

No. 19 • October 24, 2001

### Winter Educational Opportunities

November 27, 2001: Illinois/Iowa Fruit and Vegetable Growers Conference, Holiday Inn, Bettendorf, Iowa. Fee: \$40/person; 3 or more, \$36/person (includes lunch). Topics include the 2001 pumpkin year in review; avoiding disaster in early tomato production; strategies to maintain fruit and vegetable quality; marketing the farm; bramble and strawberry disease update; natural and biological control of apple insects; cover crops for nonchemical weed control in vegetable production. For more information, call Martha Smith, Macomb Extension Center, (309)836-3366.

November 27–29, 2001: North Central Turfgrass Exposition, Pheasant Run Resort, St. Charles. Sessions cover turf and landscape maintenance issues along with a trade show. For more information, call the Illinois Turfgrass Foundation at (847)706-6750.

January 4, 2002: Southern Illinois Bedding Plant School for bedding plant growers, garden center operators, and master gardeners at Southwestern Illinois College, Belleville. 9 a.m. to 4 p.m. Fee: \$10 at door. Call Ron Cornwell at (618)692-9434.

February 5 and 6, 2002: Pro Hort Symposium, Holiday Inn City Centre, Peoria, for those in the landscape, nursery, lawn care, grounds maintenance, golf, or garden center industries. Twelve sessions cover perennials, roses, trees, native plants, ornamental grasses, fertilization, compaction, diseases, insects, biotechnology, nomenclature, and marketing. Fee: \$100. For more information, visit [www.prohort.org](http://www.prohort.org) or call (888)525-3900.

February 19 and 20, 2002: Southern Illinois Grounds Maintenance School, Gateway Convention Center, Collinsville. Programs for nurserymen, garden center operators, arborists, parks and recreation employees, golf course employees, and all others working in grounds maintenance. Many sessions also in Spanish; school features a large trade show. Fee: \$50, advance registration required. Call Ron Cornwell at (618)692-9434. A copy of the program and the registration form can be downloaded from the Web site: [web.extension.uiuc.edu/edwardsvillecenter2002SIGMSinformation.htm](http://web.extension.uiuc.edu/edwardsvillecenter2002SIGMSinformation.htm).

April 1, 2002: Spanish Grounds Maintenance for Hispanic Workers in the Grounds and Landscape

Industry, Cantigny Gardens, Wheaton. Begins at 7:30 a.m.; registration \$45. For more information, call Jim Schuster at (708)352-0109 or e-mail [schusterj@mail.aces.uiuc.edu](mailto:schusterj@mail.aces.uiuc.edu). (Phil Nixon)

### INSECTS

#### Using Dormant Oils to Manage Pests

Insect and mite pests normally survive the winter months in an overwintering stage, perhaps as an egg or a mature female that emerges in the spring. Instead of waiting until spring to initiate control measures, it is possible to apply a dormant oil. Advantages include (1) a wide range of activity against most species of mites and scales, including effectiveness on eggs; (2) little likelihood of insects or mites developing resistance; (3) a tendency to be less harmful to beneficial insects and predatory mites (natural enemies) than other pest-control materials with long residual activity; and (4) relative safety to birds, humans, and other mammals. Disadvantages are (1) potential phytotoxicity during the growing season and (2) minimal residual activity or less persistence.

Dormant oils, derived from paraffinic crude oil, are the heaviest of the petroleum oil sprays and have a low unsulfonated residue (UR). UR is a measure of phytotoxic compounds remaining after distillation and refining. A high UR (greater than 92%) indicates a highly refined product with less probability of phytotoxicity. Dormant oils have a UR value below 92%.

Dormant oil applications are directed primarily at killing overwintering pests, including mites and scales, before they can become active in the spring and cause plant injury. Applications are made in winter to minimize phytotoxicity to plants. Usually, a 2% to 4% rate is used in the late fall to early spring. Dormant oils suffocate insects or mites by blocking their breathing pores (spiracles). These oils are contact materials with minimal residual activity, so thorough coverage is essential.

Dormant oil sprays are generally applied to plant parts, which means that the pest's overwintering stage is located on the plant. However, not all insect and mite pests overwinter on plants. For example, dormant oil applications will not work on two-spotted spider mite, *Tetranychus urticae*, because the mite

overwinters as a female in plant debris, mulch, or other nonplant protected places. In contrast, the spruce spider mite, *Oligonychus ununguis*, overwinters as an egg on plants, primarily evergreens such as arborvitae, juniper, hemlock, and pine. As a result, this mite is susceptible to dormant oil sprays.

Dormant oils are highly effective in killing the overwintering stages of scales, especially first- and second-instar nymphs (for example, cottony maple scale, *Pulvinaria innumerabilis*). Similarly, euonymus scale, *Unaspis euonymi*, overwinters as second instars or mature females and is relatively easy to control with dormant oil sprays. However, scales that overwinter as eggs, such as oystershell scale, *Lepidosaphes ulmi*, and pine needle scale, *Chionaspis pini-foliae*, may be hard to control. Eggs are generally stacked on top of each other, and the dormant oil may not contact the bottom layer. Additional insecticide applications after egg hatch are generally required.

A concern with the use of dormant oils is phytotoxicity (plant injury). Some plants, including arborvitae, beech, and certain maples, are very sensitive to these sprays. Needles of Colorado blue spruce can be discolored (change from blue to green) by dormant oil applications. Phytotoxicity is generally prevalent when higher rates (over 4%) are used and when applications are made in early fall before dormancy or in late spring at budbreak. Fewer problems occur when applications are made in late October through February when plants are completely dormant. To minimize the potential for phytotoxicity, make sure the spray solution is continually agitated. Dormant oils should not be applied to plants when there is danger of freezing. Also, dormant oils should not be applied to stressed plants, which are more susceptible to phytotoxicity. Lack of moisture, extreme temperatures, sudden change in temperature after spraying, prolonged winds, or poor conditions due to disease or insect infestation predispose plants to phytotoxicity.

It is generally thought that using dormant oils is less likely to result in resistance. This may not be true. For example, a Christmas tree plantation of Scots pines was sprayed with dormant oils for over 10 years to control pine needle scale. Eventually the scales became more difficult to control. It was discovered that the scale covers were thicker than normal, making it harder for the dormant oil to penetrate.

Preventive dormant oil applications can save time later on. Treatments may not be needed in early spring, or the number of applications may be reduced. Reducing the number of insecticide applications preserves natural enemies of mites and scales, including parasitoids and predators, which usually supply sufficient control of these pests. (Raymond Cloyd)

## White Grubs

We have several reports of spotty, high infestations of white grubs, with resulting heavy damage to turf. Much of Illinois has had lighter infestations than one would expect, considering the size of grub beetle flight and growing conditions for eggs and larvae from August through October.

Grubs start moving down out of the turfgrass root zone when soil temperatures drop below 50°F, below 60°F for Japanese beetle grubs. In the northern two-thirds of the state, grubs will soon move down. They may have already descended in some areas. Once they burrow below the root zone, turf damage will cease, but so will the chances at effective control. As long as the grubs are in the root zone, insecticidal or nematode control should be effective.

At this time of year, treatment is usually done in response to grub damage, which means that quick control is important to ease the client's mind. Trichlorfon, sold as Dylox and Proxol, kills the grubs in three days and is probably the insecticide of choice. Insecticidal nematodes vary in ability under cooler conditions, but *Heterorhabditis bacteriophora*, sold as Cruiser and Hb nematodes, should still be effective when the grubs are in the root zone. Nematodes usually kill grubs in less than a week, but dead grubs may still be found because bacteria in the nematodes produce antibiotics that keep the grub from rotting.

If damaging grub populations are not controlled before descending for the winter, be ready to irrigate during dry spells next spring. When soil temperatures rise above 50°F in the turf root zone, grubs will rise and start feeding. However, they will be very difficult to control with insecticides. Irrigation during dry spells allows the grass to grow more roots than the grubs can eat, resulting in attractive turf. (Phil Nixon)

## PLANT DISEASES

---

### Bacterial Leaf Scorch of Trees

Environmental stress, root injury, drought, and many other factors can cause leaf margin necrosis, or scorch. This condition is usually widespread in a tree and fairly uniform. It is not necessarily repeated in following years and is noninfectious (see issue no. 5). Bacterial leaf scorch (BLS) is an infectious disease that spreads systemically and causes slow decline and death of a tree. BLS is not new but is appearing more frequently in the Midwest. This may simply be because more people recognize the symptoms.

Infectious leaf scorch is caused by the bacterium *Xylella fastidiosa*. This disease has become famous for its presence in oaks and elms on the mall in Wash-

ington, DC. Although mainly found in eastern and southern states, BLS has now frequently been found in western Kentucky and Indiana and reported in Illinois. This past summer, the U of I Plant Clinic confirmed BLS on six pin oaks in central Illinois.

Frequent hosts include elm, oak, sycamore, mulberry, sweetgum, sugar maple, and red maple. Scorch symptoms occur in early to midsummer and intensify in late summer. The scorched leaf edges or tissue between veins may be bordered by a yellow or reddish brown. Symptoms occur on one branch or section of branches and slowly spread in the tree from year to year. BLS often appears on the oldest leaves first, unlike environmental scorch, which first appears on the newest leaves. Of course, diagnosis is never that simple, and oaks are an exception. We did not observe this pattern on pin oaks in Illinois. Most references say **oaks** show symptoms on an entire branch at once. In trees with bacterial scorch, infected leaves often remain on the tree until the fall. Oaks are again the exception; they drop leaves early. If your oak has been in slow decline with leaf scorch symptoms each July and August, and fall leaf drop occurs about a month ahead of healthy oaks, BLS may be present.

The bacterial pathogen is found only in xylem tissue. Xylem-feeding leafhoppers and spittlebugs are thought to spread the bacterium in landscape trees, but it can also be transmitted through root grafts. Transmission methods must not be very effective, though, as disease does not spread rapidly from tree to tree.

We cannot test for this bacterium at the Plant Clinic, so we send our samples to AGDIA, Inc., a private lab in Indiana. AGDIA has a serological (polyclonal antibody) test that can be done on young twigs and leaves. As of this writing, the fee for the test is \$48.25 for one sample and \$6.25 for each additional sample. Call ahead to be certain you have prepared the sample correctly; this will avoid resampling at your expense. Leaf petiole tissue is preferred. If you have questions, consult AGDIA at [www.agdia.com](http://www.agdia.com) or call them at (219)264-2014 or (800)62-AGDIA.

What can you do if bacterial scorch is present? There is probably nothing you can do to keep the tree from dying. Prune out dead wood as it appears. Start thinking of tree replacement, and plant a variety that is not known to host this disease. Be sure to pick a species that does well in your site. Investigate drainage pattern, soil type, amount of sunlight, and any oddities about the location. No fungicides, insecticides, or bactericides can be sprayed on a tree to prevent or cure this disease. The antibiotic oxytetracycline is present in some commercially available injectable products. There has been little research in this area, but some work shows that oxytetracycline sup-

presses *Xylella* in some cases and may provide temporary symptom suppression when injected into trees. Researchers in Kentucky who have tried such injections do not see any benefit, and National Park Service researchers have seen only short-term benefits. You may need to repeat costly injections as frequently as every year; and there are no guarantees. We will keep you posted as new information on managing this disease is available. (*Nancy Pataky*)

## Act Now to Prevent Diseased Plants

It is so hard to convince homeowners to act now to prevent disease problems next year. After all, how do we know last year's actions did any good? We don't see the disease, so it must never have been present. Please trust me on this one because I see plenty of samples each year that do have problems. If you decide to do nothing, then I may be hearing from you next May when you send samples to the Plant Clinic.

Many gardeners wait until a problem occurs, then try to correct it by asking for a quick chemical cure (which usually does not exist). Ask instead: What can be done now to help prevent disease problems in the lawn and garden? Many problems are best controlled with preventive measures. Chemical rescue treatments may act as temporary Band-Aids, but they are usually not the answer for long-term disease control. These fall lawn and garden cleanup procedures help prepare plants for winter and discourage disease problems.

1. Keep grass mowed until it stops growing. This practice helps prevent winter injury and damage from fungal snow mold diseases.
2. Prune oak trees in the dormant season to reduce the risk of oak wilt. Pruning from September to early March is recommended because pruning during the growing season causes sap flow, attracting bark beetles that may transmit oak wilt fungus.
3. Prune trees and shrubs to remove dead and seriously cankered wood and any crossing or interfering branches. Open up the center of woody plants to promote faster drying, let in more light, and reduce foliar and stem diseases. This practice helps prevent fire blight on rosaceous hosts, anthracnose and fungal leaf spots of trees, bacterial leaf spot of *Prunus* species, and many other diseases.
4. Provide winter protection for roses, evergreens, thin-barked young trees, and other sensitive plants. Winter wounds often become infected with secondary canker fungi, such as rose cane canker.
5. Prune tree and bush fruits according to the recommendations of Extension horticulturists.

6. Remove and burn compost where possible, or bury plant debris to help reduce foliar and stem disease next year. It is usually safe to compost leaf material, but diseased stem and root tissues should be burned or buried, not included in a compost pile.
7. Look over seed and nursery catalogs and select resistant varieties. Plant them where you've had problems but have no rotation options. Choosing disease-resistant hybrids, varieties, and species is usually the least expensive and best long-term method of disease control. If you have had problems with scab on crabapple, consider replacement with a scab-resistant variety that shows a flower and fruit color you prefer. Try to obtain a variety that is also resistant to powdery mildew and rust.
8. Make a map of your flower and vegetable gardens. Rotate annuals to another area to reduce soilborne pathogens that cause *Rhizoctonia* and *Fusarium* root rots. This is also a great time to amend soil to improve soil drainage. *Phytophthora* and *Pythium* root rots are problems in poorly drained areas.
9. Divide perennial flowers where it is appropriate, remove rotted or diseased parts, and replant them in a new location. Let the cut edges dry a day or two before replanting to avoid soft rot bacteria and other soil-borne root rots.

Taking these measures does not guarantee a lack of disease in your garden, but it will help reduce the incidence of disease. (Nancy Pataky)

*Home, Yard, and Garden Pest Newsletter* is prepared by Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey. Information for this newsletter is gathered with the help of staff members, Extension field staff, and others. Karel Jacobs and Donna Danielson of The Morton Arboretum also provide information and articles.

Major authors are Phil Nixon, (217)333-6650, Fredric Miller, (708)352-0109, and Raymond Cloyd, (217)244-7218, entomologists; Nancy Pataky, (217)333-0519, plant pathologist; Bruce Paulsrud, (217)244-9646, pesticide applicator training; and Tom Voigt and David Williams, (217)333-0350, and Michelle Weisbrook, (217)244-4397, horticulturists. Phil Nixon is the executive editor of the *Home, Yard, and Garden Pest Newsletter*. This newsletter is written by faculty in the Department of Natural Resources and Environmental Sciences and the Department of Crop Sciences. The newsletter is edited by Phyllis Picklesimer and typeset by Oneda VanDyke, Information Technology and Communication Services.

For subscription information, phone (217)333-2666 or (800)345-6087, or e-mail [acesnews@uiuc.edu](mailto:acesnews@uiuc.edu). Web subscriptions are available (<http://www.ag.uiuc.edu/cespubs/hyg>).

Copyright © 2001, Board of Trustees, University of Illinois

Return Service Requested

U OF I EXTENSION  
NEWSLETTER SERVICE  
UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN  
528 BEVIER HALL, MC-184  
905 S. GOODWIN AVENUE  
URBANA, IL 61801

EXTENSION  
UNIVERSITY OF ILLINOIS



University of Illinois Extension provides equal opportunities in programs and employment.  
University of Illinois • U.S. Department of Agriculture • Local Extension Councils Cooperating

First Class  
U.S. Postage Paid  
Permit #75  
Champaign, IL