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Meeting Dates



National Arborist Assn., Midwinter Meeting. International Inn, Tampa, Fla., Feb. 12-15.

Maryland Arborist Day, University of Maryland, College Park, Feb. 14.

Florida Pest Control Conference, University of Florida, Gainesville, Feb. 14-16.

Weed Society of America, Annual Meeting, Statler-Hilton Hotel, Washington, D.C., Feb. 14-17.

Cornell Turfgrass Conference, Statler Hall, Cornell University, Ithaca, N.Y., Feb. 20-23.

NE Ohio Horticultural Trade Meeting, Sheraton-Cleveland Hotel, Cleveland, Feb. 21-22.

Southern Turfgrass Conference, Sheraton-Peabody Hotel, Memphis, Tenn., Feb. 27-28.

Massachusetts's Nurserymen's Short Course, Waltham Field Station, Waltham, Feb. 28-Mar. 1.

Maryland Sod Conference, University of Maryland, College Park, Mar. 2.

Midwest Regional Turf Conference, Purdue University, Lafayette, Ind., Mar. 6-8.

Southern Shade Tree Conference, John Marshall Hotel, Richmond, Va., Mar. 12-15.

Iowa Turfgrass Conference, Hotel Savery, Des Moines, Mar. 13-14.

Michigan Turfgrass Conference, Kellogg Center, Michigan State University, East Lansing, Mar. 15-16.

Western Weed Conference, Westward Ho Hotel, Phoenix, Ariz., Mar. 15-17.

Northern California Turfgrass Exposition, Strybing Arboretum, San Francisco, Calif., Mar. 22-23.

New England Chapter, International Shade Tree Conference Annual Meeting, Sheraton-Eastland Hotel, Portland Ore., Mar. 30-31.

Nebraska Program on Selection and Handling of Pesticides, University of Nebraska, East Campus, Lincoln, Apr. 3-4.

Florida Turfgrass Trade Show, Diplomat Hotel, Hollywood By The Sea, Fla., Apr. 27-29.

Western Chapter, International Shade Tree Conference, Annual Meeting, Hotel Coronado, San Diego, Calif., Apr. 30-May 3.

Rutgers University entomologist, told conferees that there is a five-fold challenge ahead if the system is to fulfill its mission.

First, it will be increasingly necessary for individuals engaged in their own private researches to work together in interdisciplinary projects. Second, it is essential that research be kept relevant and that unnecessary projects be discarded. Third, competent young men must be brought into the field. Fourth, it will be necessary to establish and strengthen international educational programs. And, fifth, the challenge of environmental pollution will have to be met; calling this one of the great issues of our time, Dr. Wilson warned that action is needed now.

Panel Considers Ways To Enhance Herbicides

Of particular interest at this year's conference was a panel of three experts, who considered herbicide combinations, surfactants, and incorporation and irrigation as means of stimulating herbicide activity.

Dr. L. L. Danielson, USDA, Beltsville, Md., suggested that the main reasons for using herbicide combinations are to broaden the spectrum of control, to reduce amounts of herbicides, to cut costs and residues, and to make full use of available chemicals. What rates of each herbicide can be used in combination? What adjuvants should be used? What are crop tolerances to combinations (since these differ from tolerances to herbicides used singly)? More information is needed on how herbicides interact and how they affect plant metabolism before these questions can be fully answered, Danielson indicated.

"There hasn't been too much work in the area of herbicide-surfactant relationships," Dr. Ilnicki told the gathering. The question has been approached on a trial and error basis, and some information is gradually being collected. It is still difficult to know that a particular surfactant and herbicide will work well together, a problem under study at the New Jersey Experiment Station.

Dr. Robert Sweet, Cornell University, Ithaca, N.Y., emphasized that the effect of incorporation and irrigation on herbicide activity varies from one

chemical to another. Until the relation of herbicides to soils and plants is more fully understood, many outstanding questions cannot be answered, Sweet added.

Industry Developments Debut

One of the new products developed for weed controllers is Velsicol Chemical Corp.'s OCS-21963, introduced at NEWCC by Velsicol's Dr. Gideon Berger. Primarily a preemergence killer of annual weeds and grasses, the chemical also controls some broadleaf weeds. Velsicol hopes to have an experimental label by the end of 1967. Bluegrass turf has shown sufficient tolerance to OCS-21963 at rates up to 5 or 6 lbs. per acre to warrant further testing for turf use, weedmen were told.

A newly developed roadside sprayer designed for economical one-man operation was explained by Thomas McMahon, McMahon Brothers, Inc., Tenafly, N.J. In operation, he said, the sprayer can cover up to 30 ft. from roadsides without drift, in winds up to 20 m.p.h. Development trials with the equipment, which features interchangeable spray arms, have covered a million miles of roadsides, according to McMahon.

Offering technical data on Diamond Alkali's recently introduced Dacagin spray gel was Dr. William Sprayberry. Intended for use with conventional spray equipment, Dacagin is a low viscosity liquid while being agitated or pumped, but a high viscosity liquid after passing through a nozzle, Sprayberry noted. The thickener can be used with water soluble materials, emulsifiable concentrates, and wettable powders.

Lee D. Greenwood, product engineer for FMC's John Bean Division, spoke on the adaptability of Bean's Rotocast sprayer to special needs of weed and brush controllers. Rotocast is an air sprayer attachment, which is usually truck-mounted but has also been used behind trailer-type sprayers. Air outlet is shaped to provide a proportioned column of air adaptable to both broadcast and spot spray needs, with a wide range of vertical and horizontal positions.

Shell is continuing its evaluation of SD-11831 (Planavin) and hopes to have registration in 1967, Dr. Jamie Wilson, Shell

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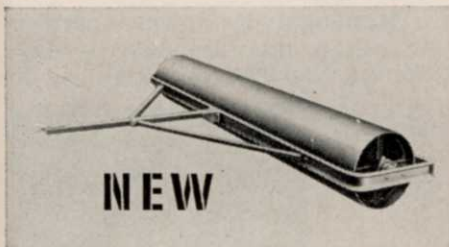


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scientist, told the group. A pre-emergence chemical for control of grassy and broadleaf weeds, it is available to university and other cooperating testers in 75% wettable powder and liquid suspension formulations. A special low-concentrate formulation has shown promise for weed control in turf, as have mixtures of the herbicide with fertilizer, Wilson concluded.

Power Companies View Vegetation Control

"Pennsylvania Electric Co. recognized the need to improve the appearance of its many facilities located in a service area that occupies 40% of Pennsylvania," John B. Middleton, Superintendent of Forestry for Penelec, told participants at a session on industrial weed control.

Penelec's program begins before rights-of-way are opened with a determination of low-growing native trees and shrubs that should be saved. Clearing contractors are then required to avoid damage to these plants, which are used to establish buffer strips on both sides of

improved highway crossings. Stump treating is included in initial clearing to eliminate tall-growing trees. In some cases, screens of selected materials are planted along major highways and population centers.

"The numerous techniques of vegetation control chemical application are utilized to gain economy and retain natural beauty," Middleton stressed. "Selective control through the use of water-borne stem foliage treatment and selective basal treatment allows us to save desirable shrubs and low-growing vegetation."

"Chemical brush control offers the best economics for Potomac Edison in keeping our rights-of-way free of brush," according to Potomac's R. L. Dalton, who continued the discussion. To compare costs between chemical and hand or mechanical clearing methods, the company initiated studies which have placed hand clearing costs at \$141 per acre in 1962 and \$215 per acre in 1965. During this same period, chemical control costs have averaged about \$65 to \$75 per acre.

Three methods of mechanical



John B. Middleton, forestry supervisor of Pennsylvania Electric Co., told of Penelec's efforts to improve rights-of-way appearance.

cutting were also compared: discing, bulldozing, and clearing with a "Tree Eater," a front-mounted flail cutter. In all cases, chemicals proved most economical unless there were specific circumstances that ruled out spraying.

"To my mind there are two important unresolved questions in chemical brush control," S. S. Russell, Senior Lines Engineer for West Virginia's Monongahela Power Co., told the audience of industrial weed and brush controllers: "How clear should the right-of-way be? And, how much of what chemical applied by what technique will accomplish this?"

Monongahela Power operates in rough, mountainous country. Where the land is unnatural or



S. S. Russell, Monongahela Power's senior lines engineer, cited application difficulties in W. Va.'s mountains, called for more sophisticated equipment.



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Two familiar convention sights are caught here: Above, the signing-in which registered nearly 700 delegates under Dr. Bing's direction. Right, the passing of the gavel (this one made from Rutgers' historic Kilmer oak), here being transferred from '66 president, Ilnicki, (right) to '67 president, Gallagher (left).



unimproved, the company employs "less expensive, less thorough re-clearing." "We want the right-of-way to be in harmony with the landscape," Russell said. As for the second point, he made it clear that, in his area at least, the key question is that of application technique. Last year, three out of four acres were helicopter sprayed. Yet, he admitted, helicopter spraying still has drawbacks. So do other spray methods the company has employed.

Defining the problem as one of logistics, Russell contended that "we need to strive for the same degree of sophistication in mechanical applicators that has already been attained in chemistry."

Spray Additives Described

A paper prepared for NEWCC by John H. Kirch and James E. Esposito, of Amchem Products, Inc., described the development of Emulsavert, a new type of invert emulsion. "In the Emulsavert system," conferees were

told, "2,4-D and 2,4,5-T are present in the oil phase as a blend of oil-soluble acids and amine salts rather than as esters."

Most chemicals, however formulated, can be added to the water phase of the emulsion and be compatible with the system. "By carefully studying the efficiency of available chemicals on individual woody species it should be possible to prescribe for use with these invert systems chemicals that have hitherto had too narrow a spectrum of activity to warrant marketing as general brushkillers." Amchem's specialists concluded that "such studies should prove particularly rewarding to right-of-way managers faced with the serious problem of difficult-to-kill species."

In tests of both invert and conventional emulsions applied by helicopter equipped with Amchem's Spray-Disk, Professor W. E. Chappell, of Virginia Polytechnic Institute, Blacksburg, reported that the conventional emulsion "resulted in many

more droplets drifting greater distances than was the case with the invert mixtures." Amchem's Envert and Emulsavert were inverts studied in these trials.

Spray drift was also the concern of researchers of The Dow Chemical Co., as tests on the effectiveness of Dow's Norbak particulating agent were released. Tordon 101 mixture was applied with Norbak by a truck-mounted sprayer covering a 20-ft. swath at 9 m.p.h. in two passes (total spray was 40 gals. per acre). Dow reported no drift of consequence beyond 10 ft. of the spray swath when winds were less than 5 m.p.h., and beyond 25 ft. when winds were up to 12 m.p.h.

Turf Session Studies Crabgrass Controls

Presenting data on crabgrass control tests at NEWCC's morning session on turfgrass weeds were Dr. J. A. Jagschitz, University of Rhode Island, Kingston; Dr. J. M. Duich, Pennsylvania State University, University Park; J. H. Dunn, research assistant at Rutgers; and Dr. J. F. Cornman, Cornell University.

Leadoff man, Dr. Jagschitz, who also chaired the earlybird turf program, discussed tests on timing of preemergent herbicide applications. "Good crabgrass control with only slight turf injury was obtained with Bensulide, DMPA, and H-9573 (Azak) when applied seven and three weeks before emergence started. Bandane and SD-11831 (Planavin) also gave good control but with slightly more injury," Jagschitz recounted.

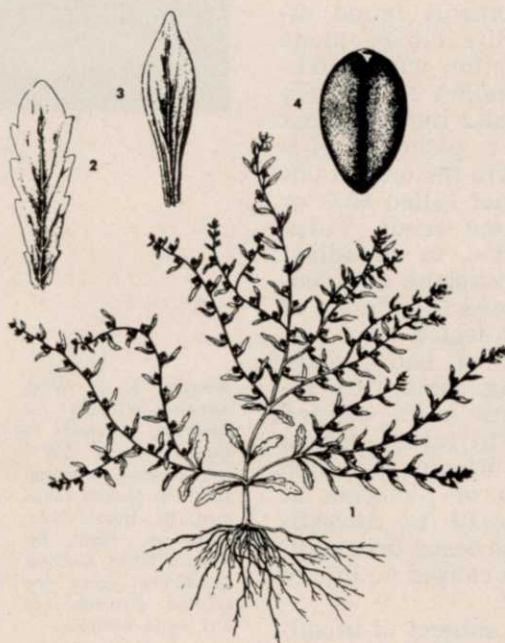
On May 31, when about 22% of crabgrass had emerged, good control with only slight injury was obtained from Bensulide, SD-11831, and siduron at rates, respectively, of 10, 2, and 8-12 lbs. The Rhode Island turf researcher also noted that "none of the treatments applied when 54% of the crabgrass was present gave good control."

Dr. Duich told turfmen of trials on bluegrass and bentgrass tolerances to crabgrass herbicides. Among the most effective chemicals were siduron, which gave 90 to 100% control without turf injury, and benefin with 90% control at 4 lbs. Benefin caused slight injury to bent at 2 and 4 lbs., and to bluegrass at 4 lbs.

"Results from four to seven years of testing showed Bandane,

PURSLANE SPEEDWELL

(*Veronica peregrina*)



Purslane speedwell is sometimes known as neckweed or winter purslane. A native plant, it is widely spread over the eastern and central United States and is also found in the extreme Northwest.

This plant is an annual or winter annual that reproduces by seeds. It is found in gardens, lawns, fertile feeds, and waste places. Its fibrous root system usually seeks moist, rich soils.

Seldom over 8 inches tall, stems are erect and have many branches (1). Stems have a smooth surface and may be slightly hairy. Leaves from the lower stems of the plant (2) are somewhat toothed and grow oppositely, while those on the upper stems alternate and have smooth edges (3).

Small, white flowers of the purslane speedwell grow in axils of upper leaves and at the terminals.

Seed pods are flat, heart shaped, and about $\frac{1}{8}$ inch wide. Seeds (4) are flattened, oval, and have a scar on one side. They are a translucent, glossy, orange yellow.

Purslane speedwell will produce a large number of seeds, but the young seedlings are easily destroyed by harrowing land. This plant is not easily destroyed by chemical means. However, repeated applications of 2,4-D or 2,4,5-T at 1 to 2 pounds per acre, or a heavier than normal application, should bring it under control.

chlordane, calcium arsenate, and DCPA were more effective when applied in early spring than late spring," J. H. Dunn pointed out as he disclosed Rutgers' timing test results. DMPA showed no response to date variation. With less time under test, benefin, H-9573, and trifluralin did not respond to timing variation, while Bensulide, SD-11831, siduron, and Sindone seemed to perform better under earlier application.

In another phase of the test, comparison of carrier types, it was established that "applying preemergence herbicides with dry carriers was more successful than applications with water." This, Dunn noted, was true of all materials tested except trifluralin. Bandane, chlordane, and siduron, for example, provided unsatisfactory control with water, as compared to far better or very good control when applied dry.

Confirming results with newer preemergence crabgrass chemicals tested in mixed red fescue-bluegrass turf were announced by Dr. Cornman. "Under conditions of these trials, SD-11831, D-263 (Sindone), benefin, and siduron provided essentially complete preemergence crabgrass control," he related. All were applied in granular form.

Turning to preemergence control of *Poa annua* in bents, Dr. Duich summarized Penn results by noting that "fall applications of bensulide were found to be the most effective with least injury to bent of herbicides tested. Root injury was evident, but only under moisture stress."

A Vermont study on the density and frequency of weeds on golf greens, and recommendations for hawkweed and spotted spurge control closed out the morning turf session. To control hawkweed, Dr. Jagschitz suggested combinations of 2,4-D plus dicamba or silvex applied in May, or 2,4-D plus dicamba or mecoprop applied in September. Two applications of dicamba plus 2,4-D or of silvex can control spotted spurge.

Turf Talks Turn to Broadleaf Problems

Penn State tests show dicamba to be just as effective in dry form as in liquid, Duich told turf-oriented conferees. However, dry 2,4-D is not comparable to spray formulations, which

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)

limits dry combinations of the two chemicals. "Broad spectrum weed control value of dicamba-2,4-D combinations can be increased by improving the wetting qualities of a formulation," he counseled. Also, adding $\frac{1}{16}$ lb. of picloram will help, though he added that more data is needed on its safety.

Reporting controls found effective for white clover alone and in combination with stitchwort and dandelion in fairway turf, Dr. Jagschitz revealed that picloram and a picloram-2,4-D combination were the only treatments tested that killed 92% or better of all three weeds. Turning his attention to broadleaf plantain and purslane in seedling turf, he noted that "none of the treatments tested gave excellent control of both weeds without causing some turf injury." Jagschitz then offered this thought: "In future tests a combination of bromoxynil with either dicamba or picloram at low rates should be investigated." In these tests, bromoxynil at $\frac{3}{4}$ lb. rate caused no injury to seedling turf.

Again on the subject of broadleaf weeds in seedling turf, Dr. Duich revealed that brominil and ioxynil showed less damage to seedling turf than 2,4-D and dicamba. "With a few exceptions," Duich said, "fescue and bent were most sensitive to herbicides."

From across the Northern



Above, B. J. Watt, Sherwin-Williams of Canada, answers a question on SW's mixed herbicide formulation as session chairman, Dr. Harold Kerr, looks on. Right, Dr. Richard Otten, Amchem Products, joins the spirited discussion of turf weed control.



border, B. J. Watt, of Sherwin-Williams Co. of Canada, brought a report on SW's 2,4-D-MCPP-dicamba mixed herbicide formulation. Respectively, 16, 16, and 1.5 ozs. per imperial gal. are used. This combination, at 1 gal. per acre, Watt said, "has proved

the most effective mixture found to date for control of the widest range of turf weeds while at the same time providing the greatest safety margin to nearby ornamentals." August and September applications at half to a quarter of the usual dose are also safe to Penncross, Seaside, and Highland bents, Watt said.

At this point, the turf session evolved into a lively discussion. In a rare moment of complete agreement, Dr. Henry Indyk, Rutgers extension specialist, and Dr. Harold Kerr, USDA, Beltsville, who chaired the session, echoed a prime concern facing turf weed controllers in the years ahead: selective control of grassy weeds in turf. Tall fescue is a particular problem, experts say. Where is it all coming from? Duich thinks a major source of this problem is "economy" grass seed mixtures.

Water Problems Discussed

While the Northeast's water problems did not affect the nearly 700 weed controllers meeting in New York, water problems of a different sort did provide the focus for a small but enthusiastic gathering of aquatic weedmen.



Reporting results of turfgrass weed control studies were (left to right) Dr. J. A. Jagschitz, University of Rhode Island; Dr. J. M. Duich, Pennsylvania State University; Dr. J. F. Cornman, Cornell University; and Dr. T. R. Flanagan, University of Vermont.

Behavior of copper sulfate in small ponds was explored by Dr. Donald Riemer, of Rutgers. His conclusions: Application of crystals, which sink to the bottom, provide less compound in solution than theoretically expected. Nor does the copper form a heavy concentration near the bottom. This behavior may be due to absorption by bottom muds, Riemer speculated. Greater concentrations result from applying copper sulfate in solution, though a heavy bloom of algae will quickly reduce the amount of copper in a treated pond.

In another aquatic paper, Dr. Riemer concluded that repeated mowing of spatterdock, while not adequate to control the water weed, may well increase the effectiveness of herbicides. David L. Sutton, research assistant from Virginia Polytechnic, reported that analyses for simazine in treated ponds seem to show that fish are free of simazine once the water is free.

Continuing aquatic talks, John H. Steenis, of the Patuxent Wildlife Research Center in Laurel, Md., observed that a combination of dicamba and 2,4-D shows promise for control of waterchestnut. "Treatments made during early flowering were questionable," he said, "while those made during the period of early to late seed maturation were successful."

1967 Officers Named

With barely an hour's break in the busy round of discussions aimed at varied interests of weedmen in attendance, NEWCC paused to name its officers for the coming year and to issue a few well-deserved thanks to those of the past. Dr. John Gallagher, Amchem Products, Inc., Ambler, Pa., will head the conference in 1967, with Dr. John Meade, Rutgers weed expert, in the vice president's seat. Dr. Arthur Bing, Cornell Ornamentals Research Laboratory, Farmingdale, N.Y., continues to serve as secretary-treasurer.

With these officers at the helm, the Northeastern Weed Control Conference plans to hold its 22nd annual meeting on January 3, 4, and 5, 1968. Again, New York City's Commodore Hotel will be the site, and for three days out of the year at least, weed control capital of the Northeast.



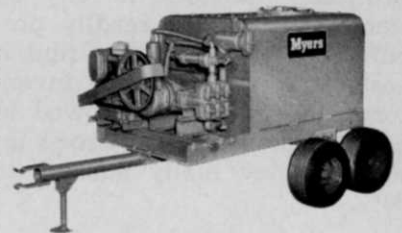
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Profit, Safety, Unusual Tree Problems Accented at Indiana Arborists' Jan. Meeting

By DR. PAUL E. TILFORD

"Net profit, the goal in all business, depends on many interrelated factors, such as price, sales volume, cost of goods or services, and expenses," Don Surber, of National Cash Register Sales, told the Indiana Arborist Association at the opening of its 18th Midwinter Conference, January 4 to 6, at the Claypool Hotel, Indianapolis, Ind.

The price charged for goods or services deserves more consideration than some arborists give to this important phase of their business, Surber continued. Prices must be directly related to the costs of a particular business and should not be overly influenced by competitors' quotations.

It is easy to lose money on small jobs. Therefore, special attention should be given to charging if these constitute much of the business. Sometimes, an increase in price of as little as 5% can boost net profit considerably. Volume of sales is also important to any business, but a continual increase is not always profitable if accompanied by increased sales costs. Surber pointed out that "many times, less volume will give more profit."

Supplies and equipment for use in the business or resale usually can be bought at better prices with quantity purchases. However, it may not always be profitable to stock heavily on items that can be readily procured. Many businesses find it costs about 14% to hold inventory. If capital is borrowed at 6%, the cost of holding excess inventory may really amount to 20%.

Aerial Safety Stressed

Panelists discussing aerial lift safety during tree trimming were John Harley, Indianapolis Power and Light Co.; Rex Wilkinson, Muncie Tree Surgery

Corp.; and Paul Ramsey, N. G. Gilbert Corp., Muncie.

Harley emphasized that only original parts supplied by equipment manufacturers should be used to make repairs. Make-shift substitutes can cause serious accidents, he noted, citing a case where a section of hydraulic hose containing metal reinforcing strands was used to replace a broken pneumatic hose. This destroyed the insulating qualities of the boom and a man was electrocuted later when it was pushed into a high voltage line.

Some cheap black hoses contain enough carbon to be conductors and should never be used on aerial lifts. Harley also stressed the importance of safety belts for the man in the bucket.

Rex Wilkinson reported National Safety Council studies of 184 aerial lift accidents. Of these, 47 were due to equipment failures and 137 to operator failures. Equipment failures were mostly caused by boom bolts and welds breaking and by failures in hydraulic mechanisms.

Paul Ramsey recommended daily inspections of aerial equipment made jointly by the operator and crew foreman. The machine should be run through all its movements, and cables and hydraulic systems especially should be checked for flaws, with an inspection sheet for a guideline. Aerial lifts should also be examined by factory-trained personnel at least once every 12 to 15 months, Ramsey advised.

Turning to arborists' public relations, Noel Wysong, secretary of the Midwestern Chapter, International Shade Tree Conference, emphasized the importance of advertising and publicity material, telephone image, correspondence, conduct of workmen, appearance of equipment, personal contacts, and most im-

portant, quality of work. "Establishing good public relations in the community is a job that can't be done in a day or a week. In fact, it's a job that is never completed; it must be worked at constantly," he counseled.

Unusual Tree Problems Accented

A highlight of the Hoosier arborist gathering was Dr. J. C. Carter's discussion of uncommon and unusual tree diseases. Dr. Carter, Head of the Section of Applied Botany and Plant Pathology, Illinois Natural History Survey, Urbana, described some lesser known leaf diseases: *Dothistroma* pine needle blight, oak leaf blister, *Actinopelte* leaf-spot of oak, island chlorosis of hackberry, and hackberry mosaic.

Pine needle blight, oak leaf blister, and oak leaf spot are caused by fungi, he observed. Spraying for pine needle blight with such fungicides as Bordeaux mixture or organic mercury during April and early May has been recommended, but has not controlled the disease in Illinois. Spacing trees at wider intervals to permit free movement of air between will help reduce infection and defoliation, Dr. Carter recommended.

Oak leaf blister is adequately controlled with one Bordeaux spray applied before buds open in spring, while *Actinopelte* leaf-spot does not cause sufficient damage to warrant treatment. Island chlorosis of hackberry seems to be associated with heavy infestations of the potato leafhopper, *Empoasca fabae*. Cause of leaf mosaic or yellows and stunt of hackberry has not been determined, Carter noted. He suggested that affected trees be removed and destroyed since they are deformed in growth and appearance.

A bacterial canker of oak,