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### **Zimmerman Pine Moth**

Zimmerman pine moth (*Dioryctria zimmermani*) is a borer that injures tree trunks and scaffold branches. These insects commonly feed on Austrian, red and Scotch pines in Illinois, causing die-back in branches and twigs. Zimmerman pine moth injury can be identified on the trunk as crusted areas of white pitch 1 to 2 inches in diameter or white cones of pitch that are about 1 inch in diameter. Terminal leaders that are heavily infested may also begin to bend downward like a hook.

Adult moths emerge from the trees in late summer, usually mid-July in southern Illinois and mid-August in northern Illinois. At this time they mate and deposit eggs in crevices or wounds in the surface of the bark and at terminal buds. These eggs will hatch about 10 days later, usually in early-August in southern Illinois and late-August in northern Illinois. The young larvae will begin to move across and feed on the surface of the bark for several weeks. When the caterpillars mature, they will begin to spin cocoons where they overwinter. In the spring, the larvae will become active again, moving across the bark for several days before boring into the tree.

While these insects can be difficult to control after they bore into a tree or while they overwinter, the larvae mov-

ing across the surface of the tree are susceptible to chemical controls and can be targeted. The caterpillars range from 1/16 of an inch long when they hatch to 3/4 of an inch long when they are mature. They have tan or green bodies with small dark spots and can be found at the base of terminal buds or in the grooves of the bark.

Because the larvae are available on the surface of the trunk and major branches, spray applications to these locations, this time of year, can be effective in controlling Zimmerman pine moth. Pyrethroid insecticides such as bifenthrin (Onyx), cyfluthrin (Tempo), permethrin (Astro), or other labeled insecticide to control Zimmerman pine moth can be used. These pests usually only attack the trunk in trees under 8 inches in diameter. In these smaller trees, the lower 10 to 12 feet can be treated. In larger trees, the branches are more likely to be attacked and can be treated. (*Sarah Hughson*)

### **Bur Oak Blight**

Be on the lookout for bur oak blight. We have had a few questions come in regarding bur oak blight. This potentially serious fungal disease only affects certain types of bur oak trees. The fungal pathogen that causes bur oak blight was first identified in Iowa and has been reported in almost every county in Iowa and Minnesota. The disease was first

reported in Illinois in 2012. Since then, the Plant Clinic has received symptomatic samples almost every year. Initially, the disease was only observed in northern counties and one far western county (Hancock). In recent years, we have received samples from central portion of the state. These samples were either confirmed or highly suspected of infection with the bur oak blight pathogen. There are several of possible reasons for this apparent shift south:

- The pathogen is becoming more prevalent and beginning to infect bur oak trees here central Illinois, either due to pathogen movement or due to changing environmental conditions resulting in more favorable conditions for infection in the center of the state.
- The public is more aware of what symptoms to look for when scouting bur oak trees, resulting in greater numbers of samples and confirmations at the Plant Clinic.
- Some work has suggested that the variety *oliviformis* is more susceptible to this disease and it's possible that the pathogen will move within this variety's geographic range. Because identifying varieties can be difficult, the exact range of this variety is not known though it appears to be more common in northern Illinois.

### *Bur Oak Blight*

Bur Oak Blight is a late season fungal leaf blight disease caused by the pathogen *Tubakia iowensis*. This is a relatively new disease, identified by Dr. Tom Harrington of Iowa State University. Several species of *Tubakia* are known to infect oak trees and cause minor leaf spots. *Tubakia iowensis* is the only species

known to attack leaf petioles. Additionally, the pathogen will only infect bur oak, particularly *Quercus macrocarpa* var. *oliviformis*. Results from his research suggest that the pathogen is native to the region and has only recently become problematic due to a significant environmental change. Moist springs, with significantly more precipitation, have likely created an environment favorable for disease development.

### *Symptoms*

Bur oak blight has both spring and summer infection cycles. The spring infection cycle is the most important in terms of disease spread. The pathogen overwinters as pustules on diseased leaf petioles that remain attached to the tree from the previous season. During moist, spring weather, fungal spores release from the pustules and splash to newly expanding leaves. Infection occurs before the leaves are fully developed. However, there is a 1-2 month latent period between the initial infection and when the petioles develop symptoms of necrosis. Petiole necrosis eventually kills the leaves, but more importantly, it prevents diseased leaves forming an abscission layer. As a result, the diseased leaves remain attached to the tree into the winter, well after healthy bur oaks have dropped their leaves. The following spring, newly formed pustules on diseased leaf petioles are perfectly positioned to spread fungal spores to newly expanding leaves.

Summer infection cycles result in repeated infections to mature leaves. Summer infection symptoms first appear in June as purple-brown spots on the underside leaf veins. In July, the spots expand, and purplish necrotic veins become noticeable on the upper

leaf surface. The most notable symptoms appear in August and September as leaf veins are killed as the infection progresses and a characteristic wedge shaped necrotic area develops on the leaf blade. Coalescing lesions and expanding vein necrosis may cause the leaf to die. Severely affected trees typically have significant leaf mortality and extensive defoliation. While alarming and unsightly, the summer infection cycles do not appear to play a significant role in year to year infections.

Diseased leaf retention is currently one of the best ways to identify this disease in the field. During winter months, scout bur oak trees for leaves and petioles attached from the previous growing season. Infected petioles will have black pustules or scars from previously attached pustules. The other species of *Tubakia* that infect bur oak are not known to produce these overwintering pustules.

Initially, bur oak blight infections may be limited to the lower branches. Symptoms intensify from year to year and progress from the lower branches to the entire crown. Several successive years of severe infection and defoliation have been reported to kill trees. Death has also been attributed to secondary invaders such as the two-lined chestnut borer. Trees infected with bur oak blight appear to have increased susceptibility to these secondary invaders.

### *Management Strategies*

- Fortunately, this disease will not affect all bur oaks. Many bur oak trees have a resistance to this pathogen. Healthy, unaffected bur oak trees are commonly found growing in close proximity to severely infected trees.
- If you suspect a bur oak blight infection, have the diagnosis confirmed by a laboratory. The leaf blight and scorching symptoms of bur oak blight can be confused with other common disease such as oak wilt, oak anthracnose, and environmental stresses. Disease confirmation is important for providing accurate disease control strategies and recommendations. Suspect bur oak blight samples can be submitted to the University of Illinois Plant Clinic. Information on general sample submission can be found on the plant clinic website (<http://web.extension.illinois.edu/plantclinic/>). For bur oak blight sampling, collect branches and twigs with symptomatic and healthy leaves. Be sure to include branches with petioles from previous growing season still attached
- Raking diseased leaves will have little effect on controlling the disease. The primary infection occurs from the abundant spores produced from diseased petioles that remain attached to the tree.
- Boosting tree vigor may help the tree to limit and prevent secondary invaders. Pruning and removing branch dieback has been suggested to help reduce borer populations
- For high value trees, Iowa State University found trunk injections of propiconazole to be effective at controlling the disease. Applications require specialized equipment and will need to be made by a certified professional.
  - Injections should be made in late May or early June just after the leaves have fully expanded
  - The recommended application rate is 8-10 mls per 1"DBH. Higher applications rates reportedly

- resulted in phytotoxicity to leaves. The rate will also need to be adjusted if the tree has significant branch dieback in the canopy.
- One application should last several years. Iowa State currently recommends repeat application only after a severe outbreak re-occurs.

### *References and Further Reading*

Dr. Tom Harrington's bur oak blight update (Video from 2017)

<https://vimeo.com/229174467/f19476b2a7>

US Forest Service Pest Alert: Bur Oak Blight

[http://na.fs.fed.us/pubs/palerts/bur\\_oak\\_blight/bob\\_print.pdf](http://na.fs.fed.us/pubs/palerts/bur_oak_blight/bob_print.pdf)

*Published Research Article--* Harrington T, McNew D, Hye Young Y. Bur oak blight, a new disease on *Quercus macrocarpa* caused by *Tubakia iowensis* sp. nov. *Mycologia* January 2012;104(1):79-92.

*(Travis Cleveland)*

### **Safety While Pruning Trees--Not for the Faint of Heart**

We are nearing the end of the summer season, as our plants wind down, it is time to start looking at what plants need to be trimmed or completely removed. Maintaining trees is important for economics as well as aesthetics. Trees increase a home value, provide shade and also beautify a landscape. When it comes to trimming trees, it isn't easy. Simply put, just because you have a truck, ladder and chainsaw, doesn't mean that you are a tree trimmer. There are several precautions that should be taken before climbing a ladder.

1. Equipment- checking your equipment before you leave the shop is essential. Chains and pruners should be sharpened and cleaned. This is especially important if you were working on a diseased plant. Check the fuel, spark plugs and tension on chain. One chainsaw or pruner doesn't mean that it is enough for every job, so make sure that you have the correct size or length appropriate for what you are cutting. Having something too small will cause for pinching of a blade, and cause early wear and tear of equipment. Having adjustable pruners with adjustable arms or even ratcheting hand grips is more ergonomic for the body causing less pressure and pain in the body.
2. Personal Protective Equipment- hard hats, chaps, glasses, ear plugs and gloves. The hard hat should fit to the head or be able to be adjusted to fit and have no cracks or dents. Chainsaw chaps should not have rips or tears and cover the top portion of the thigh. Safety glasses should be appropriate for shielding against wood debris, and hearing protection for the decibels of the chainsaw or other equipment. Gloves are also needed that provide protection to the hand, but also allow for enough dexterity to manipulate switches, buttons, and levers. Leather gloves allow for protection but also breathability.
3. Insects and other wildlife- We don't always think about the insects/wildlife that are taking up residence in a tree. Be sure to make sure that if you are taking a tree down to inspect for bees or wasps' nests. Bees or wasps can swarm and sting when provoked. Many times you can call a local bee keeper to collect the hive ahead time or collect it after the tree

is down. Also squirrels and raccoons can bite when disturbed. If the area that you are working in is sensitive site for bats, then avoid taking trees during hibernation, or during nesting seasons. If an employee is allergic to stings, a precaution would be to carry an epi pen in case of a bite.

4. **Falling/ getting struck by a branch-** One of the most common ways a person is hurt when taking down a tree is being struck by a branch or a limb. Many times it is cutting a branch and it doesn't go the direction planned or it takes out another branch then striking someone. Falling either occurs from falling off a tree, ladder or even a roof while trying to reach for a branch. Caution needs to be taken when utilizing any of these. A safety harness should be incorporated when climbing.
5. **Electrocution-** Power lines are probably the number one reason why trees need to be trimmed. When a person is up in a tree trimming, a branch could fall on a line or someone might accidentally touch a line. Be sure to talk with the power companies before you decide to take a tree down near a power line. Once a tree has been taken down, be sure to inspect the area if a replacement tree is to be planted to make sure it is in the right place.
6. **Recoil or Equipment injury-** many times a chainsaw, if cutting through something too hard, a blade can get stuck and the chain saw can kickback. This kickback isn't planned and can cause an operator to lose control. Injuries resulting in this are amputations, cuts or even muscle injury. Be sure to utilize the right size of equipment for the job and make sure that all machinery is in proper working order before you make the first cut.

7. **Poisonous plants-** poison ivy, poison oak and poison sumac are all plants found in Illinois that have leaves and stems that produce a surface oil called urushiol. For some, this oil causes an allergic reaction resulting in contact dermatitis. These plants can cause severe blistering, infection, and some people may have other allergic reactions. The plants can be very difficult to identify, especially if the leaves have fallen off or if they are way up into the tree.

A worksite surveys should be conducted before each new job. The National Institute of Occupational and Safety Health (NIOSH) recommendations for safety during tree work include 1) wearing appropriate personal protective equipment; 2) always working in teams in visual contact with each other; 3) checking the condition of tree branches before cutting them, climbing on them, or tying off safety equipment; 4) inspecting equipment before each shift and removing damaged equipment from service until repaired; 5) maintaining minimum distances from power lines as specified by OSHA 6) prohibiting the use of conductive tools and equipment near power lines. If you are a certified arborist be sure to keep up with trainings as new methods and safety procedures are developed. Tree trimming can be very valuable to the health of the tree as well as the landowner.

<http://www.treeremoval.com/10-common-tree-cutting-accidents/#.W3MjiOhKiM8>  
<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5815a2.htm>  
<https://www.purduelandscapereport.org/article/homeowner-tree-care-accidents/>

(Maria Turner)