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University of Kentucky – College of Agriculture

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KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • WEED SCIENCE
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Number 1136 **July 16, 2007**

WATCH FOR:

TWO-SPOTTED SPIDER MITES on vegetables and ornamentals; second generation EUROPEAN CORN BORER; WESTERN CORN ROOTWORM BEETLES feeding on corn silks; second generation of COLORADO POTATO BEETLE; DOGWOOD sawflies feeding on dogwoods; BLISTER BEETLES feeding in gardens; wandering MILLIPEDES

TOBACCO

DISEASE UPDATE
by Kenny Seebold

We remain blue mold-free in Kentucky as of July 16, 2007. Unfortunately, our neighbors in east Tennessee and western North Carolina can't say the same. Last week, blue mold was found in Yancey County, NC and we also learned that a serious epidemic of the disease has taken hold in the eastern part of Tennessee. Weather patterns over the past week have not been favorable for the spread of blue mold into our area, but could change in the coming weeks. Should movement of the blue mold pathogen into Kentucky take place, please advise growers to begin applications of fungicides such as Acrobat (tank-mixed with Dithane DF), Quadris, or Actigard. Please see ID-160, the 2007 KY Tobacco Production Guide, for information on rates and timing of fungicide applications.

Please be on the lookout for blue mold, particularly in southeastern Kentucky, and spread the word if disease is found. You can visit the Kentucky Tobacco Disease Information page for regular updates on blue mold and other diseases (http://www.uky.edu/Ag/kpn/kyblue/kyblue.htm).

CHECK TOBACCO BARNS FOR HORNETS AND BUMBLE BEES BEFORE HOUSING CROP
by Lee Townsend

Paper wasps, hornets and yellowjackets, and bumble bees often nest in and around barns but also can occur in some unexpected places. You may even find a nest was discovered in the hollow tongue of a wagon. In addition to painful stings, people working high up on rails in a barn can be injured as they try to escape these angry insects. As if this were not enough, some people can have a severe allergic reaction to the venom of these insects. Wasps, hornets and yellowjackets are more dangerous and unpredictable than honey bees and should be treated with respect; nests should be eliminated with great care and in a specific manner.

Paper wasps, hornets and yellowjackets construct nests of a paper-like material which is a mixture of finely chewed wood fragments and salivary secretions of the wasps. Paper wasps typically build their umbrella-shaped nests under eaves and ledges. These wasps are not as aggressive as yellowjackets or hornets, and can be eliminated rather easily with a wasp and hornet spray sold at most grocery and hardware stores. These formulations have an added advantage in that they often spray as far as 20 feet.

Treatment of wasps, hornets, and yellowjackets is best performed at night; paper wasps can be eliminated during the daytime provided you do not stand directly below the nest during treatment. Most wasp and hornet sprays cause insects to drop instantly when contacted by the in-

secticide. Standing directly below a nest increases one's risk of being stung. Following treatment, wait a day to ensure that the colony is destroyed, then scrape or knock down the nest. This will prevent secondary problems from carpet beetles, ants and other scavenging insects.

Hornets are far more difficult and dangerous to control than paper wasps. The nests resemble a large, inverted tear-drop shaped ball which typically is attached to a tree, bush or side of a building. Hornet nests may contain thousands of wasps which are extremely aggressive when disturbed. Treatment can be accomplished by applying a wasp freeze-type, aerosol insecticide or dust formulation (Sevin) directly into the nest opening.

Hornet nests have a single opening, usually toward the bottom, where the wasps enter and exit. It is essential that the paper envelope of the nest not be broken open during treatment or the irritated wasps will scatter in all directions, causing even greater problems. Following treatment, wait at least a day before removing the nest to ensure that all of the wasps are killed. If hornets continue to be observed, the application may need to be repeated.

Bumble bees can nest in small piles of hay, paper, or other similar materials, usually at ground level. Look for activity around the barn and deal with it before the rush of housing begins.

VEGETABLES

FUNGICIDE OPTIONS FOR MANAGEMENT OF POWDERY MILDEW ON CUCURBITS
by Kenny Seebold

We're starting to see quite a bit of powdery mildew crop up on cucurbit crops around Kentucky. Last week, we discussed downy mildew and its control. In this week's article, we'll take a look at options for management of powdery mildew on cucurbits.

Powdery mildew, caused by *Podosphaera xanthii*, affects most cucurbit crops and can be recognized easily by the presence of a talc-like growth, comprised of mycelia and conidia of the pathogen, on leaves and stems; it is possible to find signs of this disease on the upper and lower surfaces of a leaf. On leaves, chlorotic areas may be present on the surface opposite colonies of the powdery mildew fungus. As the disease progresses, blighting and defoliation can occur and can be severe under favorable conditions for the disease

Powdery mildew often begins appears on older leaves growing in shaded areas of the plant canopy or field. Warm and dry weather favors sporulation and spread of the pathogen, and high relative humidity promotes rapid infection. Symptoms appear between 3-7 days after infection.

Effective management of powdery mildew requires and integrated approach. Resistance to powdery mildew is available in some cucurbit crops, mainly cucumbers and melons; however, powdery mildew-resistant varieties of summer squash and pumpkins are available. Consult ID-36, the 2006-07 Vegetable Production Guide for Commercial Growers, for more information. Growers should employ practices that promote good airflow in the crop, such as increasing spacing between rows and plants, as this can limit the potential for infection by the pathogen.

Fungicides are important option for management of powdery mildew on cucurbit crops. Timing of application is critical; sprays should be made on a 7 to 10-day interval, beginning at the first appearance of symptoms of powdery mildew. Below is a list of fungicides labeled in Kentucky for management of powdery mildew:

- Chlorothalonil (Bravo, Equus, etc.) 720SC: 2-3 pt/A; Dry flowable formulations are available - see label for rates.
- Fixed copper (Kocide, Cuprofix, etc.) - see label for rates.
- Quadris: 11-15.4 fl oz/A.
- Cabrio: 12-16 oz/A.
- Flint: 1.5-2 oz/A.
- Nova 40WP: 2.5-5 oz.
- Pristine: 12.5-18.5 oz/A.
- Procure 50WS: 4-8 oz/A.
- Sulfur: 2-35 lb/A (varies by product); phytotoxicity can occur if applied when air temperatures exceed 90°F
- Topsin M: 0.5 lb/A; other formulations are available – see label for rates.

Good coverage is critical for control, so make sure that adequate volumes and sprayer pressure are maintained. Systemic products such as Nova, Procure, and Topsin M are re-distributed in the plant after application, and will help provide good control of disease on hard-to-reach plant surfaces such as the undersides of leaves. Resistance management practices should be followed with products such as Quadris, Cabrio, Amistar, Pristine, Nova, and Topsin M - do not make back-to-back applications of these products; rotate with products containing different modes of action. Resistance to the SBI (sterol-biosynthesis inhibitor) and QoI (strobilurins) classes of fungicides is common in KY, so make sure to rotate products in the spray program to avoid control failures. Each product has a limit on the number of applications that can be applied - consult the label for specific information.

SPIDER MITES ON VEGETABLES
by Ric Bessin

Two-spotted spider mite is a common pest of several vegetable crops during prolonged hot and dry periods. This pest rapidly builds in numbers during hot dry weather and some pesticides used to control insect pests may reduce the natural enemies that help to keep it below economic levels. Mites can injure tomatoes, beans, muskmelons, watermelons, and sweet corn. Infestations usually first occur at the edge of a field, typically near rank weed growth or dirt roads. There have been reports of high numbers this summer in some surrounding states.

Generally mites feed on the undersides of leaves. They use their sucking mouthparts to remove sap from plants, giving the upper leaf surface a speckled or mottled appearance. Leaves of mite-infested plants may turn yellow and dry up, and plants may lose vigor and die when infestations are severe. The undersides of affected leaves appear tan or yellow and have a crusty texture. Heavy infestations of the two-spotted spider mite produce fine webbing which may cover the entire plant. Mites can be identified by shaking leaves onto a sheet of white paper or by observing leaf areas with a hand lens. In hot dry weather, mites can cause plants to drop leaves in a few weeks. Fruit from severely infected plants are often unmarketable because defoliated plants tend to yield small, poor quality fruit.

The eight-legged female mites are yellow to dark green with two to four dark dorsal spots. At 1/60 of an inch, they are almost microscopic. Males are smaller with more pointed abdomens. The tiny, spherical, eggs are laid on the undersides of leaves, often under the webbing produced by the mites. Under optimum conditions of high temperature and low humidity, the life cycle may be completed in 7 days. Females can lay 200 eggs.

Natural enemies of mites are present in and around fields and usually can keep mite populations low. Many insecticides used for control of insect pests severely reduce numbers of beneficial insects that keep mite populations in check. Therefore, apply insecticides only as-needed, rather than at regularly scheduled intervals. When possible, select pesticides which will have the least impact on beneficial insects.

Destruction of weeds adjacent to and in fields should be done in the fall or early spring. Growers should manage weeds around fields carefully during the season. Grass should be mowed regularly. Spraying or mowing of weeds after growth has become rank may increase the movement of mites to cultivated plants.
Use of overhead-sprinkler irrigation may provide some short- term relief of mite infestations.

Miticides are available for some vegetable crops but should be used only where justified. As with aphids, mark infestations with flags, and check them again every 3 or 4 days. Mites can easily be moved to infested plants on clothing, so always examine infested areas last during inspections. If the infestation is not spreading, treatment will not be required. Because mite populations often are localized, spot spraying may be effective. If you spray only a portion of the field, spray a buffer zone of 100 to 200 feet beyond the mite infested area.

Resistance to pesticides has increased the difficulty of controlling of these pests. Because mites primarily occur on the undersides of leaves, applications of contact miticides need to be directed at both the lower and upper leaf surfaces. Mite eggs are resistant to some miticides, so repeated applications are often necessary to control infestations. Two applications spaced 5 to 7 days apart may be necessary with some miticides. See ID-36, *2006-2007 Vegetable Production Guide for Commercial Growers*, for a complete list of available miticides for vegetable crops.

GARDENS

BLISTER BEETLES ATTACK SOME GARDEN CROPS
by Lee Townsend

Blister beetles are out and feeding now. These narrow half-inch long beetles can be seen massing on flowers or foliage of a wide range of plants. Their name comes from the defensive chemical, a blistering agent, that is released when they are handled or disturbed. These insects are most active in the morning and late afternoon and may disappear during the hottest part of the day. They are easily disturbed and will drop off the plant or run away if disturbed.

The striped blister beetle has a yellow-orange head and body with three long black stripes running along each wing cover. It will feed on many different vegetables but seems to prefer the fruits of solanaceous plants. They also are foliage feeders with big appetites. Striped blister beetles form large mobile feeding masses so they can descend on an area and cause a lot of damage in a short time. Other species in the area include the black blister beetle and the margined blister beetle. The latter has a black body with thin gray stripes along the wing covers and a gray abdomen. These two species frequently feed on flowers, the black blister beetle can be found on alfalfa flowers. More information is available in Blister beetles in alfalfa (Entfact 102), http://www.ca.uky.edu/entomology/entfacts/ef102.asp.

LAWN & TURF

NEW PUBLICATION IN TURF DISEASES
by Paul Vincelli

A new publication entitled *Identification and Management of Turfgrass Diseases* is available through the University of Missouri Extension service. The authors are Barb Corwin (of Turfgrass Diagnostics), Ned Tisserat (Colorado State University), and Brad Fresenburg (University of Missouri). I know the first two authors well and they are highly regarded turfgrass pathologists. Furthermore, this book is excellent: it has a solid technical foundation, it offers just the right amount of depth for the average turfgrass manager, and the photos and layout are excellent.

It is available for free as a downloadable pdf file at: http://extension.missouri.edu/explore/agguides/pests/ipm1029.htm. But get this: a printed copy on high-quality paper is available for only $3.00 each.

Keep in mind that the diseases described in the book may not be precisely those that occur in your location. For example, we see very little Ascochyta leaf blight and gray snow mold in Kentucky. However, most of the diseases described are quite widespread, so go for it, folks. Treat yourself to the bargain of the week.

CICADA KILLERS GOING BALLISTIC
by Mike Potter

Cicada killers have been flying about and burrowing into lawns, gardens and play areas, prompting many calls from homeowners. Despite their menacing appearance (up to 2 inches long with rusty red head/thorax, amber-yellow wings, and black and yellow striped abdomen), the wasps seldom sting unless provoked.

Biology - Cicada killers do not live in communal nests like hornets or yellowjackets. They overwinter as larvae within cocoons deep in the soil, emerging as adults during July. The females feed, mate, and excavate burrows in the ground about ½ inch in diameter, ending in a series of brood chambers. Bare ground or sand are especially prone to infestation. Excess soil is pushed out of the burrow, leaving a mound of dirt at the entrance. Each female excavates numerous burrows and provisions them with adult cicadas which she ambushes, paralyzes with her venom, and stuffs into individual brood chambers. She then lays an egg on top, backs out, and seals the cell behind her. The egg hatches within a few days and the hungry larva devours the offering, eventually transforming into an adult the following summer.

Management - Cicada killers seldom sting and the females normally do not defend their burrows. The males, while incapable of stinging, sometimes dive-bomb passers-by, or hover menacingly nearby. Insecticide treatment may be warranted where the soil burrows become unsightly, or the wasps are digging in a high-traffic area such as along a sidewalk, playground, or sand trap on a golf course. Individual burrows can be effectively sprayed or dusted with most lawn & garden insecticides (Sevin, Bayer Advanced Lawn & Garden Multi-Insect Killer, Spectracide Triazicide Soil & Turf Insect Killer, etc.), or a wasp & hornet aerosol. Multiple nests may need to be treated with a broadcast application to the ground surface, using a pump up or hose-end sprayer.

As a deterrent to future nesting, clients should be advised to eliminate bare-ground areas. Cicada killers generally do not prefer burrowing into well-managed turf, gravel, pebbles or mulch. In situations such as playgrounds, camping areas, or commercial landscapes, these materials may be substituted for sand or bare soil. Another option is to wait and do nothing — in a matter of weeks the adults will die off and there's a chance the problem will not reoccur next year.

BLUEWINGED WASPS ON LAWN PATROL
by Lee Townsend

Hundreds of bluewinged wasps (*Scolia dubia*) buzzing lazily over expanses of turf can be a troubling site except that these distinctive insects are working hard to parasitize as many white grubs as possible. While packing a stinger, these solitary hunters pose no threat to us. They are following their own agenda, a tireless search for grubs (green June beetles, May beetles, etc.) down in the soil feeding on grass roots.

This wasp has a black head, thorax and wings. The front of the abdomen is black, the back is dark orange with two distinct yellow bars. Cruising females will occasionally enter the soil in search of white grubs, which serve as food for the wasp larva. They can be very abundant in turf where white grubs are numerous; however, the wasps are not aggressive, they are not defending a nest as would social wasps such as yellowjackets and hornets. There is no need for control.

SHADE TREES & ORNAMENTALS

CANKER DISEASES OF WOODY PLANTS
by John Hartman

Canker diseases caused by fungi and bacteria may develop in most landscape trees and shrubs. Cankers are difficult to manage and they may impact aesthetic values

and provide openings for other diseases. Cankers are localized dead areas of twigs, branches, limbs, trunks, and even roots of woody plants. They are often caused by invasion of bark or cambial tissues by fungi or bacteria which then kill phloem, cambium, and the outermost xylem. The bark in an infected area may shrink, crack, and expose the wood beneath. Canker diseases often girdle the infected branch and cause the entire branch to die.

Canker diseases are often more severe when plants are growing under stressful conditions. Common environmental stresses include drought, flooding, unseasonable freezing temperatures, extreme temperature fluctuations, mineral element deficiencies, defoliation, chemical injury, transplant shock, and mechanical injuries. Fungal cankers usually start at a wound or a branch stub, but some fungi may penetrate healthy tissue or begin as latent infections already existing inside the plant and only causing disease when the tree is under stress. However, some fungi and bacteria aggressively attack trees and cause cankers. With important exceptions such as chestnut blight, dogwood anthracnose, pine tip blight, and a few other diseases, cankers rarely kill their host plants entirely. Cankers not involving pathogenic microbes can also be caused by mechanical injuries such as hail, heat, or cold.

Common fungal cankers in Kentucky include:

- Thyronectria canker of honey locust and other woody plants,
- Diplodia canker of Austrian and Scots pines (associated with pine tip blight disease),
- Cytospora (Leucostoma) canker of fruit trees and spruce trees.
- Hypoxylon canker of oaks and other deciduous trees,
- Botryosphaeria canker of many kinds of trees and shrubs,
- Phytophthora dieback of beech and maple, collar rot of dogwood,
- Cryptodiaporthe canker of dogwood,
- Discula canker of dogwood (dogwood anthracnose)
- Seridium canker of Leyland cypress
- Nectria canker of many kinds of trees, and
- Phomopsis canker of a variety of trees and shrubs.

Perennial cankers. Target-spot cankers caused by fungi such as *Nectria* or *Eutypella* on hardwoods are roughly circular or elongate with much callus at the canker edges. Wounds and branch stubs are invaded by the fungus during the tree's dormant period. The plant forms callus around the infection site during the growing season, but the fungus invades more tissue the following dormant period. This back-and-forth struggle between the tree and the pathogen creates concentric ridges of callus tissue. Although infection spread is relatively slow and target cankers seldom kill the tree, they do weaken the tree structure and detract from its appearance.

Annual cankers. Weak parasites such as the fungus *Fusarium* normally don't cause disease problems unless the tree is under environmental stress and low in vigor. Infection occurs during the dormant season, but during the growing season host callus tissue walls off the canker and prevents further spread. Although annual cankers do not persist, continued stress makes it likely that more cankers will form and it opens the possibility of invasion by other diseases.

Diffuse cankers. Fungi such as *Cytospora, Botryosphaeria, Hypoxylon, Phytophthora*, or *Cryphonectria* (chestnut blight) and bacteria such as *Erwinia* (fire blight) produce cankers with little callus at the margins. Because the pathogens invade so rapidly, the tree tissue at the canker margin is killed and branches or whole trees are girdled and killed sometimes in one season. Some diffuse cankers are favored when the tree is under stress, but most are not. Canker blights are diffuse cankers in which the disease develops rapidly and kills collateral branch and foliage tissue by way of girdling, and canker-rots are diffuse cankers that cause significant internal wood decay.

Finding cankers. Woody plants in the nursery and landscape should be inspected for cankers. Look for:

- localized areas of roughened or cracked bark, especially around wounds and branch stubs,
- ridges of callus formation, and
- small red, dark brown, or black pimple-like fungal fruiting bodies in the center of or around the edges of the cankers.

Canker disease management. In the nursery and landscape:

- Prune out cankered twigs and branches being careful to avoid damage to the branch collar.
- Prune trees and shrubs only during dry weather and not in late summer or fall when canker fungi may be active.
- Prevent drought or flooding.
- Control weeds and other competitors, but avoid herbicide injury.
- Prevent mechanical injury.
- Protect trees from defoliating insects and diseases.
- Remove trees weakened by cankers.
- Plant well-adapted species and cultivars, matching the plant with the site.
- Use proper transplanting techniques.
- Alleviate drought stress with mulching and timely watering.
- Avoid excessive nitrogen fertilization.

HOUSEHOLD

MILLIPEDES ON THE MOVE
by Lee Townsend and Mike Potter

Millipedes are long, many segmented creatures that use their two pairs of legs per body segment to move with deliberate determination. There are several species in Kentucky so we can see a variety of shapes and colors. Millipedes can be very abundant in forest litter, grass, thatch, and in mulched areas. These places provide them with the food and dampness that they prefer. Usually, millipedes stay out of sight unless abundant rainfall or some other event, such as the mating season, puts them on the move.

While harmless and in fact, helpful recyclers, millipedes generally are not welcomed with enthusiasm. They often invade crawl spaces, damp basements and first floors of houses at ground level. Common points of entry include door thresholds (especially at the base of sliding glass doors), expansion joints, and through the voids of concrete block walls. Frequent sightings of these pests indoors usually mean that there are large numbers breeding on the outside in the lawn, or beneath mulch, leaf litter or debris close to the foundation. Because of their moisture requirement, they do not survive indoors more than a few days unless there are very moist or damp conditions.

MILLIPEDE MANAGEMENT

1) Minimize moisture & remove hiding places - The most effective, long-term measure for reducing entry of millipedes (and many other pests) is to minimize moisture and hiding places, especially near the foundation. Leaves, grass clippings, heavy accumulations of mulch, boards, stones, boxes, and similar items laying on the ground beside the foundation should be removed, since these often attract and harbor pests. Items that cannot be removed should be elevated off the ground.

2) Seal entry points - Seal cracks and openings in the outside foundation wall, and around the bottoms of doors and basement windows. Install tight-fitting door sweeps or thresholds at the base of all exterior entry doors, and apply caulk along the bottom outside edge and sides of door thresholds. Seal expansion joints where outdoor patios, sunrooms and sidewalks abut the foundation. Expansion joints and gaps should also be scaled along the bottom of basement walls on the interior to reduce entry of pests and moisture from outdoors.

3) Insecticides - Exterior applications, in the form of barrier sprays, may help to reduce inward invasion when applied outdoors, along the bottom of exterior doors, around crawl space entrances, foundation vents and utility openings, and up underneath siding. It also may be useful to treat along the ground beside the foundation in mulch and ornamental plant beds, and a few feet up the base of the foundation wall. Heavy accumulations of mulch and leaf litter should first be raked back to expose pest hiding areas. Insecticide treatment may also be warranted along the interior foundation walls of damp crawl spaces and unfinished basements. There is no benefit from treating indoors. Millipedes that do get inside will not find what they need to survive.

DIAGNOSTIC LAB-HIGHLIGHTS
by Julie Beale and Paul Bachi

Agronomic samples over the past week included downy mildew and potassium deficiency on soybean; black shank, sore shin, tomato spotted wilt virus, potyvirus complex, frogeye leaf spot, temporary phosphorus deficiency, and weather fleck (ozone) on tobacco.

On fruit, vegetable and herb samples we have diagnosed cedar-apple rust on apple; black rot and powdery mildew on grape; Rhizoctonia crown and petiole rot on rhubarb; Stewart's wilt on sweet corn; anthracnose on bean; bacterial wilt on cantaloupe; root knot nematode on cucumber; bacterial leaf spot on pepper; blossom end rot, early blight, Septoria leaf spot, and magnesium deficiency on tomato; Pythium root rot on feverfew; and Rhizoctonia stem/root rot on thyme.

On ornamentals and turf we have seen Pythium root rot on chrysanthemum; Volutella blight on pachysandra; Cercospora leaf spot on aspen; Phytophthora root rot on juniper; fire blight on pear; tip blight on pine; spider mite injury on spruce; ozone injury and tar spot on maple; brown patch on bluegrass; anthracnose on bentgrass; and slime mold on fescue turf.

TRAP COUNTS
UKREC, Princeton KY
Kentucky — Tennessee
June 29-July 6, 2007

►***Jackson, TN***

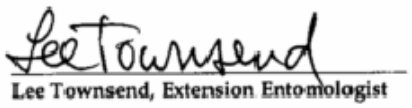
Black cutworm	0
True armyworm	0
Corn earworm	0
European corn borer	0
Southwestern corn borer	12
Fall armyworm	0

►***Milan, TN***
Black cutworm 0
True armyworm.....0
Corn earworm.....0
European corn borer 0
Southwestern corn borer 15
Fall armyworm 0

►***Princeton, KY***
Black cutworm 4
True armyworm.....12
Corn earworm.....4
European corn borer 0
Southwestern corn borer 145
Fall armyworm 0

►***Lexington, KY***
Black cutworm 3
True armyworm.....120
Corn earworm.....0
European corn borer 0
Southwestern corn borer 0
Fall armyworm 0

This season insect trap counts will be provided for locations in Kentucky and Tennessee.
View trap counts for past seasons and the entire 2007 season at –
http://www.uky.edu/Ag/IPMPrinceton/Counts/2006trapsfp.htm
View trap counts for Fulton County, Kentucky at -
http://ces.ca.uky.edu/fulton/anr/
For information on trap counts in southern Illinois visit the Hines Report at –
http://www.ipm.uiuc.edu/pubs/hines_report/comments.html
The Hines Report is posted weekly by Ron Hines, Senior Research Specialist, at the
University of Illinois Dixon Springs Agricultural Center.



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