed is sowed annually to America's fine turfs. In each pound there are approximately two million seeds—clean, plump, of at least 85% purity and 75% germination (accepted trade standards; most bluegrass is essentially weed-free; the non-seed fraction, "inert," is mostly

Weeds and Turf is proud to present the first in a series of profiles of common American turfgrasses by Dr. Robert Schery of The Lawn Institute. Dr. Schery, a frequent *W&T* contributor and world-renowned authority on the subject, covers history, characteristics, and maintenance methods for each species, so that turf professionals may use each installment as a "working manual" and as a training aid for maintenance crews.

chaff and hulls, impractical to winnow away in the cleaning operations because there would be loss of viable seed too).

Recommended seeding rate, usually in mixture with fine fescue, is 2-3 lbs./M, 20 or more potential plants per square inch. On good seedbeds, loose and crumbly, even lighter rates are possible—provided so little seed can be spread evenly (use a good spreader). Watered as needed, and mulched to conserve moisture, bluegrass sprouts in as little as five days in warm weather. Where warmth or humidity are less than ideal, several weeks may pass before bluegrass is very much evident. Bluegrass sprouts best, as it grows fastest, in a 65-80° temperature range.

What To Watch Out For

Trouble can beset Kentucky bluegrass when weather gets warm, especially if the grass is succulent from nitrogen. Disease gets blamed for its demise, but "soft" bluegrass can't stand up to 100° temperature anyway. So go light on summer feedings where hot days aren't at least counterbalanced by cool nights.

Leaf spot (*Helminthosporium*) may be rampant in the cool of spring. If the grass is not oversucculent, and is mowed reasonably high, chances are the disease will not extend to the foot rot stage, with appreciable loss of turf. The lawn can be sprayed with one of the excellent general-purpose fungicides*. Bluegrass is quite tolerant of fungicides if applied correctly.

Sometimes insects attack. Sod webworm, the larva of the lawn moth, has been serious in the Midwest in recent years. It can be controlled by drenching insecticide into the crowns (where the webworm makes its burrow). Chlorinated hydrocarbons (aldrin, chlordane, dieldrin, DDT, heptachlor, toxaphene, etc.) have worked well through the years, but webworm populations seem building up resistance. Lawnsmen may have to

*Acti-dione-thiram, Captan, Dyrene, Kromad, Maneb, PMAS (not on Merion), Tersan OM, Thiram, Zineb, etc. are recommended for leaf spot and most other diseases.

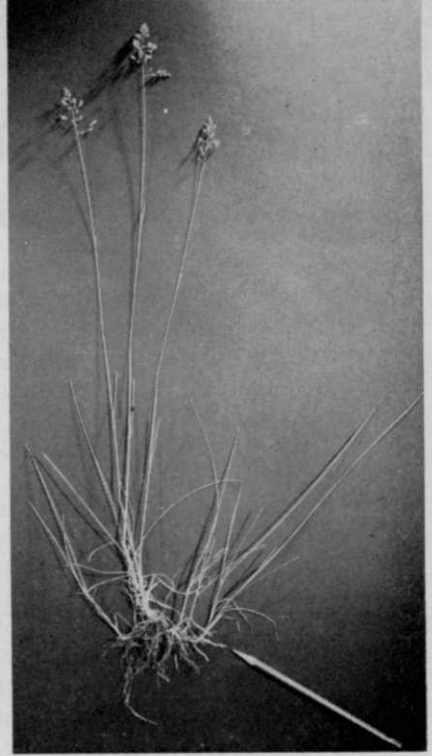
turn to the phosphatics such as Diazinon, Ethion, and Trithion, or to safe general insecticides such as Malathion and Sevin. The same is true with chinchbug, though this is not the serious pest with bluegrass that it is with st. augustine in the South.

Grubs in the soil may do damage; one cure is a long-lasting insecticide such as chlordane or dieldrin drenched into the soil. Fortunately, recent cold, dry winters have reduced the once prevalent Japanese beetle over much of the Northeast.

Varieties

Adventive Kentucky bluegrass, termed "natural" or "common," represents a mixture of hereditary combinations that have survived in a diversity of environments since colonial times. "Survival of the fittest" assures that these are well adapted to their particular niches. Seed harvested from natural stands, especially in Kentucky (where the gene pool is perhaps the broadest), ends up in the seed bag as many "natural selections," suitable to as wide a variety of ecological situations as occur in the seed fields. This covers most of the varying conditions apt to be found in the average lawn. Moreover, tests have proven that so broad and flexible is Kentucky bluegrass heredity, that seed from one region adapts readily to another location even though a thousand miles removed. This striking adaptiveness of natural Kentucky bluegrass is an advantage shared by few species.

Even so, man wishes to select from this wealth of natural types certain forms he fancies, or which behave in a singular way. Because Kentucky bluegrass is largely apomictic (nonsexual; i.e. most seed does not require sexual fertilization, but represents exactly the parent plant), almost any bluegrass plant can be perpetuated as a pure line. It is no wonder that there have been numerous Kentucky bluegrass releases, and many selections under test. It is equally no surprise that few exceed natural Kentucky bluegrass, selected



A complete natural Kentucky bluegrass plant which was yanked from the soil in mid-spring. Notice the spreading rhizomes underground (one at pencil point), the clusters of trilliers, and the seedheads on older culms.

and proved by nature, in more than a few respects.

The first commercially important selection was Merion, noticed as an attractive patch on the Merion Golf Course near Philadelphia. Merion has received much publicity and acclaim; it is noteworthy for its comparatively low growth, density, color, and resistance to leaf spot disease. But no variety has a corner on all desirable traits; Merion does rust (and catches other diseases), demands heavier fertilization, and (because of tight growth) tends to thatch quicker than most bluegrasses.

Park is another established variety, noteworthy for heavy seed that sprouts readily. Park results from the interplanting of a dozen natural bluegrass selections made by the University of Minnesota. It contains a good measure of the genetic variability that is natural to Kentucky bluegrass.

Other American selections include Arboretum, a "southern" bluegrass population from Missouri; Delta, from Canada, a good seed yielder; Newport, from a west coast of Oregon clone (out of which came C-1), dense and vigorous in autumn but tending to peter out; Windsor resembling Merion a little, too new to be reported on.

Field Demonstrations, Sunny Weather, Added Exhibits Spur 3rd Annual Fla. Turf-Grass Trade Show to Success

Sunny spring weather, approximately 400 registrants, and an increased number of field demonstrations and exhibits combined to insure a successful Third Annual Florida Turf-Grass Trade Show, April 30-May 2.

Sponsored by the Florida Turf-Grass Association in cooperation with the Horticultural Spraymen's Association of Florida and the Florida Society of Golf Superintendents, the Show was held at the University of Florida Experiment Station Plantation Field Laboratory, Fort Lauderdale and the Seville Hotel on Miami Beach.

Opening day's program at the Field Laboratory began with morning tours of the turf research areas. Separate tours were conducted for specialized interest groups, such as the Horticultural Spraymen, Garden Supply Dealers, Golf Superintendents and others, thus giving each group a common ground of discussion at each stop on the guided tours.

Check Weeds, Insects, Diseases

Stations were established along the way to pinpoint the research being conducted at the laboratory in weed control, in-

by **WALTER D. ANDERSON**

Executive Secretary
Florida Turf-Grass Association
Jacksonville



Homeowners' clinic sought to answer turf questions from the public. County Agent Lew Watson (left) conferred with FT-GA Director James E. Ousley, Jr., on a diseased turf sample.

sect, disease and nematode treatment, and overseeding tests.

Demonstrations of a broad range of turf equipment and products were carried on throughout the afternoon under an arrangement in which the registrants moved from demonstration to demonstration during a three-hour period. In this way each demonstrator was able to give simultaneous and continuous showings of his product throughout the period.

With approximately a dozen

and a half of the exhibitors demonstrating, the areas were divided into two sections: the first for major, large equipment and the second for small equipment and product displays.

In addition to the equipment shown in prior years, such as tractors, shredders, spraying rigs, varying sizes and types of mowers, additional demonstrations were conducted for the first time by sprinkler manufacturers and fertilizer companies.

Show 70 Exhibits

The Show moved to Miami Beach in the evening for the first and highly successful evening opening of exhibit booths at the Seville Hotel, during which several hundred of the registrants toured the 60 industry exhibits and 10 educational exhibits.

Friday morning's program was completed by the three-hour Small Business Clinic designed, as in the past, to assist the FT-GA members in the increasingly effective operation of their businesses.

Delegates Get Bank Loan Tips

In reviewing "Banking Services for the Small Businessman," Frank Dieringer, Vice President, Commercial Loan Department, First National Bank of Miami, analyzed in detail the methods employed by a bank in considering applications for credit.

Dieringer indicated that the loan department of any bank generally pays the way for the other services provided, and thus all banks are looking for opportunities to maintain an active, growing loan business. In this light, he said, "credit applications are generally considered from the viewpoints of your suppliers' information on your bill-paying habits, your own personal knowledge and ability, and the reputation and personality of the business applicant."

Reviewing other banking serv-



Top-ranking turf experts from the Sunshine State welcomed the annual show as an opportunity to renew old acquaintances. Left to right are Dr. Gene C. Nutter, FT-GA president; FT-GA Director Francis Branan, president of the Florida Agriculture Council; Charlie P. Johnson, past president of the Horticultural Sprayman's Association of Florida; Norwood Glover, president of the Florida Seedsmen and Garden Supply Dealers; and Dr. Evert O. Burt, Assistant Turf Technologist, Plantation Field Laboratory, and show co-chairman.

ices, Dieringer also strongly urged the registrants to make full use of the consultative services of financial experts in their own banks for logical planning of both personal and business finances.

Wage-Hour Laws Studied

Moving into a more detailed section of the Business Clinic, the subjects of "Workmen's Compensation and You" and "Wage-Hour Legislation and the Small Businessman" were discussed by Virgil Lynch of John Z. Fletcher and Associates, Miami, and Kenneth Morefield,

as introductory material for a study of the current laws on the subject.

Morefield reviewed all aspects of the subject with emphasis on the sections dealing with exemptions from the law, minimum wage changes since 1961, over-time computation rates and schedules, exempt employees, and child labor regulations.

Delegates Quiz Pros

Following the individual speakers, a lengthy question and answer session was joined in by the registrants with all of the speakers, after which the exhibit



Equipment demonstrations highlighted the annual Florida Turf-Grass Conference, which this year drew 60 industrial exhibits. Machines like this Ford tractor, and the mowing and seeding attachments it is designed to pull, were moved into convention hall of the conference hotel so delegates could inspect the devices close at hand.

Manager, Florida Flower Association, respectively.

Lynch outlined the fundamental theories and programs of workmen's compensation, outlining for the registrants "how to save money on buying the most insurance." He spoke with particular reference to the 20 Associations in Florida having self-insurers' funds, all of which, he said, are designed "to protect a businessman from going bankrupt because of excessive claims."

History of wage-hour legislation was presented by Morefield

hall was opened for the remainder of the day.

While many of the turf professionals stayed over until Saturday for further talks with exhibitors, Saturday was again a day for the public to be admitted free of charge to the exhibits. Running simultaneously with the opening of the displays was a six-hour lawn clinic made up of industry suppliers, research and extension personnel, and other leading turf authorities from across the state, all prepared to answer whatever questions were presented by the public.

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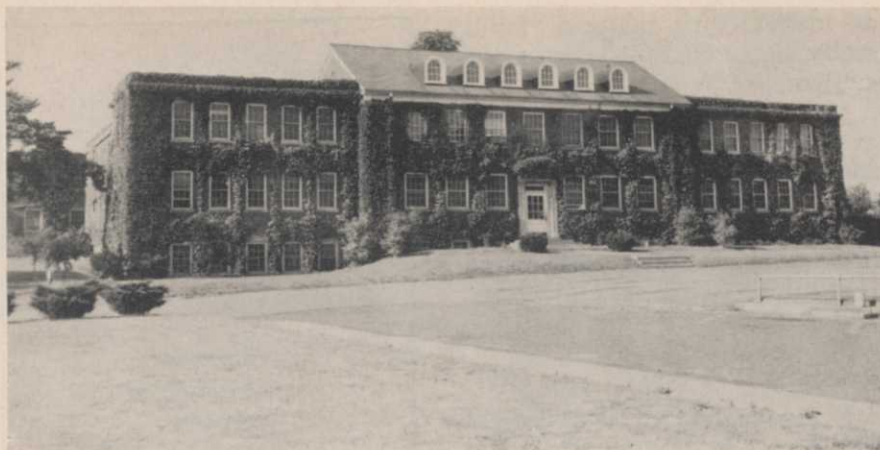
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Thorne Hall is headquarters for the Wooster, Ohio, station, and is typical of the stately buildings which grace many similar facilities across the country. Vegetation maintenance personnel will find themselves welcome at these centers of technical know-how! This and the shot of Dr. Davis on the facing page are courtesy of the Ohio Agricultural Experiment Station. All other photos by *Weeds and Turf*.

Use Your *AG* Experiment Station

ARE YOU obtaining informative literature from your state agricultural experiment station? If not, a great deal of useful aid is going by the board. *Weeds and Turf* recently visited the facilities of the Ohio station and discovered that benefits of research carried on at these institutions are not being gleaned to their fullest.

The Ohio State Agricultural Experiment Station, located in Wooster, occupies 1600 acres. Adding substations and tracts at Ohio State University in Columbus brings the total to 3200 acres. Nearly 250 persons are employed by the station, including personnel cooperating with OSU and the U.S. Department of Agriculture.

Fields represented include agronomy, animal science, forestry, entomology, horticulture, and many others. Agronomy is the field in which we were interested in our visit. It consists of what would be called plant science. Investigations range from soil studies concerning plants to radiation uptake in crops (a recently initiated study). Turf cul-

ture and pest control also fit into this branch.

In 1950 a pasture and turf program was begun. Since then it has grown so that the Ohioans now hold annual Lawn and Ornamental Field Days every third Tuesday and Wednesday in September. Here Station scientists release findings of research and demonstrate the results of experimentation. Usually about 600 persons attend this program.

"Demand for information about turf has been steadily rising," Dr. Richard R. Davis, Agronomy Department Head, told us. "Ohio State now offers a course in turf management at Columbus. Later the University

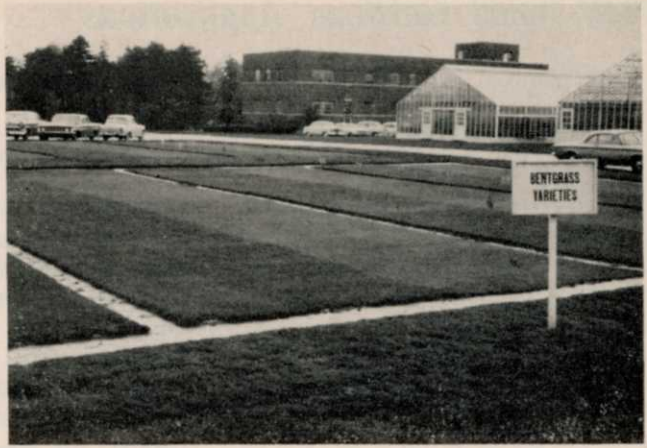
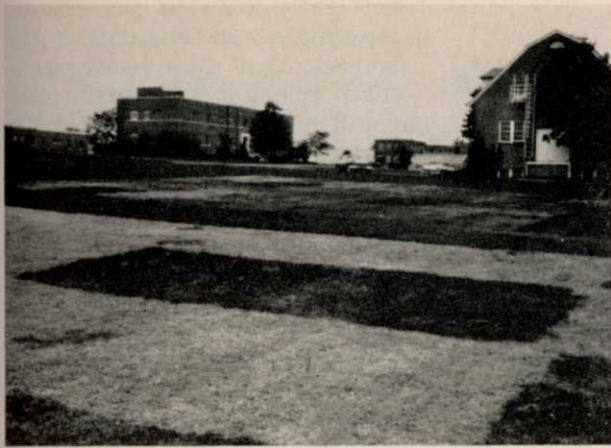
will probably sponsor a short course on the same subject. This illustrates that an Ag station is 'not just for farmers.'"

Dr. Davis showed us around the plots that had been set up to test various chemical and mechanical treatments on turf.

In chemical tests of preemergence crabgrass control, Dr. Davis said results with Dacthal and Zytron have been the most consistent. Among postemergence chemicals, the most widely used are AMA and DMA. These may discolor Kentucky bluegrass but no serious injury results if they are used in recommended amounts.

Fungus disease control receives

Agriculture experiment stations don't limit themselves to farm crop research, as many knowledgeable applicators have already discovered. Most such stations have research programs in turf management and tree maintenance, and many have studies related to weed and brush control. This article describes how one of the many ag stations operates, and tells how to make the most of services offered in state centers.



Most phases of turf management are studied at agricultural experiment stations. At Wooster, for example, there are plots for sod renewal (above left). Bentgrass varieties (above right) are planted in strips and tested for response and resistance to crabgrass and other pests. Area at the right has been laid out in a grid pattern where fungicides are tested. Dollar spot is evident at the lower left of the photo.



the attention of Professor Harmon A. Runnels. Some plots of varieties of close-cut and high-cut bentgrass are given chemical treatments to prevent the occurrence of fungus diseases. Those fungicides he found effective against snow mold (*Typhula* sp.) are "Calo-clor or Calocure, Dyrene, Scutl F-92 or F-96, Panogen Turf Spray, Tersan OM, Ortho Lawn and Turf Fungicide, Acti-dione-Thiram, PMAS, Kromad, Cadminate, Miller 658, and Elcide 73." These were applied once in December at twice the recommended summer dosage for control.

Dollar spot (*Sclerotinia homoeocarpa*) is another fungus disease damaging in Ohio. "Calocure, Kromad, Ortho Lawn and Turf Fungicide, and Acti-dione-Thiram provided better than 90% control" against this disease.

Recently striped smut has turned up at the Experiment Station on Kentucky bluegrass. None of the chemicals have been able to control it, and it is not known how widespread the disease is or will be.

Several professors at the station carry on turf insect control experiments. Professors Joseph Polivka and Roy Rings, in their work on turf grubs, prescribe aldrin, dieldrin, chlordane, or heptachlor as soon as damage is sighted or if it is expected.

In the weed department, we were told that nimblewill is the worst of the perennial grass pests in Ohio. There seems to be no control for its persistent growth habits.

Dr. Davis told us that work with 2,4-D on campus lawns has shown that the amine type (used because it is less volatile) controls most of the broadleaved weeds. He mentioned that care must be taken when using 2,4-D in lawns near tomatoes which are ultrasensitive. Those weeds not controlled by 2,4-D, like ground ivy, chickweed, and white clover, can be controlled with silvex (2,4,5-TP). Knotweed and speedwell are resistant to both silvex and 2,4-D, but some reports have come in showing that endothal (2 to 4 lbs. per acre) will kill them.

Successful results of improved

techniques of weed and turf pest control (as well as work in other fields) are published and available to all taxpayers at a nominal fee (some are even free). So if you are not already taking advantage of the research of your state institutions, write for a bulletin of available publications, obtain a program of the field days which would interest and inform you, or visit your local Ag Station.

Dr. Richard R. Davis is head of agronomy at the Ohio ag station, one of many such sources of helpful data and advice.



Well-Timed Fertilizer Applications

Improve Turf in Southern California

By HOWARD H. HAWKINS, Golden State Plant Food Company, Glendora, California
(Member of the Soil Improvement Committee, California Fertilizer Association)

Under southern California growing conditions, timing of fertilizer applications for turf areas is almost as important as the material used.

Many turf people wait until spring to apply fertilizer to turf, when actually the plants should get fertilized two to three months earlier when it is cold and rainy.

In this way the nutrients get into the soil and move into the root zone where they are assimilated into the plant systems early. Thus as soon as it starts to warm up, the grass turns green, which follows a four- to six-weeks waiting period during which time nutrients are taken into the plant.

Actually for most Bermuda lawns, which tend to turn brown naturally during the cool winter southern California nights, the best time to fertilize for spring-time growth is in late October or early November. This is after the growing has slowed down and mowing gets to be much less a major job. Fertilizer applied

at this time has all winter for the rains to carry it into the root zone, and if it is supplied mainly from an organic source, it will not leach out, but will become attached itself to clay particles to be held until used.

The class of materials most needed for good turf production is the natural organics. While it is now an accepted practice to apply fertilizer as pellets, because of ease of application and freedom from dust, it may be said that these same characteristics are needed to promote the best lawn and turf growth. When a pellet is used as a fertilizer there are many times fewer particles per pound than when a granular mixture with a quantity of organic products is applied. Therefore there is much less root contact with the fertilizer by the plant than when a mixture with more particles per pound is used.

Remember, the plant can't go out looking for the fertilizer. The fertilizer has to be placed close to the root of the plant. This is

especially true in the case of phosphates. In field trials it was learned that phosphates placed three inches away from the plant could not be assimilated by the plant. It had to be closer than that to be useful. Potash is somewhat more soluble than that in water, and nitrogen is still more soluble. However at times, phosphates can be the limiting factor in the growth of turf, especially to root systems.

Nimblewill Threatens Lawns

Gray-green, thickly matted foliage of nimblewill is increasing as a problem weed in lawns in the Midwest, according to Dr. Eliot C. Roberts, associate professor of agronomy and horticulture at Iowa State University, Ames.

To control this sturdy perennial, Dr. Roberts reports: "Only Zytron liquid combines freedom of injury to bluegrass and nearby ornamentals, and also gives some measure of nimblewill control." Zytron treatments made in July and August are more effective than those made earlier in the year, he adds.

Recommended rate of application is 1 pint to 5 gallons of water for 1,000 sq. ft. Zytron can also be used for spot treatments, Roberts points out.

"Since the spray must completely coat the plant for effective control, wet the foliage well at each application," Roberts cautions CAs, "and allow 2 to 3 weeks between applications."

Film on Water Weed Control

A new film illustrating water weed control with the new chemical Diquat is available from California Chemical Co.

Control of water weeds in irrigation and flood control channels, canals, ponds and lakes, is accomplished quickly, effectively and economically with Diquat, the company says.

Titled "Aquatic Weed Control," the 16mm color-sound film runs 18 minutes. It is available on free loan by writing to: L. F. Czufin, Manager, Advertising and Public Relations, California Chemical Co., 200 Bush St., San Francisco 20, Calif.



The West's first college turfgrass curriculum for golf course superintendents will be offered this fall at Mt. San Antonio College, near Pomona. Checking the area where demonstration fairway and greens will be installed this summer are, left to right, Frederick Bove, president of the Southern California Golf Course Superintendents Assn.; Wayne Morgan, University of California farm advisor; David Mastroleo, vice president, SCGCSA; and G. A. Sherman, dean of agriculture at Mt. San Antonio.

20-Plus Lectures Aim to Draw Record Attendance to 40th ISTC Convention

Plans for the 40th Annual International Shade Tree Conference Convention, now nearly complete, promise not only record attendance but a program of singular variety and relevance.

Set for August 16-21 at the famed Shamrock Hilton Hotel in Houston, Texas, the annual meeting includes addresses on a full range of topics from insects and nematodes which affect trees, to talks on, and displays of, "tools, gadgets, and equipment" for the arborist.

A panorama of subjects will be covered in more than 20 lectures; a full-fledged supplier's exhibit is in the offing (including both booths and field demonstrations); the social program is lavish; and there's an entire afternoon devoted to tours of surrounding tree-rich parks and residential areas.

Meeting concurrently with the International Shade Tree Conference, members of the National Arborists Association will hold educational sessions and conduct their annual business meetings and election of officers.

A special afternoon series of talks will be given over to problems of municipal arboriculture.

Official convention opening is Monday, August 17, when Prof. A. F. DeWerth of Texas A&M College in College Station, will speak on "Planting the Right Tree." He will be followed by Ernest Wertheim, a landscape architect from San Francisco, Calif., who is to discuss "Tree Planting in Large Commercial and Parking Areas."

Insect problems to be analyzed include the hackberry gall and southern pine beetles. There's also a session on nematode damage to trees.

Highlighting the public utility arboriculture section of this year's program is a speech, "Good Standards for Line Clearance," by Keith L. Davey, president of Davey Tree Surgery Co., Ltd., in San Francisco.

When National Arborists As-

sociation members hold their sessions, they'll hear addresses on sales practices and on professional tree pruning.

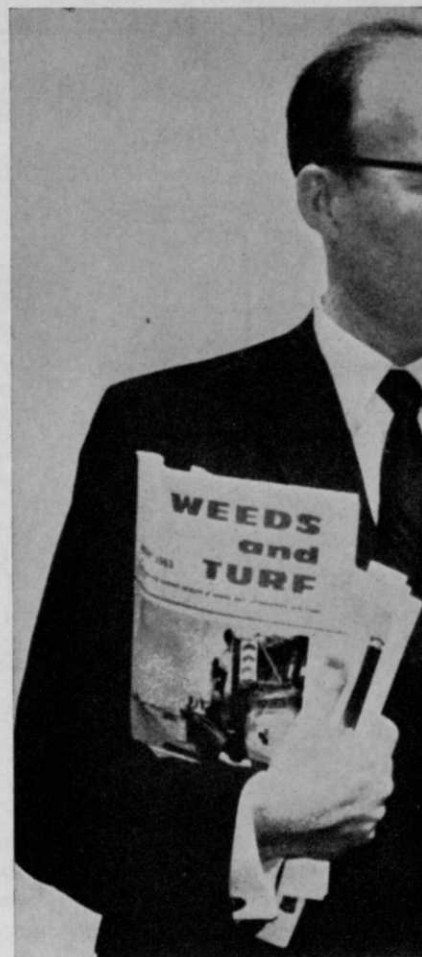
"A Training Program for Municipal Shade Tree Department Employees" is the address on tap for delegates who attend the municipal arboriculture portion of the program, held concurrently with the NAA meetings.

Lectures will be discontinued Wednesday so delegates can tour Houston residential areas, and participate in an extensive demonstration of complex new equipment designed to make the arborist's job easier. This is always a popular feature of the annual affair. Of course, suppliers with exhibits will have their booths open at regular intervals throughout the convention to allow delegates to ask questions about new chemicals and equipment.

Two subjects will comprise Thursday morning's program. The first, entitled "Tools, Gadgets, and Equipment for the Arborist," will be offered by Fred C. Galle, Director of Horticulture, Callaway Gardens, Pine Mountain, Ga. Second topic is "Tolerance of Trees to Deficiencies of Soil Aeration" by Dr. George Yelenosky, Department of Botany, Duke University, Durham, N.C. Dr. Yelenosky addressed the Toronto convention last year.

Of particular interest Thursday afternoon is a panel on tree diseases, which will emphasize littleleaf disease of pines and live oak decline. A cocktail party and dinner winds up the day.

More information about the 40th ISTC Convention is available from Dr. L. C. Chadwick, Secretary-Treasurer, International Shade Tree Conference, 1827 Neil Avenue, Columbus, Ohio 43210. Details about National Arborists Association activities are available from Dr. Paul Tilford, Executive Secretary, National Arborists Association, Box 426, Wooster, Ohio.



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LAMBSQUARTERS

(*Chenopodium album*)



Lambsquarters, an annual, known locally as white goosefoot, mealweed, and fathen, is a member of the goosefoot family, Chenopodiaceae. It reproduces by seeds each year, and is common in fields, neglected yards, gardens, waste places, and around urban parking lots.

Lambsquarters is sometimes confused with members of the pigweed family, but lambsquarters lacks the bristles and spines common to pigweeds.

Pale-green stems are characteristically smooth (not hairy) and ridged or angular; they stand erect and are moderately branched. Light reddish or greenish lines run the length of the stems which may grow to a height of 6 feet.

Leaves (2) are alternate, not directly opposite on the stem, simple, and irregularly toothed. Leaves have a whitish fuzz (meal) on the undersides. Lower leaves slightly resemble the outline of a goose footprint; upper leaves become longer and more pointed.

Small greenish flowers (3) without stalks are clustered irregularly on the ends of branches and in the axils of leaves (where leaf meets stem).

Lambsquarters' seeds (4) are almost 1/16 inch in diameter, lens- or disc-shaped, and glossy black. One plant can produce about 72,000 seeds. Seeds of this weed are often found as contaminants in seed mixtures.

The root (1) is a taproot and can be easily pulled from the soil.

Lambsquarters can be controlled by a foliage spray of 2,4-D at 1 lb. per acre if applied to plants that are actively growing.

A close relative of lambsquarters is Mexicantea, *C. ambrosioides*. This plant has longer leaves with wavy rather than toothed edges, and leaves are not mealy underneath. This pungent-smelling weed can also be controlled by treatment with 2,4-D.

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)

Weed Control Studies Set For 12th Fla. Turf School

Attention during the general sessions of this year's Florida Turf-Grass Management Conference will be focused on weed control in all its aspects, conference spokesmen announced recently.

Set for August 25-27 at the Student Service Center, University of Florida, Gainesville, the 12th annual seminar on turf is expected to attract over 500 delegates. More than 30 turf experts are slated to address the turf professionals in attendance.

Topics for the opening day's program will include talks on "Principles of Weed Control;" "Weed Identification;" "Aquatic Weed Control;" "Control of Grassy and Broadleaf Weeds;" and "Application of Pesticides."

General meetings will be followed by "Management Workshop Sessions" which will include such categories as golf turf, industrial sites, athletic fields, parks, cemeteries, and turf nurseries.

Special sessions are scheduled for horticultural sprayers and other lawn service agencies.

In conjunction with program emphasis on weed control, conference coordinators have planned an "Industry Hour" which will highlight herbicides and herbicide equipment, and which will feature demonstrations by suppliers. Coordinators this year are University of Florida staffers Dr. G. C. Horn and John F. Cabler.

To close out the conference on Thursday, speakers will offer 1964 Turf Research Reports on a survey of Florida turf nurseries; disease, nematode, insect, and nutrition studies; and results of technical turf research underway in South Florida and in Gainesville, which is located in the northern part of the state.

More information is available from Dr. Horn at 401 Newell Hall, University of Florida, Gainesville; or Walter D. Anderson, Executive Secretary, Florida Turf-Grass Association, 4065 University Blvd. North, Jacksonville 32211.



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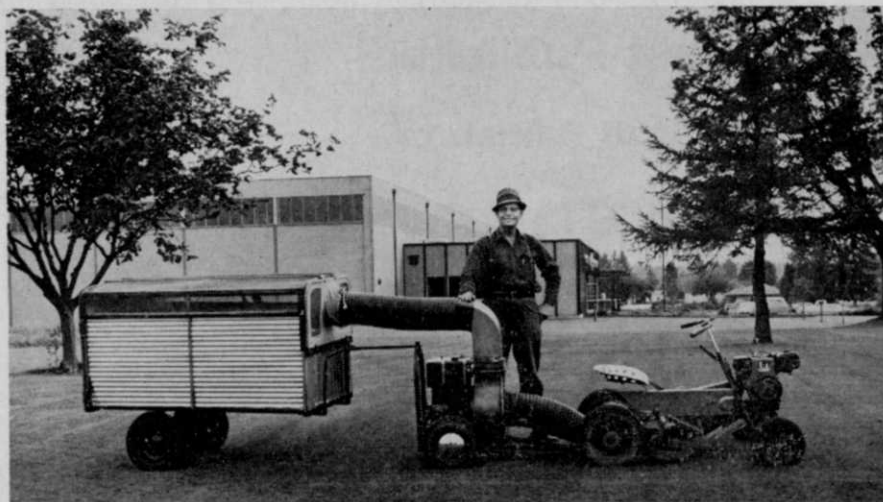
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Gif-Vac #1 Lawn Mower Attachment was invented by Oscar D. Gifford as an answer to a problem he encountered in his contract lawn maintenance business. Gifford, shown above with his machine, says the Gif-Vac will soon be in production and available to other turf managers.

Northwest Spraymen Organize

A new organization of chemical applicators in the Northwest was recently formed in Yakima, Wash. Named the Northwest Chemical Applicators Association, the group's membership includes basic manufacturers, distributors, ground and aerial applicators, and equipment manufacturers. Purpose of the organization is to coordinate the agricultural chemical industry in Washington, Oregon, and Idaho.

Officers elected are: Bob Cockburn, Early Bird Spray, Everett, Wash., president; John Yeats, Northwest Spray Co., Spokane, Wash., 1st vice president; Jerry Fox, Van Waters & Rogers, Seattle, 2nd vice president.

Board of directors include Henry Carsner, Northwest Weed Control, Tacoma, Wash.; Hugh Kendall, Allied Spray, Snohomish, Wash.; Hewitt Harrison, L. H. Butcher Co., Seattle, Wash.; Eldon Harvey, Snohomish Flying Service, Snohomish, Wash., and Ted Britten, Wolfkill Feed & Fertilizer, Monroe, Wash.

John G. Wilson was selected as executive secretary. The annual meeting will be held in Yakima in November. Address of the new association is 814 Second Ave. Bldg., Seattle, Wash. 98104.

Landscaper, Fed Up with Clippings, Designs Own Grass Removal Machine

When landscape maintenance company owner Oscar D. Gifford discovered he'd have to cut down on time spent removing clippings after mowing to increase his profits, he turned imaginative and came up with a machine for lawns that looks so good to him he's now decided to sell it to others.

Called the Gif-Vac #1 lawn mower attachment, the new device is said to pick up, immediately, freshly cut grass clippings, while a blower simultaneously partly chops up the clippings before throwing them into a trailer towed behind the mower. Clippings are thus removed before they amass on the ground.

Gifford says the trailer can handle one cubic yard of clippings before it must be emptied. The trailer's delicate balance and maneuverability allow landscapers' crews minimum effort in emptying the trailer, Gifford adds.

Gifford operates in Olympia, Washington, under the name of Giffords the Gardeners. He says he got the idea for his new Gif-Vac eight years ago while engaged in landscape maintenance on the Washington State Capitol grounds. He later went into business for himself, and now has such accounts as Continental

Can Company, whose grounds he is maintaining in the photo above.

Production and sales of the new invention are set to begin soon after a demonstration on the Capitol grounds in Olympia July 15th at 2 p.m. Those who wish advance information may write the inventor at 1003 North Central, Olympia, Washington.

U.S. Borax Has New Herbicide

Fast-killing action coupled with long residual effectiveness on all weeds and grasses is offered by a new weedkilling product designed to prevent reinfestation of treated areas.

Labeled Monobor-Chlorate Granular-D, U. S. Borax & Chemical's new herbicide is intended to reduce labor and expense in keeping fence lines, fuel storage areas, parking lots and ditchbanks free of weeds.

Diuron, an organic herbicide of very low solubility in water, has been added to a long-used borate, sodium chlorate mixture to produce the combination action. The product can be applied dry directly from the bag, or as a spray when dissolved in water. More information is available from the company at P.O. Box 75218, Sanford Station, Los Angeles, Calif.

Banvel-D Has Further Approval

Recent information from Velsicol Chemical Corp. states Banvel-D has been approved for control of Canada thistle and leafy spurge in noncroplands. Banvel-D, a broad spectrum herbicide, was previously approved for spring-seeded and fall-seeded wheat on a no-residue basis.

Approval was also obtained for top growth control of field bindweed and Russian knapweed on fence rows, roadways and other noncroplands. Canadian clearance has been given for control of Tartary buckwheat, wild buckwheat, green smartweed, ladythumb and cow cockle, and for top growth control of Canada Thistle and sowthistle in spring-seeded wheat and oats. Details are available from Velsicol at 341 E. Ohio St., Chicago, Ill.

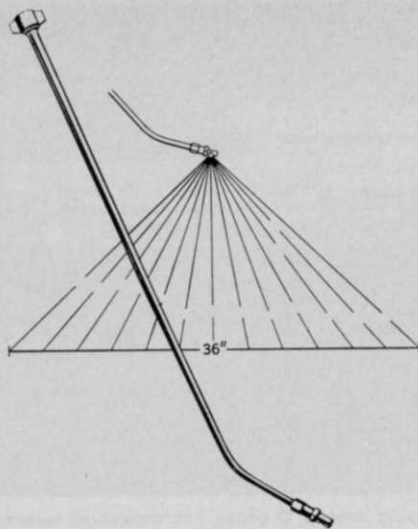
Guide to Horticulture Jobs

Information on career opportunities in horticulture is given in a new publication, "Exploring Horticultural Science as Your Career," available from the Department of Horticulture at the University of Minnesota.

Research in ornamentals and turf, plant breeding, garden store operation, and turf management are among the career possibilities listed. "Demand for professionally trained turf specialists is rapidly growing," a Department of Horticulture spokesman reports. "More than \$90 million is spent each year in Minnesota alone for commercial maintenance of turf."

Field laboratories at the Minnesota U., designed for research in turf management, include a 302-acre Landscape Arboretum, 20,000 sq. ft. of research greenhouse space, and 20 acres of experimental plots.

For a free copy of the career guide, write the Department of Horticulture, Institute of Agriculture, University of Minnesota, St. Paul 1, Minn.



Hudson's new extension tube is 18 inches long, fits 1/4-inch male pipe thread.

Extension/Nozzle New From Hudson

Spraying large areas of exposed surfaces, such as lawns, is said to be easier and faster with the new Hudson Broad-Spray Extension Set, recently developed by H. D. Hudson Mfg. Co.

The nozzle is said to spray a sharp, nondrift spray pattern

about 36 inches wide at pressure up to 50 lbs. As an accessory on compression, knapsack, or small power sprayers, the extension is ideal for lawn weed control, the company says.

More information is available from the manufacturer at 589 East Illinois St., Chicago 11, Ill.

Stop Oyster Shell Scale

Oyster shell scale, an insect that attacks trees and shrubs, can be controlled with malathion, nicotine sulphate, or DDT applied as sprays, according to William Hantsbarger, extension entomologist at Colorado State University, Fort Collins.

Insect attacks such shrubs and trees as ash, cotoneaster, poplar, lilac, dogwood, and willow. Oyster shell scale is identified as similar in texture and color to an oyster shell, as its name implies.

For complete control, two sprays are usually necessary, spaced 10 to 14 days apart, Hantsbarger recommends.



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Aerial view shows the effect of good landscaping around Organon Pharmaceutical Laboratories, West Orange, N. J. Trees, turf and pond create a favorable impression to visitors and make the factory a good neighbor in this community.

N. J. Applicator Installs and Maintains Grounds of New Suburban Research Center

Attractive grounds surrounding the new Organon Pharmaceutical Laboratories in West Orange, N.J., demonstrate how a contract applicator both installs and maintains the entire landscape for a suburban research complex.

This 7½-acre plot was produced "from scratch" by Alfred J. Luciano, owner of A-L Services, Whippany, N.J. The original construction of Organon's facilities left buildings perched on an unsightly rock pile, a far cry from the present vista of turf, trees, and even a fresh-water pond.

After filling in topsoil, grading and planting, Luciano selected a number of specialized chemical herbicides to help maintain the "well-groomed" look of several portions of the tract.

Full-season weed control in the parking lot is achieved with Amizine herbicide, a soil-sterilant said to effect top kill of standing weeds and to prevent resprouting of weed and grass seeds.

Guard rails along the driveways and narrow border strips around the buildings also receive this treatment to reduce the labor and cost involved in close trimming.

The steep embankment descending to the pond is covered

with a well-established stand of honeysuckle vines to prevent erosion.

Like many "CAs," Luciano finds it practical to offer suburban centers like this a full line of vegetation maintenance services.

Weed-eating Beetle Found

Scientists have found a flea beetle in South America that eats only alligatorweeds. They plan to import the beetle in an effort to control alligatorweeds in this country.

The experiment, headed by U. S. Department of Agriculture scientists, will be conducted in the Savannah (Georgia) Wildlife Refuge and in alligatorweed-infested waters north of New Orleans.

Adkins-Phelps Building Plant

The Adkins-Phelps Seed Co., North Little Rock, Ark., is building a new pesticide and herbicide manufacturing plant. The 25,000-square-foot plant is being erected in the LeFevre Industrial Park and is expected to be completed Nov. 15.

Adkins-Phelps is a major distributor of farm chemicals in Arkansas and the new plant marks a first venture in the manufacturing field.

Skyworker Has Hydraulic Tools

Recent developments have made available a line of open-center hydraulic tools for use with Skyworker hydraulic aerial lifts, according to Glen W. Way, Skyworker president.

"There are many off-the-ground operations where hydraulic tools are indicated," Way said. "In certain tree trimming and utility line work applications, these tools provide the desired extra power."

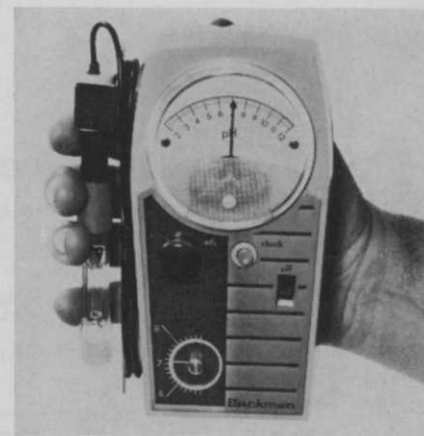
The company can now meet requests that specify hydraulic aerial lifts be equipped for hydraulic tools, Way reported.

For more information write to Dept. WT, Hughes-Keenan Div., U. S. Air Conditioning Corp., Delaware, Ohio.

Florida Approves Scope

The new insecticide, Scope Lawn Chinch Bug Killer, was recently approved for use on lawns and other outdoor areas by the state of Florida, announces Chemagro Corp. of Kansas City, Mo.

A carbamate, the insecticide is designed as an outdoor insecticide for the control of chinch bugs, earwigs, ants, cockroaches, mosquitoes, and other insects. Residual control lasts 6 to 8 weeks.



This Pocket pH Meter will give accurate, rapid pH measurements in the laboratory, plant, or field, says the manufacturer. Powered by flashlight batteries, the meter is operated by inserting an electrode into soil which in turn delivers the pH reading. Meter range is from 2 to 12 pH, readable in 10ths. For further information write Joe Hauber, Beckman Instruments, Inc., 2500 Harbor Blvd., Fullerton, Calif.

AUGUST SHADE TREE ISSUE

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New Controls to Help Combat Dutch Elm Disease; North Carolina Reports Spread of Elm Problem

A new chemical compound, Vapam, can now be used to kill roots halfway between trees and effectively stop movement of Dutch elm fungus from infected to healthy trees through the root systems.

Another new development is the use of a systemic insecticide, Bidrin, to control the elm bark beetle. The insecticide is injected into the trunk, moves throughout the tree, and kills the beetle when it feeds on the tree.

Bidrin holds considerable promise that it may be the answer to the control of the elm bark beetle, according to Herbert Johnson, extension plant pathologist at the University of Minnesota. Large-scale tests are currently being conducted in Wisconsin. Although not available at present, Bidrin may be ready after the tests.

Several N.C. Counties Hit

Reports from North Carolina indicate that Dutch elm disease has now spread to several other counties. It was first discovered last September at Greensboro. The disease has since been found as far west as Davidson county, north to Rockingham and Caswell counties, northeast to Northampton and Halifax, and east to Edgecomb and Nash.

Known to exist in these widely separated counties, the area encompassed is not yet blanketed by the disease, explains Fred Whitfield, extension forestry specialist at North Carolina State College.

"The infection is spotty within this area," Whitfield said. "But no comfort can be found in this fact since it spreads rapidly and can't be completely controlled."

North Carolina is following sanitation practices in its effort to contain Dutch elm disease. However, it is found that in many cases individual property owners won't take the responsibility to destroy infected elm wood. "Because of this," Whitfield says, "it becomes necessary for local officials to recognize

the danger elms are in and take action on a community basis."

At the University of Minnesota, Herbert Johnson reminds arborists that of the many things that can happen to elms, most are not related to Dutch elm disease. Dutch elm and other wilt diseases have fairly distinct symptoms.

If wilting is noted, take a section about a half inch in diameter and make a clean cut across it. If there is wilt fungus present, a brown line or series of dots in the white wood appears just under the bark.

A laboratory test is needed to determine whether it is Dutch elm or some other wilt fungus. This test can be made at most experiment stations.

The most effective method to control Dutch elm disease is sanitation—destruction of all dead and dying elm wood. Control of the elm bark beetle consists of dormant spraying in the spring or fall. Spraying should be done only on elms in a radius of 300 to 500 feet from locations of known infected trees.

The bark does not show Dutch elm symptoms. Miscellaneous insect tunnels under the bark may

be caused by several insects. The distinctive tunnels of the elm bark beetle are easily identified. Elm wood containing such tunnels should be destroyed immediately, Johnson advises.

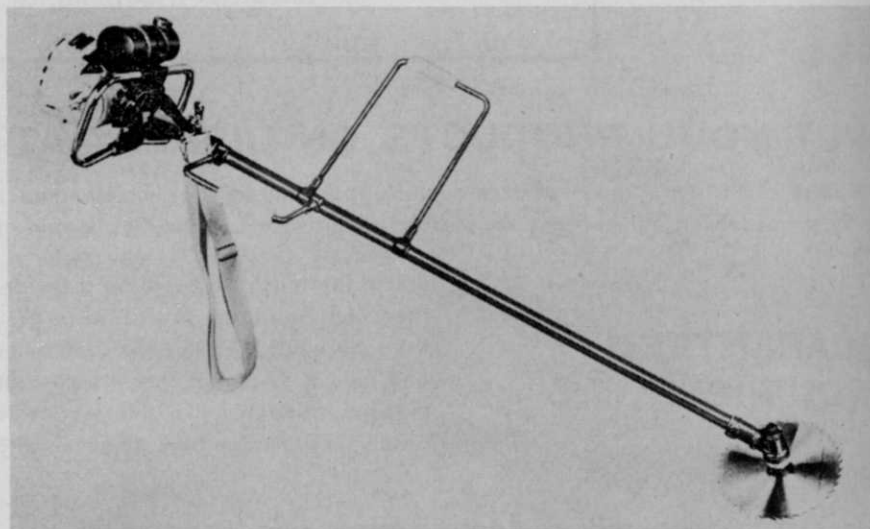
Illustrations and descriptions of Dutch elm symptoms are in Minnesota Extension Folder 211, "The Dutch Elm Disease," available from the Bulletin Room, Institute of Agriculture, St. Paul, Minn. 55101.

Gas Co. Enters Fertilizer Field

Entry into the fertilizer business, with plans to construct a fertilizer complex, were announced recently by Lone Star Producing Co., a wholly owned subsidiary of Lone Star Gas Co., Dallas, Texas. An investment of more than \$20 million is planned, the firm revealed.

Newly-formed Chemical Division of Lone Star Producing Co. will become a basic producer of nitrogen products, made from natural gas, for use in agricultural fertilizers, a company spokesman stated. Fertilizer complex will be located in the heart of the Texas Blacklands area.

"We expect to begin operation of the complex in approximately 18 months," Roy E. Jury, vice president in charge of the Chemical Division, reported.



This medium-duty brush cutter is powered by a 2½ hp, 2-cycle gasoline engine and is said to cut through growth two inches in diameter with a scything motion. It will saw through trees five inches in diameter. An all-position diaphragm carburetor permits tipping the unit to prune low branches overhead, Rowco Mfg. Co., the producer, says. Named the Brushking Model 330, the machine's carrying weight is 28 pounds. Additional information is available by writing Dept. 330, Rowco Mfg. Co., 48 Emerald St., Keene, N. H.

Maryland U. Entomologist Tells of Hemlock Scale Control

The range of *Fiorinia externa* Ferries in Maryland is restricted to the city of Baltimore and certain adjacent sections of Baltimore county. It is a serious insect pest of the hemlock. Waxy secretions produced by the scales of this insect give heavily infested trees a whitewashed appearance. The feeding of the insects causes needles to turn pale.

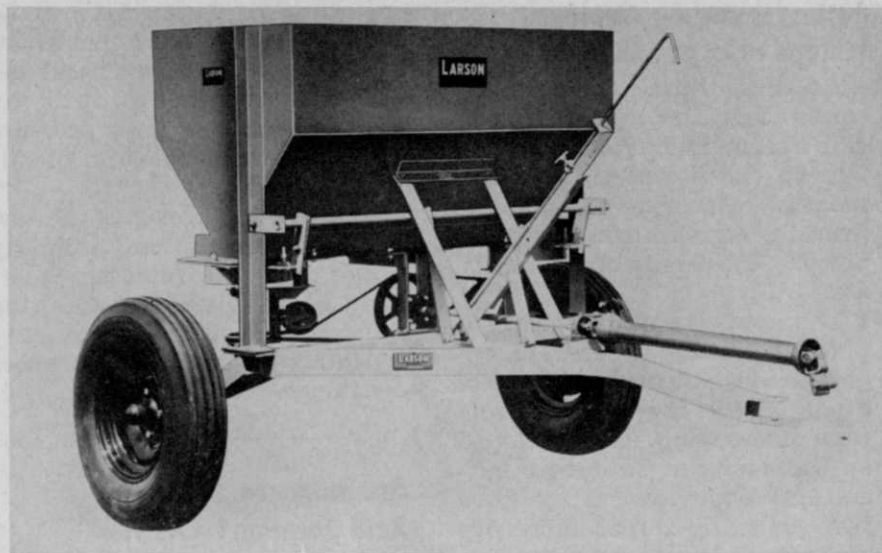
The adult female lives within the cast skin of the last immature molt. She is further protected by the hard outer covering which is typical of all armored scales, explains Charles W. McComb, University of Maryland Entomology Department. After the last molt, she begins to lay eggs and eventually fills the posterior portion of the scale with eggs.

Young scale, known as crawlers, hatch from the eggs and escape from under the female covering. These are active insects with legs and antennae which can be seen clearly only with the aid of a magnifying glass. After spreading over the tree, they settle down, insert their mouthparts into the plant, and begin to feed on the plant juices. After molting, the insects lose their legs and antennae and become fixed in one place. Crawlers occur in greatest numbers in the spring and fall.

The insecticide Dimethoate has been found to give excellent control of this pest, killing not only by contact, but by penetrating the foliage and killing by systemic action. When the spray is applied all parts of the trees, especially the underside of the needles, should be drenched with the spray, but do not apply beyond point of runoff, McComb says.

Spray should be applied in late May and if trees are heavily infested a second spray should be applied 30 days after the first. In heavily infested areas treatment should be repeated each year to prevent reestablishment of the scale.

In applying the insecticide, read the label on the container carefully and be sure to follow all directions. An alternate spray



A new blade design has proved highly effective for positive spread under the most difficult and variable field conditions, reports L. L. Larson Machine, Inc., Princeville, Illinois. Exhaustive testing of numerous blade designs has resulted in a new prototype for the Larson BroadCaster spreader-seeder, shown here. Another advancement is a telescoping on-off feed control which is adjustable to fit the most convenient position for the operator. Details are available from Larson.

schedule, using oil and DDT-malathion sprays, is also available. For information on this alternate schedule, write to the Department of Entomology, University of Maryland, College Park, Md.

New Brochure on Urox

How to destroy unwanted vegetation on industrial, railroad, highway, and noncrop farmland sites is explained in a new brochure from Allied Chemical's General Chemical Div.

Titled "How to Use Urox Weed Killers," the brochure discusses risks involved in letting unwanted vegetation flourish. It also describes which of the seven Urox herbicides are most effective against particular weeds. Application rates are included. Applicators may obtain a copy by writing General Chemical Div., P.O. Box 70, Morristown, N. J.

Soil Steaming Data Offered

Technical information on methods of heat treatment of soil through the use of mobile steam boilers is available in a large booklet from the Clayton Mfg. Co., El Monte, Calif.

The booklet, titled "Low Cost Soil Sterilization," illustrates methods of steam application to

soil areas. Much of the material, it is said, has been prepared by leading authorities in this field, and should be of value to private companies offering soil sterilization services, as well as nurserymen, and vegetation maintenance supervisors.

The booklet, Form No. C-1459, is available from the company at the address above.

Crabgrass "Cane" Marketed

Spot eradication of crabgrass is facilitated for homeowners with a new "cane" crabgrass killer, according to the manufacturer, Judd Ringer Corp.

Operating on the same principle as the pill-shaped "Karttridges" that have been used for eradication of dandelions, plantain, and other broad-leaved weeds, the dry, capsule-like "Karttridge" is placed in a "Killer Kane" tube which is then filled with water.

"Dissolving rapidly, this capsule produces an effective herbicide which is released in measured squirts when weeds are touched with the spray tip of the cane," a company spokesman claims.

For more information on the crabgrass killer, designed for resale to do-it-yourselfers, write the Judd Ringer Corp., 3355 Republic Ave., Minneapolis 26, Minn.

Better, Faster Ag Airplane Is Hope of U. of Cal. Team

An agricultural airplane that squirts fertilizer, seed, or pesticide rearward out of its wings will be test-flown within a few months, according to reports from the Agricultural Extension Service, University of California, Davis.

The new concept of aerial application, using a separate engine to blast air backward out of a long slot in the upper trailing edge of the wing, was developed by University of California agricultural engineers. They have two goals: To spread more dry material in less time and to better control distribution patterns.

These goals, of course, could reduce overhead expenses, and thus increase profits, for custom aerial applicators.

Ground tests of the new "controlled-distribution" wing have encouraged UCD engineers, Norman Akesson and Wesley Yates. The plane itself, as well as the flight design of the wing, is the brainchild of Kenneth Razak, dean of the University of Wichita (Kansas) college of engineering. Razak heads a private group now building a prototype plane for flight tests in Northern California late this year.

The new wing, with internal ducts delivering a precisely controlled stream of air outward along most of its length, is designed for:

1. Faster and more efficient spreading of fertilizers and other dry material. By forcing the material out with the stream of air, tremendous volumes—as high as 50 lbs. per second—are possible. This, the engineers predict, will permit operating speeds up to 140 miles per hour. The wide swath made possible by delivery through the wing will also boost acreage per hour, the California report maintains.

2. More uniform spreading of both dry material and sprays. By controlling pressure and distribution of the air jet, as well as flight speed and other factors, the engineers can lay a relatively even blanket of material across the ground. If necessary, the rearward air flow can be adjusted to match the plane's

speed—so dry material can be launched into the air without forward motion, to be spread and carried onto the ground by whirling vortices of air pressure created by the plane and the air jet.

These advantages give the new plane, which is only slightly larger than the familiar Stearman biplane, about twice the Stearman's potential productivity in acres per hour, the report concludes.

Are Nitrogen Fertilizers Acid Forming? CAs Ask

Frequently contract applicators ask whether or not nitrogen fertilizers are acid forming. It all depends on the source of the nitrogen, according to researchers at the University of Maryland Extension Service.

Many different sources of nitrogen are used successfully on crops, including turf, Dr. James R. Miller, Maryland Department of Agronomy head reports. These include anhydrous ammonia, ammonium nitrate, ammonium sulfate, calcium cyanamide, nitrogen solutions, sodium nitrate, urea, and others.

Many of the nitrogen fertilizers used on crops are indeed acid forming. However, when one considers the amount of nitrogen applied to most crops, the acidity is small and can be corrected with a good liming program. For example, for each 20 lbs. of Nitrogen (N), supplied from anhydrous ammonia, ammonium nitrate, or nitrogen solutions of urea, it takes 36 lbs. of lime (calcium carbonate) to neutralize the acidity created by the fertilizer.

Suppose 60 lbs. of nitrogen is applied per acre, Dr. Miller says. This means that 108 lbs. of lime would be required to neutralize the acidity formed by the nitrogen compounds mentioned immediately above.

The nitrogen fertilizers that are basic forming (opposite of acid) include calcium cyanamide, calcium nitrate, potassium nitrate, and sodium nitrate. For example, an application of 60 lbs. of nitrogen from calcium



Meeting Dates

American Association of Nurserymen Annual Convention, Statler-Hilton Hotel, Boston, Mass., July 18-22.

Southern Nurserymen's Assn. Meeting, Queen Charlotte Hotel, Charlotte, N.C., Aug. 2-4.

Wisconsin Park and Recreation Society Meeting, McKay Nursery, Waterloo, Wis., Aug. 13.

Rutgers University Turfgrass Field Days, New Brunswick, N. J.: Lawn and Utility Turf, Aug. 12; Golf and Fine Turf, Aug. 13.

International Shade Tree Conference, Shamrock Hilton Hotel, Houston, Tex., August 15-21.

Iowa Nurserymen's Assn. Meeting, Town House, Cedar Rapids, Iowa, Aug. 20-21.

Florida Turf-Grass Assn. 12th Annual Turf Conference, Gainesville, Aug. 25-27.

National Agricultural Chemicals Assn. Annual Convention, The Greenbrier, White Sulphur Springs, W.Va., Sept. 8-11.

Midwest Regional Turf Foundation Field Days, Purdue Univ., Lafayette, Ind., Sept. 14-15.

Ohio Agricultural Experiment Station, Lawn and Ornamentals Day, Columbus, Ohio, Sept. 15.

Illinois Turfgrass Foundation Field Day, University of Illinois, Urbana, Sept. 18.

Society of American Foresters Annual Meeting, Hilton Hotel Denver, Colo., Sept. 27-30.

Central Plains Turf Grass Foundation Meeting, Umberger Hall, Kansas State University, Manhattan, Oct. 21-23.

Northwest Chemical Applicators Assn. Annual Conference, Chinoook Hotel, Yakima, Wash., Nov. 30-Dec. 1.

cyanamide forms basicity (base) equivalent to 171 lbs. of lime. In the case of sodium nitrate, the same amount of nitrogen forms basicity equivalent to 108 lbs. of lime.

Machine Removes Water Weeds

Every type of aquatic weed, in fresh or salt water, in lakes, streams, or irrigation canals, can be effectively controlled with an Aquatic Harvester, according to Aquatic Controls Corp., which makes the machine.

Harvester is actually a self-propelled water vehicle which cuts and harvests weeds up to a depth of 5½ ft. Excess water is pressed out, and weeds are lifted hydraulically to the rear. When the Harvester is loaded, weeds may be dumped on a service barge, and taken to trucks for disposal on land.

Treated water is immediately usable, and the Harvester can work early in the season, when many plants have reached one-half of maximum growth, the manufacturer claims.

For more information on the machine, write to Aquatic Controls Corp., Hartland, Wis.

Sprays and Dusts Both Have Advantages, Partyka Says

Which is best, spraying or dusting? If done correctly, both will do a good job controlling plant diseases, according to Dr. Robert Partyka, extension plant pathologist at Ohio State University, Columbus.

Many factors, such as area to be treated, weather conditions, type of plants, fungicides to be used, and time available, influence decision. Sometimes both methods should be used, the OSU specialist states.

Dusts are easy to apply, can be put on rapidly, and duster does



Aquatic Harvester is said to control water weeds in lakes, streams, and canals by cutting submerged weeds up to a depth of 5½ ft., and depositing them in a service barge. Machine, manufactured by the Aquatic Controls Corp. in Hartland, Wis., can harvest a full acre of weeds per hour, the firm claims.

not have to be cleaned after using, Dr. Partyka points out. Apply dusts when there is little wind, such as early morning or evening. Slight moisture is desirable on plants so dust will stick. But dusting plants wet with rain or dew may produce long-lasting splotchy areas. A dusty film will dull the glowing color of many flowers or plants if applied too heavily, Dr. Partyka cautions contract sprayers.

Sprays can be applied on windy days and on slightly wet foliage without a splotchy effect remaining, the pathologist notes. However, sprays must dry on the foliage before heavy dews or rain occur; otherwise protective material will be washed away. Rinse sprayers between each kind of solution and wash them out at the end of the day or spray period, Dr. Partyka recom-

mends. Occasionally sprayers must be taken apart and thoroughly cleaned. Unless a liquid fungicide is used, sprays must be constantly agitated to prevent material from settling out, he says.

New MEMMI for Turf Ills

An emulsifiable liquid concentrate turf fungicide known as MEMMI .8EC has been introduced by Velsicol Chemical Corp. MEMMI is said to afford low-cost protection against such turf diseases as dollar spot, brown spot, copper spot, and melting out.

Velsicol says the formulation mixes in immediately, needs no constant agitation, doesn't clog nozzles, and leaves no sediment to clean out of spray tanks.

Details and use information is available from Velsicol at 341 E. Ohio St., Chicago, Ill. 60611

New TWIN TANK model

POWER KNAPSACK MISTBLOWER DUSTER

Spray, dust, wet-dust, and apply granules with the same machine; no extra attachments needed.

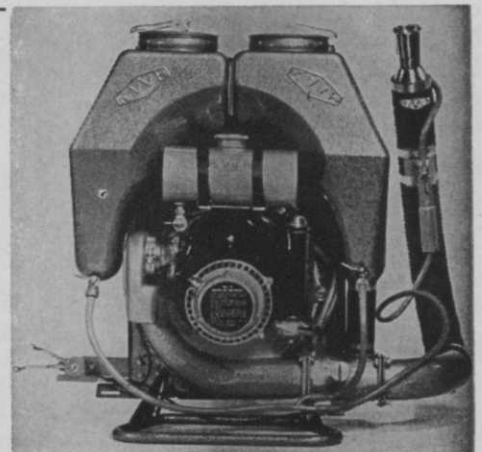
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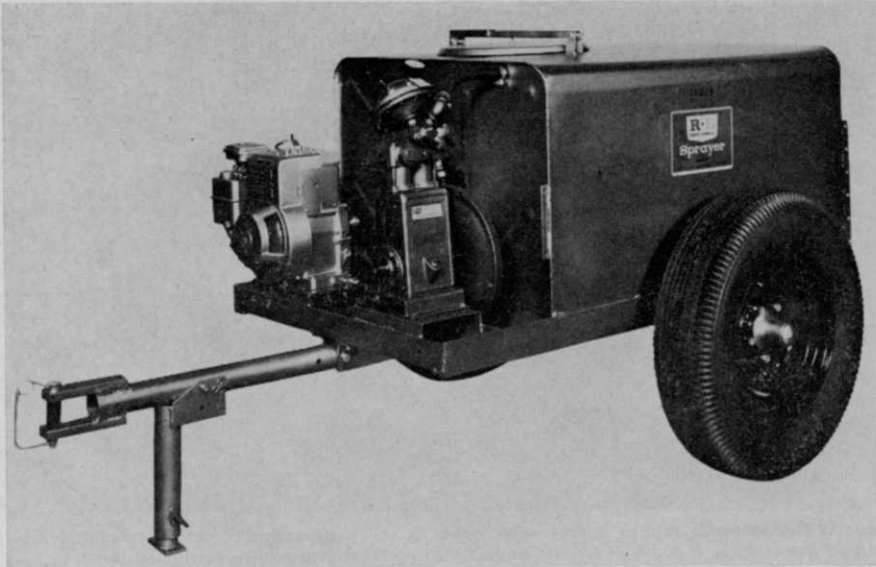
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North Caldwell, N. J.





Root-Lowell's new "Durapower" sprayers are said to have a wide range of applications in vegetation maintenance.

Root-Lowell's New All-Purpose Durapower Sprayer Introduced

Introduction of a new, all-purpose power sprayer line to be marketed under the name of "Durapower" Sprayers has been announced by the Root-Lowell Corp. of Lowell, Mich.

Company officials say the new sprayers feature an all-new two-cylinder positive piston pump in choice of 5 or 10 gpm models, said to produce smooth, pulsation-free discharge at working pressures to 400 psi.

Operating features include a prepressurized accumulator that

will not become waterlogged, leakproof piston shield that prevents lubricant dilution, self-flexing pump cups in ceramic cylinders, and an automotive-type oil splash lubrication system.

Tank capacities range from 50 through 300 gallons in both wheel and skid-mounted models, so that the machines may be used for lawn and shrub spraying, weed and brush control, and tree applications.

Descriptive literature and prices are available from Root-Lowell Corp., Lowell, Mich. 49331.

Literature you'll want .

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

Herbicide-Soil Stabilizer Mulch Combinations for Weed Control of Horticultural Crops, Bulletin B-601, Agricultural Experiment Station, Oklahoma State University, Stillwater, Okla.

Industrial Weed and Brush Control, Information Kit, Chipman Chemical Co., Inc., Bound Brook, N.J.

Field Bindweed, Bulletin L-48, Agricultural Extension Service, University of Wyoming, Laramie.

Recommendations for Commercial Lawn Spraying, Bulletin S-121A, University of Florida Experiment Station, Gainesville.

Weed Control Practices for Home Lawns, Bulletin 61-7, 8 pp. 1961, College of Agriculture Extension Service, University of Connecticut, Storrs.

Prevention and Control of Crabgrass in Lawns, Bulletin 642, 8 pp. 1961, Connecticut Agricultural Experiment Station, New Haven.

Bindweed: How to Control It, Bulletin 366, 40 p. il. Kansas Agricultural Experiment Station, Manhattan.

Carolina Lawns, Extension Circular No. 292, 16 p. il., Agricultural Extension Service, University of North Carolina, Raleigh, N.C.

Chemical Control of Crabgrass in Lawn Turf, 4 p., Agricultural Experiment Station, University of Delaware, Newark, Del.

Suppliers Personnel Changes

Amchem Products, Inc., Ambler, Pa., has appointed Richard C. Miller as lawn and garden products sales representative in Michigan and Indiana, according to marketing vice president M. B. Turner. Amchem says Miller has nine years experience in the chemical industry in Indiana.

The Ansul Company has just named a new product sales manager for its line of agricultural chemicals. He is Robert E. Lucas, who was formerly product manager for the firm's arsenicals. Lucas is a graduate of the University of Minnesota and has been with Ansul since 1962. He will be headquartered in the company's home offices in Marinette, Wis.

Diamond Alkali Co. has selected Dr. H. D. Woofter as its new Senior Agricultural Chemicals Specialist in the firm's Development Department. Woofter's Ph. D., which is in agronomy, was obtained at Ohio State University. He has also been a County Agricultural Agent in West Virginia, according to Diamond's Director of Development, A. G. Kridl.

Whip Club Gall in Conn.

The insect responsible for a deformity called dogwood club gall was controlled in 1963 with repeated sprays of either DDT or Sevin in experiments at the Connecticut Agricultural Experiment Station, according to test results just released.

Station staffer John C. Schread, who conducted the tests, said the gall is a problem in only one Connecticut location, but occurs elsewhere in ornamental plantings of dogwood and on trees growing naturally.

Complete control of the gall-inducing insect, a tiny midge, was effected with six sprays of Sevin or DDT at weekly intervals from late May through June. Three sprays did not give satisfactory control, while five gave nearly complete control.

More information on dogwood club gall and its control is given in Circular 225A, available from Publications, Box 1106, New Haven, Conn.

Controlled Irrigation and Deep Soil Aeration Help "Old Turf," Report Says

Deep soil aeration and controlled irrigation can significantly improve old golf greens and other fine turf areas, making them tough but tender and springy, according to a recent report from the University of California (Riverside) Agricultural Extension Service.

Attempts to increase turf vigor and resilience have increased longstanding problems of diseases, poor root systems, and low water penetration rates. Increased irrigation to soften a putting green surface, for example, may leave water on greens, seriously reduce the air available to roots, scald foliage in the summer, and increase soil compaction.

The Arrowhead Country Club in San Bernardino, during the winter of 1961, requested assistance in their program to replace and repair putting greens. Of immediate concern were two 35-year-old greens with typical characteristics of old-green maladies: surface soil stratification, compaction, impaired root penetration, unhealthy root system, and an anaerobic soil condition sufficiently severe to develop a strong odor after exposure of plugs to air for 20 to 30 minutes. University of California farm advisors Chester Hemstreet and Fred Dorman agreed to help with the program.

The researchers tried a number of turf rejuvenation methods on Green Number 4 at the club. Two-thirds of the length of the green was reserved for "deep aeration" treatment; the other third, about 21 feet, was used as a control. The west portion was treated by placing 3/4-inch diameter holes on 2-inch centers to a 6-inch depth. Similar holes in the east portion were placed on 4-inch spacings.

Aerifier holes were filled (vertically mulched) by Hemstreet and Dorman with a sandy top-dressing mixture containing 25% redwood sawdust, plus all major and minor nutrients. The green was irrigated twice and then

given a light top dressing of fine sand, then "squeegeed" smooth.

Next the entire green was aerified with rotary spoon-type equipment. The holes were left open to facilitate movement of irrigation water into the areas between the "deep aerified" holes.

A striking increase in resilience of this putting green was detected by the experimenters immediately after the hand-aeration holes were completed. Heavy irrigations were no longer necessary to supply injured roots with adequate moisture and increase green surface resilience.

Water infiltration tests indicated a considerable increase over the pretreatment rates. Prior to deep aeration treatments, there was excessive water accumulation on the surface after approximately 1/4-inch of water was applied—a 20 to 30 minute irrigation. For periods up to 5 hours, the soil surface would yield water when walked on after 1/2-inch of water was applied. After treatment, casual or excessive water accumulation appeared only in the control or untreated area and on a 3 or 4 sq. ft. area where slope was a problem.

Hemstreet and Dorman feel that the long period of minimum water application increased the air in the soil and allowed the layers of partially decomposed organic matter (old buried thatch) to decompose.

Dorman reported that large-diameter deep-aerifier holes placed through the surface of an old bentgrass green successfully provided adequate drainage.

This deep aeration or vertical mulch procedure, plus irrigation water application control, increased root activity at deeper soil depths and decreased root density at the shallower depths.

The deeper root system and possibly the hardening of the turf from reduced water application, resulted in less turf injury when the interval between irrigations was lengthened, thus reducing the total amount of water applied and time spent in application, it was concluded.

W & T Mailbox

Drives English Style



I have been receiving your magazine for over a year now and have found many articles of great interest. I look forward to each publication.

Being involved in weed and brush control work on state and county roads, I thought your readers might be interested in steps we have taken towards doing a better job, easier and safer.

By going to righthand-drive equipment (see photo above) we have put the applicator "on top of his work." Leaning towards one-man-operated rigs for spot work and shoulder applications, time is saved and possibilities of damages from drift are greatly reduced. The cost of this equipment, factory ordered, is only slightly above standard models, some \$90.00 for our one-ton rig. Anyone working on roadways, I am sure, will find this type of equipment beneficial to his program.

M. R. Hubbell

Supervisor
Jackson County Weed Control
Medford, Oregon.

May Pix Were VPI's!

We would like to request several copies of your May issue. In the article, "Brush Up on Brush Control," pages 12 and 13, pictures which were taken here at the Virginia Agricultural Experiment Station were used, and we would like very much to have several extra copies for our files.

Dr. W. E. Chappell

Professor of Plant Physiology
Virginia Polytechnic Institute
Blacksburg

Somehow we failed to credit Dr. Chappell for his kindness in supplying us some of the photographs used in the brush control article. Readers who perform brush control work are all aware of Dr. Chappell's work at VPI, which has been helpful to many applicators around the country. Ed.

Classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds 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.

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OUR COMPANY is now operating in termite and pest control. We wish to expand into weed control, turf maintenance, tree care, etc. If you qualify to form and manage this new department, kindly give education details, experience, reference and personal data. Write Box 512, Havertown, Pa.

MISCELLANEOUS

TO EMPLOYERS who advertise for men! The letters you receive in answer to your advertisements in WEEDS and TURF are submitted by each of the applicants with the hope of securing the position offered. When there are many applicants it frequently happens that the only letters acknowledged are those of promising candidates. (Others do not receive the slightest indication that their letters have even been received, much less given any consideration.) These men often become discouraged, will not respond to future advertisements and sometimes even question if they are bonafide. We can guarantee that every advertisement printed in WEEDS and TURF is duly authorized. Now won't you help keep our readers interested in this advertising by acknowledging every application received, even if you only return the letters of unsuccessful applicants to them marked, say, "Position filled, thank you"? If you don't care to reveal your identity mail them in plain envelopes. We suggest this in a spirit of helpful cooperation between employers and the men replying to Help Wanted advertisements. Put yourself in the place of the other fellow.

Agri-Humus Co. Formed to Market "Humus-Plus"

Formation of a sales corporation in Fresno, Calif., to market a new 50% humic acid concentrate for turf and crop fertilization, has been announced by William S. Kimbro, president of the firm, known as Agri-Humus Co., Inc.

The product will be sold nationally under the trade name of Humus-Plus.

"Humus-Plus," Kimbro reports, "is a new product (of the Baroid Div. of National Lead) refined from natural organic deposits of lignite now being mined and processed for our company. The product is prepared in dry granular form, and is readily

mixed with other fertilizer materials and may be applied with all conventional application equipment at planting time or side dressed after planting."

Humus-Plus is reportedly used extensively in turfgrass areas.

Details are available from the company at 317 West Voorman Ave., Fresno, Calif.

Too Few Youth Seek Turf Jobs, Californian Says

Jobs for young people in the turf industry are becoming increasingly plentiful in America, but job applicants are scarcer, according to a recent University of California (Riverside) bulletin.

A group of men in Los Angeles, however, hopes to remedy that situation within a few years. A University of California Farm Adviser, Wayne C. Morgan, is working with educators, golf course officials and members of the turfgrass industry to drum up interest in turfgrass teaching programs at junior and senior high school levels and college levels.

Aim is to interest youth in turfgrass as a career, provide learning opportunities both in the classroom and on the job, and finally have trained candidates become available for work at golf courses, for contract turf maintenance companies, parks, freeways, and similar areas where turf is growing increasingly important.

Lester O. Matthews, supervisor of secondary agriculture in the Los Angeles City Schools, said a similar shortage of qualified people exists for turf and landscaping jobs with the California State Division of Highways (65 short), the Los Angeles City Schools (45 short), and the Los Angeles City Recreation and Parks System (148 short).

Study Red Spider Resistance

Strong resistance of the red spider to pesticides is a big problem to Massachusetts flower growers and ornamental maintenance companies, according to Dr. John A. Naegele, Professor of Entomology and head of the

Advertisers

INDEX TO ADVERTISEMENTS

Amchem Products, Inc.	May
The Ansul Co.	3rd Cover
John Bean Division, FMC	June
Buffalo Turbine Agricultural Equipment Co.	5
California Chemical Co., Ortho Div.	June
Chipman Chemical Co., Inc.	May
Diamond Alkali Co.	May
Doggett Fison Co.	33
E. I. duPont de Nemours & Co., Inc.	June
Geigy Agricultural Chemicals	7
Harder Arborist Supply Co.	June
Hooker Chemical Corp.	May
Kemp Manufacturing Co.	May
Morton Chemical Co.	4, 4th Cover
The F. E. Myers & Bro. Co.	June
Niagara Chemicals Division, FMC	2nd Cover
Pennsalt Chemicals Corp.	June
Robert B. Peters Co., Inc.	33
Rowco Manufacturing Co., Inc.	6
Ryan Equipment Co.	June
Solo Industries, Inc.	3
Stauffer Chemical Co.	May
Stephenson Chemical Co., Inc.	23
Sun Industry, Inc.	May
Union Carbide Corp., Chemicals Div.	June
Vandermolen Export Co.	29
Velsicol Chemical Corp.	May

University of Massachusetts' Waltham Field Station.

"These spiders are prime economic pests, particularly on roses, which are an extremely important floricultural specialty in the Bay State," Dr. Naegele reports.

Under a \$37,072 Public Health Service research grant awarded recently to the Experiment Station, Drs. Naegele, William McEnroe, K. Kanungo, and Jozef Nowosielski will continue their studies initiated at Cornell University to discover why mites are frequently resistant to pesticides.

"This research is important to growers in Massachusetts," Dr. Naegele explained, "because it may provide information that will answer the question of how to control resistant red spiders and other mites plaguing ornamentals."

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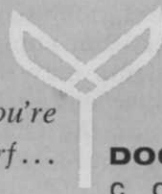
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Fertilizer Needs Discovered by Leaf Analysis, Researchers Say

Best possible rates, methods, and frequency of fertilizer application on woody plants may be discovered by detailed leaf analysis, horticulturists at the Ohio Agricultural Experiment Station, Wooster, believe.

"Necessary information for proper application includes growth rate, age of plant, desired ornamental effect, and quality of the plant," researchers point out, "and soil tests or other means which overlook this information can not be conclusive."

Wooster scientists are convinced that foliar analysis will provide a truer picture of a plant's nutrient status, and that this information, when correlated with growth and quality measurements, will provide more accurate guides for proper fertilizer practices.

Shade trees and acid soil plants are under study in the present phase of the program, now being carried out in Columbus, Ohio, and at commercial nurseries, as well as at the experiment station in Wooster. Leaf samples are being analyzed by photometric and chemical techniques to discover the most effective differential fertilizer treatments.

Rhode Island U. Develops Fungi-Nemato-Herbicide

A water-soluble combination fungicide, nematocide, and selective herbicide is the latest development to come from research labs of the University of Rhode Island's Department of Plant Pathology-Entomology.

A report from the Agricultural Experiment Station by department chairman Dr. Frank L. Howard, and research assistant Peter B. Adams, states that workers at the station have developed and field tested stabilized methyl arsine oxide. This compound is said to be different from presently available products in that it will pass through highly organic soil and will not be diluted or inactivated, and thus keeps its fungicidal killing properties, the report explains.

Some turf fungus diseases

which commonly occur together require two separate fungicides, because one fungus may be in a resting or spore stage and be more resistant to treatment.

Methyl arsine oxide has shown in tests to be effective against both active and resting stages of *Pythium* and *Rhizoctonia* disease organisms. Field trials in 1962 gave 100% control of brown patch, *R. solani*.

1963 trials showed effectiveness against the *Helminthosporium-Coryularia* complex, a serious disease on turf. At that time, researchers also discovered that methyl arsine oxide selectively controlled crabgrass.

Methyl arsine oxide is also toxic to nematodes, but becomes more active if the compound is modified to hexyl arsine oxide.

Although the product is not yet federally registered for sale or use, Vineland Chemical Company, Vineland, N. J., plans additional testing for registration. They expect registration for use on nonfood crops such as turf, ornamentals, shrubs, and flowers. The compound is an arsenical and toxic to humans; it will not be used on food crops.

USDA Registers Betasan

Stauffer Chemical's Betasan, a preemergence herbicide for control of crabgrass and other lawn weeds, has received registration approval under U.S. Department of Agriculture and Public Health Service regulations, the manufacturer announced recently.

Field-tested across the United States and sold commercially for two years in California, Betasan has been shown to have a wider margin of safety to established turfgrasses than many other commercially available products, Stauffer contends.

An application of Betasan during late winter or early spring prior to germination of the weeds is said to give season-long control. Betasan is also noted for its ability to control annual bluegrass, the company says.

Stauffer says the product is safe to use on all types of established lawn grasses, as well as dichondra. For details, write the firm at 380 Madison Avenue, New York 17, N.Y.

Trimnings

Dandy Danner. Hats off to Charlie Danner, Superintendent of the Capital City Country Club in Atlanta, Georgia! It was Charlie, we learned recently, who singled out *Weeds and Turf* for special praise during one of the turf conferences earlier this year. Now we learn from one of his friends that "Charlie is known throughout the South as the very best southern bent grower. He did an excellent job of producing bent greens where most professionals said it was impossible. He appears on several of the southern conference programs annually."

* * *

Rayner Shines. Cities across the land are in the midst of their elm preservation programs, hoping to protect their Dutch elm trees from disease. A city program which recently received notable local attention was administered by Gordon Z. Rayner, city forester for Milwaukee, Wis. Forester Rayner supervised the inoculation of nearly 45,000 elms with the new systemic insecticide, Bidrin. A feature article in the *Milwaukee Journal* gave all the details, and pictured arborist John E. Szydlowski applying the pesticide. In his protective garb, John looks like a man from outer space in the *Journal* photograph, but it's good to see this graphic example of safe practices on the job.

* * *

Hostetter Hoopla! A landscape architect who's not confining himself at home these days is James F. Hostetter of Tucson, Arizona. This Arizonan (by adoption) was scheduled to address women attending the University of New Mexico Homemakers College on effective landscaping for the housewife last month. Jim received his degree in Landscape Architecture from Ohio State University, and now specializes in landscape design as well as running Hostetter's Nursery in Tucson. As if this didn't consume enough of his time, the versatile vegetation specialist writes a weekly column, "Yard 'N' Garden Tips" for the *Arizona Daily Star*. We're glad to learn of this fellow journalist's apparently limitless energies!

* * *

Southwick moves up. Promotion of Dr. Franklin W. Southwick, formerly research professor of pomology at the University of Massachusetts, to head of that school's Department of Horticulture was announced recently. It's a singular honor for the renowned scientist, since it was just about 25 years ago when he himself graduated (with his BS) from the Mass pomology curriculum.

* * *

New Deal. Speaking of new figures in our universities, Dr. Elwyn E. Deal has just been added to the Agronomy Department staff at the University of Maryland. Dr. Deal will conduct research and extension work in turf management, according to Dr. James R. Miller, department head at the College Park school. Dr. Deal is a specialist in the management of roadside turf, and as a result will no doubt have much to offer the W&T readers engaged in this type of activity.

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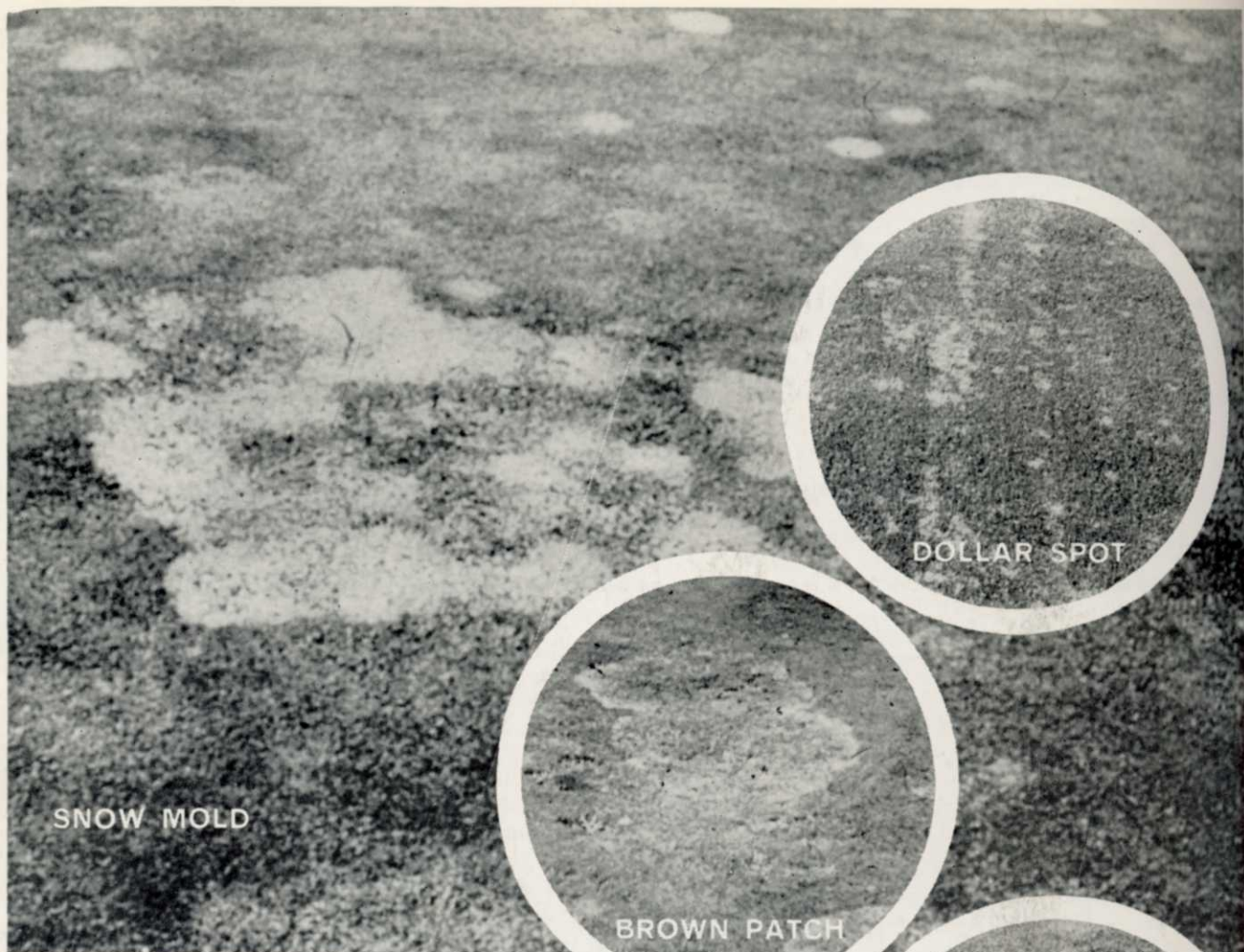
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