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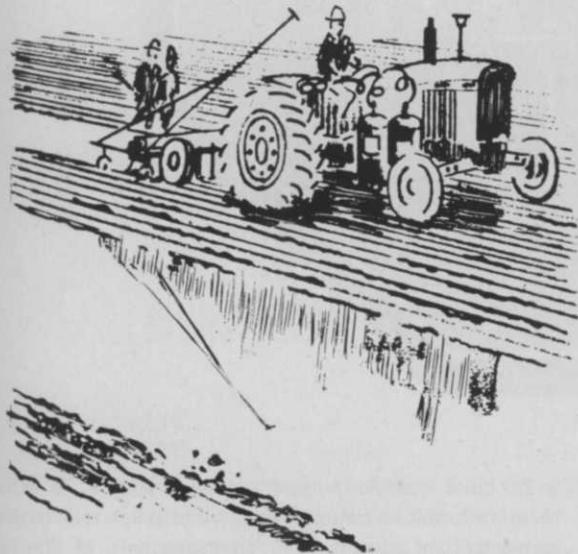
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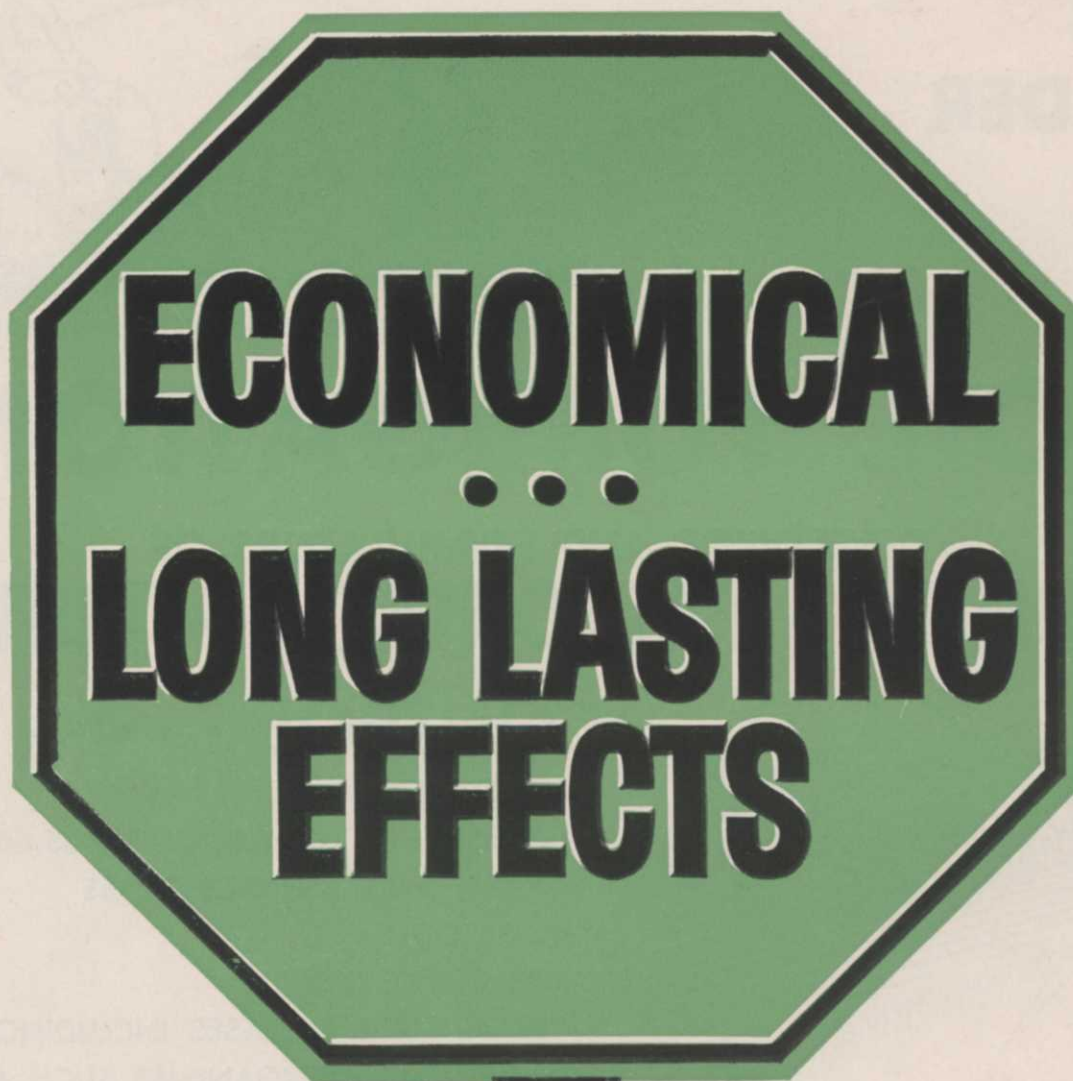
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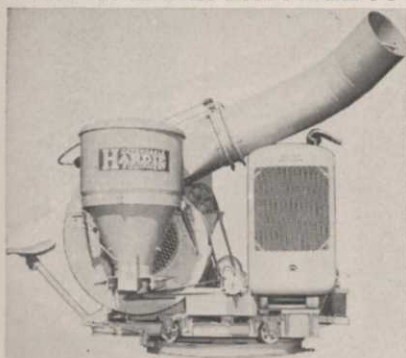
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## **WEEDS and TURF**

PEST CONTROL

A SECTION OF PEST CONTROL MAGAZINE

February, 1963

### **Features**

How to Fumigate Soil for Turf Weed Control  
by Dr. Fred Fletcher . . . . . W-8

How to Identify and Control Insect Pests in Turf, Part I . . . . . W-10

Raceway Job Draws Harder to Weed Control . . . . . W-18

Science No Longer Divorced from Public, 17th Northeast Weed Conference Decides . . . . . W-20

Know Your Species: Yellow Woodsorrell . . . . . W-29

### **Departments**

Calendar . . . . . W-28  
Trimnings . . . . . W-30

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## **Pitfalls**

Obviously, interest in a national trade association of contract applicators is growing rapidly. Industry leaders have heard reports from the far corners of the land about this need, and are generally in agreement.

But any new and important project is apt to be fraught with pitfalls. Certainly spraymen know only too well the tremendous economic and technical differences between, say, California CAs and their New England counterparts.

And spraymen, like all human beings, have broad differences of opinion. Sales methods, means of application, even chemicals used, vary from firm to firm. The more "human" elements, such as regional loyalties and desire to keep prized know-how in the family, are even more conducive to disharmony.

So if there's really to be effective industry unity, a hardworking group of applicators must spur America's spraymen to new heights of service and professionalism. Small differences must be laid aside.

There's no place for "me-first-ism" in a trade association!

It's important that members of any business pursuit get together to work for mutual progress. It's important because nobody understands a businessman's problems like others who earn their living in the same business.

But going national is no ready-made, universal remedy for industry ailments. There are pitfalls.

We've had occasion recently to attend several regional meetings, and are impressed with the possibility of some kind of national trade group. But it's not going to be easy.

When, and if, CAs get together to talk about forming their own association, they must leave pet peeves and personal problems outside the conference room. This job is too big to be accomplished by little men.

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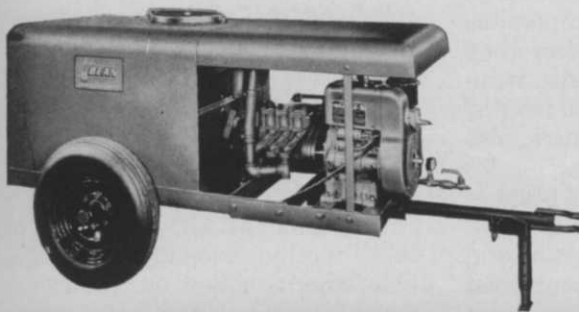
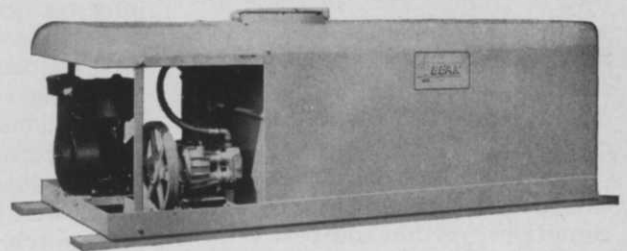
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Workers used 32-foot wide tarps in this soil fumigation job. Tarp edges are sealed with soil to keep gas in.

## How to Fumigate Soil for Turf Weed Control

By FRED W. FLETCHER

Research and Development Department,  
Agricultural and Industrial Bioproducts Div.,  
The Dow Chemical Company, Midland, Michigan

**T**HANKS to chemical research, contract applicators have at their disposal the means to produce thick, healthy turf, in double-quick time. From research laboratories have come powerful soil fumigants which, by virtue of their lethal action against weeds and other soil pests, are highly effective aids in growing new turf or renovating old.

Turf is, of course, best known in home lawns, golf greens, football playing fields, parks, and other mowed areas. Grass varieties have been developed which stand a great deal of traffic. Some of these are adapted to shade, some to sunlight; some to acid and some to sweet soil; some to drouthy conditions; some are adapted to specific areas of the country.

Whatever kind of turf may be established and under whatever conditions, certain soil pest problems are present to beset the custom sprayer, nurseryman, gardener, or maintenance man charged with the responsibility for upkeep.

One such problem is the competition from early weeds. Most desirable grasses are fairly slow to start from seed. Before they have a chance to grow strong and dense, weeds of many kinds usually become very thick and troublesome. They may include weed grasses such as Johnsongrass, quackgrass, and crabgrass.

### "Nurse Grasses" May Bring Weeds

It is frequently desirable to renovate turf areas that have become infested with undesirable perennial grasses. Such grasses

may grow up in turf from poor seed, or they may occur naturally in the soil. And they may be included in seed mixtures as nurse grasses, which are usually fast-growing. Purpose of these nurse grasses is to prevent erosion, protect the tiny seedlings of desirable grass, and provide a surface which withstands limited traffic while desirable grasses of slower growth are coming along. Experts have long recognized, however, that nurse grasses offer stiff competition to permanent grasses, and, according to some, their value is questionable.

Underground insects and nematodes are serious parasites of desirable turf grasses. Nematodes — destructive, microscopic worms in the soil — often make it impossible to produce good turf unless they are controlled. White grubs, wireworms and many other soil insects, as well as soil-borne diseases, also attack grass roots.

This formidable array of pests — weeds, weed roots, weed seeds, nematodes, wireworms, grubs and plant diseases — all are controlled by the potent chemical action of soil fumigants.

These pest-control materials are not exactly new to agriculture,

although some of them have been vastly improved as a result of years of chemical research. Several of the newer materials, Trizone and Brozone soil fumigants manufactured by the Dow Chemical Company and Pathofume (B) and Weedfume manufactured by the Neil A. Maclean Company, two of the pioneers in this field, have proved effective in treating seed and plant beds and in the culture of nursery ornamentals. These two materials, in addition to Dowfume MC-2 soil fumigant, another Dow product, are tools to fight the perennial battle against soil pests in the production of new turf or renovation of old.

Elaborate mechanical procedures have to be followed in applying each of these fumigants, since all are poisonous gases. Their application must be carried out by qualified, competent operators following the manufacturer's use recommendations explicitly. Soil fumigation is not the kind of a project the eager, do-it-yourself home gardener can take on over a weekend. This means more business for contract applicators.

Dowfume MC-2, consisting of 98% methyl bromide, with 2% chloropicrin added as a warning agent, is used on small turf areas, around homes, for example. Trizone, Brozone, Pathofume (B) and Weedfume are more suitable

Information in this article concerning products of the Neil A. Maclean Company was furnished by Norman Ehmann, Maclean vice president, Belmont, California. Ed.



for application to large turf areas such as parks, athletic fields, and turf nurseries. Trizone fumigant is a blend of three fumigants — 61% methyl bromide, 31% chloropicrin and 8% propargyl bromide. Brozone is a mixture of 70% Dowfume MC-2 and 30% oil as a carrier. Pathofume (B) is a blend of 67% methyl bromide and 33% chloropicrin. Weedfume is a mixture of 70% methyl bromide and 30% petroleum thinner as a carrier.

#### Preplant Treatment with Dowfume

In the preplant treatment of soil with Dowfume MC-2, the gas, at 1 lb. per 100 sq. ft., is released as a vapor under a gas-tight tarp such as polyethylene film sealed to the earth all the way around the edges.

This requires precise operation in order to obtain a satisfactory seal and necessary gaseous distribution of the vaporizing material. The pressurized fumigant is released by applicators such as the one made expressly for this purpose by the Neil A. Maclean Company. The tarp is removed after 24 to 48 hours. The former period is adequate in warm weather: the latter may be required in cool weather.

#### Fumigants Sterilize Soil

If the soil has been cultivated, the gas penetrates to the depth of cultivation or a little deeper. Where the soil is not cultivated, gas penetrates for a few inches but no more. To the depth to which it penetrates, the fumigant completely sterilizes the soil, eliminating weeds, weed seeds, weed roots, nematodes, insects and certain plant diseases. When it

has done its work, Dowfume MC-2 leaves the soil in ideal condition to receive seeds of any kind, including grass seeds for new turf.

Where new grass is wanted in place of old, run-down turf, the chemical is applied directly over living turf, killing the old grass and weeds as they stand. After a heavy application of complete fertilizer, the grass seed is then planted on the soil surface through the dead grass. Heavy watering then serves to wash the seeds off the dead vegetation and bring them into contact with the soil.

#### Broad Spectrum Fumigants

All five of these soil fumigants have a broad spectrum of activity, controlling a wide range of soil pests. Where soil-borne diseases are a serious problem, Trizone and Pathofume (B) are said to be particularly effective.

Unlike the application of Dowfume MC-2, Trizone, Brozone, Pathofume (B), and Weedfume are injected into the soil from pressurized cylinders with a simple tractor-mounted, chisel-type applicator to a depth of about six inches. Chisels are spaced 12 inches apart.

Because the chisel-type applicator is used for injecting these fumigants, they may be used only in treating areas which have been plowed under and the soil worked up, or prepared, for turf renovation.

#### Use Plastic Tarp to Seal Soil

A plastic tarp is required to seal these fumigants in the soil, preferably within about 20 minutes following application. Where overall treatment of a large area is



Tractor-mounted, chisel-type applicators, such as this, can be used to inject fumigants into soil before planting seed.

carried out, the cover is laid manually. (In treating nursery seed and plant beds, the fumigant is injected and the tarp is laid simultaneously by a mechanical tarp-layer.)

Trizone and Pathofume (B) are recommended for use at 200 to 300 lbs. per acre, Brozone at 500 lbs. per acre, and Weedfume at 300 to 500 lbs. per acre. In each case, the treated soil is kept covered for at least 48 hours. Grass seed can be planted within three to four days after the cover is removed.

Whatever the method and materials used in treatment, the grass grows without competition from soil pests. And *how* it grows

*(Continued on page W-27)*

This is the same area shown on facing page. The obviously healthy stand of turf is evidence, the article says, of soil fumigation efficiency.





**ENTOMOLOGISTS** estimate that there are as many insects in every square mile of earth's surface as there are human beings on the whole planet.

This fact would not be hard to convey to a suburban homeowner whose lawn is infested with insects. When these hexapods get too plentiful in turf, beautiful grassy areas may be severely blighted. Enter the contract applicator. The market is wide open for services of competent CAs who diagnose and treat ailing turf areas such as golf courses, school and hospital lawns, cemeteries, parks, and roadsides, not to mention the huge home lawn demand.

To help CAs better understand



**Infamous Japanese beetle**, shown here in a remarkable close-up of an adult, is a prime ornamental pest; larva destroys lawns, and is probably the best known lawn insect among the general public. Shiny metallic coloration of the Japanese beetle makes this eastern pest easy to spot.

## How to Identify and Control Insect Pests in Turf

the pests with which they are dealing and how to control them best, *Weeds and Turf* surveyed extension services of state universities from 8 different geographical regions to find variations in pest prominence and control recommendations.

### How Insects Damage

Understanding insect habits helps explain why techniques may vary from one pest to another. Most damage results from feeding activities. Beetle grubs eat grass roots, but moth and butterfly larvae feed on above-ground leaves. Other pests, such as chinch bug nymphs, feed by piercing stems with their mouthparts to suck plant juices. There are some pests, such as ants and the cicada killer wasp, which do not destroy grasses directly, but deface lawns by burrowing in turf. It is easy to see that controls, though chemicals may be the same, will differ from pest to pest.

In general, to control pests in soil, insecticide is applied so that it penetrates the ground to the zone where insects feed. Apply insecticides with sufficient water in a spray to soak the chemical into the soil. If dusts or granules are used for smaller jobs, thoroughly water turf after application.

For leaf-feeding species, if granules or dusts are used, water lightly to wash insecticide down around the crown of the plant where in-

sects feed. Completely irrigate and flush off insecticide a few days later. Spray treatments are similar to soil pest control treatments, except that the object is not to wash insecticide into the soil but rather to have it remain on the soil and leaves. Don't water again until necessary. Usually spray treatments for leaf feeders last for only 1½ to 2 months.

Turf insecticides are usually formulated from chemicals which have proved their worth against other insects. Today, however, there are lawn insecticides which were originally intended for nematodes and crabgrass (V-C 13 and Zytron respectively. Zytron has not yet been labeled for control of lawn insects).

While turf insecticides may be obtained in dust or granular form for small jobs, most economical for the CA are the spray applications, provided equipment is avail-

able. Sprays can be prepared from either wettable powder or emulsifiable concentrate. Both require occasional agitation because the insecticide is not completely soluble in water.

All of the popular lawn preparations are products of organic synthesis. Either the chlorinated hydrocarbons such as DDT, heptachlor, and chlordane, or organic phosphates such as parathion, Diazinon, Ethion, and Trithion, will give good control when used properly against the right target pests. These chemicals are toxic to insects and humans alike and must be handled with respect, knowledge, and care.

### Beetle Grub Control

Several hundred species of beetles (family Scarabaeidae) infest soils in the larval or white grub stage. Some of these are: May Beetle, June Beetle, Japanese Beetle, Asiatic Garden Beetle,

Lawn sprayers will soon find their busy season upon them, so *Weeds and Turf* begins this month a two-part article which defines the basic elements of turf insect control. This in-depth research paper will be concluded next month with a discussion of chinch bugs, lawn moths, and miscellaneous invaders.