KENTUCKY PEST NEWS

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CORN

EPA APPROVES STARLINK BT-CORN
By Ric Bessin

The EPA has approved the registration of StarLink Bt-Corn. The grain harvested from StarLink hybrids may only be used in domestic feed and industrial non-food uses. The StarLink Bt technology has been developed by the AgrEvo based on the CBH 351 event and uses the Cry9C gene. This gene is different from that used in other Bt-corn technologies. The gene is expressed throughout the plant and provides season-long control of first and second generation European corn borer. For a complete summary of the available Bt-corn technologies, their similarities and differences, and resistance management, see ENTFACT 118, *Bt-corn*.

StarLink hybrids will be sold initially through the Garst Seed Company with four hybrids. StarLink hybrids are also stacked with resistance to Liberty Herbicide.

ARMYWORMS IN CORN
By Ric Bessin

There are increasing numbers of reports concerning armyworms in corn, especially following small grains that have been killed down. This has not been a surprise this year. Early pheromone trap counts reported in the KPN indicated above normal moth captures in early spring. What does this mean for producers? Now is the time to scout corn for armyworms, with added attention given to corn following small grains or adjacent to small grains.

Before deciding whether or not to treat for armyworms with an insecticide there are a few things to consider. First, what sizes are the armyworms. If the armyworms are longer than about 1-1/4 inch they have completed most of their feeding. Controlling larvae of this size is not profitable because the damage is already done. Control actions in corn are recommended when armyworms average between 1/2 and 3/4 inches and the entire field averages 35% infested plants or 50% or more defoliation is seen on damaged plants.

TOBACCO

CURRENT BLUE MOLD STATUS
By William Nesmith

Active blue mold has been confirmed in transplant production systems in nine western Kentucky counties: Calloway, Christian, Daviess, Hancock, Logan, Todd, Simpson, Warren and Webster. The disease is no longer confined to Florida sources, but is now occurring in all types of transplant production, especially greenhouses. Laboratory tests conducted thus far indicate the fungus involved is highly resistant to metalaxyl, but highly sensitive to dimethomorph (a component in Acrobat MZ).

Kentucky's weather was not favorable for long distance spread during the past week via airborne routes, so most of the recent activity has resulted either from movement of transplants or from secondary spore movement earlier. Therefore, some of this "new" activity has probably been present several weeks, but at low levels. The recent period of sunny and dry weather should have greatly reduced airborne spread in Kentucky. However, until we have a better handle on the extent of blue mold development in Kentucky, we urge growers statewide to keep transplant systems sprayed regularly and, west of a line from Monroe to Jefferson counties, field sprays may be warranted, especially in counties that have confirmed activity.

Blue mold has also been confirmed on two fronts in western and middle Tennessee as far as Macon Co., and in far eastern Tennessee near the Tennessee / North Carolina border.

The disease also remains very active in southern Georgia. Activity in Florida has declined sharply with drier weather, but irrigation and heavy fertilization are expected to provide favorable environments on many farms.

SPECIAL ADVISORY: The tobacco industry (Kentucky and nationally) should assume that transplants moving from Georgia since April 14 have a significant risk of harboring blue mold. The disease has developed widely in south Georgia's tobacco production area, a region that also produces tobacco transplants and ships them to northern production areas from April-June. Using transplants from this area of the southern U.S. greatly increases the potential of spreading blue mold into Kentucky and other northern states. Kentucky's tobacco industry should remain very alert to the movement of blue mold on transplants. That includes plants arriving from any area where blue mold exists: western Kentucky, western Tennessee, Florida and Georgia. It is recommended that growers obtaining transplants from off their farms use locally produced transplants in order to reduce spread of blue mold from region to region.

TWO RACES OF BLACK SHANK OPERATE IN KENTUCKY
By William Nesmith

Two races of black shank occur in Kentucky. Race O is the original race and is, by far, the most common in Kentucky. It attacks and damages all varieties of tobacco. However, it causes much less damage on the varieties with general resistance (horizontal to both races) to black shank and the root systems of L8-hybrids are considered immune. Even though race 0 does not damage the roots of L8-hybrids, it can be maintained on them, and it can attack and seriously damage the foliage and the stems of L8-hybrids. Serious damage to L8-hybrids by race 0 occasionally occurs when flood water stands in the field allowing the main stem and / or foliage to become directly exposed to race 0.

Race I was discovered later, after the introduction of L8-hybrids, and became prevalent about the state when L8-hybrids were the most widely planted tobaccos. Although, the L8-hybrids have high resistant to race O in their roots, their roots have no resistance to race I. Race I attack all varieties of tobacco produced in Kentucky, but as with race O it causes much less damage to varieties with horizontal resistance.

Race I does not persist as well in Kentucky's soils as does race 0. Why not is unknown, but it is probably related to fitness of the fungus as compared to race 0. We only find high populations of race I associated directly with sites cropped to L8-hybrids. Furthermore, usually, race I populations decline even under continuous tobacco when the later crop is not an L8-hybrid, but leaving a high population of race 0.

Kentucky's tobacco industry needs to recognize that wholesale abandonment of L8-hybrids for varieties

with horizontal resistance is eliminating the use of a powerful tool in black shank control. L8-hybrids remain an excellent tool in the control of race 0 of black shank!

VEGETABLES

VEGETABLE DISEASES MOVING IN RETAIL TRANSPLANTS
By William Nesmith

Infected vegetable transplants may have been distributed widely around the state through garden centers, supermarkets, and other retail outlets this spring. I base this forecast on a number of infected transplant samples received in our diagnostic labs and finding numerous diseased transplants offered for sale in plant retail chain-stores / garden centers in central Kentucky. At the same time, no diseased plants were found at some retail outlets. Therefore, some communities could experience high levels of infectious plant diseases in vegetable gardens as a direct result of local stores distributing diseased plants while others have no increased activity.

We urge retailers to examine their stocks closely for diseases and to not sell transplants with infectious diseases. Take suspected transplants to local County Extension Offices for assistance in diagnosis of the problems. Gardeners that have already purchased transplants should check the plants closely for symptoms of infectious diseases and destroy diseased transplants. Planting diseased transplants is a good way to insure failure later in the season, and there is still time to correct the situation. If the plants have already been transplanted to the garden, remove them, and transplant clean plants into another area of the garden. Garden fungicides containing chlorothalonil can be used to help slow spread of some of the fungal diseases involved, but not all. Fixed coppers can help with reducing spread of the bacterial diseases, and some of the fungal diseases.

Commercial vegetable growers could also be impacted by these infected transplants, directly if they use them or indirectly by moving inoculum of airborne diseases such as the mildews and late blight. Late blight is windborne and can move about the community, from gardens to commercial tomato and potato plantings. The recent change to hot, dry weather will have greatly reduced threats of late blight in Kentucky, but gardens could serve as sources of inoculum for the remainder of the season should a protracted cool, wet period return.

The following list of diseases were identified in retail, vegetable transplants last week:

TOMATOES: Late blight, Septoria leaf spot, bacterial leaf spot, bacterial speck, bacterial canker, Sclerotinia stem rot, Southern stem blight, Phoma leaf and stem rot, Pythium root and stem rot, Rhizoctonia root and stem rot, and Cucumber mosaic virus.

PEPPERS: Bacterial leaf spot and Southern stem blight.

COLE CROPS: Bacterial black rot, downy mildew, and Rhizoctonia stem blight.

CUCURBITS: Bacterial spots, powdery mildew, and downy mildew

ONION TRANSPLANTS: downy mildew

LAWN AND TURF

BACKYARD BUG-ZAPPERS: DON'T EXPECT MUCH HELP
By Lee Townsend

Insect electrocuters provide some impressive crackles, flashes, and sizzles on summer nights but apparently little pest control around the home landscape. Homeowners expect to rid the area of mosquitos, and perhaps a variety of other pests, by using these devices. Research has generally shown little positive effect. A study from Delaware investigated the "catch" from electrocuters placed around some homes near potential mosquito breeding sites during June and July. Of the 13,000+ insects eliminated by the electric grids, only 0.2% (31 specimens) were biting flies. On the other hand, more than 1,800 beneficials- including predators and parasites- were dispatched (about 13% of the catch). Not much return on the investment -- actually a loss, considering that more than 45% were aquatic insects that were at least, harmless and at best, important fish food.

Several factors contribute to this performance. For example, UV lamps that give off a lot of visible light are less attractive to mosquitoes and other night-biting flies than those that give off only UV light. That is, the more visible the light to us, the poorer it is in luring biting flies. Also, many species of mosquitoes are not attracted by black lights at all.

For species that do respond to UV, only a portion will actually make it to the charged grids.

FRUIT TREES

THE CICADAS HAVE ARRIVED!
By Ric Bessin

Initial reports of cicada egg-laying were received this week. The cicadas will lay their eggs on the terminal end of branches. This wounding will cause the limbs to die from the point where the eggs were laid to the tip, giving trees a brown cast.

In 1991, we conducted a study measuring periodical cicada mortality when they were confined on treated apple foliage. The apple foliage was dipped into final spray solutions (labeled rates) of the insecticides and allowed to dry. The mortalities of the periodical cicadas are as follows:

Insecticide	*24 hour mortality*	*48 hour mortality*	*72 hour mortality*
Sevin 50W @ 2 lb /100gal	43.3%	88.3%	98.3%
Orthene 75S @ 1 lb /100gal	1.7%	10.9%	36.4%
Lorsban 50W @ 10 oz /100gal	1.7%	8.8%	22.8%
Asana XL @ 4 fl.oz /100gal	91.7%	98.3%	100.0%
Untreated	3.3%	3.5%	10.5%

Sevin and Asana XL provided good control of cicadas, however, Asana XL is a restricted use chemical. Note that Orthene is NOT labeled for apples and was used just for comparison. In all treatments, we observed that the males were more easily killed than females. An orchardist interested in this product may have to have it ordered by their dealer. Asana XL is likely to cost about $1.00 per fl. oz. Orchardists needing to control cicadas should understand that while both Sevin and Asana XL will provoke mite problems, Asana appears to upset mite management more than Sevin. Homeowners may want to protect young trees with cheese cloth or other fine netting.

SHADE TREES AND ORNAMENTALS

LOCUST LEAFMINER ADULTS OUT
By Lee Townsend

Locust leafminers typically are responsible for the browning of black locusts along roadways and in landscapes or wooded areas in mid- to late summer. The 1/4 inch long, flat, orange and black insects have left their overwintering sites and are beginning to feed on developing leaves. Females soon will glue groups of 3 to 5 eggs to the undersides of the leaves. The larvae that hatch from these eggs will burrow into the leaves and mine within the tissue. Infested leaves take on a scorched appearance as the damaged area dries out. At this point, the injury has been inflicted. Damage to black locust is seldom significant unless there are repeated defoliations or attack occurs during poor growing seasons.

Control attempts must be directed against the adults and usually are justified only in landscape settings to reduce aesthetic damage. These beetles occasionally feed on apple, birch, beech, cherry, elm, oak, and hawthorn. Sevin may be used for control.

LANDSCAPE PLANT DISEASES AND CONTROLS
By John Hartman

Dogwood leaf splotches, dead areas on the leaves, have resulted from infections by the gray mold fungus, *Botrytis cinerea* that occurred recently, just after the flower bracts fell. During wet weather, fading bracts often develop gray mold disease and fall to the ground unnoticed. Some diseased bracts, however fall on dogwood leaves and stick there while the infection spreads to the leaf itself. With the advent of dry weather the rotted flower bract shrivels up, leaving a dead blotch or spot on the leaf. These spots will not spread for the rest of the season unless we have a return of cool, wet weather. There has been some concern that these dead spots were symptoms of dogwood anthracnose.

Crabapple, apple, and hawthorn rust symptoms are becoming more visible. Infected, swollen fruit of

hawthorn are more prominent than their healthy counterparts in the same fruit cluster. The typical

orange spots on crabapple and apple leaves are now easily seen.

Pachysandra leaf blight and canker, caused by the fungus *Volutella*, is also widespread, but is sometimes confused with spring frost injury. Both problems cause death of leaf margins, but leaf blight shows concentric zones of infection within the dead tissue. In addition, where leaf blight disease occurs, dark brown, dead cankers are visible on the stems and stolons.

Peony red spot disease, caused by the fungus *Cladosporium* is becoming visible on peony stems. Look for short reddish-brown streaks all along the stems. Thorough sanitation in the fall is the best way to manage this disease.

Rose black spot disease control begins now if disease-susceptible roses such as hybrid tea, floribunda, and grandiflora roses are being grown. Shrub roses are less susceptible and may not require fungicide sprays.

Homeowners may use protectant fungicides such as Captan (captan), Carbamate (ferbam), Daconil 2787 or other chlorothalonil products, and Maneb (maneb). Systemic or locally systemic fungicides include Funginex (triforine) and Immunox or Kgrow multipurpose fungicide (myclobutanil). Baking soda has been proposed as a fungicide for homeowners to prevent black spot, but under our conditions of high disease pressure, it may prove unreliable.

Professional applicators can use Banner Maxx (propiconazol), Eagle (myclobutanil), Fore (mancozeb), and Rubigan (fenarimol). Fenarimol, myclobutanil, propiconazol, and triforine should all be effective against rose powdery mildew and rust diseases as well.

HOUSEHOLD

ELIMINATING CARPENTER ANTS
By Mike Potter

"I'm seeing big, black ants in my house, especially in the kitchen and bathroom. I spray the ones I see, but they keep coming back. What kind of ants are these and how do I get rid of them?" These are the questions typically asked by clients who have carpenter ants. This time of year, callers may also complain about a swarm of winged carpenter ants emerging inside their homes -- a sure sign that the ants are nesting within the structure. This column will help you deal with this challenging pest problem.

The Problem

Carpenter ants vary in size and color, but are usually rather large (1/4-1/2") and blackish. Not every large black ant encountered around homes is a carpenter ant, however (see footnote* below). Besides being a nuisance, carpenter ants may damage wood while hollowing it out for nesting. The galleries have a smooth, sandpapered appearance and contain no mud, as is the case with termites. Shredded fragments of wood similar to coarse sawdust are ejected from the galleries, along with dead ants and bits of insects which the carpenter ants have eaten. When such accumulations are found, it's a good indication that a nest is nearby. Often, however, the excavated sawdust remains hidden behind a wall or in some other concealed area.

Carpenter ants nest in moist or dry locations, but prefer sites that are moist. Consequently, nests often occur in wood dampened by water leaks, such as around sinks, bathtubs, poorly sealed window and door frames, leaking roofs, and within damp crawlspaces. *When considering likely nesting sites, it's also important to remember that carpenter ants nest in areas other than wood.* Nests commonly occur in moist, hollow spaces, like the wall behind a dishwasher, beneath insulation in the crawlspace, garage, attic, or basement, or in a hollow porch column. False ceilings, hollow-core doors, curtain rods, or even an old suitcase up in the attic may serve as nesting sites for carpenter ants.

Nests may be located inside or outdoors. Ants spotted inside the home may actually be nesting outdoors in a tree stump, landscape timber or woodpile, and foraging indoors in search of food. Noticing five or more carpenter ants per day in an area of the home where there is no food, such as a bathroom or bedroom, usually indicates an indoor nest. Swarms of winged carpenter ants emerging indoors is another sign of an indoor nest, as is the sighting of ants indoors on cool or rainy days.

The potential for damage exists only when ants are nesting inside the structure. In Kentucky, damage produced by carpenter ants is often insignificant and seldom as extensive as that associated with termites. Nonetheless, over extended periods, large colonies can weaken studs, joists and other structural timbers.

The Solution

Currently there are no "over-the-counter" insecticide baits available that are consistently effective against carpenter ants***. Therefore the best – and only way – to control them is to find and treat the nest(s) directly.*** This is easier said than done. Carpenter ants seldom travel in clearly defined ant "trails" as do many other ants. When attempting to locate a nest, focus your efforts on where most of the ants have been seen. Areas dampened by moisture, e.g., around sinks, dishwashers, chimneys, and window or door frames are especially attractive to carpenter ants, although "bone-dry" walls may also serve as nesting sites.

The vicinity of a carpenter nest can often be located by placing small dabs of honey or maple syrup in the area(s) where ants have been seen. Cleanup is aided by placing the "bait" onto small squares of wax paper, or the back (non-sticky side) of pieces of masking tape. The best time to do this is at night since this is when carpenter ants are most active. After the ants have fed on the bait, follow them on their journey back to their nest. Be patient — eventually the ants will disappear behind a baseboard, cabinet, or into some other concealed location such as behind a wall, window, door frame or porch column.

Treat behind walls and other hidden locations where ants are entering by puffing boric acid dust into existing cracks, or drilling small (1/8") holes into suspected nest areas. With a little luck, the insecticide dust will disperse in the hidden void and contact and kill the ants. If you suspect the nest is in a wall, drill and treat at least 3-6 feet on either side of where ants are entering so as to maximize the chances of contacting the nest. As is true for most ants, carpenter ants prefer to travel along wires, pipes and edges. It often pays to inject dust into any openings around plumbing pipes and behind (not inside) the junction boxes of electrical light switches and receptacles. *Never apply insecticides directly into junction boxes or spray liquids around electrical outlets. Turn off the main circuit breaker as an additional safety precaution.*

Professional pest control firms have "dusters" specifically designed for this type of treatment. Homeowners wishing to perform treatment themselves can purchase boric acid in a ready-to-use "puffer" (squeeze bottle), or attempt to make one using an empty, dry, narrow-tipped plastic container. Don't expect to see results overnight; a week or more may be needed to eliminate the entire nest which may contain thousands of ants.

As noted earlier, carpenter ants seen in the home may actually be nesting outdoors and foraging indoors for food and water. Consequently, you may end up following the ants out into the yard, possibly to a nest located in a stump, fence, dead tree limb, or landscaping timber. Once an outdoor nest is discovered, treatment can be performed by spraying or drenching with Sevin, permethrin, diazinon, or chlorpyrifos (Dursban). If outdoor nests are suspected, inspect for ants around the foundation and siding at night with a flashlight. Pay particular attention to areas around doors, windows, and where utility pipes and wires enter the structure. Carpenter ants also like to trail along the bottom edges of siding. The sweet bait technique can again be used to trace these ants back to their nest.

Calling a Professional

Eliminating carpenter ants can be difficult and time consuming. Therefore some clients will want to call a professional. Pest control companies tackle carpenter ants in different ways. Some try to locate the nest(s) and treat only in suspected areas. Other firms take a less directed approach, opting instead to drill and treat as many conceivable nesting sites as possible. Most companies also spray around the exterior foundation of the home, hoping to limit reinfestation. The approach which should *not* be taken is simply to spray each month where carpenter ants are seen. Knowledgeable companies will spend less time "spraying" and more time inspecting and asking the homeowner where they have seen ants, whether there have been moisture leaks, etc. *If no effort is made to locate the nest(s) or probable nest areas, the infestation will continue.* The homeowner can assist the professional in helping to locate nests by using the sweet bait technique discussed earlier.

Preventing Future Problems

1. Correct roof leaks, plumbing leaks, and other moisture problems which attract carpenter ants.
2. Clip back tree limbs and branches touching the

roof or siding of the house. These serve as "bridges" between ants nesting in dead portions of trees and the structure.

3. Seal cracks and openings in the foundation, especially where utility pipes and wires enter from outside.
4. Never store firewood in the garage since firewood is a prime nesting location for carpenter ants. Stack wood away from the foundation and elevate it off the ground.

* Another large black ant that is often mistaken for carpenter ants in Kentucky is the black field ant. Many costly "carpenter ant" jobs are inadvertently sold to homeowners by companies that confuse these two 'look-alike' pests. A good hand lens is needed to tell the difference: viewed from the side, carpenter ants have an evenly rounded thorax (the body segment just after the head); black field ants have a thorax which in profile appears ridged or uneven. Black field ants commonly form large, low-profile, earthen mounds in the yard. Unlike carpenter ants, they do not nest within buildings, although they may wander indoors in search of food. The solution to black field ants is simply a mound drench.

GROUND BEETLES INVADE HOMES
By Lee Townsend

Three samples of ground beetles, from widely scattered counties in the state, contained small ground beetles. The head of this dark, 1/4-inch long beetle narrows in front of the bulging eyes. The antennae and legs are long. This is the flight period of the adults and they were attracted to lights.

Ground beetles may be a temporary nuisance but will not become established in the home. Sweep up and discard these accidental invaders, they should disappear soon of their own accord. More information can be found in Entfact 104.

DIAGNOSTIC LAB-HIGHLIGHTS
By Julie Beale and Paul Bachi

Tobacco diseases this week have included more cases of Sclerotinia, blackleg and target spot (the stem rot phase of Rhizoctonia is also present). Heat injury is also a common problem in poorly ventilated greenhouses and covered beds now that outside temperatures have warmed up. We are also seeing a number of tobacco samples (in particular) which are in very poor condition by the time they reach the lab and cannot be diagnosed. Please package tender transplants carefully, preferably wrapping the root balls of individual plants with plastic wrap to keep roots from drying and prevent soil contamination of leaves. Mail early in the week to avoid packages sitting over the weekend at the post office. Also refer to Extension Publication PPA-9 for suggestions.

Both fungal and bacterial diseases are active in home fruit plantings and in the landscape. Last week we saw white root rot of apple, peach leaf curl, black rot of grape, and bacterial canker of cherry; also plenty of anthracnose of maple, ash and sycamore, spot anthracnose of dogwood, red thread of fine fescue, rust of hollyhock and bacterial soft rot of iris. In vegetable crops, bacterial spot (Xanthomonas) was diagnosed on tomato transplants.

INSECT TRAP COUNTS
May 8 - 15
Princeton

Black Cut Worm 1
True Armyworm 38
European Corn Borer 9

Lee Townsend