CORN

• Get bins ready for corn harvest

WHEAT

• Low wheat seed germination problems rather widespread

FRUIT CROPS

• Grapes - be alert for post-harvest downy and powdery mildews
• Look for San Jose scale on apples at harvest
• Wooly apple aphid

VEGETABLES

• Pepper maggot in Kentucky
• Yellow Vine Decline of Cucurbits—newly diagnosed disease in Kentucky

LAWN & TURF

• Grub damage already appearing
• Velvet ants pack punch

SHADE TREES & ORNAMENTALS

• Orange-striped oakworms
• Fall webworms
• Giant caterpillars active

HOUSEHOLD

• Spider wars

DIAGNOSTIC LAB-HIGHLIGHTS

INSECT TRAP COUNTS

Date: August 12, 2002

This will be the last weekly issue of the Kentucky Pest News for 2002. The newsletter will be published on an alternate week basis during the fall and winter.

The 32nd Annual UK Pest Control Short Course will be held September 24-26, 2002. Call or e-mail Darlene Thorpe for more information, 859-257-5955 or dthorpe@uky.edu.

UK-IPM Pre-Harvest Checklist for Controlling Insects in Stored Corn (August 2002)
by Doug Johnson, Extension Entomologist and Sam McNell, Extension Agricultural Engineer UK

Before Harvest

! Clean all equipment used to handle grain (Examples: combines, carts, trucks, receiving pits/ hoppers) thoroughly to remove old grain, trash, and debris that might contaminate the new crop. Use pressurized air/ water.
! Remove all “old” grain from inside storage bins. Use a shovel, broom and vacuum. Every Kernel counts!
! Check for holes and cracks in bin roofs and walls. Seal them to prevent leaks and entry of insects and rodents. (Look closely around ladders, roof vents and other openings)
! Treat the interior floor and bin walls with an approved insecticide.
brought them up to the high 80s to mid-90s. Overall, seed had germs in the low 60's to mid 70's, and treatment seed. The results are encouraging. Most of the non-treated fungicide-treated (50/50 Raxil/Thiram) and non-treated. Some seed producers have submitted split samples of the 40-70% range. (57-60 lbs/bu) seed for us, and Fusarium infections are in testing some fairly good looking, rather high test weight Fusarium on some farms. Dr. Dennis Tekrony has been season moisture resulted in significant seed infection by moderate statewide in 2002, but it appears as though late treatment with one of the new generation seed treatment fungicides. The saved seed "industry" is at greatest risk because farmers frequently plant non-treated seed. However, a large percentage of commercial seed sold and planted in Kentucky is treated with a fungicide. The main purpose of this article is to give you a "head's up" that wheat seed quality is not uniformly good this season.

FRUIT CROPS

GRAPEs - BE ALERT FOR POST-HARVEST DOWNY AND POWDERY MILDEWS
by John Hartman

After the grape harvest, growers often put away their spray equipment, assuming that disease management tasks are finished for the season. Growers need to be aware that there are two diseases, downy mildew and powdery mildew, that can take their toll on next year’s crop if not controlled for the rest of this season.

Downy mildew. This important disease is present now in many Kentucky vineyards. The fungus causes yield losses resulting from premature defoliation of vines due to leaf and shoot infections, including those that occur after harvest. Premature defoliation is a serious problem because it predisposes the vine to winter injury. In general, vinifera (Vitis vinifera) varieties are much more susceptible than American types and the French hybrids are somewhat intermediate in susceptibility. Highly susceptible cultivars include Catawba, Chancellor, Chardonnay, Delaware, Fredonia, Ives, Niagara, White Riesling, and Rougeon.

Early in the season, infected leaves develop yellowish-green lesions on their upper surfaces and on the underside of the leaves, the fungus sporulates by forming sporangia on numerous branched structures, called sporangiophores, that protrude through stomata. This gives the lesion surface on the leaf underside its characteristic white, downy appearance. Severely infected leaves may curl and drop from the vine. The disease attacks older leaves in late summer and autumn, producing a mosaic of small, angular, yellow to red-brown spots on the upper leaf surface. Lesions commonly form along leaf veins and the fungus sporulates in these areas on the lower leaf surface.

Powdery mildew. If not controlled on susceptible cultivars, this disease can reduce vine growth, yield, quality, and winter hardiness. Cultivars of Vitis vinifera and its hybrids (French hybrids) are generally much more susceptible to powdery mildew than are native American varieties such...
sucking insect pest that weakens the tree by feeding on apple aphid can appear like on an apple tree. It is a Snow in August? That's what an infestation of woolly apple aphid can appear like. This generation will be more prevalent later in the summer, but sprays are seldom used to control effective control. Although there is a second generation dormant oil application and crawler sprays are critical for controlling San Jose Scale. These applications aimed at the crawlers should be used. If populations are heavy, a second application two weeks after the first crawlers are seen. If populations are uncontrolled, San Jose scale can kill the entire tree in a couple years.

Disease management: In some years downy and powdery mildews cause post-harvest defoliation well before the onset of cool weather in the fall. Post-harvest early defoliation predisposes the vines to winter injury and reduces fruit set the following season. Thus it is important to maintain protection against foliar infections by these fungi. Rates and suggestions of fungicides to use are found in U.K. Cooperative Extension publication ID-94, Kentucky Commercial Small Fruit and Grape Spray Guide 2002, available at Kentucky county extension offices.

LOOK FOR SAN JOSE SCALE ON APPLES AT HARVEST by Ric Bessin

Red flecking on the fruit at harvest are an indication of San Jose scale infestations in the orchard. The red spots on the fruit are particularly noticeable on green and yellow varieties. It is a sucking insect that injects a toxin into the plant as it feeds causing localized discolorations. Left uncontrolled, San Jose scale can kill the entire tree in a couple years.

Control of San Jose Scale in apples begins with a thorough application of a dormant oil spray in late winter followed by a late spring insecticide spray aimed at the immature crawler stage. Sprays directed against crawlers also protect fruit from infestation. Sprays should be timed about one week after the first crawlers are seen. If populations are heavy, a second application two weeks after the first should be used. These applications aimed at the crawlers have little effect on the adult scales. Because San Jose Scale occur on all parts of the tree, spray coverage with the dormant oil application and crawler sprays is critical for effective control. Although there is a second generation later in the summer, but sprays are seldom used to control this generation.

WOOLLY APPLE APHID by Ric Bessin

Snow in August? That's what an infestation of woolly apple aphid can appear like on an apple tree. It is a sucking insect pest that weakens the tree by feeding on limbs and roots. It gets its name from the woolly appearance of its colonies. Long strands of white wax are produced that help to protect the colony of purple aphids.

Woolly apple aphid can be a serious pest of apples, particularly young trees. Colonies form at wound sites on trunks, limbs, and twigs, where they feed on tender bark. Pruning, hail or periodical cicada damage can create the wound sites for attack by this pest. As populations grow, aphids can be found on water sprouts in the center of the tree. The tree will begin to swell and form galls at the feeding sites.

In addition to feeding on small branches and wounds, woolly apple aphid may be found year-round on roots where they often go unnoticed. Mature trees usually suffer little damage. Yellowish foliage is a sign that woolly apple aphid may be infesting roots. The root systems of nursery stock can be damaged, and severe root infestations can stunt or kill young trees. Infested trees often have short fibrous roots, which predisposes them to being easily uprooted. Swollen galls also form on roots; galls increase in size from year to year and are sites where fungi can attack. Aphid feeding on the root systems also disrupts the nutrient balance of root tissue, which can affect growth of other parts of the tree. The underground form of woolly apple aphid is more damaging than the above-ground form. Trees can have above-ground infestations of woolly apple aphid but no root infestations. Rootstocks appearing more susceptible to woolly apple aphid infestation include B9, M9, M26 and the P series.

There are few insecticides specifically labeled for control of woolly apple aphid. Thiadiazoxide and dimethoate are recommended for control of above-ground infestations. There are no insecticides to control root infestations on bearing apple trees.

VEGETABLES

PEPPER MAGGOT IN KENTUCKY by Ric Bessin

Last week, pepper maggot was found attacking peppers in two central Kentucky pepper fields. In each location, nearly a dozen damaged peppers were found to have pepper maggot. These are the first records of this pest in Kentucky. Pepper maggot is a sporadic pest of peppers along the Atlantic coast, Indiana, and Missouri. Like European corn borer, pepper maggot feeds inside the fruit tunneling underneath the cap. While European corn borer does leave some evidence on the outside of the fruit, pepper maggot leaves little evidence on the outside other than a small dimple where the female fly deposited her egg in the flesh of the fruit. At harvest, the cap of the infested peppers often separates from the pod as a result of the tunneling damage.

Small fly maggots are commonly found feeding on decaying
material in rotting peppers. But the pepper maggot is different. This is a relatively large maggot, nearly a half inch in length, feeds on otherwise sound fruit. When mature, the larvae is light yellow in color. The body is pointed near the head and blunt toward the rear. After feeding on the pepper for two to three weeks, the maggot drop to the soil, and pupe two to four inches below ground. Adults begin to emerge from the soil the following year in early summer through mid-August. The adult pepper maggot is a brightly colored fly with a pale yellow head, green eyes, honey colored thorax, pale yellow abdomen and clear wings with brown bands. There is only one generation per year.

As with many disease problems of peppers, sanitation and rotation are used to control pepper maggot. Adult flies are attracted to rotting peppers, so removal of rotting fruit from fields reduces the attractiveness of fields to egg laying flies. Destroy infested fruit and cull piles as they serve as reservoirs for future infestations. Another cultural control is rotation. When possible, do not plant peppers in or near fields with a history of maggot infestation.

Yellow sticky cards can be used to monitor for pepper maggot adult activity. Traps should be placed around the margins of fields and observed weekly. In other states where pepper maggot has been a problem, sprays are applied when the flies are detected on the traps and reapplied weekly while the flies remain active. Mustang 1.5 and Thiodan are recommended for control of pepper maggot flies. These must be applied prior to egg laying to be effective.

**YELLOW VINE DECLINE OF CUCURBITS—NEWLY DIAGNOSED DISEASE IN KENTUCKY**

by William Nesmith

During the past decade, a disease causing yellowing and sudden decline of cucurbit vines has been recognized mainly in the south central states. It has been named Cucurbit Yellow Vine Decline (Disease). The disease was initially reported from Texas and Oklahoma but other states in the south and midwest have reported it too, once diagnostic protocols had been established. Recently, Cucurbit Yellow Vine Decline (CYVD) was confirmed from several locations in Kentucky on squash, pumpkin, watermelon, and muskmelon.

It is important to appreciate that this is a newly diagnosed disease in Kentucky, rather than a new disease. Since 1993, we have observed plants with CYVD in Kentucky, sometimes causing heavy losses, but were unable to confirm CYVD as definitive diagnostic protocols were not available. In part, the complications came from the complex of root, stem, vascular, and viral diseases that are often involved in the same plantings, especially those that move in on the root systems as the plants decline. Thanks to persistent researchers from the USDA-ARS in Oklahoma, Texas A&M, and Oklahoma State University, the techniques became available late last summer to satisfy the rules of proof necessary to make a definitive diagnosis. We used their techniques in making the diagnosis in our laboratories, plus had confirmation from the laboratory of Dr. Benny Bruton, USDA-ARS, Lane, Oklahoma - a leading lab in uncovering CYVD.

Symptoms of CYVD are variable depending on plant species involved, age of plant at the time of infection, and probably other factors. They include the following: Some plants show considerable stunting and yellowing (probably those infected early), while young fast growing plants (that probably become infected later) may suddenly collapse without yellowing. Other plants apparently infected later develop striking yellow vines and decline slowly as the fruit approach maturity. In watermelon, we notice that the terminals of runners tend to become more vertical (stand up) with rolled leaves. To diagnose the disease, select plants with the above symptoms and make cross-sectional cuts into the phloem tissues in the primary root and crown, looking for the development of a distinct golden to honey-brown discoloration of the phloem. The roots and lower stems of such plants are quickly colonized by a number of microbes that help finish the kill, and these secondary invaders will complicate the diagnostic efforts. The phloem tissues in a cross sectional cut in the lower stem appear just inside the outer layer of the stem as a series of arcs, wedges, or continuous zone (depending on age of tissue) that cap the xylem (the woody tissue with the large pores). Healthy phloem should be translucent to green, rather than yellow to browning.

It is now known that the causal agent is a phloem-limited bacterium, *Serratia marcescens*, and it appears to survive in, and be vectorized into the cucurbit plants, by the squash bug, *Anasa tristis*. Effective controls have not been fully formulated, but it is anticipated that controls will be focused on controlling the vector until host-plant resistance is found and incorporated into acceptable varieties.

Growers needing assistance in diagnosis of this problem, need to submit plants in the yellowing stage (with roots and vines still attached) through their local county extension office, where they will be forwarded to the appropriate plant disease diagnostic lab. Diagnosis soon after symptoms appear is critical as a number of other root and stem pathogens move in to confuse the diagnosis.

The bacterium *Serratia marcescens* has been found associated with a large number of habitats in nature-water, soil, plants (dicots and monocots, herbaceous and woody), insects, animals, and humans including being pathogens of humans. Work done so far with the strains isolated from Cucurbits indicate that they are physiologically different from the strains found in other plant species and other habitats.

**LAWN & TURF**

**GRUB DAMAGE ALREADY APPEARING**

by Mike Potter and Dan Potter

White grubs are the most important insect pests of lawn grasses in Kentucky. Several different kinds of white grubs, in particular, the larvae of masked chaferbs and Japanese beetles can cause damage to turf when the grubs feed on the
Velvet ants can be seen running around in the yard during late summer. They are parasites of bees and wasps that nest in the ground. Velvet ants prefer bare areas in sandy soil where their prey are most likely to be found. There is no effective control measure for them. If they are particularly abundant in an area, it may be helpful in the long run to overseed to get a better grass cover. This would discourage the ground nesting bees and wasps on which velvet ants feed.

SHADE TREES & ORNAMENTALS

ORANGE-STRIPED OAKWORMS by Lee Townsend

Orange-striped oakworms are black caterpillars with eight narrow yellow stripes that run the length of the body. There are a pair of curved “horns” behind the head. Small larvae feed in groups and skeletonize the leaves, older larvae eat all of the leaf except the main veins.

They usually destroy all of the leaves on a branch before moving to a new feeding site. Infestations usually start in the top of the tree and the larvae move down as they feed and destroy foliage. Sprays of B-t (Bacillus thuringiensis - Dipel, etc.) will control these insects. B-t works as a stomach poison so treated leaves must be eaten. Direct spraying of the caterpillars will not kill them.

FALL WEBWORMS by Lee Townsend

Fall webworms feed on almost all shade, fruit and ornamental trees except evergreens. In Kentucky some of the preferred trees include American elm, maples, hickory, and sweetgum. They always place their tent on the end of branches and there is usually more than one generation each year.

Fall webworms are about one inch long, very hairy, and is pale green or yellow. They may have either a red or black head. The black-headed larvae have black spots along the back while the redheaded have orange to reddish spots. The black-headed larvae will create a flimsy web while the redheaded larvae make a larger, more dense web.

The first generation of caterpillars start to feed sometime in mid-spring to early summer. After feeding, they pupate in the soil and a second generation of webworms will be observed during August or September. The second generation of webworms usually causes more defoliation than the first generation.

GIANT CATERPILLARS ACTIVE by Lee Townsend

Several species of our giant caterpillars are reaching maturity now and leaving trees to find a protected place where they can spin a cocoon and pupate. Most are striking because of their size and the ornate barbs, horns, or spines on their body. Pictures to help with identification can be found at www.uky.edu/ Agriculture/ Entomology/ entfacts/ misc/ ef
SPIDER WARS
by Mike Potter

Numerous calls are received each year about spiders. Typically, the caller wants to know if the spider they’ve seen is dangerous, and what - if anything - should be done in terms of control.

Many different kinds of spiders live in and around buildings. Some, such as the house, cellar, and garden spiders, construct webs to help entrap their prey. Others, like the wolf spiders, are free-roaming and make no webs. The vast majority of spiders are harmless, and in fact are beneficial because they prey upon flies, crickets and other insects. They generally will not attempt to bite humans unless held or accidentally trapped. Moreover, the majority of spiders have fangs too small or weak to puncture human skin. Of the hundreds of species found in Kentucky, only the black widow and brown recluse are dangerous. Fortunately, both are relatively uncommon, and have markings that can be used to distinguish them from other non-threatening species.

Even though most spiders are harmless, few people are willing to tolerate them inside the home. Their unsightly webbing and fecal spots outweigh the beneficial aspects of spiders to most homeowners. This column provides practical tips on spider control for concerned clients.

General Control Measures (all species)
1. Routine, thorough house cleaning is the most effective way to eliminate spiders and discourage their return. A vacuum cleaner and broom are the householder’s most useful tools for removing spiders, webs, and egg sacs. Egg sacs in particular should be removed since each may yield hundreds of new spiders.

2. Spiders prefer quiet, undisturbed areas such as closets, garages, basements, and attics. Reducing clutter in these areas makes them less attractive to spiders.

3. Large numbers of spiders often congregate outdoors around the perimeter of structures. Moving firewood, building materials, and debris away from the foundation can reduce migration indoors. Shrubs, vines and tree limbs should be clipped back from the side of the building. Maintaining a vegetation-free zone next to the house also lowers the moisture content of the foundation and siding, making them less attractive to termites, carpenter ants, rodents and decay.

4. Install tight-fitting window screens and door sweeps to exclude spiders and other insects. Inspect and clean behind window shutters, and inside the orifices of gas barbecue grills.

5. Consider installing yellow or sodium vapor light bulbs at outside entrances. These lights are less attractive than incandescent bulbs to night-flying insects, which, in turn, attract spiders.

6. To further reduce spider entry from outdoors, insecticides can be applied as a “barrier treatment” around the base of the foundation. Pay particular attention to door thresholds, garage and crawl space entrances, and foundation vents. Pyrethroid insecticides (e.g., Spectracide Triazicide (lambda cyhalothrin), Bayer Advanced Multi-Insect Killer (cyfluthrin), Ortho Home Defense System (bifenthrin)) are most effective, but may need to be reapplied periodically throughout the summer.

Brown Recluse/Black Widow
Both of these spiders are potential health threats. They are timid, however, and will only bite in response to the threat of being injured. Most bites occur while putting on a shoe or piece of clothing in which a spider has hidden, or while unpacking boxes, sorting through clutter, etc.

The female black widow is about 1/2-inch long, shiny black and usually has a red hourglass mark on the underside of the abdomen. In some varieties the hourglass mark may be reduced to two separate spots. Most adult brown recluse spiders are about the size of a dime to a quarter with legs extended. Coloration ranges from tan to dark brown, with the abdomen often darker than the rest of the body. The feature that most readily distinguishes the brown recluse from many other harmless spiders is a somewhat darker violin-shaped marking on the top of the leg-bearing section of the body. The neck of the violin “silhouette” points toward the rear (abdomen) of the spider.

Closer examination under magnification will reveal only three pairs of eyes toward the front of the head – most other spiders have eight eyes. Although both the black widow and brown recluse have distinctive markings, a “spider is a spider” to most people. Concerned homeowners or victims of spider bites should be advised to bring the specimen in for confirmation.

Spider bites are difficult to diagnose, even by physicians. Black widow venom is a nerve toxin and its effects are rapid. The victim suffers painful rigidity of the abdomen and usually tightness of the chest. Victims should seek medical attention promptly. The bite of the brown recluse is usually painless until 3 to 8 hours later when it may become red, swollen and tender. Later the area around the bite site may develop into an ulcerous sore from ½ to 10 inches in diameter. Healing often requires a month or longer, and the victim may be left with a deep scar. Prompt medical attention can reduce the extent of ulceration and further complications. Not all brown recluse bites result in ulcerations and scarring.

The brown recluse may be found living indoors or outdoors. Black widows are more often encountered outdoors. Thorough inspection of cracks, corners, and other dark, undisturbed areas with a bright flashlight is an essential first step in determining the location and extent of infestation. Indoors, pay particular attention to basements, attics, crawl spaces, closets, under/behind beds and furniture, inside shoes, boxes of stored items, and between hanging clothing. Brown recluse spiders also may be found living above suspended ceilings, behind baseboards, and inside
ductwork or floor/ceiling registers. Another way to detect infestations in these areas is to install several glueboards or sticky traps. Designed to capture mice and cockroaches, these devices can be purchased at grocery or farm supply stores. Placed flush along walls and in corners, they are useful monitoring tools and will also capture large numbers of spiders.

Brown recluse and black widow spiders also live outdoors in barns, utility sheds, woodpiles, and underneath lumber, rocks, and accumulated debris. To avoid being bitten, wear work gloves when inspecting inside boxes or when moving stored items.

Each of the management tips (1-6) mentioned above for spiders in general are useful for the black widow and brown recluse. Removal of unnecessary clutter is especially helpful in making areas unattractive to these pests. Indoor infestations of brown recluse and black widow also warrant treatment with insecticides. Insecticides should be applied into areas where spiders are living, making an attempt to contact as many spiders and webs as possible with the treatment. Most household insecticides with spiders listed on the label will kill spiders provided the spider is treated directly. Spot treatment with pyrethroids such as those mentioned earlier is especially effective. In attics, storage sheds, and other inaccessible or cluttered areas, total-release foggers (e.g., Raid Max, containing cyfluthrin=cyhalothrin) will have a better chance of contacting spiders that are hidden.

Severe infestations of brown recluse or black widow spiders require specialized skills, persistence and equipment to eradicate. In these situations, it would be prudent to call a professional pest control operator.

**DIAGNOSTIC LAB HIGHLIGHTS**

*by Julie Beale and Paul Bachi*

Diagnostic lab samples this past week included gray leaf spot on corn; charcoal rot, Fusarium stem rot, soybean cyst nematode, frogeye leaf spot, and southern blight on soybean; black shank, soreshin, Fusarium wilt, blue mold, frogeye leaf spot, tomato spotted wilt virus and lightning injury on tobacco.

On fruit and vegetable samples, we diagnosed downy mildew on grape; cane borer on blackberry; Mycosphaerella leaf spot on strawberry; anthracnose on bean; yellow vine decline and vine borer injury on pumpkin; Phytophthora fruit rot on watermelon; Septoria leaf spot, Fusarium wilt, root knot nematode, and yellow shoulder on tomato.

On ornamentals, we have seen bacterial leaf spot on salvia; Heterosporium leaf spot on iris; anthracnose on bentgrass; brown patch on fescue and bentgrass; powdery mildew and Septoria leaf spot on dogwood; Dutch elm disease on elm; and Verticillium wilt on magnolia and maple.

**INSECT TRAP COUNTS**

**UKREC, Princeton, KY --August 2-9**

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NOTE: 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.