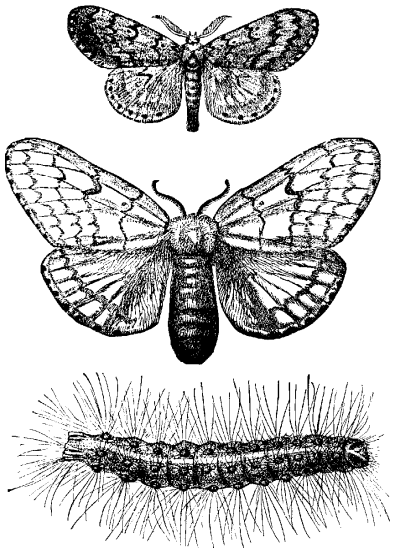
RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

LANDSCAPE, NURSERY & TURF EDITION $1.50 SEPTEMBER 13, 2001



INSIDE

Estimating Gypsy Moth Populations for the Year 2002

Steven K. Rettke, Ocean County Program Associate in Landscape IPM

The gypsy moth caterpillar has made a moderate revival in a number of hot spots within New Jersey and surrounding states during the past couple of years. Recent history has shown that the *NPV* virus and *Entomophaga* fungus pathogens cannot always be relied upon to maintain adequate suppression levels every year. Therefore, in certain parts of the state your clients may request additional controls and it may be worth your effort to attempt to determine this fall what the infestation levels will be at certain sites next spring.

Estimating gypsy moth populations next spring by counting egg masses this fall can be a challenge. After fall leaf drop is the best time of the season to count gypsy moth egg masses. Fewer leaves on the trees will improve visual observation abilities. Furthermore, counting is done in the fall before the egg masses become too weathered. During the fall season, the coloration of egg masses laid the previous July is still easily distinguished between weathered egg masses laid a season of two earlier. Viable egg masses laid in July will still have a yellow to light brown coloration. Weathered egg masses eventually change to a white or cream coloration. Observing egg masses before they become excessively weathered helps avoid the counting of non-viable eggs and improves the accuracy of spring hatch estimates.

To properly estimate gypsy moth egg mass populations from the ground, a good pair of binoculars is required. It can still be particularly difficult on white oaks because of the lighter colored bark and the eggs can be hidden from view under exfoliating bark flaps. Studies have indicated that on white oaks the gypsy moth egg mass counts from the ground are typically under-estimated by at least 25%. This problem is further compounded since gypsy moths are sometimes more numerous on the white oaks relative to red oaks.

Under standard conditions, gypsy moth females will lay egg masses containing between 400 to 500 individual eggs with the long length of the mass measuring 12 inches or longer. The counting of

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Bensumec Advisory

Reprinted from GCSAA NewsWeekly Alert, September 10, 2001

PBI-Gordon Corporation has asked golf course superintendents to stop using Bensumec 4LF until further notice. The company says it has had reports of yellowing turf on greens after application of the product.

According to Bill Brocker, vice president of marketing, the company has been working to find the cause since the first report. "Once we determined it was actually something in the product, we began trying to identify the specific cause. We have now determined that one batch (lot 1286) is apparently contaminated with low levels of phenoxies and dicamba."

On Saturday, Sept. 8, the company posted a notice to the GCSAA member Web forums asking superintendents to stop using Bensumec on their greens. The company also posted a notice on its Web site at: http://www.pbigordon.com/bensumec_message.htm, which includes the advisory and an injury recovery plan for greens that have been treated with Bensumec since Aug. 1.

The company asks that any golf course or superintendent that has applied the product since Aug. 1 please contact Gary Custis at (800) 821-7925 or (800) 471-3677.

Submitted by James Murphy, Ph.D., Turf Management. ❑

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egg masses can be complicated since the actual number of individual eggs within each mass can dramatically differ and affect defoliation potential. In areas experiencing explosive gypsy moth population increases, observations have shown that 1000 individual eggs per mass are possible. In other areas where the food quality is reduced and the population is crashing, the number of eggs per mass may only be 100. These small egg mass sizes also typically indicate that the fungus or virus pathogens were well established in the area. When egg mass sizes become this small the length of the mass may be less than 2 inches.

When dealing with standard egg mass sizes (e.g., 400-500 eggs/mass) some possible threshold levels have been established for residential and urban park settings. These suggested thresholds are 250-egg masses/acre within residential landscapes and 500-egg masses/acre for urban park areas. The urban park threshold was determined in order to avoid defoliation levels exceeding 50%. When defoliation levels exceed 50% repeatedly, then tree health is compromised and two-lined chestnut borer infestations can cause oak mortality. The residential threshold is reduced by half because other factors beyond tree health are important, such as sanitation and human aesthetics.

Counting egg masses within an area the size of an acre is extremely difficult. A more practical plot size is needed when counting and estimating gypsy moth populations at various locations. Performing counts within circular plots having a diameter of 37 feet (1/40th of an acre) greatly simplifies the procedure. Therefore, in residential areas only 6 or 7 standard sized egg masses counted within the 1/40th of an acre site will equal threshold levels. Within urban park settings the threshold count will correspondingly be 13 egg masses per 1/40th of an acre plot. If standard sized egg mass counts exceed 25 per 1/40th acre plot (e.g., 1000 egg masses per acre), then severe defoliation levels should be projected. When populations reach these density levels the use of B.t. (*Bacillus thuringiensis*) is no longer an effective control option and the use of standard chemical materials will be required. When estimating the potential gypsy moth pressures within larger land areas, it is important to draw a random transit through the area and perform counts on more than only one 1/40th acre plot. For example, when dealing with a grove of oaks within a 50-acre park, at least 5 plots of 1/40th acre size will need to be counted. Also consider that the wood lot edges containing oaks will typically have higher gypsy moth egg mass populations.

Even after accurate egg mass counts for an area have been determined, remember that after hatch, the 1st instar caterpillars have a "ballooning" period that can potentially blow them a few miles downwind. Therefore, adjacent areas with infestations upwind could significantly increase defoliation levels on sites where the fall egg mass counts were estimated to be below thresholds. Be aware of the direction of the prevailing winds and where past gypsy moth problems have occurred.

Adapted from a discussion with Greg Hoover, Penn State Entomology Specialist, July 2001. ❑

Diseases of Turfgrass

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

Stem and Crown Rust

These diseases are prevalent on susceptible Kentucky bluegrass and perennial ryegrass cultivars, respectively, at this time. As rust intensifies, affected turf prematurely yellows and orange pustules called uredia (reproductive structures) appear on leaf blades. To control both stem and crown rust, maintain adequate fertility and apply Banner, Bayleton, Chlorostar, Daconil, Eagle, Heritage, mancozeb, Manicure, or Thalonil per manufacturer's recommendations.

Stripe Smut

This disease, caused by the fungus *Ustilago striiformis,* will soon develop on sensitive Kentucky bluegrass varieties. Symptoms typically appear as long black streaks (striations) between the veins of infected blades. These areas eventually rupture, releasing abundant black smut spores. Research at Rutgers has shown that one well-timed application of a systemic fungicide in early to mid-October offers excellent control and is, therefore, far superior to multiple applications in the spring (mid-May). For best results, apply Banner, Bayleton, Cleary 3336, Eagle, Fungo, or Rubigan, now per manufacturer's recommendations.

Take-all patch

This disease, caused by the root and crown infecting fungus, *Gaeumannomyces graminis* var. *avenae,* may redevelop on bentgrass greens and fairways during the next few weeks. Although this disease is most prevalent from April through June, late summer and fall outbreaks are not uncommon. Infection takes place during cool, wet weather and symptoms are most striking after stress. Infected grass first appears bronze to reddish-brown in color and then fades to a dull brown. Patches are usually circular or ring-shaped and range in size from several inches to two feet or more in diameter. The centers of affected turf are frequently colonized by bluegrass (*Poa* spp.), fescue (*Festuca* spp.), or weed species. Upon close examination, decaying roots and leaf sheaths appear black and dark strands of mycelium often develop parallel to the root axes. The disease is enhanced by poorly drained, light-textured, and high pH soils. Although take-all is difficult to control, best results have been achieved through the use of acidifying fertilizers during cool weather (e.g., ammonium sulfate) and preventive applications of Banner, Bayleton, Heritage, or Rubigan in October, November, and April. If the disease has been particularly severe, fungicides should be reapplied twice next spring at 21 to 28-day intervals beginning in early April. Chemicals should be applied in 4 gal water/1000 sq ft or irrigated into the root zone (1/8 to ¼" of water) for maximum effectiveness. Whenever practical, overseed infested areas with less susceptible grasses such as fine fescue, Kentucky bluegrass, or perennial ryegrass to mask symptom expression. Maintain soil pH at approximately 6.0.

Turf Expo

This year's Turf Expo will be held at the Trump Taj Mahal Casino/Resort on December 11-13, 2001. This is an excellent opportunity to receive the latest turf management information from nationally renowned speakers. For additional information, please contact Bea Devine (732) 821-7134. ❑

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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

Fees

All In-State Samples (except fine turf) . $20
In-State Fine Turf $50
All Out-of-State Samples $75
Other Services Negotiable

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

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

Plant Diagnostic Laboratory Highlights

Richard Buckley, Plant Diagnostic Laboratory Coordinator

Turfgrass

What a change a week makes. Things have certainly slowed down since our last report. Cooler weather and a little moisture have been good for the grass. Many turf managers that had troublesome summers have "cut bait" and started to renovate. Aerification, seeding, and top dressing operations are in full swing. Even though things are slower, we still are getting samples. **Chinch bugs** were a problem for a Long Island golf course. The highest populations of the critters were found in fine fescue rough areas. **Take-all** was identified in a plug from a north-Jersey golf course. We finally had a sample of **bentgrass dead spot**, which was identified on a newer bentgrass green from an Atlantic County golf course. **Anthracnose** still trickles in, with samples from Passaic County and North Carolina. An unusual disease, **copper spot**, was diagnosed on golf turf from Cape May County. Finally, we had one golf course superintendent that brought in a plug covered with mycelium. He was quite alarmed as the fungus was apparently covering the entire green in what looked like a massive outbreak of **Pythium blight**. It turned out that the fungus was *Rhizopus*, which is common bread mold, and it was growing on some Milorganite that had just been applied. Cool looking, but harmless. No **gray leaf spot** yet.

Landscape

Last issue we mentioned **bacterial leaf scorch**. Our comment was "This disease has come on in a big way over the last two weeks". To date, we have tested nearly 100 trees with more than 80 positive tests. All of the positive tests were from red oak and pin oak, except for two samples of sweet gum that were also positive. These are the first positive test for a tree other than a red oak in New Jersey. Shade trees that get **leaf scorch** include elm, sycamore, maple, red oaks, and mulberry. There are several other hosts as well. This summer was not that tough, so if you see irregular scorching on the leaves of your oaks or one of the other hosts consider **bacterial leaf scorch** and have the tree tested. We also mentioned last issue that the state forester will be conducting a survey of oaks this fall with the hopes of tracking the spread of the disease and determining the severity of the problem in the state. The Plant Diagnostic Laboratory will be running the testing protocol for this survey during the next several weeks. In light of this, if you have trees that you think have **bacterial leaf scorch** and want to get in the survey, we will discount our normal submission fee to encourage your participation. For this fall only *bacterial leaf scorch testing will be $15!* Mention this article with your submission to get your discount. ❑

Greenhouse Fall Crop Production Program

September 27, 2001
Kube Pak Greenhouses, Allentown, NJ
Sponsored by Rutgers Cooperative Extension of Mercer County

Program
9:00 AM-3:30 PM
Greenhouse Tours
12:45-1:15 PM

The presentations will include the following topics and speakers:

- ❖ Keys to Insect and Disease Control - Mr. Roger Styer, Horticultural Consultant
- ❖ Growing Your Crop With A Broken Speedometer - Mr. Roger Styer, Horticultural Consultant
- ❖ Poinsettias 2001: A Holiday Odyssey - Mr. Joseph O'Donovan, Regional Program Manager, Paul Ecke Ranch
- ❖ Chemical and Environmental Approaches to Growth and Height Control of Poinsettias and Garden Mums - Dr. George Wulster, Rutgers Cooperative Extension, Specialist in Floriculture
- ❖ Rediscovering Pour Thru Testing - Mr. Warren Goll, Penn State Extension, Greenhouse Agent
- ❖ Improving Productivity Through Genetics - Mr. John Bonin, S & G Sales, S & G Flowers, A Syngenta Company
- ❖ Breaking Old Habits with Garden Mum Techniques and Improving Profits - Mr. Greg Soles, Regional Sales, Yoder Brothers Inc.
- ❖ Tour of Kube Pak - Mr. Hank Bukowski, Head Grower and Mr. William Swanekamp, Owner

PESTICIDE LICENSE RECERTIFICATION CREDITS: 3 Unit -PP2, 3 Units-3A.

The meeting and tour is handicapped accessible.

The program cost of $25.00 will cover the food, beverages and materials.

Pre-registration is required by September 19th.

For further information call Annette Capp, Program Associate in Agriculture, at Rutgers Cooperative Extension of Mercer County at 609-989-6830. ❑

Tuber Oatgrass Reporting

Albert Ayeni, Ph.D., Research Associate, Weed Science

Tuber oatgrass is a perennial grass weed widely distributed throughout the Pacific Northwest. It resembles quackgrass in morphology but in some environments may grow to about six feet tall. It occurs on roadsides, in wastelands, and in cultivated fields. The bulbs are easily spread during tillage operations. There is limited information on control measures. Pete Probasco (Ag Agent, Salem County), brought a sample to our office at Rutgers Agricultural Research and Extension Center recently. He said the weed was found around the base of some ornamental plants growing out of some mulch materials that probably came from western United States. We are interested in knowing more about the distribution of tuber oatgrass in New Jersey and encourage you to report any sighting of this weed in your locality. You may call Albert Ayeni or Bradley Majek at 856-455-3100 or e-mail ayeni@aesop.rutgers.edu or majek@aesop.rutgers.edu.

Tuber oatgrass (Arrhenatherum elatius (L.) Presl var. bulbosum (Willd.) Spenner
[Source: Weeds of the West, Tom D. Whitson (Ed.) et al. 1991]

Ornamentals Pest Notes

Steven Rettke, Ocean County Program Associate in IPM

✔ **Maples and Branch Decline**: When maple trees show symptoms of a few dead or dying branches, we often place the blame on **Verticillium Wilt**. Such branch decline, however, can also be the result of many other problems such as drought, girdling roots, compacted or poor soils, deicing salts, etc. In order to obtain a more definitive evidence of Verticillium it is necessary to cut into the affected branches and look for the greenish-brown discoloration within the vascular system. Larger trees should have the discolored vascular tissue higher into the tree. Smaller trees with trunk calipers of less than two inches, on the other hand, may still have much of the discolored tissue at the base of the tree. If the greenish-brown discoloration is not observed within the vascular tissue of a recently declined branch, then other causes may be to blame.

✔ **Lacebugs and Azaleas**: Over the years, experienced field monitors should have noticed that every season the pressure on azaleas from **lacebugs** is less on plants located in the shade. Research has shown the reason for this observation 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 lacebug infestation. Such practices are irresponsible, especially in areas were there is no pest target. Remember, when applying pesticides, "A prescription without diagnosis is malpractice."

✔ **Grinding Stumps**: Typically when a dead tree is removed from a property, the owner requests tree replacement recommendations. However, remember to grind-up the old tree stump before any new trees are placed close to it. There are several root-rotting fungi that are capable of becoming pathogens to living trees nearby. Some of these potential pathogens include *Xylaria* **Root Rot** (**Dead Man's Fingers**), *Ganoderma lucidum* (**Ganoderma Root & Butt Rot**) and *Armillaria mellea* (**Armillaria Root Rot**). With a sizable food source such as a dead stump, these dead wood decay fungi can eventually become primary pathogens and infect live plants. By grinding the stumps, the food source is removed and these fungi become less of a threat.

✔ **Lichens**: The blue-green colored lichens growing on the bark of trunks and stems is the well-known mutualistic association between fungi and algae. Lichens have prolific growth when exposed to full sunlight. Sometimes clients may become concerned with lichen growth on their trees, especially after crown thinning has opened up the canopy and the increased sunlight promotes further growth. Nearly all of the literature states that lichens are purely superficial and cause no harm to the health of trees. Interestingly, a few non-scientific studies have indicated that lichens may possibly have some detrimental health effects. For example, it has been postulated that lichens may disrupt gas exchange. Furthermore, these organisms have the ability to break down rocks and hence, it is suggested some damage to the trees do occur. However, until replicated and controlled scientific studies prove otherwise, we should continue to reassure our clients that these curious growths on their trees are of no concern.

✔ **Witches' Brooms**: The development of Witches' Brooms on woody plants and the resulting formation of abnormal growth can cause curiosity and concern to your clients. Typically, the new growth is often distorted and a proliferation of leaves or fruit/cones are closely clumped together when apical dominance is lost. Witches' Brooms are created on plants when the transfer of growth hormones are disrupted, caused from the introduction of a foreign substance (some Witches' Brooms are known to be genetically induced). Insects (e.g., aphids), fungi, bacteria, phytoplasmas, and herbicides have all been implicated in causing the formation of Witches' Brooms in a large number of plant species. It is interesting to note that sub-lethal doses of Round-Up, when applied late in the season, can cause witches' brooms on new plant growth the following spring.

✔ **Managing Dutch Elm Disease**: During the past several years, Cooperative Extension researchers at Penn State University have developed a successful growing degree day decision-making model for the management of both the **native and European Elm Bark Beetles**. The Penn State campus has over 300 large American elms (80 to 130 years of age) that require protection against the transmission of **Dutch Elm Disease** by the elm bark beetles.

Elm bark beetle pheromone traps are located off campus and a safe distance away from the elms being protected (i.e. these traps attract both male as well as female elm bark beetles, so therefore it would be unwise to place them near any American elms). After monitoring the pheromone traps for a few seasons they confirmed three distinct growing degree-day flight periods for both species of elm bark beetles. The native elm bark beetle initial flight period begins at 100 growing degree-days (i.e., late mid-April to mid-May) and a spray treatment was applied at this time. The second critical treatment timings begin at 350

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growing degree-days (i.e., late-May to mid-June) for the initial flight period of the 1st generation of the smaller European elm bark beetle. The third and final of the three critical treatment timings begin at 1350 growing degree-days (i.e., mid/late July), which coincides with the initial flight period of the 2nd generation of the smaller European elm bark beetle.

Five years ago the Penn State applicators switched from Methoxyclor to Mavrik Aquaflo 2EE (restrictive use label) as the insecticide of choice to apply against the elm bark beetles. The amount of active ingredient contained in Mavrik Aquaflo is less than Methoxyclor and is less expensive and has proven to be more effective. The residual of Mavrik on bark has proven to be approximately 4 weeks. Achieving good coverage of material to the smaller branch crotches within the upper crowns of the elms can be difficult, so therefore the second treatment timing (350 GDD) included a helicopter application.

It is crucial to emphasize the importance of vigilant monitoring of the elms when managing against Dutch Elm Disease. The constant scouting for symptoms such as the characteristic branch flagging and conscientious dead wood pruning are the backbone of the Penn State management. The use of insecticides alone would not have provided the success that Penn State has achieved managing their American elms.

✔ **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.

✔ **Interior Needle Yellowing of Spruce**: It is fairly common within the landscape to observe a blue/white spruce with current needle growth a blue or green color, but with older inner needles having lost the desirable color and turning yellow. After **spruce spider mites** causes have been eliminated, such symptoms might indicate a potassium deficiency. The spruce might be stressed from the planting location (e.g., excess soil moisture) with the roots not capable of absorbing enough potassium from the soil. In order to compensate, the tree creates a self-induced deficiency of potassium from older needles by translocation to the newest growth needles. Hence, the two- tone coloration of blue/green new growth needles vs. yellowish old growth needles is created. Most likely, fertilization with potassium will not solve the problem, because the problem is from root stress and not a shortage of potassium in the soil. Wet soils are the most common stress since the movement of soil minerals into and across plant cell membranes requires oxygen. Therefore, a solution to the above problem may not be more fertilization, but to improve the drainage. The same symptoms may occur periodically during very wet seasons or occasional flooding.

✔ **Hackberry Galls**: Hackberry (*Celtis*) is a common native plant found growing in open fields, along roadsides, and in many types of soil. It is admirable that this hardy genus is especially able to grow well in dry soils. However, over 10 types of gall-making insects attack hackberry foliage. A common one is the **hackberry nipple gall**, which causes small, oblong protrusions on hackberry that are pale green to red in color. These galls are raised from the leaf surface, somewhat shaped like a nipple. These are most prevalent on shrubby forms of hackberry. The **hackberry blister gall**, on the other hand, forms small round blister-like galls on the surface of hackberry. Adults of both of these species are **psyllids**, about 3 inches in length, black in color, and have a jumping habit. Adults began emerging in September and can continue to emerge well into the fall season. They can be extremely annoying to people, as they alight by the hundreds on cars, buildings, and other objects near large hackberry trees. They will overwinter inside of homes or in cracks and crevices of tree bark before becoming active again next spring. Eggs will be laid just as new growth emerges and then nymphal feeding will cause new galls to form. As is the case with many leaf galls, they are a curiosity to many, but rarely are chemical sprays warranted. ❑

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