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WATCH FOR

Thrips
By Ric Bessin

High levels of flower thrips continue to be a problem on some vegetable crops and ornamental plants. Thrips damage can be highly variable on various types of plants and the thrips themselves are very small (1/20") and may be hidden at the base of flowers or buds. Thrips feed with piercing-sucking mouthparts and damage to the developing leaves may appear as leaves that do not expand symmetrically or fully. Light-colored or golden flecking may appears on some fruit with high levels of thrips.

In addition to fruit damage, western flower thrips can transmit two serious viruses of vegetables, tomato spotted wilt virus and impatiens necrotic spot virus. However, in order to transmit the viruses, the immature thrips needs to acquire the virus from an infected plant, then they can transmit the virus to uninfected plants as an adult. Typically in vegetable fields, it is primarily spread from thrips moving into the field that is of most concern. As a result, there is often an 'edge' effect relationship with the thrips-transmitted virus diseases. Secondary spread by thrips that develop and acquire the virus within the field is less common.

The best method to sample for thrips is to tap leaves, buds, or flowers of suspected plants over a sheet of white paper. Thrips are much easier to see on the paper than they are on the plant. The commercial vegetable spray guide, ID-36, lists insecticides for thrips management, however, some thrips species are more easily control with some of these products than other species.

SHADE TREES & ORNAMENTALS

Emerald Ash Borer – 6 Counties Confirmed
By Lee Townsend

As of June 8, 2009 emerald ash borer (EAB) adult collections have been confirmed from sites in Fayette, Franklin, Jefferson, Jessamine, Kenton, and Shelby counties. This does not mean that the insects

are present throughout these counties, the extents of these infestations have not been determined.

There are a lot of green insects around that can be confused with the emerald ash borer. The picture below (courtesy of the Missouri Dept Agriculture) shows an EAB along with several look-alikes. The line-up includes (top row L-R): EAB, a bark gnawing beetle (family Trogossitidae), *Buprestis rufipes*, green June beetle, and the caterpillar hunter. (bottom row L-R) Japanese beetle, a green tiger beetle, green stinkbug, dogbane beetle, and a metallic bee. The picture shows relative sizes and shapes of these insects.

Another Pine Sawfly
By Lee Townsend

First it was the European pine sawfly; now, it is the introduced pine sawfly. This speckled larva feeds on old needles of white and Scots pine. Based on the most recent sample, most larvae are nearly full-grown and will spin brown paper-like cases in which to pupate. There will be a second generation that can be active from July thru September. These larvae will feed on new and old needles.

Although sawflies have caterpillar-like bodies, they are larvae of a group of wasps. Bacillus thuringiensis sprays are not effective against them. Initially, the larvae are clumped on trees so it may be possible to prune infested areas to remove them. Insecticide options include acephate (Orthene Turf, Tree & Ornamental Spray), bifenthrin (Ortho Houseplant & Garden Insect Killer), carbaryl (Sevin), cyfluthrin (Bayer Advanced Garden Multi-Insect Killer Concentrate), esfenvalerate (Ortho® Bug-B-Gon Garden & Landscape Insect Killer Concentrate), or permethrin (Ortho Mosquito B Gon Tree, Shrub, and Lawn Spray and others).

FRUIT CROPS

Frogeye Leaf Spot is Appearing on Apple
By John Hartman

Symptoms of frogeye leaf spot have been evident on leaves of apple and crabapple throughout Kentucky in recent weeks. In some plantings, frogeye leaf spot can be more prevalent than other diseases such as scab or rust which are also visible now.

Symptoms. The lesions that have appeared on leaves are small (1/8 - 1/4 inch) distinct circular, brown spots (Figure 1). The center portion of the spot may become tan colored, while the outer edge remains dark brown, giving it a "frogeye" appearance. By contrast, apple scab develops as dark brown to black diffuse spots without sharp margins, and rust spots will have a distinct yellow-orange color. Signs of disease in the form of tiny black pycnidia (fungal fruiting bodies) of the causal fungus may develop in the center of the spot. If present, pycnidia can be examined with the aid of a hand lens and will appear as tiny black "pimples" when viewed through the magnifier. These pycnidia contain thousands of spores that can be a source of continued infections. As leaf spots become more numerous and coalesce, leaves turn yellow and fall.

Figure 1. Frogeye leaf spot disease on apple leaf.

Cause. Frogeye leaf spot is caused by the fungus *Botryosphaeria obtusa*. This fungus causes three distinctly different symptoms in apple and

crabapple. In addition to frogeye leaf spot, *B. obtusa* causes black rot of the fruit and a canker disease of twigs and branches. This fungus is capable of attacking many different kinds of trees and shrubs in Kentucky, so inoculum is quite widespread. The infections now being seen on the leaves most likely originated from cankers on dead twigs and branches in the tree. The black rot fungus frequently invades last year's fire blight infections, causing a canker in the branch or twig (Figure 2). Such cankers may weaken the limb or kill the twig or branch. Often a cone-shaped area of affected leaves will appear just beneath such a canker. The presence of high levels of fire blight disease in many apples and crabapples during recent years could account for high levels of frogeye leaf spot this year. In addition, rainy weather this spring has been conducive for disease development.

Figure 2. Apple fire blight branch infection, a site for black rot canker development.

Fruit infections. In trees with many cankers and spotted leaves, fruit infections have probably already occurred this season, but fruit decay symptoms will not appear until fruits mature. Infections often begin on flower sepals in spring and progress to the blossom end of the developing fruit. As the fruits enlarge, a brown decayed area appears. The decay is often characterized by a series of concentric rings alternating from black to brown on the fruit surface (Figure 3). Pycnidia are scattered over the surface of the decayed fruit. Eventually, the rotted fruits dry out and mummify, sometimes hanging on the tree until the next season.

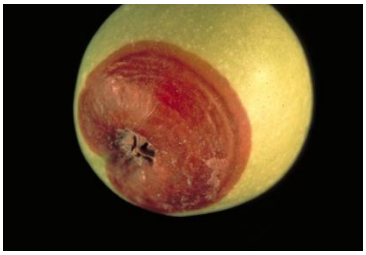

Figure 3. Apple black rot symptoms on fruit (APS photo).

Disease management. Control suggestions include:

- Prune out and destroy all dead twigs and branches. This is best done while trees are dormant to prevent early spring frogeye leaf spot infections. When pruning, promote rapid wound closing by not leaving stubs or making flush cuts. Prunings must be removed from the orchard or they can become sources of inoculum.
- Thin out branches to promote good air movement.
- Remove mummified fruit (Figure 4) to reduce inoculum.
- Protect the fruits from injury caused by insects or harsh spray materials.
- Promote optimum growth.
- Protectant fungicides such as captan, mancozeb, and polyram, used to control scab are generally effective against frogeye leaf spot. Thiophanate-methyl (Topsin-M) and strobilurin fungicides such as Flint, Pristine, and Sovran are also generally effective.

Figure 4. Apple black rot mummy.

TOBACCO

Blue Mold Reported in Southeastern Pennsylvania
By Kenny Seebold

Blue mold has been confirmed in southeast Pennsylvania (Chester County). Here's a synopsis of what was sent out from the North American Plant Disease Forecast Center:

June 6

First report of blue mold from the United States. Blue mold was reported late June 5 from Chester County, PA. Disease was discovered in a float bed house near the town of Oxford. Areas of yellow

leaves were observed and sporulation was occuring on some plants. First appearance of symptoms is estimated at May 29, 2009. The report indicates that plants are to be destroyed immediately.

At the moment, there's no clear indication of the source of this outbreak. Before this report, there were no known cases of blue mold in the U.S. It is possible that the PA case started from spores moving in from an area south of the outbreak or we could be looking at plants that were imported from the south. As I learn more, I will let you know.

More importantly, we need to keep an eye out for blue mold in KY and surrounding areas. Plants still on float beds will be at greatest risk and should be treated with Dithane/Penncozeb/Manzate until they are set. I don't think we face a big risk, and the current blue mold forecast has inoculum moving out to the Atlantic Ocean rather than towards us. So, we should hold off on fungicides until we are sure they are needed. Please let me know if you suspect or find blue mold in your area.

Tobacco Budworms
By Lee Townsend

The potential for tobacco budworm damage is greatest in earliest set fields which will be most attractive to moths. Budworms feed in the buds of young tobacco plants, chewing holes in the developing leaves. As the leaves expand, the familiar large rounded holes are appear but by then, the damage is done. If the bud is destroyed, a new early sucker growth is started.

The trick to reducing budworm damage is to catch infestations early by carefully inspecting plant buds at least weekly. Feeding by small budworms can be detected early and the black pepper grain like droppings are also a good diagnostic clue. Treat if you find 5 or more budworms (1/2" to 3/4~' long) per 50 plants from button stage to topping.

There is a parasitic wasp that attacks budworms. Frequently the 1/4' long white to gray cocoon of this beneficial insect can be seen on the top leaves of tobacco plants. They can be conserved by avoiding unneeded insecticide applications. Insecticides for budworm control include Denim, Orthene, Tracer, and Warrior. Examples of Bt products include Agree, Biobit, Dipel, Javelin, and XenTari.

If treatment is necessary, make the application during the coolest parts of the day when buds are more exposed and budworms are out feeding on the tip leaves. A cone nozzle over the row will help to give good coverage of the area where these larvae are feeding.

LIVESTOCK

Hay Beetles Cause Concern
By Lee Townsend

Four separate samples of live black beetles found in horse hay were received last week. Naturally, owners were concerned about blister beetles and the potential for toxicity to their animals. In each case, the insects were darkling beetles, they are relatively common in stored grain and feed. Darkling beetles do not contain cantharidin, the defensive chemical found in blister beetles. Consumption of limited amounts of these arthropods is unlikely to pose a threat to animal health; however, if nothing is done, their numbers probably will increase dramatically over time, and may cause feed to become unpalatable or unacceptable to animals. Fortunately, the beetles will tend to leave the hay when it is put out to feed animals.

Darkling beetles are similar to blister beetles in size and shape but do not have a distinctly narrow segment between the head and abdomen; this is a key identification characteristic that separates them from many other beetles. In blister beetles

(left), this segment is narrow, giving the insect a distinctive "neck". The segment behind the head of a darkling beetle (right) is as wide as or wider than the head.

Darkling beetles typically hide under objects on the ground during the day. It is natural for them to accumulate under hay bales, boards, or other shelter where they can survive on seeds, plant matter, or other things that they can find. Over time, residual feed in bunks, buckets, or troughs can harbor small numbers of insects. They are most likely to occur under bins or bunks with cracks can crevices where fines can collect or on the ground around feeders.

If large numbers of beetles are found, sources of the infestation should be determined. Unfortunately, insects usually aren't noticed until large numbers are present so a problem can be out of hand before it is recognized. The wireworm- like larvae (mealworms) live in infested products but may be found in barns and feed rooms as they wander in search of a pupation site. This situation can be dealt with by thorough sanitation.

Infestations in stored bulk feed are more difficult to address, depending on the volume that is present and how quickly it will be used, and time of year. If the time frame is relatively short, it may be best to feed out the supply and thoroughly clean the storage area and surroundings before re-filling the storage units. Brooms and shop vacs need to be used to clean all accessible fines. A pyrethrin spray labeled for use in feed storage areas after clean up will help to eliminate surviving insects. Activity of most stored grain insects stops when temperatures drop below 50F, so cool temperatures can allow a longer time to use feed and clean the storage area with a minimal increase in pest numbers.

Regardless of the size of the infestation, stored feed insects will disperse to new resources. Thorough sanitation and upgrading of storage units to eliminate or seal cracks and crevices is vital to managing these insects. Then, thoroughly clean storage areas before adding new feed. Placing new feed on top of old feed is a sure way to have problems.

PESTICIDE NEWS & VIEWS

Danitol Use on Stone Fruits
By Ric Bessin

Valent has recently issued a 2(ee) recommendation label for Danitol 2.4EC which adds the insects plum curculio, green June beetle, Japanese beetle, and tarnished plant bug to the Danitol's existing stone fruit label. This is in addition to European red mite, green fruitworm, green stinkbug, obliquebanded leafroller, Oriental fruit moth, redbanded Leafroller, southern green stink bug, two-spotted spider mite, and variegated leafroller which are listed on the original supplemental label for stone fruit.

Reglone Section 18 Approved for Canola
By Jim Martin

The Federal EPA approved a Section 18 Specific Exemption for using Reglone (active ingredient diquat) as a desiccant and harvest aid for canola in Kentucky. The Kentucky Department of Agriculture is responsible for ensuring that all provisions of the Specific Exemption are met. The Specific Exemption will expire on July 1, 2009. The justification for the Specific Exemption was based on number of issues related to the effect of wet weather on extending canola development and delaying planting of double-cropped soybean.

Applying Reglone at 24 to 30 fl oz/A when 60 to 75% of canola seed turn green to brown will enhance the drying of seed for direct combining of the crop. A nonionic surfactant containing 75% or greater surface active ingredient as 0.5 to 4 pt/100 gal is required as an adjuvant. Do not apply when the crops is before or past the recommended stage. A Pre Harvest Interval (PHI) of 7 days is required. In order to avoid excessive pod shatter and / or seed loss, it is recommended to harvest no later than 14 days after application.

DIAGNOSTIC LAB HIGHLIGHTS

By Julie Beale and Paul Bachi

Recent agronomic samples in the PDDL have included zinc deficiency on corn; take-all and glume blotch on wheat; black root rot and symptoms of transplant shock on tobacco.

On fruit and vegetable samples, we have diagnosed iron deficiency on blueberry; spur blight (*Didymella*) on blackberry; nitrogen deficiency on peach; cedar-apple rust, frogeye leaf spot and scab on apple; crown and petiole rot (*Colletotrichum*) on rhubarb; Rhizoctonia stem rot on broccoli; bacterial blackleg on potato; Pythium root rot, Rhizoctonia stem rot, timber rot and growth regulator injury on tomato.

On ornamentals and turf, we have seen Rhizoctonia stem rot on petunia; black spot on rose; Phytophthora leaf blight on rhododendron; spot anthacnose on dogwood; scab on crabapple; leaf spot (*Mycosphaerella*) on cherry; anthracnose on ash, redbud, oak and maple; red thread on mixed turf (home lawn); anthracnose on bentgrass; dollar spot on bermudagrass; and brown patch on ryegrass.

INSECT TRAP COUNT
May 29-June 5

By Patricia Lucas

Location	Princeton, KY	Lexington, KY
Black cutworm	35	36
Armyworm	61	541
Corn earworm	14	3
European corn borer	1	0
Southwestern corn borer	6*****	0
Fall armyworm	0	0

*Trap was damaged and pheromone (insect lure) missing.

Graphs of insect trap counts for the 2008 season are available on the IPM web site at -http://www.uky.edu/Ag/IPM/ipm.htm. View trap counts for Fulton County, Kentucky at - http://ces2.ca.uky.edu/fulton/InsectTraps

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