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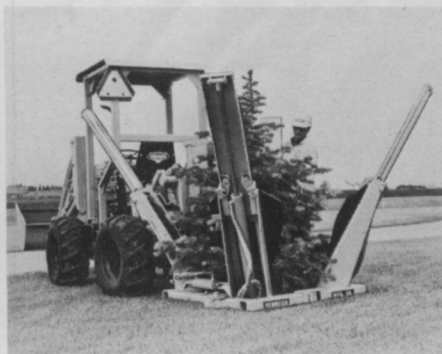
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For More Details Circle (111) on Reply Card

'ADELGIDS': The Aphid Controversy

By DR. R. LEE CAMPBELL
Associate Entomologist
Western Washington Research
and Extension Center
Puyallup, WA



PINE BARK aphid, eastern spruce gall aphid, balsam woolly aphid — these and other insects in the subfamily Adelginae have been given names which include the word 'aphid.' They are not very much like true aphids but are more closely related to the grape phylloxera which devastated the French vineyards in the latter part of the nineteenth century.

Generally names, as such, are unimportant but in this case they have led to misunderstanding and resultant economic loss. Perhaps a change is in order. I propose to call them 'adelgids.'

The problem is that the physiology of the adelgids differs from that of aphids and, as a result, insecticides which are very effective in controlling aphids are often useless against adelgids. However, since they are stuck with the name and most people do not know their idiosyncrasies, many who try to combat them with aphicides are disappointed with the results. In general, organophosphate insecticides, such as malathion, are used for aphid control but are not effective against adelgids, while carbamates, such as carbaryl, are excellent for adelgid control and not very effective against most aphids. Endosulfan, a chlorinated insecticide, is an example which is effective in control of both aphids and adelgids.

The adelgids are an extremely in-

(continued on page 58)

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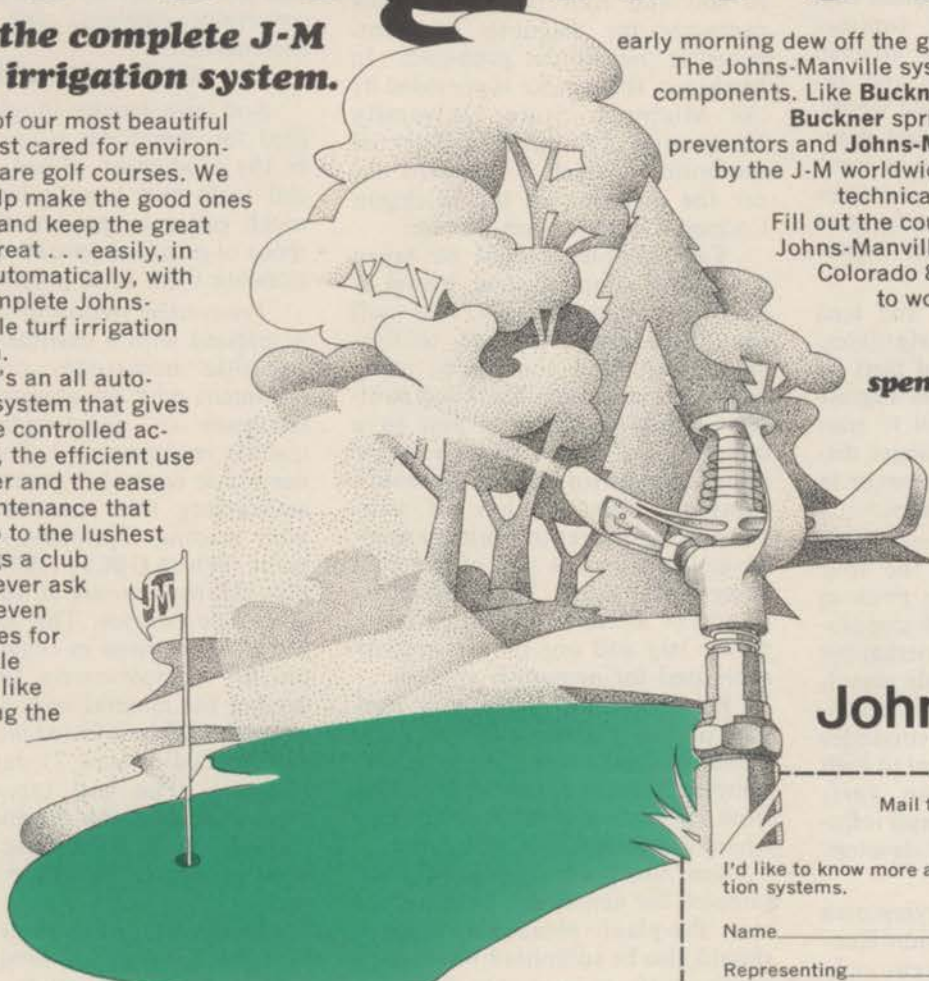
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Turfgrass Nematode Problems: Diagnosis and Control

By DR. G. W. BIRD*

PLANT PARASITIC nematodes are microscopic worms that usually feed on the roots of plants. In Michigan, they can be severe pests of turfgrasses.

Above-ground symptoms of nematode-infested turf include yellowing of leaves, dieback and breakdown of young foliage and a tendency to wilt during periods of high temperature and low moisture. Grass cover generally becomes thin and growth during the summer months is poor. Severely affected areas may become bare and infested by annual grasses and weeds. In addition to causing direct damage to root systems, feeding by some plant parasitic nematodes increases susceptibility of certain turfgrasses to diseases caused by other organisms.

Some nematodes live and feed within the roots of turfgrasses. Others live in the soil and feed on the root surface. Both types migrate through the soil from root to root and can be moved even longer distances in sod, irrigation water or in soil on mechanical equipment.

Stunt, stubby-root, root-knot and cyst nematodes are the four most important nematode pests in Michigan turfgrasses. High population densities of the stunt nematode appear to be very commonly associated with Michigan turfgrasses. Spiral, ring and sheath nematodes are also frequently recovered in high numbers from Michigan turfgrasses; however, their overall influence on plant growth and development is unknown.

In Michigan, typical symptoms of Fusarium blight of Merion Kentucky bluegrass usually occur only

in the presence of both stunt nematodes and the fungus *Fusarium roseum*. The stunt nematode renders this grass susceptible to the fungus and appears to be the dominant causal agent in this disease complex.

Nematode Detection

Because nematodes are microscopic and the damage they cause is very similar to that resulting from other factors, a laboratory analysis of soil and root tissue is usually necessary for diagnosis of plant-parasitic nematode problems. In Michigan, this service is provided by the Michigan State University Nematode Diagnostic Service Laboratory, which is operated under the direction of the Michigan Cooperative Extension Service.

Turf samples should be taken with a soil sampling tube, trowel or narrow-bladed shovel. The soil should be taken at a one- to five-inch depth, and contain as many feeder roots as possible. Each sample should consist of a pint to a quart of soil taken from a larger sample composed of 10 or more subsamples. The number of subsamples (soil cores or borings) needed depends on the size of the area being investigated. The subsamples should be mixed in a clean pail or a plastic bag and one pint to a quart submitted for nematode analysis.

Plant parasitic nematodes feed only on living tissues and are rarely found in dead roots. Soil and root samples, therefore, should be taken from the margin of the problem area where the turfgrass is still living.

Sod farm acreage should be sampled for nematodes before seeding. Pre-plant nematode samples should also be submitted where high quality turfs or lawns are desired.

Additional information about diagnosis and control of nematode problems of turfgrass can be ob-

tained by requesting Michigan State's Cooperative Extension Service Bulletin E-800, "Nematode Detection," and E-701, "The Hidden Enemy: Nematodes and Their Control," Michigan State University Bulletin Office, P.O. Box 231, East Lansing, Mich. 48824.

(Editor's note: Residents of other states should contact their local county extension agent or their state's land grant university for information concerning diagnosis and sampling procedures.)

Sod Farm Control

Sod farm acreage should be sampled for nematodes before seeding. In the production of sod, commercial turfs and private lawns, it is much easier to prevent the occurrence of nematode problems than to alleviate them once present.

Pre-seeding treatment — If a site is infested with a detrimental plant parasitic nematode, pre-seeding treatment with an appropriate soil fumigant or nematicide is frequently recommended. This type of nematode control is generally more satisfactory than treatment at or after seeding. Pre-plant soil fumigants such as DBCP, 1,3-D or 1,3-D plus chloropicrin are all suitable for nematode control. The amount of chemical required in organic soil is usually approximately twice that needed for mineral soil. Soil fumigants should be injected into the soil and applied at least 21 days before planting. The soil temperatures should be between 50 and 80 degrees F. Prior to seeding, the soil must be worked to release the fumigant.

Treatment of established sod — DBCP is the only soil fumigant that can be used for nematode control in established sod. To insure good penetration of the chemical, it must be applied as a drench.

*The author is a nematologist in the Department of Entomology and the Department of Botany and Plant Pathology, Michigan State University.

The granular nematicides Fensulfothion and Phenamophos can be used to control nematodes in established sod. They must be uniformly distributed over the area to be treated and drenched immediately after application. The sod should not be harvested for at least 60 days after application. Fensulfothion and Phenamophos are for professional application only.

Commercial Turf Control

Sites to be used for the establishment of high quality commercial turfs should be sampled for nematodes before seeding or sodding. If sod is to be used, it is best to obtain a high quality product grown in nematode-free, nematicide-treated or fumigated soil. This precaution, however, will be of little value unless the soil where the sod is to be used is nematode-free, nematicide-treated or fumigated.

Pre-plant treatment — If a site is infested with a detrimental plant parasitic nematode, pre-plant treatment with an appropriate soil fumigant or nematicide is frequently recommended. This type of control is generally more satisfactory than treatment at or after seeding or sodding. The same pre-plant soil fumigants recommended for pre-seeding sod farm nematode control — DBCP, 1,3-D or 1,3-D plus chloropicrin — are all suitable for nematode control in future commercial turf sites. Treatment is the same as described previously under the sod farm control heading.

Treatment of established commercial turfs — DBCP is also the only soil fumigant that can be used for nematode control in established commercial turfs. It must be applied to commercial turfs as a drench, as in the treatment of established sod. The granular nematicides Fensulfothion and Phenamophos can also be used to control nematodes in many established commercial turfs. They are for professional application only, and may not be suitable for use in certain situations. These materials must be uniformly distributed over the turf and drenched immediately after application.

Home Lawn Control

Sites to be used for the establishment of high quality home lawns should be sampled for nematodes

before seeding or sodding. If sod is to be used, again it is best to obtain a high quality product grown in nematode-free, nematicide-treated or fumigated soil, providing the soil where the sod is to be used is nematode-free, nematicide-treated or fumigated.

Pre-plant treatment — If a site is infested with a detrimental plant parasitic nematode, preplant treatment with an appropriate soil fumi-

gant is frequently recommended. This type of control is generally more satisfactory than treatment at or after seeding or sodding.

Treatment of established home lawns — DBCP is the only compound recommended for nematode control in established home lawns. It must be applied by a professional applicator, and to insure good chemical penetration, it should be used as a drench. □

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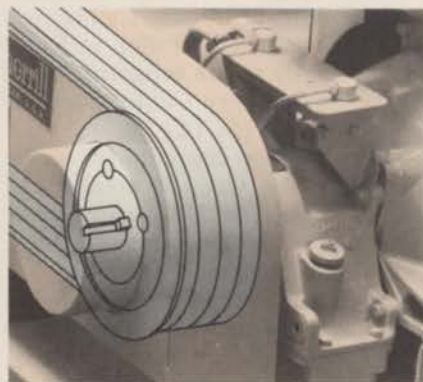
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For More Details Circle (101) on Reply Card

Industry News and Newsmakers



Southern California Turfgrass Council President Alfred N. Nobel (left) presents the Council's check to Victor B. Youngner and Victor A. Gibeault for turfgrass research at the University of California's South Coast Field Station.

California Turfgrass Council Aids Research With \$6000

The turfgrass research program at the University of California's South Coast Field Station in Santa Ana recently got an economic boost from the Southern California Turfgrass Council (SCTC).

Fulfilling a commitment made last year, the Council presented a \$3,000 check to U.C. agronomist Dr. Victor B. Youngner to assist with the ongoing undertaking.

Last April, the Council donated a like sum as the first installment to get the \$6,000 project underway. Youngner is directing the research program with the aid of Dr. Victor A. Gibeault, U.C. Cooperative Extension horticulturist.

Both attended the Council's January meeting to accept the donation. Representing the SCTC in the presentation was President Alfred N. Nobel.

Following the ceremony, Nobel emphasized the Council would welcome any funds from industry or private sources to further promote turfgrass research sponsored by the organization.

Butz, Train Call for Cooperative Effort In Applicator Training, Certification

EPA Administrator Russell E. Train and Secretary of Agriculture Earl L. Butz have announced the signing of an interagency cooperative agreement calling for Federal, State and local cooperation in the training and certification of pesticides applicators. The agreement will help to implement existing regulations concerning certification of applicators.

"This agreement will provide policy guidelines to regional, State and local agencies to promote the development of applicator training programs, by bringing Federal, State and local resources to bear on this activity," Train said. "These programs will help to insure both that restricted pesticides are used safely and that agricultural productivity is maintained."

"The Department of Agriculture's Extension Service will work closely with EPA to assist the States' Cooperative Extension Services in implementing training programs," said Secretary Butz. "The Extension Service is the basic educational arm

of the Department of Agriculture; therefore, its personnel and resources will be a vital part of our cooperative effort to train applicators in the safe use of pesticides."

EPA said applicator certification is a positive effort to insure the safe and proper use of potentially hazardous or environmentally damaging products. The Agency also noted that certification may permit continued use of those products which might otherwise have to be banned since they pose unacceptable hazards to people or the environment unless used by well-trained applicators.

Both Administrator Train and Secretary Butz believe that the training and certification program will help to maintain production while enhancing environmental protection. "We have a natural alliance here," Train said. "The present agreement will do much to lessen the risk of pesticide misuse which might otherwise threaten both of our efforts."

EPA estimates that domestic
(continued on page 42)



The Weed Science Society of America recently held its 15th annual convention in Washington, D.C., with more than 800 weed scientists attending. Officers elected for the coming year are (from left): Dr. T. J. Sheets, WSSA editor; Dr. F. W. Slife, president-elect; Dr. Will D. Carpenter, treasurer; Dr. C. R. Swanson, president; Claude Cruse, executive secretary; Dr. C. L. Foy, vice president; Dr. Ellery L. Knake, 1974 president; and Dr. G. R. Miller, secretary.

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Meeting Dates

RCGA and Canadian Golf Superintendents Association, national turfgrass conference and show, Skyline Hotel, Toronto, Ont., March 18-20.

Western Society of Weed Science, annual meeting, Del Webb Townhouse, Phoenix, Ariz., March 18-20.

Canada Chapter, ISTC, annual meeting, Four Seasons Sheraton, Toronto, Ontario, March 19-22.

National Club Association, annual conference, Shoreham Hotel, Washington, D.C., April 13-15.

Southern California Horticulture and Turfgrass Institute, Royal Inn, Anaheim, Calif., April 16-17.

Arizona Turfgrass Council, turfgrass equipment and materials show, Scottsdale Hilton Hotel, Scottsdale, Ariz., April 23.

Wyoming Recreation and Park Association, state conference, Lander, Wyoming, April 25-26.

Arizona Turfgrass Conference, Camelback Sahara Hotel, Phoenix, Ariz., May 7-8.

Western Chapter, ISTC, 42nd annual meeting, Riviera Hotel and Country Club, Palm Springs, Calif., May 11-14.

Florida Nurserymen and Growers Association, 1975 convention, Innisbrook Resort and Golf Club, Tarpon Springs, Fla., May 22-24.

American Sod Producers Association, summer convention and field days, Crown Center, Kansas City, Mo., July 16-18.

American Association of Nurserymen, centennial convention, The Palmer House, Chicago, Ill., July 19-23.

Penn Allied Nursery Trade Show, Hershey Motor Lodge and Convention Center, Hershey, Pa., July 29-31.

Illinois Landscape Contractors Association, Summer Field Day, Burr Oak Nursery, Round Lake, Ill., Aug. 6.

Canadian Parks and Recreation Association, annual conference, Quebec City, Quebec, Aug. 10-14.

Illinois Turfgrass Foundation, Golf Day, Indian Lakes Country Club, Bloomingdale, Ill., Aug. 25.

Pacific Horticultural Trade Show, San Diego Convention and Performing Arts Center, San Diego, Calif., Sept. 13-15.

International Symposium on Environmental Monitoring, Frontier Hotel, Las Vegas, Nev., Sept. 14-19.

California Association of Nurserymen, convention, Town and Country Hotel, San Diego, Calif., Sept. 16-18.

Kentucky Turfgrass Council, conference and field day, Barren River State Resort Park, Lucas, Ky., Oct. 14-15.

26th Central Plains Turfgrass Conference, Manhattan, Kansas, Oct. 22-24.