

# PLANT & PEST ADVISORY

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## Ornamentals Pest Notes

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✓ **Fletcher Scales on Yew (*Taxus*):** This soft scale is now laying eggs that will hatch in June. Monitor for hemispherical, 1/8 inch, yellow-brown adult scales. Also, look for dieback damage and needle yellowing. Small shrubs may be killed. Immature scales grow quickly and produce much honeydew, which results in foliage becoming covered with sooty mold. The crawlers are easy to control with one spray of 1% oil or soap.

✓ **Southern Red Mites (246-363 GDD):** This cool season mite is active in the spring and fall. Bright red colored eggs overwinter on the undersides of leaves of many plants, including firethorn, rose, azalea, rhododendron and viburnum. They are most commonly found on *Ilex* (Holly) leaves, especially the species *Ilex convexa* (Japanese Holly). During light infestations, most of the active southern red mites, along with their bronzed stippling damage will be concentrated along the midrib on the lower leaf surface. With heavier populations, the mites and the stippling damage can be found on both sides of the foliage. Lower leaf surfaces often appear dusty because of the eggshells and cast skins. Native predators can be effective, and this pest is often kept in check except under outbreak conditions. When overwintering eggs are numerous, the undersides of the leaves can be treated with horticultural oil (achieving good coverage may prove difficult, especially with the convex leaves of *Ilex convexa*). In heavy infestations, the use of a residual miticide may be necessary. Control them early and preferably with a miticide with ovicidal activity (kills eggs), such as hexythiazox (Hexygon) or horticultural oil. Other miticides such as abamectin (Avid), and fluvalinate (Mavrik) are labeled, but close attention and frequent monitoring are required since eggs are not killed, and at least two sprays are required.

✓ **Boxwood Leafminer (448-700 GDD):** Adults of this imported pest are orange-yellow mosquito-like flies about 1/8 inch in size. They can be seen swarming around boxwoods for a two week period during mid-May (~290+ GDD)(shake bushes to detect flying adults). Yellowish, blister-like blotch mines on the undersurface of leaves are caused from larvae feeding inside the leaves of American boxwood. Heavily mined foliage turns yellow and drops prematurely. Damage to new season growth does not become readily apparent until the fall, since the heaviest feeding is done in the fall and late winter months. When the egg

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laying adults are seen, contact insecticides can provide good suppression. If numerous mines are found during the summer and fall, a systemic spray, acephate (Orthene) or imidacloprid (Merit) can be applied to kill larvae within the mines. The overwintering larvae are also susceptible to these controls during the late winter feeding period. Avid and Talstar are also labeled. Replace susceptible plants with resistant cultivars.

✓ **Euonymus Scales (533-650 GDD = 1<sup>st</sup> generation):** The light yellow crawlers are often active during the early weeks of June or when the *Kousa* dogwood is in bloom. Variegated evergreen euonymus plants are especially vulnerable to scale. Defoliation and a weakening of the plant will result if build-up occurs. A horticultural oil plus Orthene combination will provide best control management after crawlers settle (before they turn white/grey). The Orthene will suppress the white males feeding on the leaves, while the oil reduces the brown females present on the stems. Imidacloprid (Merit) applications have only shown approximately a 40% suppression rate against armored scales.

✓ **Pine Needle Scale (298-448 GDD = 1<sup>st</sup> generation):** This armored scale insect is a common pest of pines, especially Scotch pine, mugo pine, Austrian pine and red pine, and occasionally on white pine, Norway and Colorado spruce. White oystershell shaped adult female covers are 1/8 inch and found only on needles. A long egg laying/crawler emergence period occurs from late May into mid-June, with a second generation in July (1290-1917 GDD). When the pink crawlers settle, they turn in color to yellowish tan, lose their legs, and never move again. The crawler stage and early settling periods are the ideal time to control them with insecticidal soap or 2% horticultural oil (these materials also minimize harm to beneficial insects present). Research in Ohio showed that oil provided better control than Orthene or Sevin. Control with these products will be good up until the time the crawlers begin to show some "white" or protective wax around the edges. In order to limit impact on beneficials, avoid broad-spectrum insecticides unless absolutely necessary.

✓ **Gouty Oak Galls** are woody galls up to 2" long, formed on the branches of many oaks. Large galls may girdle branches and cause significant dieback. They are caused by female wasps emerging from old galls in late May. They lay eggs in oak leaves; the hatched larvae feed and cause a blister-like gall to form along the leaf vein. In July, adults emerge again and lay eggs in twigs. The familiar woody galls will grow on these twigs over a period of 2 to 3 years.

Although pruning out galls is the only recommended control, realistically it is not very effective, since it is hard to get rid of all the overwintering galls in the area. Contact insecticides will kill emerging adults, yet timing and coverage is difficult, so overall control is minimal.

Since most wasp attacks are at the tips of trees, leaf expansion makes it difficult to provide an effective pesticide residue. No research is available on injections or soil applications; but such treatments may not get into the gall to kill the wasp before adults emerge by the end of the month.

✓ **Honeydew and Sooty Mold:** Most landscapers are familiar with the honeydew created by the feeding from **aphids, soft scales, whiteflies** and **mealybugs** and the associated black sooty mold that follows soon afterward. Incompletely digested plant fluids (honeydew) are shiny, sticky, and loaded with sugary carbohydrates. This food source becomes an irresistible attractant to an assortment of ants, bees and other stinging and biting insects. When the infestations are light and sprays are required, apply horticultural oils or insecticidal soaps. In heavy infestations, spray a residual insecticide, adding soap to the tank to dislodge the honeydew and sooty mold.

✓ **Pine Bark Adelgids:** These common aphid-like insects form a white, cottony coating on the bark of white pine and Scots pine. Eggs laid in May will hatch next month and settle on the bark, branches and new pine candles. Damage is usually cosmetic (sometimes high populations can kill small branches), yet customers may react negatively to their presence. Reduce the first generation of adelgids with a strong blast of water, horticultural oil, or insecticidal soap.

✓ **Birch Leafminers (GDD = 156 - 290 = 1<sup>st</sup> generation larvae):** Birch trees have long been the targets of annual sprays because of birch leafminer. The first generation adults have already laid eggs and the hatched larvae are feeding. The second-generation adults will become active next month and will lay eggs in the new leaf flush. Adult females can successfully use their ovipositor only in the soft tissue of new leaves (older "hardened-off" leaves cannot be penetrated by the egg laying females). Therefore, damage from the second generation may be mostly cosmetic with relatively few leaves being affected. It is often not necessary to spray for the second-generation leafminers, especially if the first generation caused little damage. There may even be a third generation in the southern half of New Jersey, but its presence is barely noticed.

One cultural control (primarily aimed at the 1<sup>st</sup> generation) is the use of "pupation barriers." These barriers consist of tightly woven fabric mulch or black plastic that are positioned underneath the birch canopy and extend out beyond the drip line. They are designed to prevent leafminer larvae from reaching the soil as they drop from the leaves. Larvae must find soil to successfully pupate (if not, rapid drying and death of the larvae occurs).

Beware that repeated attacks, combined with drought conditions, may weaken a tree and make it more

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# Azalea and Rhododendron Diseases, Part I

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

Rhododendrons and azaleas are two very important woody ornamentals that are popular in landscapes and grown widely in New Jersey nurseries. In most cases, disease management includes a combination of sound cultural practices and the appropriate use of fungicides. One of the most important diseases of rhododendron and azalea, **Ovulinia petal blight**, was discussed in the article on diseases of ornamental flowers in the last issue (April 18, 2002). Listed below are a few of the other rhododendron and azalea diseases that commonly occur in New Jersey landscapes and nurseries.

## Phytophthora Root and Crown Rot

*Phytophthora cinnamomi*, the causal agent of **Phytophthora root and crown rot**, affects a wide variety of nursery crops including azalea and rhododendron, aucuba, camellia, dogwood, false cypress, hemlock, Japanese holly, juniper, pieris, white pine, and yew. This soilborne fungus attacks the roots and crowns of susceptible plants. Affected plants become yellow and stunted and will eventually wilt and die. A cut made into the stem of an infected plant at the soil-line will reveal a red-brown discoloration of the wood just beneath the bark. Plants in low, wet, or poorly drained soils are susceptible to this disease.

Phytophthora root and crown rot is one of the most important diseases of azalea and rhododendron in container and field nursery production, and plants in all stages of production are vulnerable to the disease. On affected azaleas, leaves lose color, growth is severely reduced, and root systems appear reddish brown and lack new growth. In susceptible rhododendrons, the leaves wilt and are dull green, and root systems are reddish brown and extensive root death will occur. Severely diseased azaleas and rhododendrons may die.

Phytophthora root and crown rot is managed through good sanitation practices during propagation and production. In pot culture, plant only in well-drained, soilless media, preferably amended with composted hardwood bark. Bark improves drainage and releases compounds that are antagonistic to the fungus. Ensure proper drainage, prevent over-watering, and plant resistant cultivars when possible. Where this disease is a problem in the landscape, remove severely affected plants, improve drainage, and plant hybrids resistant to this disease.

Susceptibility to Phytophthora root and crown rot within cultivars of hybrid azalea varies. In general, however, the Indica hybrids are most resistant, and the Kurume hybrids are most susceptible. Cultivars of azalea

with known resistance include Formosa, Fakir, Fred Cochran, and Corrine Murrah.<sup>1</sup> Some resistant hybrid rhododendrons include Caroline, Martha Isaacson, Pink Trumpet, Professor Hugo de Vries, and Read Head. Purple Splendor is highly susceptible to this disease.

Fungicides such as Banrot, etridiazole, fosetyl-Al, *Gliocladium virens*, mfenoxam, metalaxyl, propamocarb-HCl, *Streptomyces griseoviridis*, or *Trichoderma harzianum* may be applied as a preventive drench per manufacturer's recommendations. NOTE: to minimize potential injury to azaleas, DO NOT apply repeat soil applications of 1.25 fl oz/100 gal mfenoxam closer than every 3 months and DO NOT exceed a total of 2.5 fl oz in 6 months. Use lower rates for the variety Coral Bell.

For a more complete list of susceptible and resistant azaleas, visit the following Web site: <http://www.ces.ncsu.edu/depts/pp/notes/Ornamental/odin16/odin16.htm>.

## Powdery Mildew

Azaleas (including deciduous) and rhododendrons are commonly affected by **powdery mildew** caused by fungal species of *Microsphaera* and *Sphaerotheca*. Look for the disease to first appear on new azalea leaves as white, "powdery" spots that coalesce to cover both the upper and lower leaf surfaces. Symptoms on rhododendron may not be evident until leaves are fully expanded. Severely infected plants may appear malformed and stunted. Young plants and tissues are most susceptible to powdery mildew, especially those plants grown in heavy shade. The fungus that causes this disease spends the winter in dormant buds and in resting structures (called cleistothecia) in diseased leaves. Although the development of powdery mildew is most rapid during periods of warm weather (80°F day/60°F night), damage due to the disease can be actually more severe at cooler temperatures (70°F day/50°F night).

To manage powdery mildew, inspect incoming stock for signs of disease, increase air circulation, reduce humidity in greenhouses, and, if possible, use resistant varieties of deciduous azaleas. To reduce fungal inoculum, remove severely infected shoots and clean up leaf debris before spring. Avoid nitrogen fertilizing practices that result in lush, succulent growth since this tissue is very susceptible to the disease. Rhododendrons that are very susceptible to powdery mildew include Elizabeth, Virginia Richards, Unique, and the Loderi group; many deciduous azaleas are susceptible as well. Plants that are less susceptible include Nova Zembla, Palestrina, and Vulcan.<sup>2</sup>

Since powdery mildew fungi are associated with the surface of leaves, they are easier to manage with fungicides than other foliar diseases. Compounds labeled for powdery mildew control include AQ10 (*Ampelomyces quisqualis*), azoxystrobin, copper (hydroxide, metallic),

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hydrogen dioxide, kresoxim-methyl, Manhandle, myclobutanil, paraffinic oil (outdoors only), potassium bicarbonate, propiconazole, thiophanate-methyl, thiophanate-methyl plus chlorothalonil, thiophanate-methyl plus iprodione, triadimefon, triflumizole (enclosed structures only), or triforine. Consult the fungicide label for timing and rates.

NOTE: Discoloration of blooms has been noted on certain varieties when copper, chlorothalonil, or mancozeb is applied during flowering. Check for phytotoxicity before large-scale use of copper or mancozeb fungicides; to prevent residues on commercial plants, DO NOT spray just before selling season.

Source: Jones, R.K. and Benson, D. M (eds.). 2001. *Diseases of Woody Ornamentals and Trees in Nurseries*. APS Press, Minneapolis.

<sup>1</sup>Benson, D. M., and Creswell, T. 2001. *Azalea diseases in the landscape*. North Carolina State University.

<sup>2</sup>Robson, M. *Powdery mildew on ornamentals and vegetables*. ProIPM, The Green Gardening Program, WSU Cooperative Extension. □

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susceptible to the **bronze birch borer**. Keep birches well irrigated and mulched. Acephate (Orthene) is the standard spray control and imidicloprid (Merit) works well, given plenty of lead-time.

✓ **Azalea Lacebug (350-646 = GDD – 1<sup>st</sup> generation):** Spiny black nymphs first become noticeable as the overwintering eggs begin to hatch. Adults become active later in May, feeding and laying eggs on the underside of azalea foliage. Leaves appear stippled and off-colored. Look for black fecal spots on the underside of foliage or for the lacy winged adults. Azaleas planted in full sun and under drought stress exhibit the worst damage. Control with acephate (Orthene) when active life stages are first seen. Note that while insecticidal soap and horticultural oil has offered good (>85%) control, obtaining contact with lacebugs on the underside of foliage may prove difficult on small plants. Imidichloprid (Merit) has provided excellent results with residuals of more than a year. □

## Black Root Rot: What You Need to Know

Jillanne Burns, Cornell Cooperative Extension and Margery Daughtrey, Cornell University

Excerpted from *Long Island Horticulture News*, Cornell Cooperative Extension, April 2002.

**Black Root Rot** is a fungal disease caused by the organism *Thielaviopsis basicola*. This disease is appropriately named due to the very black root tips that develop on infected plants. These root tips become filled with pigmented resting spores, which give the roots a dark, blackened appearance. The root system is often severely stunted. Aboveground plant parts take on very general symptoms that indicate a root problem. Infected plants can become stunted, yellowed and generally unhealthy looking. Younger leaves on infected plants may be stunted and also tinged red or purple. The specific identity of the pathogen is not obvious from aboveground: the symptoms are similar to those of **Pythium root rot**, for example.

Black root rot has traditionally been considered a problem of pansy although this is not the only plant that can be affected. Other springtime plants that could develop this disease include begonia, geranium, impatiens, nicotiana, primula, petunia, snapdragon, and vinca. Poinsettias and fuchsias are also quite susceptible.

### Conditions that Favor Black Root Rot

Black root rot is a textbook example of a disease problem that is influenced by pH. Black root rot is more likely to be a problem at a neutral or alkaline pH. It is also more likely to occur in wetter soils and under conditions where the host plant is under temperature stress.

### Disease Management

Black root rot caused by *Thielaviopsis* is managed by combining cultural practices with the use of fungicides. Sanitation is extremely important for keeping a disease outbreak in one year from returning to cause damage the next. Flats or pots holding infected plants should be discarded rather than recycled, and affected bench areas should be scrubbed and disinfected before the next crop. The return of the disease is most likely if plants are grown on the ground, because *Thielaviopsis* survives very well in soil. The pH of the growing medium should be kept below pH 6.0 for highly susceptible crops. Drenches with fungicides such as Cleary's 3336, Fungo, Terraguard, or Medallion will prevent symptoms on treated plants but will not "cure" infected plants. Growers may choose to make treatments preventively on the crops particularly vulnerable to *Thielaviopsis*, or may scout these crops and apply fungicides to the remainder of the crop only if typical symptoms are noted in a few plants. Disease spread is not rapid, and occurs primarily by the movement of infested media. Fungus gnats may also move the fungus around the greenhouse. Discard infected plants by placing them directly into plastic bags so that infested media is not spread to other areas.

Submitted by Ann B. Gould, Ph.D., Specialist in Plant Pathology. □

# Plant Diagnostic Laboratory Highlights

Richard J. Buckley, Laboratory Coordinator

## Turf

Turf disease activity has been picking up in the laboratory with a glut of spring diseases. The cooler, rainy periods have increased the activity of **Pink snow mold** and **yellow patch**. Each of these diseases does quite well in the 40-60°F temperature range and all it takes is a little moisture for the fungi that cause them to take off. A mix of chlorothalonil and iprodione is reported to be an effective **snow mold** control that should also provide adequate coverage for **yellow patch**. At any rate, once we get some consistent warm weather, these diseases will cease to be a problem. **Yellow patch** samples were submitted from golf turf in Atlantic, Burlington, Union, Middlesex, and Morris Counties, as well as from several courses in southeastern New York and Connecticut. **Pink snow mold** was found on samples from Gloucester, Union, Middlesex Counties, and from New York.

A Monmouth County sod grower had some wicked **leaf spot and melting out** in a tall fescue/Kentucky bluegrass sod. The fungus, *Drechslera poae*, was taking out all of the bluegrass from the mix. We also had a sample of **red leaf spot**, caused by the fungus *Drechslera erythrospila*, on a brand new bentgrass tee from Camden County. **Red leaf spot** was quite active on this sample, which was probably due to the extra irrigation and nitrogen applied for the grow-in. The disease is normally a problem in the warmer weather of early summer, but this was an unusual case, so please don't assume that your purplish bentgrass is due to **red leaf spot**. Most of the time reddish or purplish bentgrass at this time of year is simply a result of **cold temperatures**.

Samples with **take-all** started coming in yesterday. These plugs were mostly from down south (North Carolina, Virginia), but there was one from an Ocean County course. In almost every case, the injured turfgrass harbored some **anthracnose**.

We had nearly 50 **nematode** samples from golf courses in the last two weeks. Some samples show high populations of **nematodes** and some do not, which is typical. **Stunt**, **Ring**, **Root knot**, and **Spiral nematodes** were the most common genera identified. Generally larger **nematode** populations survive during warmer winters, so if you have had problems in the past, it might be prudent to check on the populations now, before the real heat stress hits.

## Ornamentals

Canker diseases have been all the rage in pine this period. **Atropellis canker** was found on a two-needle species from Mercer County. White pine samples, which

were also from Mercer County landscapes, had **Cenangium** and **Scleroderris cankers**. All of these pathogens attack weakened branches, so we can't rule out the impact of the drought on these trees. Douglas-fir samples with **Rhabdocline needlecast** continue to come into the laboratory. The fungus is active and sporulating, so it is important to get your fungicide treatments on the new growth or get badly diseased trees off the site. Be aware that if we keep getting rain over the next two or three weeks we will see a lot of **Rhabdocline** again next spring.

## Lab Fee Increase

Since the inception of the laboratory in 1991 the laboratory fee structure has been static. Due to the ever increasing demands of providing diagnostic services, we must increase our user fees. Our laboratory is a total cost recovery program and without your support we could not exist. The fee increases will take effect for July 1, 2002 and will include \$20 to \$30 for most samples, \$50 to \$65 for golf turf, and \$75 to \$95 for out-of-state. This will be the first increase in 11 years, and we hope the last for some time. □

## Rutgers Plant Diagnostic Laboratory

The Plant Diagnostic Laboratory and Nematode Detection Service is a diagnostic service available to the residents of the State of New Jersey. The mission of the Plant Diagnostic Laboratory is to cooperate with Rutgers Cooperative Extension personnel to provide the residents of New Jersey with accurate and timely diagnoses of plant problems. There is a fee for this service.

The laboratory was established in 1991 on the Cook College campus of Rutgers, The State University of New Jersey.

- ❖ Diagnostic Services
- ❖ Disease and Insect Pest Diagnosis
- ❖ Plant and Weed Identification
- ❖ Insect Identification
- ❖ Nematode Assays
- ❖ Screening for Acremonium Endophytes
- ❖ Benzimidazole Fungicide Resistance Screening
- ❖ Other Services Available by Contract

For sample submission instructions and forms, visit our web site at: <http://www.rce.rutgers.edu/plantdiagnosticlab/submissions.asp>

Forms may also be obtained from your local county Rutgers Cooperative Extension office or via fax request (732/932-1270). □

# Perennial Ryegrass Varieties for NJ Athletic Fields

James Murphy, Ph.D., Specialist in Turf Management

Perennial ryegrass is popular in many parts of the world because of its ability to rapidly establish turf with an attractive, leafy appearance and a persistent, wear tolerant surface. Current varieties have been developed with increased stress tolerance, improved resistance to many pests, cleaner mowing, a lower growth habit and reduced mowing requirement, darker green color, more uniform texture, and higher shoot density. The varieties 'Linn' and 'Nui' should be avoided because the very poor mowing quality, low shoot density, and poor disease resistance of these grasses will result in unsatisfactory turf.

Although improvements in summer performance and pest resistance have been made, further improvements are needed to realize the full potential of perennial

ryegrass, particularly for regions with hot, humid summers. Cold hardiness and the ability to tolerate long periods of cover from ice sheets are other weaknesses of perennial ryegrass that can be important during the occasional severe winters in New Jersey. For this reason, it is a good strategy to include Kentucky bluegrasses in a mixture with perennial ryegrass, since Kentucky bluegrass has excellent cold hardiness. Such mixtures should consist of one or more Kentucky bluegrass varieties in combination with two or more of the turf-type perennial ryegrass varieties with the following standards (percent-age by weight):

- 85-95% Kentucky bluegrass
- 5-15% Perennial Ryegrass (Table 1)

NOTE: Lower maintenance varieties of Kentucky bluegrass include the Bellevue Type; Mid-Atlantic Type; and Aspen, Cheri, Ram I, and NuStar. For more information on Kentucky bluegrass varieties, see Rutgers Cooperative Extension publication FS738 at <http://www.rce.rutgers.edu/pubs/pdfs/fs738.pdf>.

**Table 1. Recommended turf-type perennial ryegrass varieties.**

**Very High Quality**

Allstar	Amazing
Applaud	Barlennium
Brightstar II	Charismatic
Churchill	Elfkin
Exacta	Fiesta II
Gator III	Integras
Jet	Nexus
Palmer III	Paragon
Pennant II	Pinnacle II
Pizzazz	Premier II
Promise	Radiant
Seville II	Skyhawk
SR 4500	SRX 4801
Stellar	Willmington

**High Quality**

Affirmed	Allsport
Ascend	Calypso II
Catalina	Charger II
Divine	Legacy II
Majesty	Manhattan 3
Panther	Phantom
Pleasure XL	Secretariat



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If Plants Could Talk features gardening tips from local university experts, successful farmers, master gardeners, and many other plant experts. Topics include new and interesting plant varieties, safe and effective pest control, step-by-step cultural tips for landscape and garden, and visits to local farms, arboretums, and backyard gardens.

Join us on If Plants Could Talk on Sat. May 4th at 12:30 on NJN Public Television as we take a trip to the largest collection of Irises in the world, the Presby Iris Garden in Montclair, NJ.

For more information on If Plants Could Talk and upcoming episodes, visit our website at: <http://www.ifplantscouldtalk.rutgers.edu/default.htm>. □

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