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KENTUCKY PEST NEWS

ENTOMOLOGY · PLANT PATHOLOGY · WEED SCIENCE

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SHADE TREES & ORNAMENTALS

Eastern Tent Caterpillars Wandering
By Lee Townsend

Some eastern tent caterpillars have completed their development and are wandering prior to pupation. Large wandering caterpillars are not easy to kill. Sheer size requires a large dose to be effective and the "hairs" on the body probably serve as some protection against fine spray particles. Wandering mature caterpillars are not feeding so the only contact they have with an insecticide is by direct application or from crawling through treated foliage. If control is desired, it is best to deal with caterpillars before they have dispersed from trees.

European Pine Sawfly
By Lee Townsend

European pine sawfly larvae are voracious feeders that can strip old needles from Mugo and Scotch pines; occasionally, they will attack Austrian and white pines. The green-gray larvae have shiny black heads and narrow dark stripes along the body. They are about 1-inch long when mature.

Small larvae feed on the surface of needles, causing them to turn brown and wilt. Larger larvae eat entire needles but do not feed on new growth. They usually occur in small clusters, if enough are present, and they can consume most of the needles on the plant. The picture at left (R. Delong), taken last week, shows an unusually high infestation. Mature larvae will drop to the ground and pupate in brown paper-like cocoons that are blunt at each end. There is one generation each year.

While these larvae resemble caterpillars, they are immature stages of a type of wasp. This means that Bt insecticides will not work against them. Sevin, or one of the pyrethroids labeled for pines, can be used. Unfortunately, infestations often are not noticed until most of the larval feeding is finished.

Slugs
By Lee Townsend

Slugs are almost universal pests in vegetable gardens, shade gardens, and shaded landscape areas. Their soft, unsegmented bodies, exude a slimy, mucous-like substance that leaves characteristically shiny trails as they move from hiding to feeding spots. Once on a plant, slugs use their rasping mouthparts to scrape away at the leaf tissue. Immature slugs tend to feed on surface tissue while larger individuals eat rounded holes completely through the leaf. Slugs usually feed at night and hide in moist, dark areas during the day. They may eat several times their own body weight each night so serious damage can occur in a very short time. Disappearance of seedlings or newly set transplants is often blamed on cutworms but slime trails are a key clue in incriminating slugs.

Slugs prefer temperatures in the low 60's but can lay eggs and develop normally down to about 40 F. They can survive slight freezing but tend to hide in cracks and crevices when cold weather threatens them. Usually, warm temperatures are the concern. Slugs try to avoid temperatures above 70. Rising temperatures spur them to crawl down to their hiding places to rest and absorb water through their skin. As temperatures start to fall, slugs actively begin foraging, again. Slugs are so sensitive to temperature that they can detect changes as gradual as 2 F per hour!

Slugs are very sensitive to air currents. Gentle breezes cause them to turn toward the source and extend their antennae. As the breeze becomes stronger, they turn away from the source, evidently to escape dehydration. Improved ventilation of a trouble spot may make it drafty and force slugs to move. Good sanitation, including removal of extraneous vegetation, excess mulch, or other materials that might offer food or shelter, will aid in the overall control program.

Slug baits containing metaldehyde or iron phosphate may be used for control. Best results are usually obtained if the baits are applied in the afternoon and watering is delayed until the next day. Slugs feed intermittently so several applications of bait may be needed for control. Baits may attract slugs from up to 3 feet away. Beer-baited traps will lure in many slugs but is it important to check and empty the traps regularly. Pieces of wood, cardboard, or other objects can be placed on the ground in infested areas to provide hiding sites for foraging slugs. Regular visits to the slug accumulators will allow you to collect and discard the resting slugs.

Barriers can provide some relief if the slugs are moving in from outside the area that is being protected. Wood ash or fine lime can be used but both lose their effectiveness when wet and too much wood ash is not good for the soil. Slugs do not like to cross copper. A copper barrier tape (about 1" wide) can be used along borders or around the legs of greenhouse tables to deter slugs. There are wider copper barriers that can be set in the soil as fences but the expense makes this most suitable for small areas.

FRUIT CROPS

Early Season Grape Disease Management
By John Hartman

Grapevines in many Kentucky vineyards are at the 2-6-inch growth stage, and are in need of treatments for managing important diseases. In some cases, pre-bloom clusters are just now clearly visible, according to Patsy Wilson, U.K. viticulture specialist. Inoculum from previous year infections plus an abundance of rain have placed Kentucky grapevines at risk for disease.

cane and leaf spot. Caused by the fungus *Phomopsis viticola*, this disease is becoming increasingly important in Kentucky. Symptoms may include lesions along the vine (Figure 1). Early treatments are critical for Phomopsis management, especially for control of rachis infections

(Figure 2), a common cause of disease loss in grapes. Fungicide applications need to be made during the early shoot growth period, at about 3 inches of shoot growth as bloom clusters first become visible. Applications now help to control rachis infections and provide significant control of berry infections by reducing rachis infection that leads to fungus

spread from rachis to fruits. Repeat applications are helpful for Phomopsis management, but the greatest economic benefit comes from the first spray at 3 inches shoot growth.

Early sprays also provide the greatest control of shoot infections, which in future years, serve as sources of Phomopsis spores from infected canes, spurs, or pruning stubs. Dead wood and canes may be particularly important sources of Phomopsis spores. Removal of dead wood during pruning operations is important for managing this disease. Furthermore, the fungus can remain active in dead wood and pruning stubs for at least several years. Based on studies in Michigan and New York, inoculum from these sources generally fades out by mid-summer.

A minimal Phomopsis cane and leaf spot spray program should include at least one application during the period when shoots are a few inches long and soon after clusters are visible. If there is inoculum present in the vineyard along with rain, waiting to spray until shoots are 10 inches long and blooms are imminent is too late. Mancozeb, captan, and ziram all provide very good to excellent control of basal shoot and rachis infections. Strobilurin fungicides such as Abound and Pristine tend to be a little less effective. Sulfur does little for management of Phomopsis cane and leaf spot. Growers using alternate-row spraying during the early part of the season may wish to switch to every-row spray applications if the disease has been a problem over the years.

What about other diseases? If powdery mildew, caused by the fungus *Uncinula necator*, has been a problem in the vineyard in previous years, fungicide applications should be considered now. Fungicides for black rot (*Guignardia bidwellii*) management can be used now, especially if black rot was a serious problem last year. Otherwise, growers could wait until further shoot growth and bloom development. Downy mildew (*Plasmopora viticola*) treatments can also wait. Treatments at 10-inch shoot growth and at early pre-bloom and bloom stages are important for management of black rot and downy mildew. Growers in warmer parts of the state may already be at the 10-inch shoot growth stage and will want to take steps to manage all four of these diseases.

Conclusion: For the 3-5-inch growth stage with bloom clusters just visible, growers may want to consider mancozeb, captan, or ziram for Phomopsis cane and leaf spot. See U.K. Cooperative Extension Publication ID-94 “Midwest Commercial small Fruit and Grape Spray Guide 2009" for details of rates and timing. For powdery mildew, use one of the many fungicides listed for powdery mildew in that publication. Some of the material for this newsletter was adapted from an article, Grape Disease Control 2009 written by Wayne Wilcox of Cornell University.

Trade names are used to simplify the information presented in this newsletter. No endorsement by the Cooperative Extension Service is intended, nor is criticism implied of similar products that are not named.

Figure Legends:
Figure 1. Phomopsis cane and leaf spot lesions on grape stem.
Figure 2. Grape rachis infections caused by the Phomopsis cane and leaf spot fungus.

TOBACCO

Bacterial Soft Rot Found in the Bluegrass
By Kenny Seebold

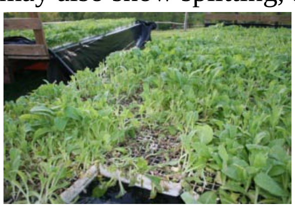
We’ve had a spate of cool, overcast, and rainy weather these past 5 days or so, and this has led to the emergence of diseases like target spot and collar rot in float beds around Kentucky. Given the current weather, the “heat wave” that prevailed from around April 24 through April 27 seems like a distant memory. Diseases and disorders that are driven by high temperatures, though, have begun to appear on tobacco transplants. At the end of April, the first case of bacterial soft rot, or blackleg, was found in a greenhouse in the Bluegrass area and the outbreak was driven clearly by temperature along with management issues during and immediately after the warm spell. Let’s take a closer look at blackleg, the conditions that promote this disease, and steps to take for best control of the problem.

Blackleg – A Crime of Opportunity

Warm, humid conditions in the float bed are the ideal environment for *Erwinia carotovora* subsp. *carotovora* and other bacterial species that cause blackleg. Initially, organic matter in trays, or wounded tissues, are colonized by the blackleg

pathogen. Debris and leaf tissue infected by *Erwinia* appear necrotic and "slimy" (Figure 1). Systemic infections, which arise when *Erwinia* moves from debris or wounded tissues into healthy plants, result in darkening of the stem that tends to move up one side of the seedling primarily, hence the name "blackleg" (Figure 2).

Affected areas of the stem may also show splitting, and in advanced stages,



seedlings will collapse. Under favorable conditions, blackleg will spread rapidly, causing significant loss of useable transplants in as few as 1-2 days (Figure 3).

The bacteria that cause blackleg are essentially parasites of wounded or stressed tissue, and are plentiful in soil and on leaf surfaces. Because the pathogens are always present, development of disease is dependent on a favorable environment and plentiful food (in the form of plant debris or wounded/stressed tissue). Factors that may lead to outbreaks of blackleg include: high nitrogen levels (> 150 ppm), warm temperatures (>75 °F), high humidity, long periods of leaf wetness, and plant injury (stress and wounding). The latter occurs routinely during clipping and can lead to rapid spread of bacterial soft rot if carried out when plants are wet.

Cultural practices are the most important ways to prevent of bacterial diseases. Provide adequate ventilation to shorten the length of time that foliage stays wet – this may be the most important of all management practices to reduce the incidence of blackleg. Most outbreaks we see in Kentucky are associated with warm temperatures and excessive moisture on float plants. Avoid over-fertilizing, a practice referred to as "pushing" seedlings, as this leads to dense, lush growth that is more susceptible to disease and takes longer to dry. Clip and handle plants only after they have been allowed to dry properly. Leaf debris left behind after clipping can serve as a starting point for the pathogens that cause blackleg and should be removed promptly. Along with maintaining good airflow in the float system, keeping as much leaf debris out of the beds as possible is a key to holding blackleg in check.

Chemical options for control of blackleg are limited. Agricultural streptomycin can be used in outdoor plant beds to suppress bacterial diseases, but is not specifically labeled for use in transplant facilities. Because the use of agricultural streptomycin is not expressly prohibited in transplant production, however, EPA rules allow its use in the float system. Streptomycin provides only moderate suppression of blackleg, though, and growers who choose to apply the material in the greenhouse must accept all liability. Apply 3-5 gallons of a 100-200 ppm solution of streptomycin to 1000 sq. feet of float bed. This use rate translates to 0.5-1 lb per 100 gallons of water, or 1-2 teaspoons per gallon. Apply streptomycin before symptoms appear for best results, using the lowest rate. Use the 200-ppm rate immediately after the appearance of symptoms of blackleg. Some plant injury may be observed when applying the higher rate. Refer to the product label and the "2009 Kentucky-Tennessee Tobacco Production Guide" (ID-160) for more information. The guide can be found online at .uky.edu/Ag/TobaccoProd/pubs/id160.pdf.

Cutworms Can Cause Early Problems in Tobacco Fields
By Lee Townsend

While serious black cutworm infestations in tobacco fields are not common, they occasionally can strike hard. The potential is greatest in conventionally-tilled fields where winter annual weed growth was evident for several weeks prior to final field preparation and a significant number of cutworm moths have been flying. Degree-day accumulations and moth captures indicate that the first black cutworms should be reaching the cutting stage during the first week of May in southern and western Kentucky. Moths have been flying since the second week of March and are still active so cutworm damage can be expected over the next 3 to 4 weeks.

Dense low-growing weeds are selected by female moths as ideal places to lay a few eggs. These plants will serve as food for the developing cutworm larvae. When the weeds are killed or turned under, the cutworms suddenly are left without food. Newly-set transplants fill this void and the cutworm larvae quickly resume feeding.

Cutworms are already present in infested fields before transplanting but there is not a good way to determine whether or not they are present or how abundant they may be. The extent of weed flush in the field over the last few weeks is the best indicator, along with reports of cutworm are in nearby communities from fields that have already been set.

Capture and Orthene are labeled for cutworm control as transplant water applications. With this approach, the treated area is immediately around the plant roots. Control may not be considered satisfactory if there is a large number of cutworms in the field or if they are large (> 1.5 inches). Lorsban and Capture may be used as pre-transplant soil applications, as an alternative to the transplant water use. Capture, Orthene, or Warrior can be used as broadcast rescue treatments if cutworms are found on transplants in the field.

Cutworms feed at night or on overcast days and hide in the soil during the day. If soil is moist, they may feed on leaves in contact with the ground. In dry soil, they are more apt to stay below the surface and feed on stems, cutting off plants. The first signs infestations can be feeding holes at the leaf edge or cut, wilted plants.

CORN

Increased Risk of Foliar Diseases in Late-Planted Corn
By Paul Vincelli

Rainfall patterns have delayed corn planting throughout much of the state. Late planting increases the risk of damaging levels of certain foliar diseases, particularly gray leaf spot, southern leaf blight, and northern leaf blight.

Several factors can contribute to this increased risk: When there is a mix of fields planted early near fields planted late, the early fields can be a source of spores for late-planted field. The early fields act a bit like "Typhoid Mary". Compared to early fields, late-planted corn is often at an earlier stage of crop development during periods of spore release and leaf blighting. Since leaf blighting early in plant development is more harmful to yields than late-season blighting, the late-planted fields have the potential to be hit harder than earlier fields.

Fields not planted until the last week of May or into June have the highest risk of foliar disease. Producers planting corn late this spring should use hybrids with adequate levels of resistance to gray leaf spot. Selecting hybrids with good resistance to gray leaf spot is especially important if the field is under conservation tillage (30% or more residue cover) and has had corn anytime in the last two years. Also, if a field has a recent history of southern leaf blight or northern leaf blight, consider those diseases in hybrid selection.

Of course, many producers have already purchased seed for this spring. If a field is sown late and the hybrid doesn't have substantial resistance to the diseases mentioned above, a fungicide application is more likely to be cost-effective. Figure 1 lists the factors that increase the likelihood of getting a positive economic return from a fungicide application in corn. The more of those that are in place, the more likely a corn field is to benefit economically from a fungicide application.

If you do choose to use fungicides, it is always a good idea to leave at least one untreated strip in the field in order to see if the fungicide provided any benefit. Sometimes it will but often it won't, and getting on-farm evidence helps in making future farming decisions.

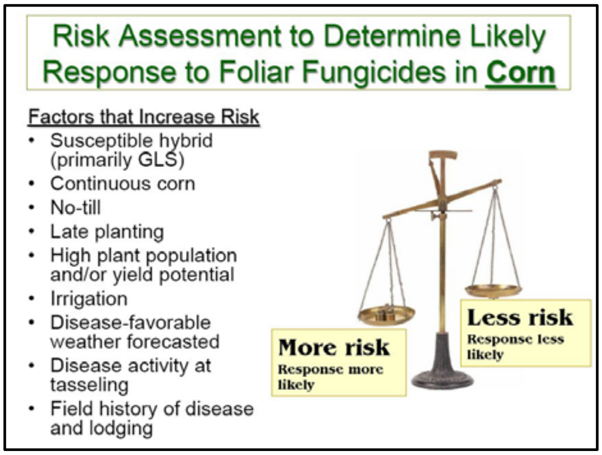


Figure 1. The more of these factors are in place, the higher the probability of getting a positive economic return from a fungicide application.

PESTICIDE NEWS & VIEWS

IR-4 Project: Filling a Needed Role
By Ric Bessin

Since the early 1960's, the IR-4 Project has been the major resource for supplying pest management tools for specialty crop growers by developing research data to support new EPA tolerances and labeled product uses. The IR-4 Project is a cooperative program of the USDA, and Land Grant Universities, with the principle goal of developing data to support and to expedite regulatory clearances of newer, reduced risk pest control products for specialty crop growers. The IR-4 Project provides the field trial and laboratory residue data necessary for EPA clearance of minor crop tolerances, and approval of new uses for pesticide labels. By securing tolerance clearances and label registrations for pesticides, the IR-4 Project is filling the gaps in pest management tools for specialty crop growers. The IR-4 Project has provided the necessary field and residue data to account for about 50% of EPA's annual workplan and new clearances in recent years.

The IR-4 Project has proven instrumental in helping curtail substantial economic losses to the agricultural sector when stricter standards of food safety were imposed with the passage of the Food Quality Protection Act of 1996 (FQPA). This act imposed added protections from pesticide exposure on food, especially for infants and children, and forced several critical pesticides off the market or substantially restricted their use. The IR-4 Project proactively established an operating strategic plan to facilitate registering new, safer alternatives for minor use pest management prior to the passage of FQPA; reducing the impact of FQPA on the farm community.

Working closely with growers and commodity groups, university extension and researchers, USDA scientists, the agrichemical industry, and EPA, the IR-4 Project assures that alternative pest control products are available that are safer and more efficient than existing products. To be sure, over 80 percent of IR-4 Projects support registration of reduced-risk pesticides that substantially reduce the risk to human and environmental health relative to existing or recently de-registered products. Since its inception, the IR-4 Project has achieved over 10,000 pest control clearances on food

IR-4 is looking for your needs and pesticide clearance requests. If you know of particular insect, mite, disease, or weed problem for which a particular pesticide is needed but is not labeled, contact myself or IR-4 with your request.

New Tolerances Established Through the IR-4 Project (June 08-Dec 08)

Note that these represent new tolerances and this is one step in the process of the development of a pesticide label. Be sure to obtain current information about usage regulations and examine a current product label before applying any chemical.

<u>Bifenthrin</u> (Brigade,Capture): Leaf petioles subgroup 4B, Bushberry subgroup 13-07B

<u>Gamma-cyhalothrin</u> (Proaxis): Fentrol, Nexide Crops: Okra, Pistachio

<u>Sethoxydim</u> (Poast): Gold of pleasure, Crambe, Cuphea, Echium, Hare's ear mustard, Lesquerella, Lunaria, Meadowfoam, Milkweed, Mustard, Oil radish, Poppy, Sesame, Sweet rocket

<u>Tebuconazole</u> (Elite, Folicur,Horizon, Lynx): Bulb onion subgroup 3-07A, Green onion subgroup 3-07B, Brassica leafy greens subgroup 5B, Cucurbit vegetables group 9, stone fruit group 12 except cherry (postharvest uses), Asparagus, Garden beet, Hop, Lychee, Mango (post-harvest use), Okra, Turnip (roots and greens), Sunflower

<u>Forchlorfenuron</u> (Prestige): Bushberry subgroup 13-07B

Cyprodinil (Chieftain,Chorus, Unix, Vanguard): Root vegetables except sugarbeet subgroup 1B, Leaves of root and tuber vegetables group 2, Cucurbit vegetables group 9, Tomato, Tomatillo, Avocado, Mamey sapote, Papaya, Black sapote, Canistel, Mango, Sapodilla, Star apple, Parsley, Lemon, Lime, Kiwifruit, Bulb onion, Green onion, Strawberry
Dichlobenil (Casoron): Crops: Caneberry subgroup 13-07A (replaces tolerances on blackberry and raspberry), Bushberry subgroup 13-07B (replaces tolerance on blueberry), Rhubarb
Fenbuconazole (Enable,Govern, Indar): Pepper
Uniconazole (Sumagic): Fruiting vegetable group 8
Fludioxonil (Celest, Geoxe, Maxim, Medallion, Saphire, Savior, Scholar): Root vegetables except sugarbeet subgroup 1B, Tuberous and corm vegetables except potato subgroup 1D, Leaves of root and tuber vegetables group 2, Cucurbit vegetables group 9, Tomato, Tomatillo, Avocado, Mamey sapote, Papaya, Black sapote, Canistel, Mango, Sapodilla, Star apple, Citrus oil
Ethoprop (Chipco, Mocap): Hop, Mint
Metaldehyde (Deadline): Globe artichoke, Prickly pear cactus, Watercress, Berry group 13
Streptomycin (Agri-Mycin): Bean (dry seed and succulent)
Cymoxanil (Curzate): Bulb onion subgroup 3-07A, Green onion subgroup 3-07B, Leafy greens subgroup 4A, Leaf petioles subgroup 4B, Cilantro leaves, Caneberry subgroup 13-07A
MCPB (Butoxone, Thistrol): Mint
Tetraconazole (Arpege, Domark, Emerald, Eminent, Greman, Lospel): Grape
Chlorothalonil (Bravo): Head and stem Brassica subgroup 5A, Fruiting vegetable group 8 (except tomato), Okra, Cucurbit vegetable group 9, Ginseng, True yam, Horseradish, Rhubarb
Novaluron (Rimon): Tomato, Sugarcane

DIAGNOSTIC LAB HIGHLIGHTS

By Julie Beale and Paul Bachi

Recent agronomic samples in the PDDL have included a crown rot complex (including *Pythium* sp.) on alfalfa; bacterial mosaic (*Clavibacter*), wheat streak mosaic virus and wheat spindle streak mosaic virus on wheat; chemical injury, target spot and Pythium root rot on tobacco.

On fruit and vegetable samples, we have diagnosed anthracnose on strawberry; Phytophthora root and crown rot on raspberry; leaf curl on peach; Sclerotinia stem rot on tomato.

On ornamentals and turf, we have seen Botrytis blight (“fire”) on tulip; bacterial blight on lilac; Volutella canker on boxwood; Phyllosticta leaf spot on cherrylaurel; black root rot on holly; black spot on rose; fireblight on ornamental pear; Rhizosphaera needle cast on spruce; Phytophthora leaf blight on pieris and rhododendron; Phytophthora root rot on crabapple and pine (from nursery); Rhizoctonia large patch on bentgrass; and red thread on bluegrass.

INSECT TRAP COUNT
April 24-May 1

Location	Princeton, KY	Lexington, KY
Black cutworm	8	16
Armyworm	47	888
Corn earworm	17	11
European corn borer	0	0
Southwestern corn borer	0	0
Fall armyworm	0	0

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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