RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

LANDSCAPE, NURSERY & TURF EDITION $1.50 AUGUST 19, 2004

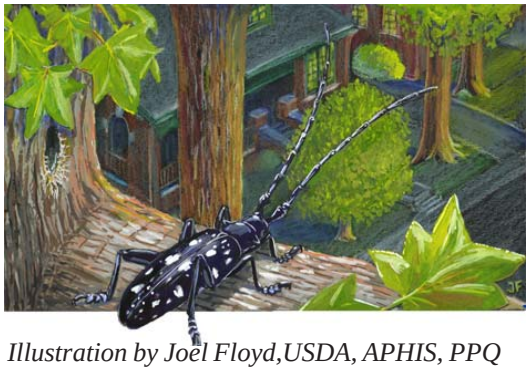

Illustration by Joel Floyd,USDA, APHIS, PPQ

INSIDE

Invader Species Beetle Confirmed in Middlesex County

An announcement was made by the New Jersey Department of Agriculture that the **Asian Longhorned Beetle**, an invader species from China, has been found in Carteret Borough, Middlesex County. The find is significant because Asian Longhorned Beetles (ALB) have caused serious tree losses in New York and Chicago. In October 2002, an area in Jersey City fell victim to the insect and more than 100 infested trees at that site were removed to eliminate the beetle.

The Asian Longhorned Beetle prefers hardwood trees as victims; these trees include willows, ash, elm, but mostly maples, which are a very common landscape and street tree throughout New Jersey. The movement of firewood, tree trimmings and nursery products will be restricted within a one-mile radius of the property where the beetle was found according to Carl Schulze, Director of the NJDA's Division of Plant Industry.

Asian Longhorned Beetles have a shiny black exterior with white spots and can reach a size of ¾ to 1.5 inches long. They have unusually long antennae that are banded black and white. The beetles typically attack one tree, and migrate to others when their populations become too dense. The female beetles chew holes in the bark, where they lay their eggs. The young hatch, then burrow beneath the tree bark. After several weeks of feeding they enter the woody tissue of the tree. Once the beetle is deep inside the tree, applying pesticides does little to eradicate them and infected trees must be cut and chipped to eliminate this pest.

The ALB first appeared in the U.S. in 1996 in the Greenpoint area of Brooklyn. USDA officials believe they first entered the country inside solid wood packing material coming from China.

Bill Hlubik, Agricultural Agent for Rutgers Cooperative Extension of Middlesex County remarks, "With the ever increasing importation of goods, and poor landscape practices such as mono-culturing, much of the blame of the Asian Longhorned Beetle problem rests on our own shoulders, but with vigilance and determination we can help to resolve this problem."

The most noticeable clue to an infestation is the perfectly round exit holes the beetles make as they leave a tree. Unlike the holes created by some woodpeckers, which are very small and grouped together in a straight line, these can be compared to singular bullet holes. One may also notice piles of sawdust in branch crotches or at the base of the trunk.

SEE ALB ON PAGE 2

Curative White Grub Control in Turfgrass

Albrecht M. Koppenhöfer, Ph.D., Specialist in Turfgrass Entomology

If you haven't treated your at-risk turf areas with a preventive application of the neonicotinoid imidacloprid (Merit, Advanced Lawn Season-Long Grub Control, GrubEX) you might want to start thinking about curative **white grub** control options just in case you need it. This would be the best time for curative applications, before the grubs get big and, with that, less susceptible to most available products. Also, be aware that the other preventively applied compound, the insect growth regulator halofenozide (Mach2), only provides on average around 50% control of the **oriental beetle**, the most common white grub species in this area (on average 61% of the grub recovered from New Jersey turf areas in 2001 and 2002 were oriental beetle!).

It appears that this year Japanese beetle adult populations have been higher than in past years. The same may be true for other white grub species, but they are less conspicuous in the beetle stage. We don't know why the Japanese beetle numbers would be higher, but it could have to do with the relatively wet summer last year. That should have improved the survival of the eggs and young larvae, particularly in non-irrigated areas. In addition, the grass was able to outgrow higher white grub larval populations, resulting in fewer curative applications and, with that, in additionally improved survival rates. Add to this the wet late June and July this year and we could be looking at pretty high white grub densities this year. But again, the grubs might only become a problem if late summer/early fall will be warm and dry.

Be alert to the signs of white grub infestations to avoid unexpected loss. Early signs include gradual thinning, yellowing, wilting in spite of adequate soil moisture, and the appearance of scattered, irregular dead patches. The patches grow and may join together until large turf areas are affected. Heavily infested turf feels spongy underfoot and can be pulled up easily, exposing the C-shaped white grubs. Secondary, often more severe damage can be caused by vertebrate predators (e.g., birds, skunks, raccoons), that tear up the turf to feed on the grubs.

The only way to accurately determine the presence of white grubs is through examining the upper 3-4" of soil under the turf. Turf/soil plugs can be sampled with a standard golf course hole cutter (4.25" diam ~ 0.1 ft^2) or cutting a square-foot sample with a flat-blade spade. The plugs can be broken up and examined on the spot. Because white grubs have a patchy distribution, several samples should be taken in a grid pattern. Rarely does an entire turf area require treatment. To save time and effort, sampling can be concentrated on suspected infestation areas, high risk or low tolerance areas, or areas with a history of grub infestations.

To determine whether treatment is required, transform the grub numbers into 'per ft^2'-values and compare to damage thresholds. Most published damage thresholds lie in the range of 6-10 (**Japanese beetle**, **oriental beetle**, **European chafer**) and 15-20 (**Asiatic garden beetle**) grubs per ft^2. However, damage thresholds vary considerably with grass species, management type, and climatic conditions. Tall fescue seems to be most grub-tolerant, perennial ryegrass the least tolerant grass species.

Only a few choices for curative control remain. Trichlorfon (Dylox, Advanced Lawn 24 Hour Grub Control) generally appears to be the best choice with high speed of kill and low binding to thatch. Diazinon (Diazinon) can provide good control but cannot be applied on golf courses, sod farms and generally turf areas > 1 acre (sale of diazinon stopped after 2003). Carbaryl (Sevin, BugBGon Lawn & Soil) appears to be less effective. Nematode products containing the species *Heterorhabditis bacteriophora* (e.g. Heteromask, Grubstake Hb,), *Heterorhabditis megidis* (Nemasys H, Grubstake Hm), or *Steinernema glaseri* can be very effective against Japanese beetle grubs, but provide only limited control of most other grub species. Recent research has shown that *Heterorhabditis bacteriophora* but not *S. glaseri* is more pathogenic to younger than older oriental beetle larvae. Therefore, applications should be more effective when applied before mid-September (but we still need to confirm this in field experiments).

For more details on white grub biology, sampling, and management check out my white grub fact sheet (FS1009) available through your county Cooperative Extension office or available on the web at: http://www.rce.rutgers.edu/pubs/pdfs/fs1009.pdf. ❑

ALB FROM PAGE 1

"The actual beetle is only visible in its adult stage, the larval and pupae stages are spent within the tree, which makes them difficult to detect, also very resistant to any treatment attempted." says Hlubik. "We need to keep one step ahead of this invader to protect not only our landscapes but out natural areas as well."

Anyone suspecting the presence of this beetle should contact the NJDA at 1-866-BEETLE-1 or (609) 292-5440.To get a first hand look at the beetle and what you should look for in your neighborhood, visit the Rutgers Cooperative Extension of Middlesex County website and click on educational videos at www.co.middlesex.nj.us/extensionservices. For additional information, visit the APHIS Web site at www.aphis.usda.gov and click on Asian Longhorned Beetle under "Hot Issues." ❑

Diseases of Turfgrass

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

Fairy Ring

This disease, caused by a group of fungi known as *basidiomycetes*, is starting to show up on golf greens and home lawns at this time. Symptoms typically appear as continuous or interrupted rings of dark-green turf. Mushrooms, which are often associated with fairy ring, usually develop in the spring and the fall. Although fungicides are not effective against all species of the fungi that cause fairy ring, Prostar, Insignia, and Heritage have provided good control in many university tests. For best results, maintain adequate soil moisture and fertility to mask symptom expression. Spike affected turf prior to irrigation and the application of fungicides to enhance water movement into the soil profile. The use of surfactants may enhance fungicide efficacy and aid in symptom suppression.

Gray Leaf Spot

Gray leaf spot has developed recently on perennial ryegrass in the Mid-Atlantic States. Symptoms start as tiny brown leaf and stem lesions covering 1 to 2 inch patches. In severe cases, the leaves curl and lesions may extend the entire width of the blade. As the disease progresses, patches coalesce into large (one to two feet) areas of blighted turf. Extensive foliar blighting may occur during warm (75-85^{0}F days and 60-65^{0}F nights), wet weather. Newly established seedlings are more susceptible to infection than mature plantings. When conditions are conducive to infection, the causal agent (*Pyricularia grisea)* produces abundant one to two-celled, pear-shaped spores (conidia). For best results, avoid high rates of quick release nitrogen sources during July and August and extended periods of leaf wetness (i.e., water in the early morning hours). Fungicide studies conducted in New Jersey, Georgia, Maryland, and Kentucky have shown that Heritage, Insignia, Compass, and thiophanate-methyl (e.g., Cleary 3336) were most effective when applied on a preventive basis every 14 to 28 days beginning in mid to late-July. Chlorothalonil and the DMI fungicides, such as Banner and Bayleton, have also provided effective control when disease pressure was moderate. Combination products containing chlorothalonil and thiophanate-methyl (e.g., ConSyst and Spectro), or chlorothalonil and mancozeb (e.g. Zyban), have also performed well in field trials.

Marasmius

There have been numerous reports recently about the appearance of small mushrooms protruding from brown leaf blades. These structures, belonging to the fungus *Marasmius*, are approximately ½ to ¾ inch in length, and consist of a dark brown stem and a small tan to orange colored cap. Marasmius often appears in areas that have been thinned by brown patch. Although this fungus may appear to be pathogenic, it is actually invading dead and dying tissue and thus is not a threat to the surrounding turf.

Pythium Blight

Pythium blight continues to be reported on golf and landscape turf. Since pythium thrives in low or poorly drained areas, especially when the night temperatures are above 68^{0}F, we should see more of this disease as the "hot muggy" weather continues this summer. For best results, improve drainage, water in the morning hours, avoid over fertilization, and apply Alude, Banol, Chipco Signature, Heritage, Insignia, Koban, Magellan, mancozeb, Prodigy, Quell, Subdue MAXX, or Terrazole, according to the manufacturer's recommendations.

Summer Patch

Summer patch is apparent on Kentucky bluegrass, annual bluegrass, and fine fescues. To control existing infections, apply Banner, Bayleton, Compass, Eagle, Heritage, Insignia, Rubigan or thiophanate-methyl in 4 to 5 gal of water/1000 ft^2. Repeat every three to four weeks (every two weeks if using thiophanate-methyl). If fungicides cannot be applied with this much water, irrigate them into the thatch immediately with 1/16 to 1/8 inch of water. Aerification (when symptoms are not present) and improved drainage will also aid in disease suppression. Soil pH should be maintained at or slightly below 6.0 for optimum disease control.

Yellow Ring

This disease, caused by the fungus *Trechispora alnicola*, is evident on Kentucky bluegrass lawns and sod fields at this time. Patches are 1 to 2 feet in diameter. Affected areas consist of green grass surrounded by 2 to 3 inch diameter yellow rings. Upon close inspection of the thatch, a dense mat of white mycelium is often apparent. Infected turf rarely dies and rings do not always reappear the following year. Symptoms are most apparent during cloudy weather between May and October. The fungus is primarily a saprophyte which colonizes organic matter in the thatch. Since the damage caused by this fungus is cosmetic and the turf recovers during cool weather in the fall and spring, control is rarely warranted. In areas where symptom expression cannot be tolerated, turf managers should dethatch affected areas. No chemicals are currently labeled for the control of yellow ring. ❑

LAB HIGHLIGHTS FROM PAGE 4

Mercer and Somerset County locations. **Quince rust** is still evident in the landscape at this time. The fruiting bodies are wearing, but the disease is still easily identified. Samples of quince rust were submitted on serviceberry from Mercer County and pear from Cape May. On the insect front, **white pine weevil damage** on spruce from Monmouth County, **arborvitae leafminer** from Hunterdon County, and **pine tip moth** from Burlington County provided excitement for laboratory personnel this week.

Plant Diagnostic Laboratory Highlights

Richard J. Buckley, Laboratory Coordinator

Turf

The last two months provided ideal conditions for turfgrass. Regular rains and cool temperatures have made this one of the easiest summers for turf managers in recent times. Besides the abundant greenery, all of the rain in July and August also brought on some unintended consequences. We have had a number of cup cutter plugs that were **water-logged**, **anaerobic**, or **just plain soggy**. Grass on poorly drained sites, on high clay content native soils, in low spots, or with layered root zones and thatch problems suffered the most damage. Furthermore, excess rainfall leaches nutrients from sand-based root zones and overcast skies slow recovery from traffic and grooming operations, so turf on some of the more favorable sites has not been spared. There was lots of **scalping** evident on these plugs, and of course, **algae**. Much of the turf stressed or killed by the excess moisture was subsequently invaded by the opportunistic fungi *Leptosphaerulina*, *Curvularia*, and *Fusarium*. Numerous samples from various locations in Pennsylvania, Connecticut, New York, and New Jersey exhibited damage by too much of a good thing. In several cases, the turf managers reported subsequent rainfall events in late-July of 2 to- 3 inches with the turfgrass never drying and then suffering a long slow decline. Mid-August also brought one or two samples each day to the laboratory of each of the following diseases: **dollar spot**, **brown patch**, **summer patch**, **anthracnose**, **gray leaf spot**, **leaf spot and melting out**, **rust**, and **take-all**. It is a regular smorgasbord of fungi out there!

In the middle of all the abiotic stress and disease hype, **annual bluegrass weevil** remains a concern for golf turf. Samples from Bergen and Monmouth County golf courses were submitted this week containing as many as two dozen larvae. **Nematodes** have also been a concern for golf turf managers. Most recent samples contained nematode populations above reported damage thresholds. In some cases, the application of a nematicide significantly improved visual turf quality.

Landscape

The most exciting thing this week in ornamentals was the number of samples from the residential landscapes with fungal cankers. The fungus *Sphaeropsis albescens* was identified causing small **cankers and twig blight** on several varieties of cut-leaf maples from a Middlesex County development. Another sample of maple was diagnosed with the most spectacular example of **nectria canker** I have ever seen. Finally, **cytospora canker** was found on a number of willow samples from

See Lab Highlights on page 3

Verticillium Wilt in Shade Trees

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

Recently, I've been receiving inquiries about the symptoms and host range of **Verticillium wilt**. This disease is caused by one of two fungal species that disrupts the uptake and flow of water and minerals in xylem tissues. The fungus *Verticillium dahliae* causes Verticillium wilt in woody species and is found in cultivated soils all over the world. *V. dahliae* forms small survival structures known as *microsclerotia* that resist degradation and can persist in soil for many years. Microsclerotia germinate when exposed to plant exudates from nearby developing roots. The fungus penetrates the epidermis of these roots, moves into xylem tissues, and is carried up to the canopy. Vascular tissue becomes clogged, and affected branches wilt and die.

Host Range

Many woody plant species are susceptible to Verticillium wilt. These species include: ash, azalea, boxwood, brambles, buckeye, catalpa, cherry and other stone fruit trees, Kentucky coffee tree, currant and gooseberry, elm, golden-rain tree, hibiscus, honeysuckle, horse-chestnut, India-hawthorn, lilac, black locust, magnolia, maple, Russian olive, osage orange, osmanthus, Japanese pagoda tree, peony, persimmon, photinia, privet, redbud, rose, sassafras, serviceberry, smoke tree, spirea, sumac, tree-of-heaven, tulip tree, viburnum, wiegela, and yellowwood. Refer to Sinclair et al., (1987) for additional hosts. In New Jersey, we see Verticillium wilt most often on maple and tulip trees.

Plants that are immune or somewhat resistant to Verticillium wilt are those that limit the spread of the pathogen in the plant. These species include: all gymnosperms, all monocots, apple and crabapple, mountain ash, beech, birch, boxwood, butternut, dogwood, eucalyptus, firethorn, sweet gum, hackberry, hawthorn, hickory, holly, Katsura tree, linden, honey locust, mulberry, oak, oleander, pawpaw, pear, pecan, plane tree and sycamore, poplar, quince and flowering quince, rhododendron, walnut, willow, and Japanese zelkova (Sinclair et al., 1987).

Symptoms

In woody hosts, Verticillium wilt is first noticed as a sudden wilting, scorching, or premature leaf drop on a single branch or on several branches within a portion of the canopy. Leaves may appear light green, yellow, or red, and are small in size. Through the growing season, affected branches progressively wilt throughout the canopy and die, and branches infected late the previous growing season may fail to leaf out the following spring. In nursery stock, seedlings, grafted liners, and 2- to 3-inch caliper trees are often affected by Verticillium wilt. Severely affected trees die.

See Verticillium Wilt on page 6

Landscape IPM Notes

Steven K. Rettke, Ornamental IPM Program Associate

✔ **PREDATORY MITES:** Phytoseid mites are generally the most abundant predatory mite species found in the landscape. This species is especially active during the summer months and is regularly found preying on two-spotted mites, as well as other pest mite species. Similar to monitoring for pest mites, sampling for beneficial mites is most efficiently done by beating foliage over a hard white surface (= beating tray). This technique allows for the ratio of predator to prey to be directly observed. The standard action threshold of 15-20 pest mites per beating tray sample can generally be doubled when a few predatory mites are observed. It is advisable to perform weekly samplings to manage short generation phytoseid mites during warm weather.

Use a 15x magnifying hand-lens when attempting to closely observe predatory mite eggs, larvae, nymphs, and adults. The eggs of phytoseid mites are oval in shape and white in color and are about the same size as spider mite eggs. Within infested spider mite populations look for phytoseid eggs laid singly along the veins on the bottom surfaces of leaves. All life stages of phytoseids are oval, shiny white to tan and are similar in size to spider mites. They are fairly easy to distinguish from spider mites because of their shiny, unspotted, pear-shaped and nearly hairless appearance. The most dramatic difference between pest and prey mites is their speed of movement. As would be expected, predatory mites are many times faster than spider mites.

✔ **PALES WEEVIL:** This native conifer weevil feeds on the tender bark of seedling white pine and other conifers up to 18 inches tall. The night feeding adult weevils may also infest smaller twigs of larger pines, creating holes in bark, girdled twigs, and dead needles. These insects are attracted to freshly cut pine stumps and sawdust, and are considered a very serious pest of young pines, especially in nurseries and on Christmas trees. They are only occasionally a problem in the landscape because they need dead stumps or recently killed trees to perpetuate their life cycle.

Adults overwinter in duff under pines and become active in March/April to feed on the bark of branches. The small chewed areas create wounds that cause a flow of clear sap. This sap eventually crystallizes into a hard white substance, and is usually the first symptom of pales weevil feeding activity. Eggs are laid on stumps during April/May and larvae feed under the bark during the summer. There is one generation a year. New adults emerge in the fall, feeding briefly before overwintering in the duff under conifers.

Setting out freshly cut pine blocks can monitor adult weevil activity. The adults are attracted to these blocks and will hide beneath them during the day. Applications of chlorpyrifos (within nurseries) to the branches of infested trees can control the feeding adults. The removal of dead trees and stumps are important sanitation practices.

✔ **TWO-BANDED JAPANESE WEEVIL (1644-2271 GDD = 1st adult emergence):** This flightless weevil prefers shrubs such as privet, azalea, rhododendron, mountain laurel, euonymus, and many others. Adults chew notches in leaf margins similar to the black vine weevil, except the two-banded Japanese weevil typically feed deeper toward the mid-rib. Another difference is that they feed during the day (the black vine weevil feeds at night, especially during dusk).

Adults are about 3/16 inch long, round, and are brown to gray with two darker bands across the wing covers. Look for leaf notching damage on lower leaves beginning in late July. Control with acephate (Orthene) when the adults are actively feeding, and/or handpick or trap by laying a white sheet under the affected shrub and shaking the shrub.

✔ **AZALEA LACE BUGS & SHADE:** Over the years, experienced landscape field monitors have undoubtedly observed that every season the pressure on azaleas from lace bugs is less on plants located in the shade. Research has shown the reason for this occurrence is increased levels of predators on the shaded plants. On the other hand, azaleas located in full sun are often inhospitable to many natural biological control organisms. Some applicators routinely spray an insecticide on all azaleas in order to suppress the possibility of a lace bug infestation. Such practices are irresponsible, especially in areas where there is no pest target and no history of past presence. Remember, when applying pesticides, "a prescription without diagnosis is malpractice."

✔ **DOGWOOD SAWFLY:** The larvae of this non-stinging wasp can sometimes cause severe defoliation to many varieties of Cornus species. The larvae and their shed skins may resemble bird droppings. They also superficially resemble caterpillars, but since they have more than 5 prolegs they are correctly classified as sawflies. Young sawflies will initially skeletonize leaves. Larger larvae consume the entire leaf area except for the mid-veins. They feed in groups along the margins of leaves.

The larvae have the curious ability to change appearance greatly as they develop throughout instars. First instar dogwood sawfly larvae resemble small, greenish-yellow tadpoles. Second and third instar larvae have smooth amber colored bodies with black rectangular markings along the top and sides. Maturing larvae have a white powdery coating over the surface of their body. The final instar larvae eventually stop feeding in groups and disperse throughout the tree to feed individually.

Controls: Dogwood sawfly can be easily pruned-out or handpicked when they are young and still feeding within groups. Soaps and oils may provide effective controls if small larvae are contacted. Systemics

See IPM on page 6

(Orthene) and most common contact insecticides will also destroy the population. Parasitoids or predators are generally not reliable for suppression.

✔ **WHITE PINE SAWFLY:** The second generation of this lesser known sawfly feeds primarily upon eastern white pines during September and October. Larvae are distinctive in color, having a cream body with a black head and 4 rows of black spots. As with all sawfly larvae, they have more than 5 pairs of abdominal prolegs. The feeding damage is usually not as severe as compared to the European pine sawflies on 2-3 needle pines. Larvae feed in groups on both the older, inner needles as well as the current year's growth. Early feeding activity causes needles to appear scorched brown and twisted. When larvae consume all the needles on one branch, they move to another one. When monitoring, look for signs of defoliated white pine branches.

Manually remove and destroy larvae in light infestations affecting only a few branches. They can be knocked to the ground and stepped on if you don't mind gumming up your shoe bottoms (they are full of the pine pitch). Thoroughly spraying small larvae with insecticidal soap or horticultural oil will provide good control. When necessary, Sevin, Orthene, or a pyrethroid will provide immediate kill.

✔ **PEAR SAWFLY:** The larvae have the appearance of slugs and hence are also commonly called pear slugs. They are commonly found feeding on purple leaf plum and cotoneaster and other rosaeous plants in the landscape. Since they do not have well developed prolegs, a slimy body coating is thought to help them adhere to the undersides of leaves while feeding. The larvae skeletonize plant tissue and the symptoms are often confused with damage caused by Japanese beetles. Adult pear sawflies are not particularly strong fliers and therefore this pest does not easily spread to more distance areas. Directing contact insecticides to the undersides of foliage should provide good suppression.

✔ **MOUNTAIN ASH SAWFLY:** The larvae are found exclusively on mountain ash and feed for only about three or four weeks. The larvae of the second generation are typically active by the middle of August and can feed into September. These sawflies often consume the entire leaflets with the exception of the midrib. This feeding habit gives a "fishbone" appearance to defoliated leaf areas.

The larvae drop to the soil to pupate and overwinter. Adults emerge in June the following year and lay eggs on leaflets along the mid-rib. These eggs hatch to start the first generation for the new season. They feed in groups and move together as they defoliate leaves. Mountain ash sawflies are relatively easy to control and most conventional insecticides will provide excellent suppression. With small trees the clumped infestations can simply be pruned out and removed.

✔ **ERIOPHYID MITES ON PINES:** Very small, light cream colored eriophyid mites that feed at the base of pines (e.g. Scots Pine) can cause an abnormal growth typically called "short needle syndrome." The mites are sometimes only discovered after separating the needles from their bundle sheath and observing the needle base with a magnifying hand-lens. With high populations, the infested needles are often significantly shorter than other needles on the same branch not infested. Furthermore, these shorter needles can usually be pulled off the new twig growth very easily. The feedings from these eriophyid mites can soften-up the needle to twig attachment.

A cynical client may jump to the conclusion that the "short needle syndrome" was caused from a spray application. Be aware of the possible effects from these tiny mites and look for them if incorrect assumptions are made. Controls with dormant oil applications can be attempted, but may be unsatisfactory since adequate coverage will be difficult.

✔ **MOSS INFILTRATIONS:** Moss is finding good opportunities in open drought damaged turf. The recent wet and mild conditions have been favorable toward the growth of this plant. Mosses are primitive plants that are opportunistic. In other words, they are only succeeding where conditions are unfavorable for turf (shade, wetness and acid soils). Control these three conditions for long-term control. Call your county Cooperative Extension for the free fact sheet, "Moss in Lawns" (FS426). It is also available on the web at: http://www.rce.rutgers.edu/pubs/pdfs/fs426.pdf. ❑

Verticillium Wilt from page 4

In some trees, infected plants may not exhibit symptoms each year, or the disease may progress very slowly over a period of years. In these chronically infected hosts, branch growth is reduced, leaves are sparse, and buds fail to develop. Since the disease reduces the vigor of the host, plants become more susceptible to other diseases, insects, and drought stress. Symptom expression among different species is highly variable and is affected by environmental and soils conditions. In general, Verticillium wilt is more troublesome in sandy loam, loam, and clay soils high in organic matter.

A diagnostic feature of Verticillium wilt common to many hosts is a brown, green, or gray streaking in the wood just beneath the bark of infected branches. In green ash, however, streaking is often absent, making diagnosis difficult. Note that other disease agents can cause streaking in wood, so affected branches must be sent to a laboratory for positive diagnosis.

Disease Management

In nurseries, Verticillium wilt can be a serious problem, so steps should be taken to avoid its introduction to field sites or to reduce inoculum levels in already infested fields. These include:

- rotate all fields regularly
- do not plant susceptible species in nursery sites where *V. dahliae* is known to exist

See Disease Management on page 7

Nursery Growers End-of-Summer Risk Management Meeting

September 1, 2004, 9:30 a.m. to 3:30 p.m.
The Conference Center at Mercer
Mercer County Community College, West Windsor Campus

Sponsored by Rutgers Cooperative Extension and the USDA Risk Management AGENCY

Learn about the risks associated with production, finances, marketing, human resources, labor, environmental and legal issues. Receive hands-on computer experience with nursery cost accounting and exploring the Risk Management Agency's website in a state of the art conference center. Also receive your complimentary copy of the "*New Jersey Green Pages*", a comprehensive directory of New Jersey agricultural information and resources, and "*Cultivating Peace Of Mind*", a three-volume risk management workbook. Host, presenters and panel members include the following:

- Wesley N. Musser, Farm Management Specialist, University of Maryland
- Annette Capp, Program Associate, Rutgers Cooperative Extension (RCE)
- Kim Linonis, Program Associate, RCE
- Robin Brumfield, Farm Management Specialist, RCE
- Gene Gantz, Risk Management Specialist, Risk Management Agency
- Sam Coburn, Risk Management Specialist, Risk Management Agency
- George Hamilton, Pest Management Specialist, RCE

Pesticide credits awarded.

Please contact Annette Capp at RCE of Mercer County 609-989-6830 or Coleen McGarrity at RCE of Salem County at 856-769-0090 if you plan on attending.

Disease Management from page 6

- eliminate weeds that serve as hosts to *V. dahliae* and increase inoculum levels in soil
- avoid stock from wholesalers with a history of this disease

In both the nursery and the landscape, Verticillium wilt is best managed by planting disease resistant species and cultivars in sites where the disease has been diagnosed. In addition, high levels of nitrogen fertilization may exacerbate disease development. Fungicides are not effective for management of this disease and are, therefore, not recommended.

Sources: Ash, C. 2001. Verticillium Wilt. Pages 67-68 in: Diseases of Woody Ornamentals and Trees in Nurseries. APS Press, St. Paul, MN.

Sinclair, W. A., Lyon, H. H., and Johnson, W. T. 1987. Diseases of Trees and Shrubs. Comstock Publishing Associates, Cornell University, Ithaca, NY. ❑

Weather Summary for the Week Ending 8 am Monday 8/16/ 4

	RAINFALL			TEMPERATURE				GDD BASE50		MON
WEATHER STATIONS	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	1.60	22.76	.70	83	56	72.	1	2131	223	88
CANOE BROOK	missing									
CHARLOTTEBURG	1.72	25.31	1.91	83	57	71.	3	2003	498	85
FLEMINGTON	1.06	30.99	8.61	86	57	73.	1	2191	229	74
LONG VALLEY	1.70	24.24	.13	80	58	70.	1	1902	205	92
NEWTON	.78	21.79	.23	85	55	71.	2	2021	280	69
FREEHOLD	1.12	23.11	1.33	88	57	75.	2	2360	267	80
LONG BRANCH	1.90	22.81	.91	81	64	73.	0	2161	147	99
NEW BRUNSWICK	2.06	26.51	4.62	88	60	74.	1	2328	151	95
TOMS RIVER	2.03	25.63	3.16	86	58	74.	2	2418	416	100
TRENTON	1.26	24.12	3.27	84	60	74.	0	2398	120	85
CAPE MAY COURT HOUSE	1.91	19.71	.32	83	62	73.	-2	2302	149	100
DOWNSTOWN	1.15	20.64	.14	87	60	74.	1	2478	192	70
GLASSBORO	.65	35.07	13.61	86	61	75.	1	2621	360	70
HAMMONTON	1.54	22.43	.93	88	63	75.	1	2568	304	83
POMONA	2.32	21.18	1.51	85	61	74.	1	2449	337	99
SEABROOK	1.02	25.17	5.48	87	66	76.	2	2723	427	73
SOUTH HARRISON	.43	26.47	5.06	85	62	74	NA	2594	NA	NA

WES KLINE — GDD BASE 40 PINEY HOLLOW Last Week 217 (Ending 8/09/04) This Week 241 (Ending 8/16/04)

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