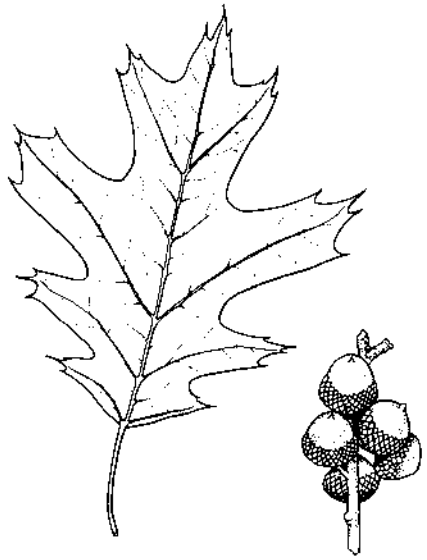
RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

LANDSCAPE, NURSERY & TURF EDITION $1.50 APRIL 29, 2004



INSIDE

Sudden Oak Death: Implications for the New Jersey Nursery Industry

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

The fungus *Phytophthora ramorum* causes a disease that first appeared in 1995 on coastal oak species in California. The disease received much attention because unprecedented mortality was occurring in coastal stands of tanoak, coast live oak, and California black oak near the San Francisco Bay. Symptoms on some trees appeared to develop so quickly that the popular press called the disease "sudden oak death" (or SOD). The pathogen has since been detected in these and other hosts in forests of California and Oregon and in nurseries in California, Oregon, Washington, and British Columbia. As transporting infected host plants may spread the pathogen, *P. ramorum* has the potential to infect oaks and other trees and shrubs elsewhere in the United States. Thus, SOD has become a critical issue for the nursery industry.

Before discussing nursery issues associated with this disease, however, I'd like to place the disease into proper context by reviewing its biology and development. The pathogen that causes SOD is a species of *Phytophthora* not too different from *Phytophthora* species with which many nursery growers in New Jersey are familiar. For example, *P. cinnamomi* is primarily restricted to the roots but may also cause cankers to form at the crown and lower stem. *P. ramorum*, on the other hand, is an "aerial" pathogen; it is not associated with root tissues and instead attacks leaves, petioles, twigs, and stems. The term "sudden oak death" is, in many respects, a misnomer because it does not fully describe the wide array of symptoms or host range associated with this pathogen. Other disease names you may see instead include **Phytophthora canker**, **Ramorum leaf blight**, or **Ramorum dieback**.

Symptoms

The type and severity of symptoms associated with infection by *P. ramorum* differ with the host species affected. In its most severe form, the fungus causes a lethal bark canker that affects oaks in the red oak group (Section *Lobatae*). These red-brown to black cankers appear most often on stems 3 to 6 feet from the ground and "bleed" a dark red or amber sap. Trees may be infected for a considerable period (up to 2 years) before stem girdling due to canker development causes the entire crown to brown and die.

SEE SOD ON PAGE 2

SOD from page 1

P. ramorum also causes a less severe twig or foliar blight on many of the other hosts in its range. On hosts such as madrone, witch-hazel, and species of *Rhododendron*, leaf lesions, twig blight, and stem dieback are most evident. Occasionally, stem dieback may continue to the ground, killing the host. On evergreen huckleberry, symptoms of the disease appear as small cankers on the stem, followed by dieback of the canes. Symptoms on these hosts can be easily confused with those caused by other pathogens such as *Phomopsis* or *Botryosphaeria*.

In contrast, foliar necrosis is not readily apparent in species of *Viburnum* infected by *P. ramorum*. Leaves on affected plants first wilt, followed by the collapse of affected twigs or the entire plant. Other agents that cause similar symptoms on *Viburnum* include water stress and Verticillium wilt.

In hosts such as andromeda, camellia, and mountain laurel, infection by *P. ramorum* is chiefly limited to lesions on the leaves, although stem necrosis on andromeda and premature leaf drop on camellia may also occur.

Host Range

The host range of *P. ramorum* is broad and encompasses many plant families. Although the list is incomplete, 59 known host species are susceptible to the pathogen. Bark canker hosts include species native to the Northwest such as tanoak (*Lithocarpus densiflorus*) and *Quercus* species in the red oak group: coast live oak (*Q. agrifolia*), California black oak (*Q. kelloggii)*, and Shreve's oak (*Q. parvula* var. *shrevei*). Of these hosts, tanoak is the most susceptible; affected trees of any age may die within a year of infection. In other oak species, most infection in nature almost always occurs on mature trees. Infection of pin oak (*Q. palustris*) and northern red oak (*Q. rubra*) has not been seen in nature, but these species can become diseased if inoculated in the laboratory. Two other tree hosts are worth mentioning here: branch cankers have been detected on saplings of Douglas-fir (*Pseudotsuga menziesii*) and on saplings and mature trees of redwood (*Sequoia sempervirns*). The impact of the disease on natural stands of these hosts, however, is not clear.

Plants that exhibit leaf lesions, twig blights, and/or stem cankers include certain members of the Ericaceae (andromeda (*Pieris* spp.), madrone (*Arbutus menziesii*), manzanita (*Arctostaphylos manzanita*), mountain laurel (*Kalmia latifolia*), and species of *Rhododendron* and *Vaccinium*), as well as California bay laurel (*Umbellaria californica*), lilac (*Syringa vulgaris*), and species of *Camellia* and *Viburnum*. Many of these hosts occur not only in natural stands but also are grown as nursery stock, thus the potential exists for widespread distribution of the pathogen in the nursery industry.

For the most current host range of *P. ramorum*, visit the following USDA-APHIS Web site:

http://www.aphis.usda.gov/ppq/ispm/sod/

This site also has a link to plant species that have been challenged with *P. ramorum* and are considered low risk for the transmission of the pathogen.

Disease Development

P. ramorum is a water mold fungus that prefers conditions that are moist and cool (optimum temperature for growth is 68°F). Thus, coastal regions that receive cool, moist air all year and periods of summer fog are ideal regions for infection in nature. (It might be expected that nursery conditions are similar during certain times of the year.) The fungus spreads short distances chiefly as spores (sporangia and zoospores) in rain splash or wind-driven rain. Although the pathogen has been recovered from pools of water around infected plants, distribution within moving streams of water is limited to 12 feet from the infected host. In addition, chlamydospores (resting spores) have been found in soil and litter, but there is no evidence that these spores are important in disease spread. Movement of infected plant material is most important for dispersal over longer distances.

In coastal oak stands, fungal spores develop to high populations on the foliage of understory hosts such as California bay laurel. In essence, these hosts serve as reservoirs of inoculum as spores are distributed on rainblown air to the bark of susceptible trees, and oak mortality is greatest when trees are grown in close proximity to these understory species.

Incidence of *P. ramorum* in Nurseries

P. ramorum was first detected in rhododendron nursery stock in a Santa Cruz California nursery in January, 2001. By 2003, the fungus was identified on viburnum, pieris, camellia, and rhododendron in nurseries in California, Oregon, Washington State, and British Columbia.

Continued incidence of this disease in natural stands and in nurseries prompted the United States Department of Agriculture – Animal and Plant Health Inspection Service (USDA-APHIS) to quarantine 12 California counties to regulate the movement of plant materials. After two large nursery facilities in California counties outside of the quarantine area tested positive for *P. ramorum* in March 2004, the USDA issued an order 9 April 2004 restricting the interstate movement of host plant material from the entire state of California. Californian nursery owners who want to ship listed plants must undergo a nursery stock inspection before those plants can be transported across state lines. The two facilities, Monrovia Nurseries in Azusa, CA and Specialty Plants, Inc. in San Marcos, CA, shipped plants to four Canadian provinces and 39 states. Florida and Georgia have each reported five nurseries testing positive for SOD and have closed their respective borders to all California nursery stock. Mississippi has closed its border to regulated articles.

What's the Story in New Jersey?

In New Jersey, the New Jersey Department of Agriculture (NJDA) and the USDA-APHIS are working to

See Management on page 3

MANAGEMENT FROM PAGE 2

trace the movement of plants that may be infected with *P. ramorum*. In 1993, Monrovia Nurseries shipped approximately 900 plants to two-dozen nurseries and garden centers in New Jersey, and Specialty Plants, Inc. shipped nearly 300 "bonsai" plants directly to New Jersey consumers. NJDA staff and USDA-APHIS officers have jointly visited those nurseries and garden centers to stop the sale of any remaining nursery stock, and have worked with Rutgers Cooperative Extension to test approximately 100 plants that had not yet been sold. There were no shipments of susceptible plants from either California nursery to New Jersey in 2004. To date, no infected plants have been detected in the state.

The NJDA is currently participating in a USDA-APHIS-PPQ national survey for *P. ramorum*. The survey is designed to gather information on the distribution of the pathogen nation-wide. The survey efforts are concentrated in two areas: forests (coordinated by the USDA Forest Service) and nurseries (coordinated by USDA-APHIS). In New Jersey, Division of Plant Industry and USDA-APHIS officers are surveying a representative mix of 30 nurseries throughout New Jersey. Forty plants at each nursery will be sampled and tested according to the National protocol. Growers are being requested to hold these individual plants until the results of the tests are known. The survey will take approximately 2 weeks to complete. For more information about the survey, contact the New Jersey Department of Agriculture, Division of Plant Industry at 609-292-5442.

Management?

Since *P. ramorum* has not been identified in New Jersey nurseries, a watchful eye and preventive measures already in place to protect plant material from other *Phytophthoras* as well as other diseases are excellent strategies.

Cultural management:

- Use pathogen-free stock. Purchase healthy stock and propagate only from disease-free mother plants. Separate stock imported to the nursery for several months until you are sure they are free of disease, and in a further step, separate crops susceptible to diseases caused by *Phytophthora* from other plants.
- Strict sanitation practices are essential, especially in propagation area. Remove debris from the previous crop, and scrub and disinfest walls, benches, and floors. Use soilless propagation mix, and prevent contamination with soil that might carry pathogen spores. Disinfest cutting area surfaces several times daily. Take cuttings high on stock plants, frequently dipping tools in 70% alcohol as you work. Change or completely clean shoes, and remove diseased plants from the nursery in plastic bags.
- Manage the moisture. Use a mix that drains well, including composted tree bark to depress pathogen populations. Design irrigation to prevent overwatering: arrange plants by size to supply adequate moisture to small plants. Design fields and beds for good drainage, and avoid splash dispersal from the bed. Remember: overhead irrigation is difficult to control.
- Reduce nitrogen in field and landscape plantings.
- Prune diseased branches.
- Use disease resistant plants when available.

Chemical control: Systemic fungicides labeled for *Phytophthora* and other nursery diseases are usually applied in preventive applications before exposure to the pathogen. Compounds currently labeled for *Phytophthora* diseases in nurseries include Banol C, Banrot, etridiazole, fosetyl-Al, mefenoxam, phosphite, and propamocarb-HCl. Check the label for timing and rates.

Selected Resources

1. California Oak Death Mortality Task Force: Sudden Oak Death. 2004. www.suddenoakdeath.org. This comprehensive site describes issues with the disease in California, including disease incidence, symptoms, and host range, regulatory information, links to current research, and nursery chronology.
2. Parke, J., Pscheidt, J., and Linderman, R. 2003. *Phytophthora ramorum*, A Guide for Oregon Nurseries. Oregon State University Extension Service. http://cropandsoil.oregonstate.edu/people/faculty/parke/OSUPramorum.pdf
3. USDA-APHIS. 2004. *Phytophthora ramorum* (Pr), also known as sudden oak death, Ramorum leaf blight, and Ramorum dieback. http://www.aphis.usda.gov/ppq/ispm/sod/. This site contains links to updates, nursery survey protocols, symptoms, and regulated and associated hosts. ❑

SOD Workshop

May 7th, 10 a.m.
Rutgers University EcoComplex
1200 Florence-Columbus Rd.
Bordentown, NJ

On Friday, May 7th, at 10 a.m., a morning workshop on sudden oak death featuring speakers Carl Schulze (New Jersey Department of Agriculture) and Dr. Ann B. Gould (Rutgers University) will be held at the Rutgers University EcoComplex in Bordentown, NJ. They will discuss the biology of the disease (causal agent, host range, disease development) as well as regulatory issues and surveys conducted by the NJDA.

Sudden oak death has the potential to be a critical issue for the nursery industry in New Jersey. We invite all interested nursery professionals and other members of the agricultural community to attend.

Directions to the NJ EcoComplex can be found at the following site: http://ecocomplex.rutgers.edu/ or by calling 609-499-3600.

So that we may have adequate materials, please let us know if you plan to attend by calling 732-932-9400, ext. 339 or e-mail gould@aesop.rutgers.edu. ❑

Sample Monitoring Calendar for Landscape Plants

For the Months of May & June

Steven K. Rettke, Ornamentals IPM Program Associate

May

PEST/STAGE	COMMON HOSTS	"TIMING" GDD	COMMENTS/PLANT NDICATORS (PPI)
Aphids (eggs) (active stages) Birch Leaf Miner (larvae)	Hawthorn, Euonymus, Cotoneaster,Birch, others Paper Birch,Gray Birch, European White Birch	7-120 (Dormant Oils) 250-2800 123-290	Petal fall of flowering dogwood (=PPI) Honeydew or sooty mold Deformed leaf terminals; Yellow foliage Redbud bloom = PPI; Adults appear when leaves half expanded; Larvae inside leaves ~ 10 days, then drop to ground 2nd generation in early June
Southern Red Mite (egg hatch)	Japanese Holly, Blue Hollies, Pyracantha	69-157	Norway maple flower bud break = PPI; Fine stippling discolors leaf surface; Dark red eggs on undersides of leavesUse beating tray & hand-lens to determine population levels – Treat ASAP!
Native Holly Leaf Miner(adults)	American Holly	147-265	Pin Oak leaf bud break = PPI; Larvae produce serpentine mines in leaf Larvae overwinter within mines (handpick); Adult feeding causes leaf punctures
Cankerworms Spring & Fall(larvae)	Maple, Oak, Linden, Fruit trees	148-290	Pin Oak leaf bud break = PPI; Up to 1" long, green or brown "inchworms" may hang on threads; Shothole damage on leaves in light infestations — Defoliation when heavy
Taxus Mealybug	Yew, Maple, Dogwood, Rhododendron	246-618	End of crabapple bloom = PPI; Honeydew & sooty mold, sparse foliage Insect covered with white powdery wax with four stripes
Pine Needle Scale (crawlers) (1st generation)	Pines, Douglas Fir	298-448	Begin bloom of Kousa Dogwood = PPI; Reddish brown crawlers in May & July; Many white scales per needle; Check scale covers for parasitic wasp emergence holes; Feed in clusters at branch crotches

May & June

PEST/STAGE	COMMON HOSTS	"TIMING" GDD	COMMENTS/PLANT INDICATORS (PPI)
Rhododendron Tip Midge (adults)	Rhododendron	192-363	Flowering dogwood bloom = PPI; Adults emerge when new leaves first form Young infested leaves (two inches or less) develop inwardly rolled margins; Developed swollen greenish yellow tissuestunted, distorted leaves may turn brown
Hemlock Wooly Adelgid (50% egg hatch)	Hemlock -Canadian -Carolina	350	Full bloom of Weigela, Leucothoe species = PPI; Reddish eggs within tufts of white wax at base needlesDark colored crawlers moving about Infestations cause premature leaf-drop & dieback
Elongate Hemlock Scale (crawlers) (1st Generation)	Hemlock	360-700	Full bloom Weigela, Leucothoe species = PPI; Yellow blotchy needles; Premature needle drop"Scurfy" appearance to underside of leaves Crawlers can be transported by wind and birds to other hemlocks
Elm Leaf Beetle (larvae & adults)	Many Elms Japanese Zelkova	363-530	Full bloom of Weigela = PPI; Pointed yellow eggs laid on undersides Adults skeletonize leavesRasping mouthparts of larvae cause leaves to turn bronze color

See May/June on page 5

Azalea Lacebug (nymphs)	Azaleas	372-618	Begin bloom of the Japanese tree lilac; Yellow to white stippling damage visible on upper leaf surfaces; Black "varnish" spots on undersides of leaves (excrement); Overwinters as eggs near leaf mid-vein
Bronze Birch Borer (adults)	White-barked Birches	400-880	Begin bloom of the mountain laurel = PPI; Dead leader-raised ridges in bark; Winding galleries under bark; Adults chew "D" shaped exit holes in bark; No pheromone traps available
Black Vine Weevil	Yew, Hemlock, Rhododendron, Azalea (broadleaf evergreens)	400-900	Full bloom of American Holly; Small crescent shaped notches along leaf margins; Look for first notching of new growth before treating; Check for bark feeding at root crown
Boxwood Leaf Miner (larvae)	Boxwood	448-700	Begin bloom of the Japanese tree lilac; Yellow blisters or mines most noticeable on undersides of leaves; Most mining damage done in the fall and early spring

June

PEST/STAGE	COMMON HOSTS	"TIMING" GDD	COMMENTS/PLANT INDICATORS (PPI)
Azalea Whitefly (immatures)	Azaleas	448-700	Begin bloom of the Japanese tree lilac; Cloud of tiny white insects fly when plant is shaken; Honeydew & sooty mold; Mottled discoloration of foliage; Treat only high populations
Rhododendron Borer (adults) (1st generation)	Rhododendron, Mt. Laurel Azalea (deciduous)	509-696	Weigela full bloom = PPI; Plant appears drought stressed; Holes in bark/ check limb crotches; Only one limb may be dead; Monitor adults with pheromone traps
Birch Leaf Miner (adults) (2nd generation)	Paper, Gray, European White Birches	530-700	Begin bloom of Catalpa tree = PPI; Adults only lay eggs in new, soft leaves Treat only if 1st generation damage was severe; A third generation in July is usually insignificant
Euonymus Scale (crawlers) (1st generation)	Euonymus (not E. alatus) Pachysandra, Bittersweet	533-820	Begin bloom of Catalpa tree = PPI; White male scales mostly on leaves Brown female scales mostly on stems; Prune out severely infested branches
Peach Tree Borer (adults-emerge)	Cherry, Peach, Plum	600-1800	Begin bloom of common Smoketree = PPI; "Gummosis" present on main trunk; Extended adult flight & egg laying period; At least 2 bark spray treat ments required
Bagworm (egg hatch)	Arborvitae, Spruce, Juniper, Pine, etc.	600-900	Full bloom of Kousa dogwood = PPI; Brown, sparse foliage; Spindle-shaped bags up to 2 inches long composed of twigs & foliage; Early June, check for very small larva & bags moving within foliage; Eggs overwinter within bags from early fall to late spring
White Prunicola Scale (crawlers) (1st generation)	J. Flowering Cherry, Privet, Lilac	707-1151	Begin Bloom of Clematis spp. = PPI; Dead twigs and branches; Branches coated with white fluffy wax; Female scale cover circular; white with yellow center; Male scale cover white & elongated; Check for predators & parasitoid exit holes
Juniper Scale (crawlers)	Junipers -red cedar, -'Pfitzer',-'Savin' Chamaecyparis	707-1260	Begin bloom of Clematis spp. = PPI; Yellow foliage initially; then brown Yellow crawlers; Female scale covers are white & circular; Prune out severely infested branches
Oak Spider Mite (warm season mite)	Oak	802-1265	Begin bloom of (Golden Rain Tree)=PPI; Upper surface of leaves have bronze stippling; Oak mites feed on upper surfaces

Periodical Cicadas: No, They're not Everywhere

Barbara J. Bromley, Mercer County Horticulturist

Are you planning a bridal reception or graduation picnic in your backyard for May or June? Do you attend daytime ball games for your child's baseball league? If you live in any one of several relatively small locations in New Jersey*, perhaps you should re-think your plans. The year 2004 from May through June into July is the expected emergence of Brood X (ten) of the periodical or 17-year cicada. The last emergence of this brood was in 1987 and was memorable for those who lived in these areas. Millions of cicadas were flying into each other and people, colliding with windows, panicking drivers, and generating a mind-numbing high-pitched racket. Plus, the hotter the day, the louder the noise. There were so many nymph skins on the ground under trees that it sounded like popcorn underfoot.

You might say, "But we have cicadas every summer. What is the difference?" or "I heard these are locusts. Are they the same as the Biblical plague?" The cicadas we have each year are the dog-day cicadas (*Tibicen linnei*) that have overlapping two- to five-year life cycles and emerge to "sing" in the trees in the "dog-days" of July and August. The dog-day cicada is about 1 5/8 inches long, has a black body with whitish bloom, green wing margins, and light markings on the thorax and abdomen. Emergence is just before that of cicada killers which are large wasps that paralyze dog-day cicadas then drag them into the ground as a food source for their young. Cicadas are related to aphids and leafhoppers and have sucking mouthparts. Locusts are closely related to grasshoppers and katydids and have chewing mouthparts. Periodical cicadas were sometimes called locusts because they emerged in such huge numbers that the colonists equated them with the plant-destroying locust.

The adult periodical cicada (*Magicicada septendecim*) is about an inch long. Most of the body is black, the transparent wings have orange veins, and the legs and eyes are reddish. The immature stage, or nymph, that spent seventeen years underground sucking sap from tree roots starts creating one inch tall "chimneys" or cones of soil in April and peers out of the half-inch hole to scout the surroundings, returning back underground. Finally it emerges at dusk one night in May and promptly crawls up the nearest upright structure (usually a tree), hooks its clawed "feet" into the bark, and splits its skin or exoskeleton along the back. The emerged adult cicada spends the rest of the night turning a darker color and drying its wings so it can fly. The range of flight is about a half mile. Within a week it mates.

The female then lays her eggs in slits she creates near the ends of slim branches of over 25 species of favored trees and shrubs. To do this she uses a saw-like egg-laying device called an ovipositor that is attached to the end of her abdomen. Each female lays about 500 eggs, which hatch in about seven weeks. The tiny nymphs drop to the ground, burrow in, and spend the next seventeen years sucking small amounts of sap out of tree roots and molting through several growth phases called instars. By midsummer the branch tips turn brown, die, and eventually break off at the egg-laying site, a kind of natural pruning.

The 17-year cicada is known to exist only in the central and eastern United States. (There is also a 13-year race found in the South.) Each year marks the emergence of a different brood designated by Roman numeral. Brood I was first recognized in 1893, Brood II in 1894, Brood III in 1895, and so on. Some broods are small, some large, and some now extinct or inconsequential. Brood II had its most recent sighting in parts of northern New Jersey and other states in 1996. Brood X, the largest brood, had very impressive sightings in parts of New Jersey (especially the Princeton area) and other eastern states in 1987.

So what do we do? First, don't be alarmed or frighten your children. Periodical cicadas aren't everywhere, they don't bite people, and they are fascinating to watch. They either don't feed at all as adults or simply suck small amounts of sap. Children love to collect the shed nymph skins. The tremendous noise of millions of male cicadas thrumming at the same time can be made tolerable with a very good set of earplugs. The damage done by the female egg-laying in large trees is negligible. Because young trees don't have too many branches to start with, it is recommended that the planting of new trees and shrubs be delayed until after the cicadas have finished egg-laying. Transplants already in the ground can be protected with fine netting or cheesecloth until midsummer. Many birds love cicadas for dinner, so providing a water source and a few birdhouses may encourage the birds to stay around. Hopefully, feeding by birds will reduce the number of dead and decaying cicadas that will litter the ground and clog gutters before summer is over.

There are a few labeled pesticides, but spraying trees is generally not recommended except in commercial apple orchards. However, leaves and twigs that turn brown can be pruned out before the nymphs drop to the ground to stave off the 2021 population. Daytime outdoor parties should be planned for unaffected communities or delayed until August. All things considered, this emergence is truly a miracle of nature. Field trip, anyone?

* The author was present for and very aware of the emergence in Princeton in 1987, but has only anecdotal evidence of populations in other parts of New Jersey. In 1974 John B. Schmitt published research on the 1970 Brood X emergence. At that time infestations in small areas of Mercer, Somerset, Hunterdon, Warren, Burlington, Salem, and Monmouth Counties were noted. Habitat influences whether those populations continue to survive. Undisturbed woodland areas and residential properties have the greatest potential for continued survival of the periodical cicada. Community development and construction in those areas since 1970 has probably eliminated populations. To find out if your neighborhood had an emergence in 1987, call your local Rutgers Cooperative Extension office, Master Gardener Helpline, or newspaper archives at the local library. In any event, you will have your answer by early June. ❑

Diseases of Turfgrass

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

Red Thread

This disease, caused by the fungus *Laetisaria fuciformis*, is prevalent on susceptible turf at this time. Infections are characterized by the appearance of short red threads (1/16-1/4" long) emerging from tan-colored leaf blades. Affected patches are typically pink in color and range from 1 to 6 inches in diameter. Although perennial ryegrass and fine fescue are most susceptible, bluegrass, velvet bentgrass, bermudagrass, and tall fescue may also be affected. **Red thread** is typically found on "hungry" (low fertility) turf during cool, wet weather. Well-fertilized turf, however, may also be attacked. To obtain optimum disease control, maintain adequate fertility levels, avoid drought stress and excessive thatch, and apply Banner, Bayleton, Chipco 26GT, Compass, Curalan, Eagle, Heritage, Insignia, Prostar, Rubigan, Touche, or Vorlan per manufacturer's recommendations.

Stripe Smut

This disease, caused by the fungus *Ustilago striiformis*, is starting to appear in Kentucky bluegrass plantings at this time. To identify **stripe smut** in the field, look for thick masses of black spores protruding through "shredded" leaf blades. Although fungicides are most effective when applied once in mid-October, present infections can be controlled now with two applications of a penetrant fungicide such as Banner, Bayleton, Eagle, Rubigan, or thiophanate-methyl. Follow label directions carefully for best results.

Turf Field Day

Mark your calendars now for this year's Rutgers Turfgrass Research Field Days which will be held on July 28, 2004 (Landscape Turf Research Field Day at Adelphia, NJ) and July 29, 2004 (Golf Turf Research Field Day at Hort Farm II, Ryders Lane, New Brunswick, NJ). Additional information and directions to each location will appear in future issues of this newsletter. ❑

Plant Diagnostic Laboratory Highlights

Richard J. Buckley, Laboratory Coordinator

Turf

Leaf spot and melting out, caused by the fungus, *Drechslera poae*, is still the primary issue in residential turfgrass this period. Samples of Kentucky bluegrass with active disease were submitted from Monmouth, Middlesex, and Mercer Counties. On golf turf, the fungus *Microdochium nivale*, the cause of **pink snow mold**, continues to flare-up every few days along with the cooler, wet weather. We will expect to see **pink snow mold** activity for another month or so.

Ornamentals

Winter injury remains a problem for landscape plantings. The number of conifer and broad-leaved evergreen samples submitted from landscapes statewide is staggering. Of particular note is the number of samples of Southern magnolia that came into the laboratory this week. These beautiful trees are simply not suited to the wind-blown cold we experienced in our area the last two years. Other diseases in trees and shrubs of note include **black knot** (*Apiosporina morbosa*) of cherry; **quince rust** (*Gymnosporangium clavipes*) on hawthorn; and **Phyllosticta leaf spot** on Rhododendron.

Greenhouse

Pythium root and crown rot is currently active in greenhouse production at this time. Hosta submitted from a Camden County grower was diagnosed with the disease, as well as petunia from Burlington County. The baskets of petunia were also loaded with **fungus gnats**. ❑

Weather Summary for the Week Ending 8 am Monday 4/26/ 4

	RAINFALL			TEMPERATURE				GDD BASE50		MON
WEATHER STATIONS	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	.95	6.48	-.79	86	44	59.	6	106	88	99
CANOE BROOK	.76	7.95	-.08	88	42	59.	6	121	109	96
CHARLOTTEBURG	1.06	7.23	-.63	84	41	57.	7	98	98	100
FLEMINGTON	.74	8.50	.82	88	42	58.	5	108	93	97
LONG VALLEY	.76	6.55	-1.63	86	41	57.	6	91	87	95
NEWTON	.92	6.38	-.61	84	40	56.	5	91	88	100
FREEHOLD	1.44	9.10	1.46	90	42	60.	6	145	115	100
LONG BRANCH	1.34	9.54	1.63	88	44	56.	2	85	63	100
NEW BRUNSWICK	.86	7.42	.11	86	42	59.	4	119	75	98
TOMS RIVER	.44	9.57	1.87	91	43	59.	5	140	116	78
TRENTON	.60	7.72	.79	86	43	59.	3	139	82	85
CAPE MAY COURT HOUSE	.29	7.97	1.24	78	40	59.	4	124	78	77
DOWNSTOWN	.13	7.69	.76	85	40	61.	5	170	109	70
GLASSBORO	.87	10.00	2.70	85	48	62.	6	188	131	94
HAMMONTON	.18	8.43	1.35	87	39	60.	4	174	121	68
POMONA	.27	6.91	.10	83	37	59.	5	143	109	74
SEABROOK	.24	8.28	2.11	83	45	64.	8	205	142	70

WES KLINE — GDD BASE 40 PINEY HOLLOW Last Week 98 (Ending 4/19/04) This Week 147 (Ending 4/26/04)

Rutgers Cooperative Extension - NJAES
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