

KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • WEED SCIENCE

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May 30, 2006

**WATCH FOR
ANNOUNCEMENT
TOBACCO**

- Blue mold makes its first appearance for the 2006 season
- Stink bug damage apparent in some fields
- Spring black stem activity in alfalfa
- Alfalfa weevil on regrowth
- Some armyworms are around

SOYBEANS

- Soybean rust surveillance and status report
- Landscape tree foliar diseases are prevalent
- Letting the “other” bagworms out of the bag
- Borers are flying
- Calico scale alert

**DIAGNOSTIC LAB-HIGHLIGHTS
INSECT TRAP COUNTS**

WATCH FOR:

BAGWORM eggs start to hatch; YUCCA PLANT BUG damage to yuccas; ASPARAGUS BEETLES begin to lay eggs for second generation; watch for ALFALFA WEEVIL feeding damage that slows re-growth following harvest.

TOBACCO

**BLUE MOLD MAKES ITS FIRST APPEARANCE
FOR THE 2006 SEASON**
by **Kenny Seebold**

For the second year in a row, the first reported case of blue mold in the U.S. has been found in Kentucky. Julie Beale diagnosed a case of blue mold on tobacco transplants sent in from Magoffin County (eastern KY) on May 23. The plants came from an outdoor float bed, and appeared to have been infected for more than a week. By May 26, we had identified one more case in Magoffin Co., three in Morgan Co, and one potential outbreak in Boyle Co. What was the source of inoculum for this year’s epidemic? We’re not sure at this time, as no blue mold had been reported in the U.S. prior to the first cases from KY. It’s generally accepted that blue mold doesn’t overwinter in KY, so blue mold that develops likely must move in from outside the state. It is possible that the blue mold pathogen could survive in a protected environment such as a greenhouse, however, and this could serve as a source of inoculum for an outbreak. Tobacco seedlings brought into KY from a region where blue mold is active could be a source of the blue mold pathogen as well.

In a recent message to county agents regarding the likelihood of blue mold cropping up after the recent spell of cool weather, I wrote “We can take comfort, though, that no blue mold has been reported in the US to date – this means that our risk is relatively low”. Well, despite the perceived “low risk”, we now have active blue mold in our midst. It is advisable at this point to make sure that any tobacco in float beds (outdoor and greenhouse) be

ANNOUNCEMENT

**“IT AIN’T OVER TILL IT’S OVER”:
RUE ARMYWORMS ARE STILL AROUND!**
by **Doug Johnson**

I have spent a large amount of time reminding people that just because we have not seen wide spread outbreak of true armyworm that it is not all over. I still continue to get reports from agents, specialists and consultants indicating that crops are being treated for true armyworm. These are not large numbers of fields, but they are all across the state and on corn, and forage grasses. As yet I have not received a report of any small grain fields that have been treated.

The potential for problems with this insect will continue at least until the end of the first full week in June. I still don’t expect an “epidemic”, but I do expect that some fields will need to be treated. Only scouting can tell you which ones!

treated with Dithane DF or Aliette to protect against blue mold. This is especially important for tobacco being grown near known cases of blue mold, but would also be a good measure of insurance for the rest of the region. Growers who have been applying Dithane DF (0.5 lb/100 gal of finished spray) regularly to protect against target spot and anthracnose will also achieve suppression of blue mold. Since Dithane is a protectant, it needs to be in place prior to the arrival of inoculum for best effect and this means preventive applications are the key for success. Aliette WDG is cleared for foliar use on tobacco seedlings and has better activity than Dithane against blue mold, but none against target spot or Sclerotinia collar rot. The rate of Aliette WDG is 0.5 lb/50 gal of water. Apply as a fine spray to achieve thorough coverage. Plants in the field can be treated with Dithane DF (1.5-2 lb/A) + Acrobat 50 WP (2-8 oz/A) or Actigard (0.5 oz/A). Plants need to be at least 18-in tall before receiving an application of Actigard, and the material should be applied 3-5 days before infection for the product to work effectively.

The forecast for the next week to 10 days calls for warm temperatures, mostly sunny days, and chances for rain. The warmer temperatures and sunny days should help slow the spread of blue mold across the state, but we still will see periods of showers and cool night temperatures that could provide favorable conditions for infection in specific locations. The highest risk of infection at this time is in Boyle, Magoffin, and Morgan Counties, where blue mold has been reported. I hope that the worst has passed us, but we all know that anything can happen now that the "cat is out of the bag". Please let me know if you find blue mold or suspect it in your area. I will continue to send out emails to keep you posted on the situation, and 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>).

CORN

STINK BUG DAMAGE APPARENT IN SOME FIELDS

by Ric Bessin

Cool, wet weather during the past weeks has set the stage for increased stink bug injury in 2006. This weather pattern slowed the development of corn, keeping it small and vulnerable to attack by stink bugs and growers around the Commonwealth have begun to report problems. The mild winter also favored adult stink bug survival.

The brown stink bug is the most common species found

attacking corn. They are 1/2-inch long, shield shaped insects with piercing-sucking mouthparts. They feed at the base of very young corn. While feeding they inject enzymes into the plants that affect development. These enzymes aid in digestion and sap removal. If they feed directly in the growing point, the growing point may be killed and the plant may tiller excessively.

There are a wide range of symptoms that occur with stink bug feeding. They include excessive tillering and leaves not able to emerge properly from the whorl, resulting in a plant that resembles a buggy whip. Damaged plants may develop misshapen ears in place of the tassel. Some herbicides can cause similar injury to developing corn and distinguishing between stink bug and herbicide damage can be difficult. To identify stink bug damage in the field, look for a row of oval holes with yellow borders across the unwrapped leaves of damaged plants. This row results from the single feeding puncture that penetrates the wrapped leaves. The holes will not have distinct margins such as those caused by corn borers, rather they look like the margins have been dissolved. A slimy, decaying area may be found in the stalk where the stink bug has fed.

Stink bug damage is most severe in no-tillage fields. In some cases, the damage can be found throughout the field, often with areas of more intense damage. Frequently these are near wooded areas. Stink bug damage can be found in conventional fields, but the incidence of damaged plants is low and usually frequently limited to the border rows.

Scouting is a effective way to manage stink bugs, but you need to scout for the insect, not the damage. The symptoms often appear long after the insect has done its damage.

Spraying to control stink bugs after the damage appears is of minimal benefit. The two weeks following corn emergence are the critical times to be watching for stink bugs. Scout the field as you would for cutworms. In addition to looking for cut plants, the symptom of cutworm activity, look for stink bugs. Stink bugs tend to feed at the base of corn plants, usually an inch above the soil surface. Special attention should be given to no-till fields and where stink bug injury has been seen in past years.

FORAGE CROPS

SPRING BLACK STEM ACTIVITY IN ALFALFA by Paul Vincelli

Spring black stem has been rather active during cool, wet weather the past several weeks. Most cases seen in the field or the diagnostic labs have been moderate but one was quite severe.

Spring black stem is very common in Kentucky. In fact, I suspect one can find symptoms on stems and/or leaves in every alfalfa field right now. Look for dark brown to black lesions on the stem that can be several inches long. These lesions can coalesce to cover most of the stem when severe. Infections on leaflets typically appear as small dark brown to black spots. Just a few of these spots can cause the leaflets to turn yellow and fall off. The most unfortunate aspect of spring black stem is that infections of crowns can sometimes occur, resulting in crown rot and stand loss.

If the disease continues to develop, cut and bale the growth as early if possible. Even if you normally wait until early flowering, a severe outbreak of spring black stem can justify cutting during the bud stage. By leaving the crop in place, it will continue to defoliate (costing a producer loss in yield and in forage quality). By cutting early, producers will capture whatever yield is available. Also, cutting early allows sunlight and wind movement to penetrate to the new crown buds that will break dormancy when the disease gets severe enough. The sunlight and drying helps reduce infections of these new shoots and possibly the crowns as well.

The UK recommendation is to cut alfalfa when it is ready, not to wait for a forecast of 3-4 days of sunny, dry conditions. Advancing maturity causes substantial loss of forage quality anyway, and this would only be made worse if spring black stem is active. Thus, waiting for dry weather can cost as much or more than rain damage to the hay.

There is no fungicide labeled for spring black stem with sufficient efficacy to justify spraying. To my knowledge, there is no significant resistance to this disease among varieties currently available commercially.

ALFALFA WEEVIL ON REGROWTH by Lee Townsend

Many alfalfa weevil larvae die soon after the crop is cut because their food wilts and dries and the hot sun and dry air kills many. However, survival may be high for larvae protected under windrows or if cool, cloudy weather is not too hard on them. Regrowth must be monitored closely to make sure that there are not enough surviving larvae and adults to feed on emerging tissue in the crowns. Stubble defoliation can last for up to three days without a significant effect on regrowth. However, if stubble feeding continues for 7 to 10 days after harvest, plant development will be delayed and yields will be reduced. A stubble spray should be applied if regrowth is being damaged significantly (40% or more stems with feeding scars).

SOME ARMYWORMS ARE AROUND by Lee Townsend

Glenn Mackie (ANR agent) reported a significant armyworm infestation on a Bourbon county (5/30) horse farm where the larvae were feeding heavily in a bluegrass-orchardgrass pasture. The large flight of moths seen in late spring did not produce the type of outbreak seen in 2001 but it's a good idea to keep an eye on pastures for late season activity.

SOYBEANS

SOYBEAN RUST SURVEILLANCE AND STATUS REPORT by Don Hershman

One of the key aspects of managing soybean rust in the United States is to know where the disease is at all times and the extent of development at any given location. The USDA provided funds to Land Grant Universities in Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, and Texas to monitor various locations for soybean rust during the winter of 2005-06. These states successfully kept track of soybean rust during the winter and as of early April 2006, there were many more known infected sites compared to the winter of 2005. The implication was that soybean rust was poised to spread into new areas (kudzu and soybean) earlier and to a greater extent than occurred last year. This scenario, obviously, caused great concern due to the apparent elevated risk to the U.S. soybean crop. Since early April, soybean rust surveillance via the U.S. Sentinel Network (funded by USDA and Soybean Check-off dollars) has gone into full swing. Across the Southern U.S., kudzu is now in full canopy and many soybean fields across the Gulf Coast States are in various stages of reproduction (i.e., very prone to rust development). Many sentinel plots are being scouted (see www.sbrusa.net) weekly. Nonetheless, there has been very little new soybean rust activity detected for well over two months. Development and spread of soybean rust have been greatly hindered by unusually hot and dry weather patterns in much of the deep South during April and May.

With each passing day, the potential for soybean rust to cause serious damage to the U.S.'s 75 million soybean acres during 2006 is reduced. As of this writing (May 30) soybean rust could still wreak havoc in the U.S. soybean crop, but things would have to change soon and drastically for that to happen. Individual states, especially those with large acreages of late-planted soybean (due to doublecropping and/or wet soils), may have an elevated risk due to the generally later harvest dates that are associated

with late-planted crops. Like last year, the probability is quite high that soybean rust will “blow up” in the late summer and, especially, early fall timeframe. Thus, later maturing crops are probably at an elevated risk, overall, compared to crops planted earlier (and harvested earlier) in the season.

I encourage you to keep track of soybean rust sightings and development by periodically monitoring the USDA soybean rust public website (www.sbrusa.net). In addition, I will be regularly updating the Kentucky Soybean Promotion Board-sponsored KY Soybean Rust Hotline (800-321-6771). I will also be sending out soybean rust reports from other states, along with my interpretation of what it means to Kentucky soybean producers, via the UK College of Agriculture Soybean Rust E-mail list. To sign up for this list, go to the UK Soybean Rust Website (www.uky.edu/soybeanrust) and click on “get e-mail updates”. Please note: this is a very active list and I send out a lot of updates. I am telling you this now so you are not surprised when you receive two and sometimes three updates per day some weeks.

SHADE TREES & ORNAMENTALS

LANDSCAPE TREE FOLIAR DISEASES ARE PREVALENT

by John Hartman

Trees growing in Kentucky landscapes are showing symptoms of a variety of diseases that began with infections that were favored by the cool, wet weather of a few weeks ago.

Apple scab. In most Kentucky locations, unsprayed susceptible apples and crabapples in the landscape are heavily infected with scab caused by the fungus *Venturia inaequalis*. In some cases, infected leaves are turning yellow and falling from the tree. Heavily infected apple fruits will become scabbed and misshapen as the fruits enlarge.

Cedar-apple rust. Crabapples and backyard apples are showing symptoms of cedar-apple rust disease caused by the fungus *Gymnosporangium juniperi-virginianae*. Look for bright orange spots on the upper surface of the infected leaves. A close examination of the spots will reveal the presence of tiny dark dots which are specialized rust fungus structures called pycnia. Many of the rust spots will enlarge in the coming weeks and produce spores on the underside of the leaves just opposite the spots now visible. These spores will infect nearby juniper trees to continue the life cycle of this fungus. There will be no additional rust infections of apples and crabapples this year.

Cedar-hawthorn rust. Hawthorn foliage is beginning to show small orange spots typical of the cedar-hawthorn rust fungus *Gymnosporangium globosum*. There will be no additional rust infections of hawthorns this year and the symptoms already present are not likely to cause defoliation. Eventually, the fungus will produce spores that will infect nearby junipers.

Cedar-quince rust. Hawthorn fruits are green and enlarging, and rust infected fruits are beginning to show tiny orange surface bumps indicating that they are infected with the cedar-quince rust fungus *Gymnosporangium clavipes*. As summer progresses, infected fruits will enlarge abnormally and will be covered with small white papery tubes and a dusting of orange rust spores. Crabapple and backyard apple fruits may also be infected. Infection of crabapple and hawthorn twigs and shoots has occurred and rust symptoms will appear as swollen, dead shoot tips producing rust spores destined for cedar infections. There will be no additional cedar-quince rust infections of hawthorns and apples this year.

Sycamore Anthracnose. Last week it was mentioned that anthracnose diseases are occurring at moderate levels. For many sycamore trees in Central Kentucky, disease levels are very high and are noticeable from the highway even during a quick drive-by. Brown leaves and shoots are visible throughout the lower 3/4ths of the canopy, leaving only the foliage in the very top of the tree appearing to be green and healthy. Not all sycamore trees are equally affected. As often happens, late April and early May weather was again cool and wet and these symptoms are fairly typical for Kentucky sycamore trees in spring. New foliage will emerge in the coming weeks and by late summer anthracnose symptoms will only be a memory.

LETTING THE “OTHER” BAGWORMS OUT OF THE BAG

by Lee Townsend

Sometimes tent caterpillars are called bagworms and it's easy to see why – they definitely produce large bags in cherry and related trees. The “other” bagworms make smaller but distinctive spindle-shaped bags on a variety of trees and shrubs. These bagworms attack both deciduous trees and evergreens but are especially damaging to juniper, arborvitae, spruce, pine and cedar. Large populations of bagworms can strip plants of their foliage and eventually cause them to die. Infestations often go unnoticed because people mistake the protective bags for pine cones or other plant structures.

If only a few small trees or shrubs are infested, picking the bags off by hand and disposing of them may afford

satisfactory control but this approach is most effective during fall, winter or early spring before the eggs have hatched. When many small bagworms are infesting evergreens, an insecticide may be needed to prevent serious damage. The best time to apply an insecticide is while the larvae are still small (less than 1/2-inch long). In Kentucky, this is usually in June. Small larvae are more vulnerable to insecticides, and inflict less damage. Carefully inspect susceptible landscape plants, especially evergreens, for last year's bags. Young bagworms are harder to see; look closely for the small, upright bags which have the appearance of tiny ice cream cones constructed of bits of plant material. Preventive treatment is often justified on plants that were heavily infested with bagworms last year.

Several products are available for bagworm control. For homeowners, the microbial insecticide *Bacillus thuringiensis* (Bt) provide satisfactory results. The Bt products are most effective against younger larvae so early treatment is important. The insecticide is broken down by sunlight so more than one treatment may be necessary. Other alternatives include acephate (Orthene), carbaryl (Sevin), bifenthrin (Ortho Bug-B-Gon MAX Lawn & Garden Insect Killer Concentrate), cyfluthrin (Bayer Advanced Garden Multi-Insect Killer Concentrate, (lambda-cyhalothrin) Spectracide® Triazicide® Soil & Turf Insect Killer Concentrate, and various products containing permethrin (such as Spectracide® Bug Stop® Multi-Purpose Insect Control Concentrate).

YUCCA PLANT BUGS

Yucca plant bugs, small bluish black insects with red heads, feed on sap and produce small light spots on the leaves where they have inserted their sucking mouthparts. Large numbers of spots can produce yellow areas on the leaves. Black spots of a tarry waste material are left behind. The adults have wings but do not fly readily, they are more likely to run when the plant is disturbed. Direct applications of Insecticidal Soap should provide control but must be repeat as needed. Other insecticides labeled for flowers or landscape plants should be effective and may give some residual protection.

EASTERN TENT CATERPILLAR MOTH FLIGHT STARTS

The first ETC moths were caught in traps on 5/26 and more will be flying soon. Most of the population is in the pupal stage now but the moths will emerge and lay egg masses on cherry and related trees during June. There is only one generation each year, these eggs will remain in place and hatch next spring.

CALICO SCALE EGG HATCH IMMINENT

Calico scale is a destructive soft scale with a wide host range (hackberry, dogwood, honeylocust, walnut, sweet gum, pears, and others). Egg hatch (normally in late May) has been delayed by earlier cool temperatures but should occur soon. From 3,000 to 4,000 eggs may be under the waxy secretions covering individual females on twigs and branches. About 2 to 3 weeks after the tiny crawlers hatch, they will move to leaves, settle, and feed until late September. Prior to dispersal, the crawlers are susceptible to pyrethroid sprays applied to infested limbs, branches and twigs. The immature scales will return to bark in mid-October and remain there during the winter.

MAPLE BLADDER GALLS

Maple bladder galls, caused by tiny mites, can be common and abundant on silver maple. Substances produced by the mites stimulate extra plant growth that forms the distinctive structures (galls) in which the mites live and multiply. Bladder galls can occur singly or occur in clusters on leaves, if numerous, leaves may be distorted. The galls will change from red, to green, then black as they mature. They do not harm the tree. Gall numbers will fluctuate from year to year.

Gall formation begins in the spring as mites move from overwintering sites in protected sites on the bark to feed on expanding new leaves. Infestations are not evident until the galls are present. By then, the mites are protected in the galls and are not susceptible to control measures. Gall formation ends in July. Mites produced in the galls during the summer will move to protected for the winter.

Numbers of maple bladder galls may be reduced by application of a dormant oil spray during winter to kill mites hiding in bark cracks and crevices. The oil acts and a contact insecticide so tree trunk, limbs and branches must be covered thoroughly. Insecticide applications to leaves are not effective against mites inside leaf galls.

BORERS ARE FLYING

by Mike Potter

Four serious pests of landscape trees – dogwood borer, bronze birch borer, flatheaded appletree borer, and honeylocust borer – are emerging. The dogwood borer is the most serious pest of ornamental dogwoods, especially stressed trees in full sun. The bronze birch borer is a severe pest of European white or paper birch, especially cultivated trees under stress. Flatheaded appletree borers are major pests of red maples, hawthorns, flowering crabapple, and several other hardwoods, especially those which are newly transplanted or under stress. Honeylocust borers are serious pests of transplanted and established urban trees with limited root zones. Mated females

of all four species fly to host trees and lay eggs on the bark.

Management -- Borers rarely injure healthy trees or shrubs growing in their natural environments. When transplanted into landscape settings, every effort should be made to minimize plant stresses such as drought, soil compaction, sun scald, lawn mower/weed trimmer injuries, etc. Because newly planted trees are under considerable stress, preventive sprays are advisable during the first 2-3 growing seasons after planting. Proper timing is important in order to have a lethal residue of insecticide on the bark to intercept newly-hatched larvae before they burrow into the tree. *Now is about the time to apply protective sprays for all four species.* Astro (permethrin) and Onyx (bifenthrin) are effective. Susceptible trees should be sprayed to runoff on the trunk and main scaffold limbs. A second application, three weeks after the first, provides extended protection.

For further information, see entomology extension publication, ENT-43: *Insect Borers of Trees and Shrubs*.

CALICO SCALE ALERT **by Mike Potter and Dan Potter**

In recent years, calico scales have become rampant on several landscape plants, including honeylocust, hawthorn, hackberry, sweet gum, yellowwood, dogwood, flowering crabapple, zelkova, and sugar and Norway maples. Infestations are so heavy in some cases that entire twigs and stems are covered by the scales and the trees are in decline.

Mature calico scales, *Eulecanium cerasorum*, are large, black and white globular-looking insects about the size of a pencil eraser. They have a soft, leathery body and when crushed ooze a gummy, wax-like fluid. The immobile, adult female is the life stage observed during the spring, attached to twigs, branches, and trunks. Some people mistake them for ladybugs, which are roughly the same size. Like other scale insects, the calico scale feeds by sucking plant juices. Heavy infestations can cause premature leaf drop, branch dieback and, coupled with other stresses, eventual tree death. During April and May the maturing female scale produce copious sticky honeydew (sugary liquid excrement) that glazes vehicles and other objects under infested trees, attracts wasps and other nuisance pests, and promotes growth of black sooty mold on infested trees.

The mature females are now dying. Underneath them are thousands of eggs which have begun hatching into crawlers. The crawler stage moves to prefers to the leaves

where it settles along veins and sucks juices until moving back to the bark to overwinter. Another reason to take action against the crawlers is that they can become wind borne, spreading the infestation to other trees nearby.

Management

It's too late to impact the mature females, which turn brown and die just before crawler hatch. *However, the underlying eggs are hatching, and the crawlers will be settling on the leaves.* The yellowish, newly-hatched crawlers are tiny, but under close inspection their movement will be visible to the naked eye.

Insecticide applications, timed to coincide with emergence of young crawlers, will break the cycle of development and reduce the infestation. The most effective insecticides for crawler control are pyrethroids such as Talstar-One, Tempo (= Bayer Advanced Lawn & Garden Multi Insect Killer), and Scimitar (= Spectracide Triazicide). Sevin also can be used. So-so control of crawlers can also be achieved with 2% horticultural oil or insecticidal soaps. Thorough coverage of infested twigs, branches and adjoining leaves is important. The hatching period lasts several weeks. Pyrethroids have sufficient residual to control them with one application, but a second treatment, 2 weeks later, may be needed if using Sevin, soaps, or oil

Calico scales overwinter on the bark as flattened, grayish nymphs. Treating with a pyrethroid in late March, or early April, as soon as the scales begin to swell, has been very effective in controlling calico scale infestations. That timing prevents the tree stress and honeydew problems caused by the maturing females in the spring.

DIAGNOSTIC LAB-HIGHLIGHTS **by Julie Beale and Paul Bachi**

Agronomic samples received in the PDDL this past week included spring black stem on alfalfa; stinkbug injury and potassium deficiency on corn; aphid injury on orchardgrass; head blight and barley yellow dwarf virus on wheat; blue mold, target spot, Sclerotinia collar rot, nitrogen deficiency and cold injury on tobacco transplants.

On fruit and vegetable samples, we diagnosed black rot on grape; leaf spot (*Mycosphaerella*) on strawberry; fire blight and cedar-apple rust on apple; Oriental fruit moth injury in developing peach fruits; black knot on plum; brown rot on apricot; Pythium root rot on bean; *Alternaria* leaf blight on watermelon; bacterial spot on pepper; *Septoria* leaf spot, early blight, timber rot (*Sclerotinia*), tobacco and tomato mosaic viruses (in greenhouse) and nitrogen deficiency on tomato.

Ornamental samples included Botrytis blight on lily; anthracnose on dianthus; black root rot on holly; scab on crabapple; Botryosphaeria canker on viburnum; anthracnose on maple, oak and dogwood (Discula), as well as spot anthracnose also on dogwood; and needle rust on pine.

INSECT TRAP COUNTS UKREC, Princeton KY

May 19-26, 2006

Black cutworm	0
True Armyworm	99
European Corn Borer	0
Corn Earworm	8
Southwester Corn Borer	13

View UKREC trap counts for the entire 2006 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/Insect%20Trap%20Counts.htm>

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.


Lee Townsend, Extension Entomologist

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