

PLANT & PEST ADVISORY

A RUTGERS COOPERATIVE EXTENSION PUBLICATION



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Diseases of Ornamental Plants: End of Season Notes

Ann B. Gould, Ph.D., Specialist in Plant Pathology

The 2009 growing season is winding down. A recent tour of ornamental trees and shrubs planted in the New Brunswick area revealed many of the “old standby” diseases common in landscapes each year. Evident were **leaf spot** (trees, shrubs, and groundcovers); **crabapple scab**; **cedar-apple or quince rust** on rosaceous (crabapple or hawthorn) and juniperous (juniper and cedar) hosts; **ash rust**; **spot anthracnose of dogwood**; **black spot of elm**; **horsechestnut leaf blotch**; **shade tree anthracnose** (especially on sycamore); **juniper tip blight**; **Diplodia tip blight** (2- and 3-needle pines); **anthracnose of English ivy**; and **pachysandra leaf and stem canker**. Many of these diseases are “springtime” diseases; the fungi that cause them are active during cool, moist weather, and newly developing host tissues are more vulnerable to infection this time of year.

State-wide, these and other diseases were commonly reported. During the spring and summer, diseases in the landscape included **black spot** (rose), **fireblight** (ornamental pear), **Verticillium wilt** (maple), and **powdery mildew** (hosts commonly affected by this disease include ash, azalea and rhododendron, flowering dogwood, elm, lilac, oak, sycamore, and rose). Evidence of winter injury was common throughout the spring and early summer. Symptoms of **bacterial leaf scorch of oak** were later to appear this year than last but were still very striking on susceptible pin and red oaks. Diseases reported by producers at various points during the growing season included **Tomato spotted wilt virus** and **Impatiens necrotic spot virus**, **downy mildew**, **root rots** caused by *Rhizoctonia* and *Phytophthora* as well as **black root rot of petunia** (*Thielaviopsis*), and **Rhabdocline and Swiss needlecasts of Douglas fir**. **White rust of chrysanthemum**, a quarantine significant pest, was detected at chrysanthemum producers in the tri-state area.

Most of the landscape diseases mentioned above are merely cosmetic and do not significantly impair plant growth. Of greater concern are moisture extremes (excessive moisture in poorly drained areas as well as mid-season drought). Landscape trees throughout New Jersey have been stressed in previous years by prolonged moisture extremes, and it often takes trees five or more years to recover. Not only does moisture stress impact the immediate growth and development of plants, it also predisposes them to other diseases (especially cankers caused by *Cytospora*, *Botryosphaeria*, and *Nectria*) and insect pests (such as borers). Keep this in mind during the next few years when monitoring landscape trees and shrubs for plant health. □

It's a Good Time to... Test Your Soil!

Stephanie Murphy, Ph.D., Rutgers
Soil Testing Laboratory

The 2009 growing season is wrapping up, and landscaping chores mostly involve "cleaning up". While you're raking leaves, begin thinking about what tasks you can do now that can help you prepare for next season. One job you can do before the ground freezes is to take soil samples for testing. The nutrient levels that are analyzed for a fertility test will not change substantially between now and next March, and so the results and recommendations will allow you to learn what soil amendments you need to optimize soil fertility, plan your work efforts, and make your purchases well in advance. Testing now also provides the advantage of rapid response time from the soil testing lab, since the sample load is relatively low. Casual gardeners may not think of soil testing until the weather warms up next spring, and they'll all send their samples at the same time, wanting results before the next nice weekend!

Make soil testing a part of your late fall/winter garden routine to be better prepared and make next spring less hectic. Remember: soil testing helps you use your hard-earned dollars wisely by providing recommendations for the most appropriate fertilizer or amendment. And in addition to providing optimum conditions for your plants, proper fertilization prevents mis-use of nutrients that can cause environmental degradation. Always practice good landscape hygiene, cleaning up fertilizer granules, soil, grass clippings, and other plant detritus from impervious surfaces. Only water should be going into those storm sewers! So get back to those fall clean-up chores...

For information on submitting soil samples, contact your County Extension office or go to:
<http://njaes.rutgers.edu/soiltestinglab>. □

Diseases of Turfgrass

Bruce B. Clarke, Ph.D., Specialist in Turfgrass Pathology

General

Anthracnose, take-all patch, rust and dollar spot are apparent on susceptible turf at this time. These diseases should soon decline as the weather gets colder over the next few weeks.

Pink Snow Mold

This disease, caused by the fungus *Microdochium nivale* (= *Fusarium nivale*), will develop soon on golf and landscape turf as we return to cold damp weather. To prevent pink snow mold from developing again this fall, avoid excessive nitrogen applications (> 0.5 lb of water soluble N), continue mowing turf until dormancy and apply Armada, Banner, Chipco 26GT, chlorothalonil, Compass, ConSyst, Eagle, Headway, Heritage, Insignia, Instrata, Medallion, PCNB, Spectro, Tartan, thiophanate-methyl, Trinity, Triton or vinclozolin. For best results, apply any of these fungicides now and then repeat in late-January if the snow cover recedes. However, do not reapply PCNB after January 15 due to the possibility of phytotoxicity during warm weather next spring.

Cancellation of Certain Uses of PCNB Fungicide

Manufacturers of disease-control products containing PCNB fungicide (= pentachloronitrobenzene) have received EPA approval to cancel certain uses of this fungicide. Cancelled uses include: golf course roughs; residential sites including lawns, ornamental plants and gardens around homes; grounds around day care facilities; school yards; parks (except industrial parks); playgrounds; and athletic fields (except professional and college fields). Affected products include Terraclor, Turfcide and other products such as PCNB 75WSP and PCNB 20WDG. More information is provided in the Federal Register, Vol. 74, No. 134, Wednesday, July 15, 2009, page 34337, docket identification number EPA-HQ-OPP-2008-0935 (available online at <http://www.epa.gov/fedrgstr/index.html>). Reprinted from an article written by Dr. Paul Vincelli (Extension Specialist at the University of Kentucky) and originally published in the August 4, 2009 issue of the Kentucky Pest News (Vol 1207).

Green Expo Turf and Landscape Conference

The 2009 Green Expo Turf and Landscape Conference will be held at the Trump Taj Mahal Casino/Resort on December 8-10, 2009. To help celebrate the 40th anniversary of the New Jersey Turfgrass Association, this year's EXPO will feature presentations from past graduates of the Rutgers Turfgrass Program. This is a great opportunity to meet old friends and receive the latest turf management information from nationally renowned speakers. So put this year's Turfgrass Expo on your calendar today. For additional information, please contact Cece Peabody (973) 812-6467 or e-mail execdirector@njturfgrass.org or Anne Diglio (732) 932-9400 ext. 339 or e-mail diglio@aesop.rutgers.edu. □

Landscape IPM Pest Notes

Steven K. Rettke, Ornamental IPM Program Associate

✓ **Adapted IPM Programs Can Be Price Competitive with Traditional Landscape Pest Control Approaches:** IPM methods provide the best holistic management approach to protect a landscape. Cultural management methods are often given a high priority in IPM programs and they demand the most time and labor (e.g., pruning, mulching, irrigation, fertilization, aeration, design, plant selection, etc). As a result, the annual costs of IPM services can be more expensive to your clients.

“Integrated Pesticide Management” is a compromised IPM approach involving monitoring and selective sprays. This approach attempts to keep expenses very competitive by reducing the number of monitoring visits. Those clients who want to keep costs low are then prime candidates for this monitoring and selective treatment management approach. Although not a true IPM practice (i.e., the number of alternative plant management options is greatly limited), the monitoring and selective pesticide treatment method is an alternative option for customers who cannot afford the more holistic philosophy.

✓ **Finding Personnel Who Will Implement an IPM Program:** Finding personnel who have monitoring skills is possibly the most difficult task a landscape company must encounter when first attempting to develop an IPM program. Successful IPM monitoring requires a certain minimum level of knowledge and experience by the field technician. Often times, observant landscapers (i.e., turf managers, arborists, etc.) will naturally develop important IPM monitoring skills over several seasons. Since such knowledge does not happen overnight, it is suggested that a company first developing IPM services should start slowly and only offer them to 5-10% of their client base (this conservative beginning also has financial implications).

Hiring experienced IPM practitioners outside the company will probably require higher starting salaries, but may be the fastest way to get an IPM program off and running. And once in place, the monitoring personnel should have access to reference materials. The establishment of a library of books, magazines, and other publications are important so IPM practitioners can keep up on the latest information available. Landscape IPM involves cutting edge information and therefore the continuing education of the practitioners is necessary (see accompanying article on page 5).

Ideally, experienced and well-educated IPM scouts will establish a long employment history with a company. When valued IPM scouts do leave a company, then the established written records become especially important. Otherwise, if written records were not kept,

then all of the information that was accumulated over time at the various sites will be leaving together with the lost employee. *Monitoring and written records are the backbone of any landscape IPM program.*

✓ **Dormant Oil Phytotoxicity Concerns:** Dormant oils are typically applied when temperatures will remain above 40°F. for 24 hours. However, several University studies determined that no phytotoxicity occurred at lower temperature applications. If sprays are applied just prior to temperatures dropping below freezing, the emulsion breaks down, causing the oil to adhere to the bark/leaves instead of insects.

However, certain plants exhibit some detrimental effects regardless of temperature. Plants that have a blue glaucous bloom on foliage, such as the blue spruces and junipers, will have the bloom removed. However, the untreated new spring growth will develop the blue color and the bloom should eventually return on the older, treated needles within a season. However, the glaucous bloom does apparently provide some protection against winter injuries. In general, plants having hairy leaves are more sensitive since they retain the oil for a longer period of time. Hence, these plants should be treated with a lower concentration.

When mixing, add water to the tank first, and then add the oil. The mixture should look like skim milk. Constant agitation is necessary during application (do not apply if the solution has been sitting 10 minutes or more without agitation). Finally, if the target pest is located on a plant that has experienced a good deal of environmental stress, then wait until the early spring for treatment reassessment.

✓ **Suppressive Treatments: Armored vs. Soft Scales:** Soft Scales

Compared to armored scales, the soft scales are relatively easy to suppress with either contact sprays or systemic treatments. Although large soft scale adult females are more difficult to control, the immature nymphs are highly vulnerable to sprays when good coverage is achieved. There are numerous windows of control opportunities when applying sprays or systemic treatments against soft scales. (1) The best window for control when using spray treatments is toward the crawler emergence period. With only two major exceptions, all soft scale species produce crawlers during the months of June or July. Although scale crawlers are only 2 or 3 times the size of spider mites, they are usually clearly visible without magnification. Most crawlers have a yellowish or reddish coloration. (2) Sprays can also be successfully targeted against the settled 1st instar nymph stage feeding on foliage or bark during the growing season. Achieving adequate coverage to foliage is the major challenge with large deciduous shade trees since the settled nymphs feed on the undersides of leaves along major veins. (3) In addition, dormant oil treatments can be applied in the

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late fall or early spring to the over wintering 2nd instar nymphs on deciduous hosts. These nymphs have a black or brown coloration and are considerably larger than the crawlers and 1st instar nymphs. They can be observed in clusters on the bark of twigs, branches or trunks. (4) Finally, since soft scales are vascular feeders (phloem or xylem), root absorbed systemic insecticides such as imidacloprid (Merit) or dinotefuran (Safari) have provided better than 90% control rates. Root systemic treatments can be applied as a drench or be soil injected any time during the year as long as the ground is not frozen. Fall or spring applications are most typical. Having adequate soil moisture is a key factor to ensure success when applying root systemic treatments.

Armored Scales

The primary reason armored scales are so difficult to manage is because the best control windows are dreadfully limited. The covers produced by different armored scale species vary somewhat in their abilities to deter insecticide penetration. Generally the waxy cover greatly reduces the effectiveness of insecticide sprays. (1) The most vulnerable life stage of all armored scales is during the crawler emergence period after egg hatch. The 1st instar nymphs continue to be susceptible to spray treatments for another one or two weeks after settling. However, after this time period most scales species secrete covers to a sufficient thickness to significantly diminish spray effectiveness. (2) Unfortunately, root or trunk injected systemic insecticides provide poor results. Efficacy trials have shown less than 20 to 30% suppression rates. (3) Translaminar materials such as Orthene (acephate) can cause some mortality to armored scales feeding on foliage. They are ineffective against scales feeding on woody tissue. (4) Tragically the traditional use of dormant oil treatments to smother armored scales appears to be overrated. The attempt to achieve satisfactory control by spraying dormant oils is often disappointing since suppression rates are often less than 20%. Therefore to reliably manage armored scales, insecticide treatments must be applied to the crawlers or shortly thereafter.

✓ **Dormant Oils and Spider Mite Controls:** During the months of autumn, many landscape managers begin applying horticultural oils (2-3%) to suppress spider mites. Spruce spider mites and southern red mites are the two primary species that are active on landscape plantings during the fall season. The spruce spider mite feeds primarily on conifers, while the southern red mite feeds primarily on broadleaf evergreens. Both species have been building their populations for the past several weeks and typically reach peak levels during the month of November. These cool season mites typically have 3 or 4 generations during the fall period. Usually by December they have laid many of their over-wintering eggs.

Symptoms from mite feedings during the fall often do not become evident until the following spring or summer. The application of horticultural oil in the fall can be important to prevent unacceptable damage. Dormant oil sprays will suppress mite adults, immatures, and eggs. Remember that oils have a physical mode of action and cause a disruption of cell membranes (indirectly promotes suffocation). Therefore, to be effective, thorough oil coverage is required.

As a further reminder, do not make the mistake of applying oil sprays to kill "over-wintering eggs" of two-spotted spider mites (e.g., burning bush). This warm season mite species does *not* over-winter as eggs, but rather as adults. The adults are hidden in protected areas under the plants (e.g., soil/mulch) where oils cannot effectively contact them. Oil applications this time of year will be a waste of time and material. Controls will have to wait until next year when they emerge during the late spring months.

✓ **Gypsy Moth Egg Mass Thresholds:** When dealing with standard egg mass sizes (e.g., 400-500 eggs/mass) some possible threshold levels have been established for residential and urban park settings. These suggested thresholds are 250-egg masses/acre within residential landscapes and 500-egg masses/acre for urban park areas. The residential threshold is reduced by half, because other factors beyond tree health are important, such as sanitation and human aesthetics.

The urban park threshold was determined in order to avoid defoliation levels exceeding 50%. When defoliation levels exceed 50% repeatedly (2-3 years), then tree health is compromised and the two-lined chestnut borer or *Armillaria* root rot can move in and cause oak mortality. □

The Unrecognized Benefits of Training

Steven K. Rettke, Ornamental IPM Program Associate

1. **Prevents Burnout:** Organizations that spend a lot of money on the *human resource* can prevent employee burnout through the use of training. Over the years, as the employee increases their time with the organization, then their value to the company should also increase. Studies have shown that this is generally true for about the first 5 years during employment. Afterwards, that employee either stabilizes their value to the company, or actually begins to become less valuable, especially when no new training occurs. Research indicates that employees need to be re-motivated or re-challenged approximately every 5 years to prevent the downward slide of value of the employees to the organization.

The re-energizing of employees can be accomplished through job enrichment, job enlargement and job rotation (job enrichment = new challenges; job enlargement = more responsibility; job rotation = job cross-training). All three of the motivators listed above are greatly dependent on training. Of course, burnout can apply to managers and owners as well as employees. When the manager/owner experiences burnout, then it can spread like a cancer. It will spread to the employees who will pick on this negative situation.

2. **Helps Retention:** As mentioned, training can help to retain employees in the green industry, which has a history of very high employee turnover. Employee retention usually increases dramatically with job training, resulting in increased responsibility, ability, production and increased compensation (increased compensation does not always mean higher wages per hour).

Pay alone is not a long-term job motivator. Employee job satisfaction vs. dissatisfaction levels is determined by numerous factors. Behavioral scientists have identified pay (plus benefits) and working conditions as "*maintenance*" factors, that the employees are either dissatisfied with or not dissatisfied with (there are obviously gray areas in between). On the other hand, such factors as the job itself, the challenge, advancement, and training are considered to be "*motivators*," where they provide employees with satisfaction or no job satisfaction (again with gray areas between the two extremes). Notice the subtle difference between the *maintenance* vs. *motivating* factors. If you accept the ideas stated above, then pay is viewed more as being acceptable or not acceptable. Therefore, if pay meets a certain minimum acceptable level, then the employee is not dissatisfied. To motivate, however, then the other factors such as job training, advancement and challenge must reach certain satisfaction levels.

3. **Training Produces Trainers:** Training improves the "maturity" level of employees. Usually it not only enhances the ability of employees to do their jobs, but also their willingness to do it well. Therefore, the highly trained employees can become consultants and can be delegated responsibilities. They will be the best individuals to tell and sell the less "mature" (less advanced) personnel about job competence. In other words, well-trained employees produce good management supervisors.

Adapted from a presentation delivered by Robert J. Ash (Professor/ Training Consultant) at the N.A.A., TCI Expo, Baltimore, MD, 11/98. □

Rutgers Soil Testing Laboratory Services

The Rutgers Soil Testing Laboratory is a part of Rutgers New Jersey Agricultural Experiment Station outreach component. Located on the George H. Cook campus, the Rutgers Soil Testing Laboratory is a service unit that performs chemical and mechanical analyses of soils for the residents of New Jersey and for University research personnel. The mission of the Laboratory is to provide accurate and timely soil and water test reports to meet the increasing agricultural and environmental needs of the state.

For testing and fees provided for Greenhouse Samples or Other Organic Matter-based Growing Media or for Field, Commercial Vegetable and Fruit, or Nursery Crops, go to the web at: <http://njaes.rutgers.edu/services> or call the Lab at 732-932-7000, ext. 4231 or e-mail soiltest@rce.rutgers.edu. Soil test kits are available through your county Rutgers Cooperative Extension office. □

Rutgers Plant Diagnostic Laboratory Services

The Rutgers Plant Diagnostic Laboratory & Nematode Detection Service is a full-service plant health diagnostic facility sponsored by Rutgers New Jersey Agricultural Experiment Station. The Lab's mission is to provide accurate and timely diagnoses of plant health problems for the residents of New Jersey.

Located on the George H. Cook campus in New Brunswick, NJ, the Lab provides plant health diagnostic services in cooperation with Extension faculty, staff, and other university personnel. The Lab serves residential and commercial clientele.

The Rutgers Plant Diagnostic Laboratory provides the following services:

- ✓ Disease and Insect Pest Diagnosis
- ✓ Plant and Weed Identification
- ✓ Insect Identification
- ✓ Fungus and Mold Identification
- ✓ Nematode Assays
- ✓ Screening for Acremonium Endophytes
- ✓ Fungicide Resistance Screening
- ✓ Other Services Available by Contract

For fees and instructions on how to submit samples, go to the web at: <http://njaes.rutgers.edu/services> or call the lab at 732-932-9140, fax 732-932-1270 or e-mail clinic@njaes.rutgers.edu. □

South Jersey Landscape Conference and Nursery Growers Meeting

Jerome L. Frecon, Gloucester County Agricultural Agent

December 1, 2009

8:30 AM - 4:00 PM

**Masso Crystal Manor, South Delsea Drive
Glassboro, NJ**

Sponsored by Rutgers New Jersey Agricultural Experiment Station, Cooperative Extension in Cooperation with the New Jersey Nursery and Landscape Association.

The South Jersey Landscape Conference and Nursery Growers Program will have a kickoff session for both Landscapers and Nursery Growers on Tuesday, morning December 1, 2009, and then individual sessions for them in the afternoon, focusing on not only growing and marketing, but also dealing with the realities of a tough economy. A group of respected nursery growers and landscapers will lead off the program by discussing ideas they have used to diversify their business. Dr. Robin Brumfield, Specialist in Farm Management, Rutgers will discuss surviving in a tough economy during the afternoon nursery session.

The program will provide timely information on pest management, pesticide safety, new and "in demand" plant materials, in addition to introducing and reviewing tools like effective software for landscapers, and soil testing in the nursery and why it is important.

The program is integrated with many nursery and landscape professionals who will share "hands on experiences" with new and different things they have been doing in their operations. The program will close with an important talk by Carl Schulze, Director Bureau of Plant Industry in the New Jersey Department of Agriculture who will discuss new information on invasive plant species in New Jersey

At the conclusion of each session New Jersey Pesticide Applicator Units for Category CORE will be given. Certified Nursery and Landscape Professional Credits will also be given.

The cost is \$40. Preregistration is required. Registration forms are available at <http://gloucester.njaes.rutgers.edu> or by calling Jerry Frecon at 956 307-6450 Ext 1. or Carl Quazza at NJNLA at 800 314-4836. □



Tom Fitzsimmons, Outgoing President, NJNLA discusses landscape ideas at recent South Jersey Landscape Conference

Water Treatment and Recycling Workshop

January 21, 2010, 9 a.m. to 3.30 p.m.

Van Vugt Greenhouse

140 Jacksonville Road

Pompton Plains, NJ 07444-1503

973-696-7757

Sponsored by the Water Education Alliance for Horticulture at University of Florida

Editor's Note: This is the last issue of the Plant & Pest Advisory Landscape, Nursery & Turf edition for the 2009 season. Thank you for subscribing.

Learn how to:

Manage pathogens, algae, biofilm, and salt problems in irrigation water

Irrigate with recaptured water, surface ponds and reclaimed water sources

Use new research and technologies, with presentations from industry and university experts

Who should attend:

Greenhouse and nursery growers and associated industries

Benefit from:

Pesticide CEU's

Free booklet provided on water treatment

Program:

- 9.00 Meet at Van Vugt Greenhouse
Introductions and goals for the day (Paul Fisher, University of Florida). Welcome from Griffin Greenhouse Supplies, Van Vugt Greenhouse, Rutgers Cooperative Extension.
- 9.20 Tour of Van Vugt Greenhouse
- 10.30 Break
- 10.50 Biology of waterborne pathogens (Margery Daughtrey, Cornell University)
- 11.25 Water quality from a nutrition standpoint (Bill Argo, Blackmore Co.)
- 12.10 Lunch (Displays by water treatment companies)
- 12.40 What run off is occurring from greenhouses and nurseries and why should you care? (Sal Mangiafico, Rutgers Cooperative Extension of Salem County)
- 1.15 Split into two groups (concurrent sessions with presentations by several industry experts):
(A) Equipment (facilitated by Paul Fisher). Copper, Ozone, Injectors, and Nutritional Water Quality or
(B) Oxidizing materials (facilitated by Rick Yates, Griffin Greenhouse and Nursery Supplies).
Sodium hypochlorite, calcium hypochlorite, chlorine dioxide, chlorine gas, activated peroxygen
- 2.20 Groups (A) and (B) switch for concurrent sessions.
- 3.20 Wrap up discussion of technologies for this location. Moderators Rick Yates, Paul Fisher

Low Registration Cost: Only \$20 per person if pre-register by January 7. \$40 after January 7. 10% discount for OFA members. Preregistration is required for lunch. For more information go to:

<http://www.watereducationalliance.org/workshops.asp>. □



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Experiment Station

Plant & Pest Advisory
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Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCE in your County.

Use of Trade Names: No discrimination or endorsement is intended in the use of trade names in this publication. In some instances a compound may be sold under different trade names and may vary as to label clearances.

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