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SHADE TREES & ORNAMENTALS

Thyronectria Canker of Honey Locust
By John Hartman

The 2008 growing season in Kentucky ended with some very dry conditions and followed a significant drought in 2007. Cankers promoted by drought are a concern in the Kentucky nursery and landscape industry, especially on honey locust. Thyronectria canker of honey locust is a major cause of decline of drought-stressed urban honey locusts and is also an important disease of newly planted trees, causing transplanting failure. During this spring transplanting season, landscapers and homeowners will want to take care not to impose undue stress on honey locust transplants so that Thyronectria cankers can be avoided. Although honey locust is a Kentucky native, especially in the Outer Bluegrass region, the disease appears to have little effect on trees in the forest.

Cause, symptoms and signs. Honey locust canker is caused by the fungus *Nectria austroamericana* (formerly *Thyronectria austroamericana*). Cankers of the trunk and branches result in yellowing and death of associated foliage. Wood beneath the canker is stained a reddish color. Symptoms and signs are visible on the bark almost any time of year, but are most striking when the bark is wet. Oval-shaped dead areas found on affected trunks and branches are reddish-brown to yellowish-tan in color and dotted with dark fungal fruiting bodies called conidial stromata (Figure 1). These fruiting bodies, often appearing where lenticels were positioned, are easily seen without a hand lens and give the canker surface a roughened appearance. These fungal structures produce cream-colored to pinkish masses of conidia (spores) when cankers are wetted during rainy periods (Figure 2). Eventually, conidial stromata give way to fungal fruiting structures called perithecia which are easily recognized by their yellowish fruiting bodies with black tips, visible with a hand lens.

Disease spread. The spores exuded by the canker fungus are splashed by raindrops, moved on pruning tools, or possibly carried by insects to infection sites. The fungus infects pruning wounds that are less than three weeks old and possibly bark

tissue that is scalded by the sun. Cankers then spread internally, sometimes girdling and killing the branch or trunk.

Disease management. Proper tree maintenance practices are most useful in managing honey locust Thyronectria canker.

- Handle trees with care at transplanting: provide plenty of roots when digging trees for transplanting, avoid wounds to trunk and branches, and avoid drought stress resulting from inadequate follow-up watering.
- When pruning, use recommended pruning techniques (natural target pruning) that favor rapid closing of the wounds. When dealing with diseased trees, be sure that pruning tools are disinfested with Lysol or bleach between cuts to reduce spread of the fungus. When pruning is completed, rinse tools in clean water to avoid corrosion or damage.
- Provide good growing conditions for honey locust with mulching and watering. With good care and improved growth, honey locust trees can restrict canker growth and begin to shrink the area of dead bark.
- When we inoculated honey locust cultivars here in Kentucky some years ago, we showed that Thyronectria cankers of 'Skyline' and 'True-Shade' honey locusts were significantly smaller than those of 'Sunburst'. 'Shademaster', 'Imperial', and 'Rubylace' cultivars were intermediate in their reaction to the disease.

Figure 1: Honey locust trunk with Thyronectria canker and fungal fruiting structures.

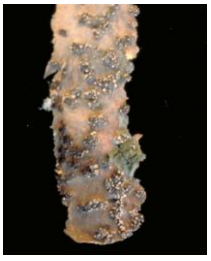


Figure 2: Close up of fungal sporulation on honey locust bark.

TOBACCO

Controlling Pythium Root Rot in the Float System

By Kenny Seebold

Pythium root rot (PRR) is the most common and damaging disease that we encounter in the float system, and it won't be long before tobacco transplants around Kentucky are affected by this problem.

The first symptoms of Pythium root rot tend to be yellowing and stunting of transplants in a well-defined area or areas of a float bay. Damping-off, or seedling death, can occur in severe cases. During the outbreak, seedlings wilt and root systems decay to some degree. Roots and sometimes lower stems of plants affected by Pythium root rot take on a darkened, necrotic appearance; roots may have a slimy appearance. Infected roots will eventually slough off and some re-growth may be observed; however, new growth likely will become infected.

Water temperatures greater than 72 °F favor rapid development and spread of PRR in float systems. Several species of *Pythium*, a fungus-like organism, are known to cause root rots on tobacco seedlings. *Pythium* species (spp.) require water, abundant in the float system, for reproduction and movement. Initial infections likely result from germination of

resting structures (oospores) of *Pythium* spp., and production of zoosporangia. Swimming spores (zoospores) are liberated from zoosporangia, and find their way to tobacco roots. Zoospores encyst after encountering susceptible tissue and enter the root system to establish an infection. Many cycles of zoospore production and infection are possible after initial infections occur.

The most common ways for *Pythium* spp. to be introduced into float systems are contaminated water, infested soil, or recycled (and contaminated) Styrofoam trays. *Pythium* spp. are found widely in our soils and surface water and can be carried on shoes or implements. *Pythium* spp. can persist in the tissue of roots that have penetrated Styrofoam float trays, providing a source of inoculum when the trays are used the following season.

Sanitation is an important part in the management of Pythium root rot in the float system (refer to KPN No. 1151 for more details). Never use pond or surface water to fill float beds, since water from these sources is likely contaminated with *Pythium* and other plant pathogens such as *Phytophthora* or *Fusarium*. Make sure that shoes and tools are cleaned before bringing them into a transplant facility.

Terramaster 4EC is labeled for use in float systems and is very effective against PRR when used correctly. Detailed information on this fungicide can be found in the product label, or refer to ID-160 (2009 Kentucky-Tennessee Tobacco Production Guide) or PPFS-AG-T-8 (2009 Fungicide Guide for Burley and Dark Tobacco). For preventive use, apply 0.7-1 fl oz of product per 100 gallons of float water beginning 2-3 weeks after seeding, or when roots first enter the water. A second treatment of 0.7-1 fl oz per 100 gallons of water can be made 3 weeks after the first, and a final application of 0.8 fl oz can be made two weeks after the second treatment (if needed). Do not apply Terramaster later than 8 weeks after seeding; make sure that the product is mixed thoroughly in float bays to minimize the risk of plant injury. "Rescue" applications of Terramaster (1.4 fl oz/100 gallons of float water) in systems with active PRR will halt further development of disease and symptomatic seedlings will likely recover. However, the higher rates of Terramaster used in rescue treatments increase the risk of plant injury AND recuperating plants may still harbor *Pythium* and increase their susceptibility to black shank and Fusarium wilt. For these reasons, preventive use of Terramaster is recommended over curative applications of the product. Before using Terramaster, or any pesticide, refer to the label for specific instructions and safety information. Quality tobacco transplants are one of the most important parts of a successful growing season. Through careful management it is possible to achieve excellent control of PRR, good transplant quality, and a healthy bottom line!

VEGETABLES

Sweet Potato Insect Management
By Ric Bessin

As a long season root crop, sweet potatoes can be quite profitable to produce in Kentucky. While there are quite a few insect pests that attack the foliage and roots of sweet potato, we do not have economic problems with several of those pests that are more common in other regions. In Kentucky, most of our problems are with soil insect pests that attack the roots directly as they are developing. The primary pests that we need to manage include wireworms, white grubs, and rootworms. Damage caused by these insects to the roots appears somewhat different while management strategies do overlap.

When the subject of insect management is discussed by sweet potato growers, the first pest mentioned is usually wireworms. There are a large number of wireworms in Kentucky and several that can attack sweet potatoes. Wireworms are the larvae of click beetles. Some wireworms are predators in the soil, others feed on plants, while still others may switch between acting as predators and herbivores in the soil. The life cycles of wireworms can be as varied as their diets with some species having an annual life cycle and other species requiring two, three, or more years to complete their life cycle. When we deal with soil insect pests that have extended life cycles (two or more years), a past problem may be a fair indication of future problems. So pest history of a recent problem in a particular field is a serious risk factor.

Wireworms leave small irregularly shaped holes on the surface of the root. These may be clustered around cracks or other injuries to the root. While initially the holes are quite shallow, as the roots grow and with additional feeding the ragged holes deepen considerably. A preplant soil applied insecticide will help to reduce wireworm problems, but some of these products may need to be applied several weeks before setting the slips because the pre-harvest intervals may be longer than the day to maturity with some variety/insecticide combinations. Of the soil applied insecticides to control wireworms, bifenthrin can also be used as a lay-by application to the soil during hilling up to 21 days before harvest.

White grubs are common in Kentucky, particularly following certain rotations or in soils with very high levels of organic matter. There are several species that can attack sweet potatoes and range from having annual life cycles to multi-year extended life cycles. Unlike wireworm damage that is characterized by small ragged holes on the surface of the root, white grub damage results in wide feeding sites scooped out of the surface of the root. The same treatments used to control wireworms will also help to reduce white grub injury. Pay close attention to the pre-harvest intervals with soil insecticides and sweet potatoes.

The spotted cucumber beetle (aka southern corn rootworm) can also be a serious pest of sweet potatoes. The larvae of this pest attack the developing root and produce round holes in the surface of the roots as they tunnel to form cavities under the surface. The adult is common throughout the year in many vegetable and field crops. It is about ¼ inch, lime green, with 11 dark spots on the wings. The adult feeds on the leaves and deposits eggs in the soil. There can be several generations during the growing season. Foliar insecticide applications can be used to control the adults and reduce egg laying with a threshold of two beetles per 100 sweeps used as the action threshold. Weed control in and around the sweet potato planting can also help to reduce problems with cucumber beetles.

LIVESTOCK

Black Flies Bother Livestock in Some Areas
By Lee Townsend

Black flies or buffalo gnats (left) are 1/8 inch long hump-backed dark flies with wide, clear wings. Females use their sharp blade-like mouthparts to slice the skin and feed on blood that wells up. The bite may bleed for some time after feeding has stopped and it may itch intensely for several days. Black flies are most closely related to mosquitoes but their feeding habits are most similar to miniature horse flies. They have been reported in several west Kentucky counties this past week.

One of the most common species in Kentucky attacks horses and cattle and swarms around humans but rarely bites. These flies feed during the day and frequently attack animals in the ears and around the eyes. They also may bite along the underbelly. The bites are painful, and animals under attack can become very head-shy and hard to handle. They may run in an attempt to escape the torment of these small gnats.

Generally, insect control efforts are based on source reduction but this is not an option with an insect that develops in streams and rivers. While there is an insecticide registered to control black fly larvae, it is expensive and impractical to use over wide areas.

Animal protection alternatives are limited, too. Insecticides used to control nuisance flies on livestock and horses will provide some protection but must be reapplied frequently during the black fly "season". Feeding can be intense in horse ears; thick, repeated applications of petroleum jelly will provide a physical barrier to fly feeding and will allow injured areas to heal. In some areas, KDA Pest and Noxious Weeds personnel are spraying with Anvil, a synthetic pyrethroid insecticide, in an effort to control adult flies.

The larval and pupal stages of black flies live in flowing water of streams and rivers. Hundreds may be found on stones or submerged objects. Brush-like fans on the head are used to strain small microorganisms from the water. The pupal stage is attached to underwater surfaces in a silken case. An adult emerges from the pupal stage, rises to the surface, and flies away in search of a blood meal. They are strong fliers and may move long distances from water to feed. Historically, black flies have been a problem for livestock along permanent streams and rivers. Buildup of debris, especially fallen trees, can slow stream flow and make long stretches unsuitable for breeding. Stream clean-up that increases current flow allows black fly populations to increase to nuisance levels.

FORAGES

Alfalfa Weevil Season Approaching
By Lee Townsend

The alfalfa weevil is the key pest to watch for on the first cutting of alfalfa each year. As with several important crop pests, activity periods can be predicted but pest levels cannot. That takes individual field assessment. Information from the UK AG WX Center allows us to follow the progress of this insect on this excellent degree day accumulation map that is updated daily - http://wwwagwx.ca.uky.edu/ldm-images/awacc.gif. Each color band on the map corresponds with important degree day values used in making control decisions. The map shows that most of the state is in the 226 to 275 dd range so if damaging populations are found, an insecticide application with a long residual life should be used.

Treatment decisions can be made using the sampling program in ENT-17, Insecticide Recommendations for alfalfa, clover, and pastures OR treating if feeding damage is seen on 25% to 50% of the tips and there are 2 or more live weevil larvae per stem.

Winter Grain Mites Apparent Culprits
By Lee Townsend

The 4-year-old bluegrass-orchard grass fields looked good until brown spots started to appear about Mid-March. These areas increased in size. Orchardgrass appeared to be most affected as many blades turned yellow and ultimately died. Bluegrass and broad leaf plants did not show obvious symptoms.

The root system was sound, with no evidence of white grub feeding damage and there was no chewing damage or other sign of insects. A number of long black-gray "worms" resembling cutworms were found under dead thatch. Length ranged from about ¾" to about 1" long; they crawled but had no obvious head or legs. They were crane fly larvae, insects that are usually found in moist decaying vegetation. In a few weeks they will become long-legged mosquito-like flies that are seen flying in the spring and fall.

Close examination of samples from the damaged areas revealed distinctive dark brown to black mites with carmine red legs – the winter grain mite. Winter grain mites hide during the day and feed at night or on overcast days on a variety of grasses and broad leaf plants during spring and fall.

Spring infestations may be associated with plant death, which may result from stresses other than feeding by the mites. Egg-laying is heaviest when temperatures are between 50 and 60F. Mite activity drops and egg hatch stops when the daily

temperature climbs above 75F. The mites will remain inactive during the summer and resume feeding and development in the fall (Va Tech Pub 444-037, Kansas State pub MF-2073).

PESTICIDE NEWS AND VIEWS

Update on Maneb and Mancozeb Availability in Kentucky
By Kenny Seebold

Previously (KPN No. 1186, February 10, 2009), I reported that registrations for maneb fungicides had been pulled by manufacturers at the end of 2008. The end result of this is that Maneb 75WP, Maneb 80 WP, and Manex can be sold through the end of 2009, and will be unavailable after that.

The supply of maneb is limited in Kentucky at the moment, and growers are reporting difficulties in finding maneb products. For our pepper growers, maneb is the only effective protectant fungicide labeled, and is also recommended as a tank mix with fixed copper to improve performance against bacterial leaf spot where needed. For growers of cucurbits (except pumpkins and winter squash) and tomatoes, mancozeb (sold as Dithane, Manzate, or Penncozeb) can be substituted for maneb.

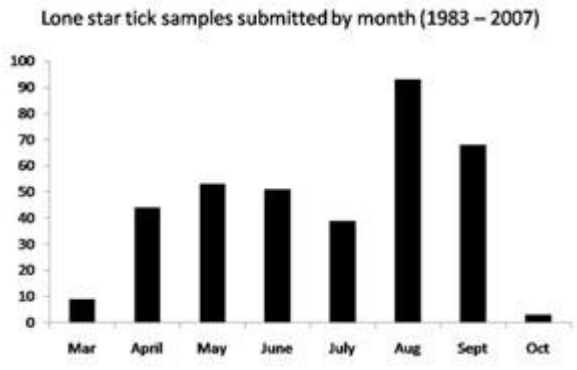
As mentioned in KPN No. 1186, the EPA is expected to expand mancozeb's label to include some of the crops that had been only on the maneb label. This decision is expected by mid-year. It is, however, likely that some will need mancozeb as a substitute for maneb before EPA's decision is made. A series of section 18 emergency exemptions for use of mancozeb on maneb-only crops are being submitted, and we anticipate adding Kentucky to this group as quickly as possible. My hope is to have the appropriate approvals in place to allow for mancozeb's use on crops like pepper, pumpkin, and winter squash in place to cover us until the EPA approves expansion of Section 3 (full) labels for mancozeb products.

This brings me to the next issue, regarding the availability of mancozeb products in Kentucky. I have confirmed reports that Dithane DF, used widely in the production of vegetables and tobacco, is in short supply across the state. Certain dealerships have not been able to order Dithane in 2009, while others have limited stocks. However, these dealers have been able to order either Manzate ProStick or Penncozeb 75DF. The latter two products contain the same active ingredient as Dithane DF and have the same formulation; use rates are identical. Also, 24(c) labels are in place that allow for use of Manzate or Penncozeb along with Dithane for control of tobacco diseases that occur in transplant or field production. The upshot is that we definitely face a shortage of Dithane in Kentucky for 2009, but we appear to have adequate supplies of alternatives in the form of Penncozeb and Manzate. Producers who cannot find Dithane must keep these alternatives in mind when buying fungicides for use this season.

Please check Kentucky Pest News for updates on the maneb situation, or contact me at kwseebold@uky.edu for latest developments.

PEST OF HUMANS

Lone Star Ticks Can Put Bite on Community Cleanup
By Lee Townsend



Outdoor activities and spring cleanup provide chances to enjoy the outdoors after a long, cold winter. Removing some of the "things" that have accumulated over the winter is hard but rewarding work as long as picking up ticks isn't part of the "reward".

Freckle-sized lone star tick larvae, sometimes called seed ticks, are active and hungry from late March

into May (see graph). They climb on low vegetation and wait with outstretched front legs to latch on to passing animals or humans. Once "on board", they crawl around to find a suitable place to attach and feed. The painful feeding site can be irritating for days after the tick has detached or been removed.

Personal Protection

Here are some things to do to reduce the possibility of being bitten by ticks when in infested areas.
Wear light-colored clothing so ticks can be seen easily.
Tuck pants into socks and shirt into pants keep ticks from reaching your skin.
Avoid or minimize time in tick habitats.
Use personal protection - repellents (DEET or picaridin) or permethrin-based clothing sprays.
Inspect your clothing and body regularly and remove ticks, especially at the end of the day.
Take a warm soapy shower after potential tick exposure.

Wash clothing in hot water and detergent - store in sealed bag until it is washed.

DIAGNOSTIC LAB HIGHLIGHTS

By Julie Beale and Paul Bachi

Recent PDDL samples have included Pythium root rot on several species of greenhouse ornamentals and on tomato transplants. Pythium root rot was also diagnosed on tobacco seedlings, both in the float system and in overhead-watered plug trays.

Bacterial canker was diagnosed on pepper from a high tunnel production system. This disease is much less common on pepper than it is on tomato. The primary symptom in this case was a dark, water-soaked canker progressing up the stem from the soil line. Tomatoes in an adjacent area were infected with bacterial canker last summer.

In the landscape, Rhizosphaera needle cast has been seen on spruce. Landscape evergreens such as holly and English ivy were submitted with symptoms of winter drying.

INSECT TRAP COUNT

By Patricia Lucas

Graphs of current insect trap counts will soon be available on the IPM web site at –

Date	Armyworm		Black cutworm	
	Princeton	Lexington	Princeton	Lexington
March 20 – 27	175	40	22	4
March 27 – April 3	67	71	2	5

http://www.uky.edu/Ag/IPM/ipm.htm.
Trap counts for Fulton County will soon be available at
http://ces2.ca.uky.edu/fulton/InsectTraps

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