

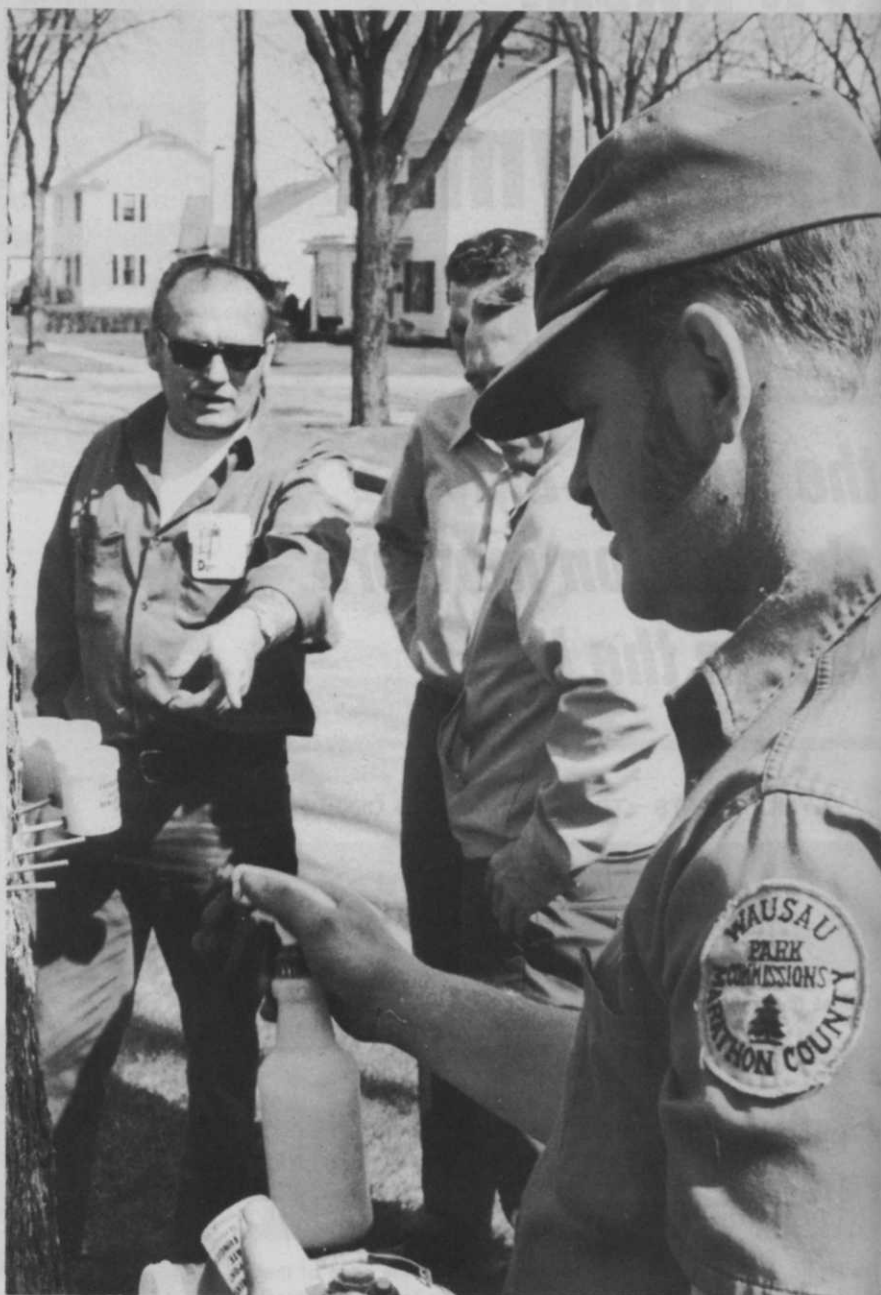
## DED Control Kindles Strong Arborist Interest

ARBORIST reaction across the country to the Federal registration of Benlate benomyl fungicide as an aid in the control of Dutch Elm Disease has been growing enthusiastically. While it can be said that the EPA label came when most people least expected it, state universities in heavy DED affected states have hurriedly whipped together training programs for arborists to comply with the Federal requirements.

Most notable response to date comes from the state of Wisconsin. In mid-April, capacity crowds of arborists — some from as far away as Texas and Maryland — jammed meeting sites in Madison and Milwaukee. (See p. 34, April 1972, WTT) Dr. Gayle Worf, Dr. Gene Smalley, plant pathologists at the University of Wisconsin, and a host of others presented background information, recent test results and university recommendations for use of Benlate both in foliar application and with the injection method.

The primary reason for these training sessions was the restriction on the use of Benlate by *trained arborists*. While it's still anybody's guess as to what constitutes a trained arborist, university extension specialists have assumed the responsibility for training within each state. As one Wisconsin extension specialist pointed out, "applicators need to know what results are realistic to expect, and how and in what way the product can be used to supplement existing control measures."

Wisconsin's training program consists of a training seminar and one or more field workshops. Four major areas have been discussed: 1. The biology of Dutch Elm Disease; 2. Dutch Elm Disease status, locally and regionally; 3. Benlate application



Scott Trull, an arborist with the Wausau Park Commissions in Marathon County, Wisc., tries his hand at learning the Mauget Tree Injection system. Here, he is inserting suspended Benlate into the feeder tube just prior to the placement of the plastic cup. All arborists attending this field workshop received training such as this.

and use procedures; and, 4. Tree physiology.

Currently, Wisconsin's field workshops are designed around the trunk injection technique. While this technique is admittedly more difficult for arborists to master, it eliminates certain hazards associated with foliar sprays. However, it is expected that later workshops will also include foliar application of Benlate.

Data presently available concerning effectiveness of this treatment are from trials conducted during the past three years. Early data suggested that the disease was arrested only when infections were quite

limited at the time of treatment. In 1970 researchers found that the most effective time period for treatment was after June 25, when only the new bark beetle-induced branch infections were appearing. Later, injection of healthy municipal elms on a preventive basis reduced the incidence of new infection from 16.4 percent to 6.5 percent.

While several methods of injection and other forms of application of Benlate are being tested this year — soil injection, sump treatment, collar method, Medicaps, trunk injection under high pressure currently being

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Del Kennedy, president of CLM National Company, says the Mauguet injector has been used in applying minerals and insecticides. It is only natural to consider it in terms of disease control, he says.

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evaluated by the Shade Tree and Ornamental Plants Laboratory at Delaware, Ohio, and others — the most popular method being demonstrated at DED training meetings is the Mauguet Tree Injector. Slightly modified from the Mauguet vials used to inject chelated iron and systemic insecticides, the Mauguet cups are designed to hold 65 ml or about 2 ounces to conform with the label for Benlate.

CLM National officials and the J. J. Mauguet Co. have given full support to the University of Wisconsin training sessions. As Del Kennedy, CLM National president put it, "We want to talk to arborists about their problems. We teach arborists the advantages of the Mauguet Tree Injection system by example. By attending meetings and giving demonstrations these men will gain a fuller understanding of this system and what it can do for them to control DED and increase local business."

Last month, Wisconsin arborists around Eau Claire, Wausaw and Milwaukee tried their hand at mastering the Mauguet tree injection. Meeting in areas of heavy elm populations,

arborists heard Rodney Johnson, a veteran DED specialist and forester for the Village of River Hills, Wisc. discuss mixing procedures.

"Benlate should be mixed at the rate of two pounds per 100 gallons of water," he said. "Thorough agitation is necessary because Benlate is a wettable powder that is suspended in water." Agitation before each step in the injection process will keep the chemical suspended for a longer period of time.

Following the mixing discussion, Del Kennedy demonstrated the various steps of the Mauguet system. Holding an inserting tool, he slipped a feeder tube over the penetrating pin. He then approached the tree at about chest level and taking a hammer drove the inserting tool at a right angle to the trunk through the bark or cambium layer into the xylem or sap wood. When the feeder tube was in place, he rotated the inserting tool and drew it straight out.

"We've found that slanting the beveled end of the feeder tube slightly to one side prior to injection improves the drainage and uptake by the tree," Kennedy told those present. "In addition, once the tube is in the tree, a light tap or two on the inserting tool will secure the tube and prevent it from falling out."

He then filled the feeder tube (sleeve) with the suspended Benlate. This expels air and prevents trapped air bubbles in the tube, he said.

The last step consisted of placing the reusable plastic body cup on the feeder tube and filling it with suspended Benlate.

He repeated the entire procedure at two inch intervals around the trunk of the tree.

Bill Bennett, vice-president of CLM, said that the chemical is absorbed by the tree within 24 to 48 hours, depending on environmental and climatic conditions. Once inside the tree, the chemical is translocated via the xylem to the upper parts of the tree and more particularly to the diseased area.

One arborist described this technique as the woodpecker approach to DED control. Others cited such advantages as: use in areas inaccessible to foliar sprays; application on windy days; and where public concern will not permit use of sprays.

Dr. Worf pointed out that with the injection system, there is no concern over environmental contamination. Only the target elm is treated. He also mentioned that equipment costs are considerably less.

Disadvantages to this method of tree injection are also evident. Arborists have already cited that

Benlate suspended in water will not stay this way for long periods at a time. Frequent agitation is needed. Following the uptake of the fluid in the two ounce plastic container there appears much white residue of Benlate that has settled out. This has lead arborists to speculate on the actual amount of chemical in the tree system.

Deane W. Finnerty, development and service representative for the Du Pont Company says that although this is a visual problem it is not one with which to be concerned. "Only an infinitesimal amount of Benlate is needed to control the disease," he told Weeds Trees and Turf.

Other disadvantages which arborists have mentioned include: excessive time consumed in application and removal of injection equipment; trunk wounds (no serious injuries to date); the possibility of erratic distribution of Benlate in the tree; uptake and translocation of the chemical is dependent upon external environmental conditions and the physical condition of the tree; and vandalism of injection equipment.

One major problem that still com-  
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C. B. (Bill) Bennett, vice-president of CLM National, demonstrates how to insert the feeder tube into the xylem layer of the tree. He says you can "hear" how far to insert the feeder tube. Tubes are placed at two inch intervals.



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plicates the use of Benlate through trunk injection is in finding a suitable solubilizer for the chemical. Of literally hundreds of compounds tested, most have produced phytotoxicity in elms. Lactic acid, a compound familiar to cattle breeders, holds promise, but much research and testing still remain before solubilized Benlate will be available commercially.

Dr. Worf points to an additional concern. He believes that diseased elms should be exposed for a longer period of time to Benlate. Currently,



Dr. Gayle Worf, extension plant pathologist, Univ. of Wisc., has spearheaded the training program for arborists in this state. He and others have held seminars and workshops to teach new methods of DED control.

one application over a 24 to 48 hour period is made, followed by additional applications as prescribed by the arborist. Worf feels that this one shot approach should be more thoroughly tested. If Benlate were made available to the tree for periods of six weeks or longer, the elm would have a better chance of combating DED, he said.

Del Kennedy is quick to note that the Mauget system is still in its infancy. "We have not perfected every aspect of the injection concept," he said. "Our scientists are

testing pressurized capsules, slow release systems and others to determine the best system at a cost-effectiveness ratio that is not prohibitive.

In spite of the disadvantages and the imperfed techniques, it is interesting to note that response to DED control is highly in favor of the injection concept. Arborists not only in Wisconsin but more recently several hundred in Maryland and Ohio showed more than curiosity to the Mauget Tree Injector. Their presence at meetings sponsored by state universities and CLM distributors is testimony that interest is genuine.

Furthermore, DED control reopens a rather closed business that heretofore ended in removal of the dead elm. For the first time arborists can treat diseased elms with more than mild success.

Much is yet to be learned about tree injection with Benlate. But arborists who carefully learn the rudiments at this point will be better prepared when more sophisticated techniques are perfected.

## Sunshine State Site of Aquatic Weed Meeting

The Aquatic Weed Science Society, formerly the Hyacinth Central Society, will hold their annual meeting in Miami Springs, Fla., July 9-12.

The program will be centered around the latest policy regulating the use of pesticides. In addition, biological, mechanical, chemical and other new methods of controlling aquatic weeds will be presented.

This year's field trip will be to the USDA Research Center, Fort Lauderdale. Dr. David Sutton, Robert D. Blackburn, Dr. Kerry K. Steward and others will tour members through the facilities.

Ray Spirnock, field station chief, Central and Southern Florida Flood Control District is serving as local arrangements chairman. He has arranged an interesting and informative program for the ladies and children.

For more details contact Robert J. Gates, Society president, Box 508, Floral City, Fla. 32636.

## Chipman Chemicals, Ltd. Distributor For Cutrine

Applied Biochemists, Inc. has announced the appointment of Chipman Chemicals, Ltd. as exclusive distributor in Canada for Cutrine algacide.

Citrine was registered in Canada in 1971 for use in controlling algae in fire, farm and fish ponds and fish hatcheries. The product has been registered in the United States since 1965 and marketed nationally since 1969.

Applied president Donald Seymour pointed out that Chipman offers more than 50 years experience in the distribution, development and application of chemicals.

In Canada, water treated with Cutrine may be used to irrigate established grasses on turf, fairways, putting greens and established ornamental plants.

## Herbicide for Bentgrass Formulated by Mallinckrodt

A new formulation of Trex-San herbicide for weed control on bentgrass is now available, according to Mallinckrodt. Called Trex-San Bent, the product offers the same broad-spectrum activity as Trex-San, yet provides the safety needed to treat fine bentgrass greens.

According to Stan Frederiksen, manager of specialty agricultural products at Mallinckrodt, turf managers have sought a broadleaf herbicide with "built-in" extra safety, so accidental overdoses, even on fine bent putting greens, would do the complete weed removal job, yet cause no adverse effects. Trex-San Bent answers this special need.

In addition, golf courses sown entirely to bentgrass can use this complete herbicide with maximum safety to turf.

The new formulation controls more than 35 broadleaf weeds, from clover to dandelion.

For more details, circle 720 on the reply card.

## Univ. of Massachusetts Turfgrass Alumni Organize

Officers of the newly formed University of Massachusetts Turfgrass Alumni Association are: Paul J. O'Leary, president; Larry Bunn, 1st vice president; John O'Connell, 2nd vice president; Frank Santos, secretary; and, Dr. Joseph Troll, treasurer.

The primary purpose of the alumni organization will be to raise funds for an accelerated program of turfgrass research at the University of Massachusetts.

Alumni interested in contributing to the organization make checks payable to: Dr. Joseph Troll, Department Plant and Soil Sciences, Stockbridge Hall, Univ. of Massachusetts, Amherst, Mass. 01002.