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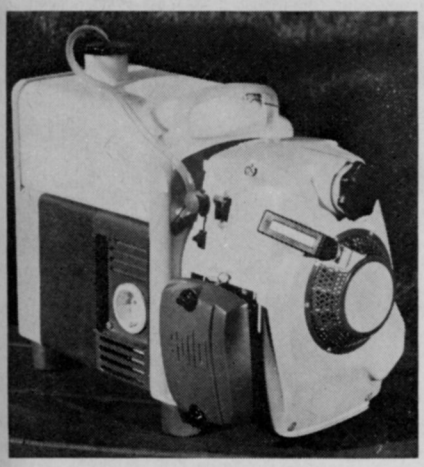
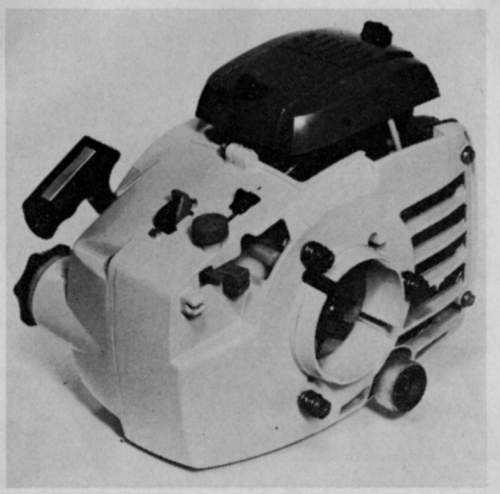
Power shears and other electrical tools can be used beyond normal power supply with this portable electric generator. Sure . . . it's the same engine that powered the lawn mower and sweeper!





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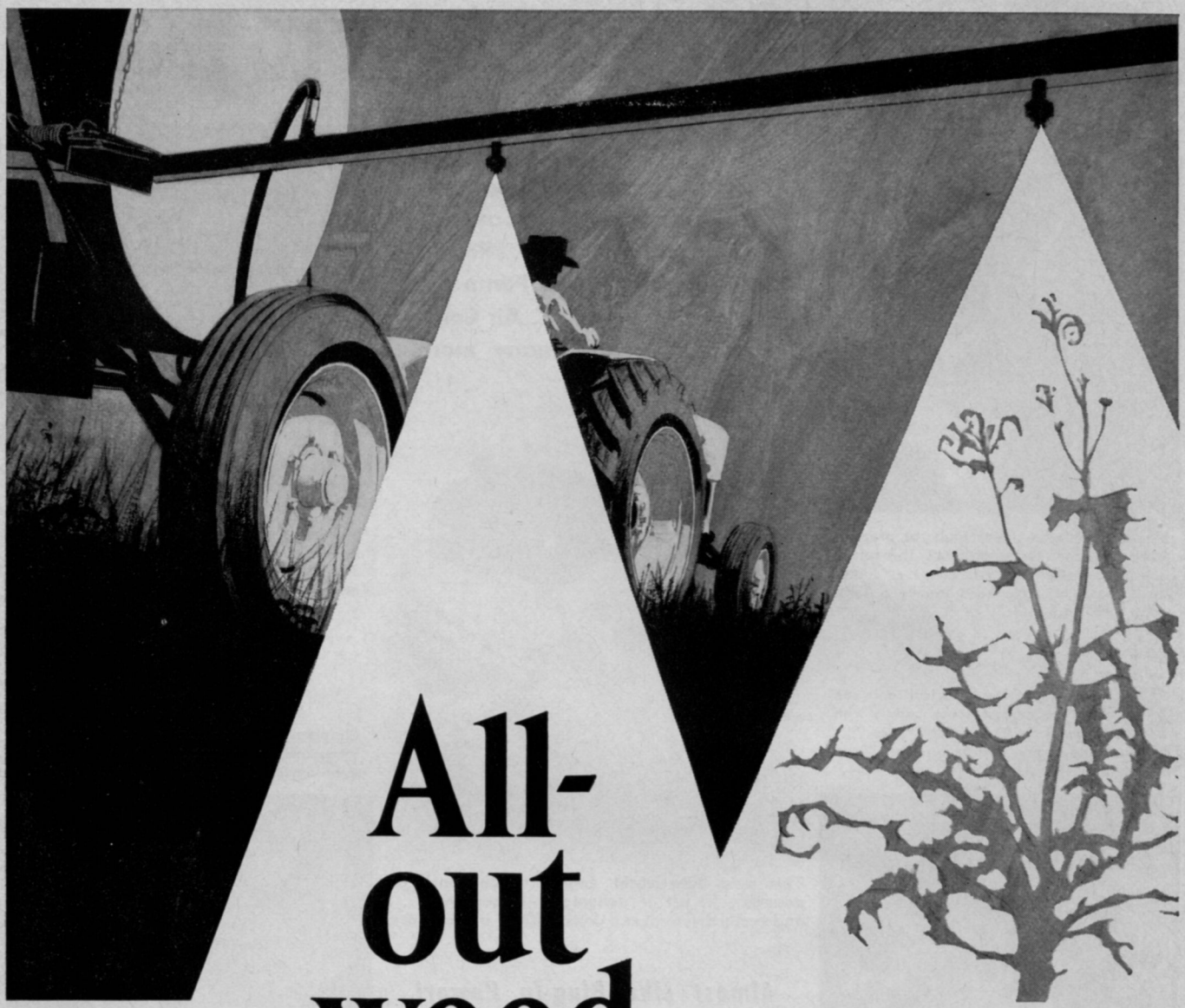

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WEEDS TREES and TURF

FORMERLY WEEDS AND TURF

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Deliberate Progress

As announced in *WTT's* October issue, the National Spraymen's Association is planning its first convention in 1966, but leaders are experiencing some delay choosing a site and date. Officers favor Florida where out-of-state delegates might combine pleasure with business and a larger attendance might be assured. Trouble was, however, that it could not be held during this winter's "off season" when hotel rates are lower in the beach areas because there hasn't been enough time to legalize bylaws, nor to publicize the event. By the time both steps could be realized, spring and summer would be here. Spraymen are busiest then and few could get away. Others propose the meeting be held in the Midwest to equalize travel time and expense and to draw a greater number of participants from all parts of the country.

While these deliberations continue, NSA board members are actively seeking legal counsel to draw up a proposed constitution and bylaws, acceptable to all segments of the industry, to be voted upon at the convention.

In this formative period delays are to be expected. Organizers have their own businesses to run. The time they put in to get NSA on the road is contributed. So far about $500 has been gained from membership dues, not enough of course to hire an association secretary nor pay for the printing and mailing expense incurred to date. Personal sacrifices in time and money are needed and it is coming from a number of sources.

Many excellent objectives have been set forth. NSA will work on national, regional, state, and local levels to upgrade the industry. Serious investigation into insurance premiums is required because many CAs feel they are subject to a disadvantageous rate structure. Contact with Washington is to be established so industry interests can be voiced on legislative proposals coming from federal agencies. Suppliers are to be encouraged to develop and research more effective pesticides better suited to outdoor spraymen uses. An educational program on legislation, new chemicals and equipment, use recommendations and restrictions, etc. is another aim.

All these objectives take time to put into realization. Progress moves slowly, but deliberately. It is hoped that to-be-expected variations in approach and timing will be resolved through steadfast determination. Outcome will be the realization of a better, stronger contract applicator industry.

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

WTT Mailbox

Questions Neologism

Have just read your fine August issue and want to write at once to commend you on your editorial "Probing the Antipesticider's Mind." We, too, applaud the responsible attitude which Shell has adopted and hope that it will spread. The article on the use of Bidrin was both informative and well written and will be of much use to us in our own application of Bidrin, which has been without benefit of training.

There is one flaw, however, in the article which I am sure you noticed and refrained from editing out either because the author was a guest writer or because you did not want to intrude. It's something that bothers me a whole lot, though . . . the increasing use of neologisms in our scientific and semi-scientific literature. In this case, it's the use of the word "applicator" when he meant "applier." Inasmuch as he was also talking about true applicators . . . the injectors of the Bidrin, and a word which could have meant either man or instrument . . . he'd have saved himself a certain smudginess.

This particular neologism is being seen with increasing frequency and I, for one, would like it nipped now! But it is otherwise a fine article and I'm sure most readers couldn't care less about neologisms!

Austin Morrill, Jr.

Applied Biologist
Bureau of Yards & Docks
U. S. Navy, San Bruno, Calif.

Webster defines "applicator" as "an applier; specifically, any device for applying medicine to the nose, throat, or other cavity." "Applier" is "one who or that which applies." Thus, an "applicator" is not a "him" at all; it's an "it." While we agree there often is misuse of the language, if we now nip the nasty knave who negotiated this neologism, Contract Applicators (CAs) would have to be referred to as Contract Appliers, and that just doesn't seem right! We'll continue to call appliers "applicators" and applicators "appliers" and show pictures of people and things so that everyone may understand what is being written. Editor.

Paraquat Misrepresented

I would like to clear the air on a point raised by the editor regarding Paraquat, when commenting on a letter by D. J. Miller featured in your WTT Mailbox of August 1965.

Paraquat at the time of writing (August 25, 1965) is registered for a single use. That use is "Seedbed Preparation for Establishing Grasses for Seed Production." Paraquat is used to control grasses and broadleaved weeds in such seedbeds. We have no registration for use on southern dormant turf at this time. We were selling limited quantities of Paraquat for use on cotton and potatoes in 1965 only under a temporary tolerance granted to us by the USDA.

However, it can be stated that further Paraquat registrations are pending in Washington, D. C. Certainly we agree with Mr. Miller's comment on Paraquat's safety and look forward to that day when it can be legally used by commercial applicators.

John W. Mackenzie

Technical Specialist, Herbicides
Chevron Chemical Co.
Richmond, Calif.

Sources for Tensiometers

As a subscriber to your magazine we read with interest an interesting article in your issue for July 1965. This article on page 25 refers to the use of a Tensiometer, and its reduction in water costs. Would you be good enough to advise us the manufacturer of this Tensiometer as we would like to discuss purchase of the instrument.

M. D. Gibbeson

General Manager,
Flick Chemical Industries Pty, Ltd.
Chatswood, N.S.W., Australia

Tensiometers are manufactured by the Irrometer Company, P. O. Box 2424, Riverside, Calif. and also the Zymak Co., 832 North Atlantic, Long Beach, Calif.—Ed.

Won't Cut Up WTT

Enclosed is my check for $1.00 for one copy of your reprint "Aquatic Weed Control."

I did not want to cut the articles on the reverse side in the three issues it ran in, so I'm ordering your reprint which includes all three parts.

I might also say I enjoy this publication very much. It is a regular part of my reference reading.

Thanks, again, and best wishes for continuous growth.

James C. Scott

Superintendent
Lake Havaso City Golf Course
Lake Havaso City, Arizona

Arborists Appreciate Coverage

I want to thank you for the fine writeup given in your September issue of the International Shade Tree Conference in Washington this past August. You covered most of the sessions and have given the high spots of our largest conference to date.

Paul E. Tilford

Executive Secretary
National Arborist Association, Inc.
Wooster, Ohio

Wants More Turf Articles

Congratulations on the very splendid article on thatch control in your October issue. Dr. Miller covered this subject most thoroughly—hope you have more such articles on turf care.

Reg Perry

Secretary
Southern Turfgrass Association
Memphis, Tenn.

Weeds Trees and Turf welcomes expressions of opinions from its readers. Send ideas and comments briefly as possible to James A. Nelson, Editor, Weeds Trees and Turf, 1900 Euclid Ave., Cleveland, Ohio 44115.

Effect of Phenoxy Herbicides on Riparian Vegetation and Water Quality

By
W. E. SOPPER,
I. C. REIGNER, and
R. R. JOHNSON[1]

CHEMICAL CONTROL of vegetation along streambanks and reservoir shores has become an acceptable procedure on many municipal watersheds. Such vegetation has long been undesirable because in addition to the use of large quantities of water its leaves often accumulate in the stream channels and reservoirs. As a result they may clog intake screens and impart acids and color to the water by their decomposition.

The phenoxy herbicides, such as 2,4-D and 2,4,5-T, although widely used in forest management have not been used on municipal watersheds because of possible contamination of the water supply. Phenols when chlorinated form chlorophenols which are said to have very low odor and taste thresholds and may be detected in concentrations as low as 0.3 parts per billion (ppb). The U.S. Public Health Service has recommended a limit of one part per billion (1 ppb) of phenol for drinking water. This recommendation is based upon taste and odor considerations and not toxicological limits.

Although considerable literature is available concerning the taste and odor thresholds of chlorophenols, little factual information is available concerning the contaminating effects of the use of phenoxy herbicides on municipal watersheds.

Therefore, the School of Forestry, The Pennsylvania State University, along with the Northeastern Forest Experiment Station and Amchem Products, Inc., conducted a cooperative study to determine the extent of streamflow contamination following the spraying of riparian vegetation with phenoxy herbicides.

The experiments were carried out on two small headwater streams of the Newark, New Jersey, watershed and two similar streams on the Stone Valley Experimental Forest in Huntingdon County, Pennsylvania.

A portable mistblower was used to spray riparian vegetation growing within 20 feet of each stream bank for a distance of 1000 feet. Thus, each plot was approximately an acre in size. The operator walked in the middle of the stream, spraying on one side only (Figure 1). Vegetation on the other side was sprayed on returning in the other direction. No extra precautions were taken and, hence, some spray settled directly on the water in the stream channel.

Two chemicals were tested. One, an ester of 2,4,5-T, was considered a representative formulation of the commercially available herbicides. The other was

Table 1. Formulations and amounts of herbicides applied to test plots.

Herbicide	Amount	Oil Carrier	Water Carrier
	gallons	gallons	gallons
2,4,5-T butoxy ethanol ester	0.5 (2 lbs. ae)	1	8.5
2,4,5-T emulsifiable acid	1.0 (2 lbs. ae)	0	9

[1] Respectively, Assistant Professor of Forestry, The Pennsylvania State University, University Park, Pa.; Associate Hydrologist, Northeastern Forest Experiment Station, Upper Darby, Pa.; Forester, Amchem Products, Inc., Minneapolis, Minnesota.

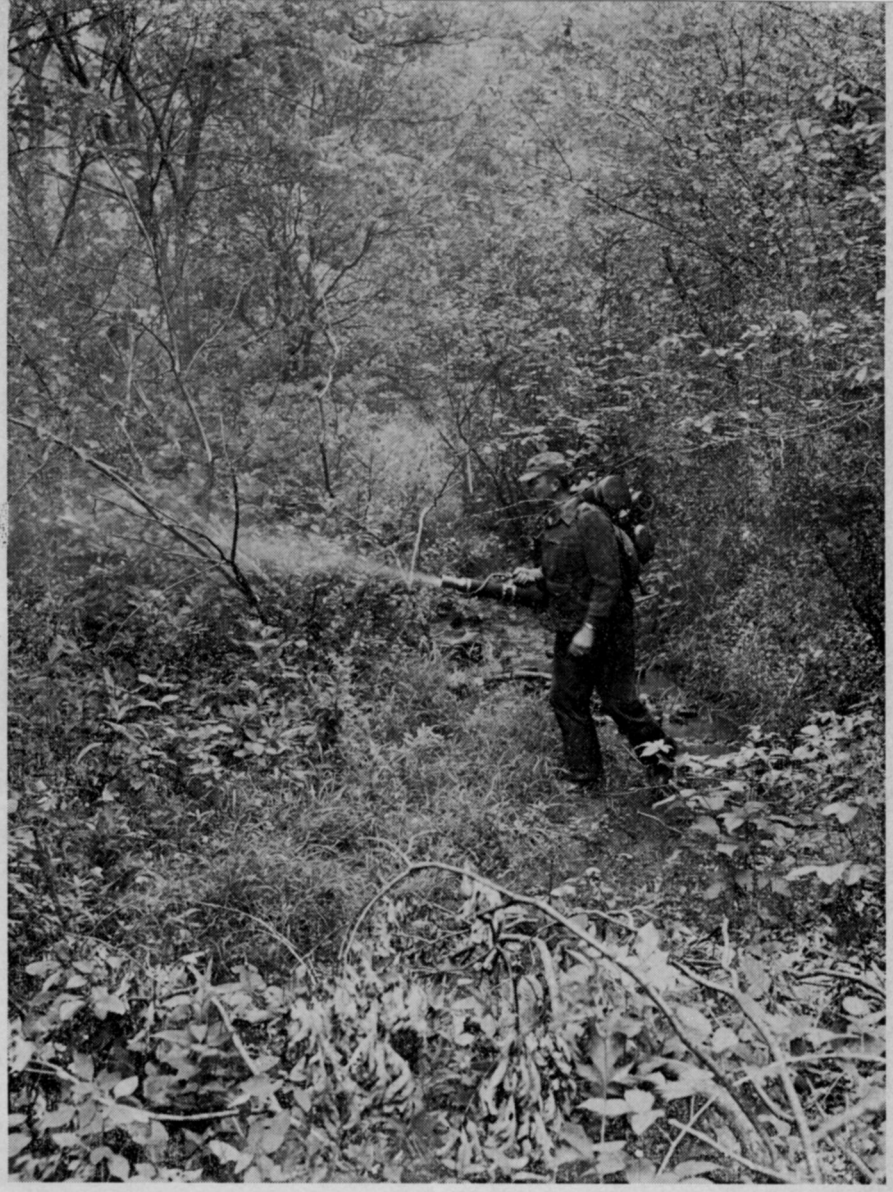

Fig. 1. A portable mistblower was used to apply herbicides to riparian vegetation. (Mr. R. R. Johnson is operator.) Note low streamflow. This is the Pennsylvania stream being sprayed with the 2,4,5-T emulsifiable-acid formulation.

2,4,5-T in the form of an emulsifiable acid. Formulations and amounts applied to the test plots are shown in Table 1.

Herbicides were applied to all streams by the same operator. Since we were interested in detecting maximum contamination, the herbicides were applied during a low streamflow period. Flow in all streams was less than 0.1 cubic foot per second (45 gpm).

Water samples were taken periodically after treatment at various locations up and down stream. The first samples were collected immediately after spraying followed by a second group of samples 4 hours later. Thereafter, samples were collected daily during the first week and twice a week during the next 3 weeks. Additional samples were collected after each rainstorm.

Streamflow samples collected were tested for contamination by a calibrated three-member odor panel (Figure 2). The testing procedure used was that approved by the American Society for Testing and Materials. Results of the panel tests are shown in Table 2.

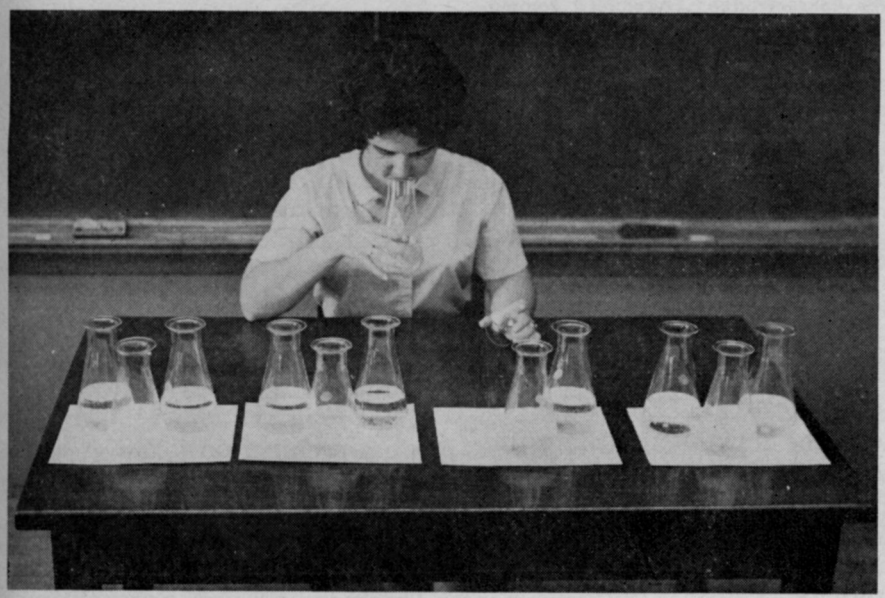

Fig. 2. Streamflow samples were tested for herbicide contamination by odor panel. Panelist is Mrs. Linda Summers.

Results indicate that during the three weeks following treatment contamination of streamflow occurred only immediately after spraying and after the first large storm. In addition, contamination was detectable only within the treated reach of stream and no contamination was ever found in a downstream sample. Downstream samples were collected approximately one mile away from the treated areas and in both locations below the junction of the two treated streams.

All areas were examined one year after treatment to deter-

Fig. 3. A tally of vegetation kill was made one year following treatment. Seventy to eighty percent of the stems were completely killed by the ester formulation. Note invasion by grasses and herbaceous vegetation. This is Pennsylvania stream treated with the 2,4,5-T ester formulation.

mine the effect of the herbicides on the riparian vegetation (Figure 3). Streamside vegetation was very brushy. The number of stems under 4 inches in diameter breast high ranged from 5,600 to 11,520 per acre. Results indicate that the ester formulation had completely killed 70 to 81% of the stems and the emulsifiable acid killed 58 to 78%. In addition, from 17 to 32% of the remaining stems were partially killed. A subsequent treatment in 3 to 5 years should eliminate the remaining stems. New streambank vegetation consists primarily of grasses and herbaceous species and should eventually predominate.

On the basis of this study it appears that phenoxy herbicides can be used to control riparian vegetation on municipal watersheds, if properly applied with the normal precautions, without constituting a water pollution hazard.

Table 2. Results of streamflow samples collected by panel in Pennsylvania and New Jersey to determine contamination.

Herbicide and Time of Sample	Herbicide Concentration in Penna. Streams	Streamflow Sample N. J. Streams
	ppb	ppb
2,4,5-T ester		
After spraying	40	40
4 hours later	20	20
Next 9 samples	neg.	neg.
After first large storm	10	neg.
2,4,5-T acid		
After spraying	40	20
4 hours later	10	neg.
Next 9 samples	neg.	neg.
After first large storm	20	neg.
Both herbicides		
All downstream samples	neg.	neg.

Mites Can Be Controlled

Mites which attack ornamental shrubs, fruit trees and bermudagrass lawns can be controlled with Tedion or Kelthane, two specific miticides, according to Stanley Coppock, entomologist with the New Mexico State University Cooperative Extension Service, University Park, N. M. Malathion is also effective although it is not a specific miticide.

Mites vary in size from almost microscopic to as big as the head of a pin. The European red mite, two-spotted mite, and McDaniel mite are troublesome on deciduous and fruit trees and shrubs. Red mites, prevalent in early spring and summer, experience a population decrease in early August. Two-spotted mites and McDaniel mites are in greatest number at the end of July and are a problem until fall.

The bermuda mite is specific on bermudagrass. Symptoms are shortening of the plant stems and browning of the vegetation. Diazinon or Kelthane work best on the bermuda mite.

Dutch Elm Disease Control Should Continue in Winter

Dutch elm disease doesn't attract much attention during the winter, but this is the time to put into effect measures to help keep it from spreading next spring, the National Arborist Assn. recommends. Sanitation and spraying are still the most effective means known to control this fatal disease of elm trees.

The overwintering habits of the tiny bark beetle makes sanitation an entirely practical control measure. Destroy weakened elm wood in which the beetles may live. By eliminating their habitat the beetle population is reduced, thus lessening the chances of the disease being spread.

Destruction of beetle-infested, diseased elm trees is of greatest importance; no elm material that can serve as living quarters for the beetles should be neglected. The National Arborist Association warns that diseased elm trees should be felled and the wood destroyed, preferably by burning, well before the spring emergence of the beetles.

Equally important in the disease control program is the application of an insecticidal spray to protect healthy elm trees against the feeding beetles. Spraying should be done annually, either in the fall after leaves have dropped and before freezing weather arrives, or in early spring before the new leaves appear.