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KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • WEED SCIENCE
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WATCH FOR:

APHIDS and PLANTHOPPERS on ornamentals; TOBACCO BUDWORMS on tobacco; SAN JOSE SCALE crawlers moving; BAGWORM egg hatch; CORN LEAF APHIDS in whorls; BARKLICE on tree trunks; WOOD COCKROACHES flying to house lights at night.

CORN

SECOND GENERATION ARMYWORM FLIGHT IS ON!
by Doug Johnson

UK-IPM pheromone baited traps indicate the second generation armyworm moth flight is on with a vengeance. (See the trap counts at: http://www.uky.edu/Ag/IPM/ipm.htm). Normally, I would not take much notice of the second generation. Usually, the first cutting hay is made and corn is growing strongly. Unfortunately, this is not the case in 2007. There are still many fields of corn that are knee high or less and struggling with a lack of moisture. Most of these are fields planted into killed wheat stubble. It would be advisable to check these fields over the next several weeks for armyworm. I still think the chance of economic damage is low, but this situation is very unusual, with little history with which to compare.

WATCH CORN EARWORM CLOSELY IN SWEET CORN
by Ric Bessin

The past several years, entomologists in the Midwest have recognized that corn earworm is not as easy to control with pyrethroids as it once was say ten years ago. Small plot efficacy trials that once Demonstrated 90+% control with properly timed and directed pyrethroid sprays now typically provide 60% control or less. A trail conducted last year at the Princeton Research Station demonstrated control far below that level. Its unlike that these poor results are due to mistiming or poor coverage, as the same protocols as used now as they were ten years ago. It appears that corn earworm is not as sensitive to pyrethroid sprays as it once was. This is a very significant problem, as there are currently no alternatives that are as effective and economical as the pyrethroid sprays.

What does this mean for sweet corn producers? Well, we need to review the basics on earworm control in sweet corn. When sweet corn is planted early, on or before the first part of May, there will be less earworm pressure and the pyrethoid and other insecticides should provide very good control. Whoever, if the sweet corn is late planted, after the middle of May, then large populations of corn earworm should be expected and satisfactory control may be more difficult. In addition to larger populations, higher temperatures during the period of treatment between initiation of silking and silk drying, and the pyrethroid activity does drop some with increasing temperatures. Silk growth is also much more rapid at higher tem-

peratures. Growers need to time sprays accurately, as once the larvae enter the ear there are no effective controls, so the controls are preventive not curative. The first sprays should be timed to coincide with about 10% of the plants just starting to show fresh silks. The interval for subsequent applications is best determined by the level of pheromone trap catches of earworm moths and temperature. Generally growers treat every 3 to 5 days until the silks dry. Once the silks dry, no further treatment is necessary. Coverage is the other key factor. Ground sprays have always provided better coverage than aerial applications. Coverage can be improved even more through the use of drop nozzles directing sprays to the middle third of the plant, around the ear zone.

Commercial producers in the Midwest generally have not noticed the drop of in control seen in research trials. This may be due to differences in the level of adult control. In small plot trials there are more opportunities for the moths to escape treatment, while in commercial fields, everything receives treatment. However, a drop in the level of control in research trials may be a warning to producers that reduced control, even control failures, may be in the near future.

Growers need to be aware of the classes of insecticides that they routinely use. The new IRAQ labeling system should be them significantly. In ID-36 on page 11 there is a table that lists the currently available insecticides and the IRAQ groups they belong to. Growers not receiving the level of control that they expect should first review the basics above then possibly consider their alternatives to the pyrethroid insecticides that are listed in ID-36.

SOYBEANS

SOYBEAN INSECTS & MITES IN HOT, DRY WEATHER
by Doug Johnson

Hot and dry weather brings a special twist to insects and mite pest problems in soybean. Though no problems have yet been reported, we need to think about elevated risks for at least two pests.

Spider mites – In our area, spider mite outbreaks are almost always associated with drought which is usually accompanied by hot weather. These insect relatives thrive under those conditions, while the soybean plant tends to struggle. As yet I have not seen any mite activity, nor has any been reported to me. On the other hand, if the current growing conditions continue we need to be looking for their appearance.

Appearance - Mites are very tiny, about like the period at the end of this sentence. One can see them with the naked eye, but you will probably not be able to decide what they are unless you can see them moving. It would be advisable to have a good hand lens. These eight-legged critters are usually light to dark brown in color, but being so small it will be hard to tell.

Damage - Mites have a type of piercing-sucking mouth, with which the remove the contents of individual plant cells. These damaged cells tend to look yellow to orange because the chlorophyll (green) has been removed. The yellow is a deep or orangish color as opposed to a bright yellow. I have seen several fields that are showing the bright yellow color on leaf margins due to potassium deficiency. This is not the same color usually associated with mites and the potassium deficient yellow cells do not appear damaged. Problems are often first detected along field margins and in and around weedy patches in the field.

Confusion – When looking for spider mites do not be confused by the presence of thrips. These insects are quit small, though not as small as mites, usually yellow (pale to deep yellow) and longer than wider. They may or may not have wings. You can expect to see thrips on just about every soybean plant you examine but they pose no real danger.

Additionally, this is a long shot, but work in Michigan and Wisconsin has shown that potassium deficient beans producer larger populations of soybean aphid than do normal beans. I have seen no aphids as yet, and none have been caught in our aphid suction traps. It is important to understand that the level of damage and type of control for mites and aphids are quite different. If you find a small crawling pest, make sure get a correct identification.

Checking – If you think you have a mite infestation, hold some leaves or small plants over a piece of white paper and shake or tap vigorously. Look at the material that falls on the paper and see if any of the little dots move! If the dots crawl around then get a sample into the Insect Diagnostic Lab for identification.

Grasshoppers – The populations of these insects are also enhanced by hot dry weather. In rainy / humid weather, many grasshoppers die of disease. In the absence of rain / humidity however, more tend to survive.

So far I have seen only a few grasshoppers (though of several species) and all of them far are wingless. This tells me that we are at the very early stages of the grasshopper population emergence. Certainly, I have not seen anywhere near enough grasshoppers to be dangerous, but

if this weather continues, expect to see scattered problems, especially among smaller / later planted beans.

SOYBEAN APHID CAPTURED IN KENTUCKY SUCTION TRAP
by Doug Johnson

A single soybean aphid was captured in the UK-IPM aphid suction trap in Princeton during the week ending Friday June 8th. This is a very early capture for us. In 2006 we did not capture a soybean aphid until the week ending August 24th. It appears that the insect is appearing earlier this year all over the north central region. There has been no capture of soybean aphid in the Lexington, KY trap, nor have soybean aphids been captured in the southern Illinois (Dixon Springs) trap.

There is no immediate response necessary, except to scout your beans. You should be checking soybeans for the presence of soybean aphid (and all other pests for that matter!) through the remainder of the season.

WHEAT

SUMMARY OF IMPACT OF FREEZE DAMAGE ON WHEAT DISEASES
by Don Hershman

The majority of wheat acres in Kentucky were badly hurt by the spring freezes that occurred in early April, 2007. Many fields were subsequently destroyed by the producer and planted to other crops. However, many acres were taken to yield for grain and many fields were retained for seed purposes.

In my 23 years on the job, I had not seen wheat subjected to multiple, consecutive hard freezes, so I really did not know what to expect. Many wheat growers apparently had the same uncertainty. Consequently, I received numerous questions about the need to spray retained fields with a fungicide. Obviously, grain yields were already seriously compromised by the freezes and, if left unchecked, diseases could have taken even more yield out of the crop. Plus, there was no sense in retaining a field for seed purposes if seed quality was not protected. Thus, it made some sense to me that some producers should consider applying a fungicide to a damaged crop.

I realized that the weather between the time the last freeze occurred and late grain fill would ultimately determine which diseases develop and to what extent. Based on limited experience with prior freeze events, I reasoned that delayed emergence of secondary tillers could result in enhanced Fusarium head blight (FHB)/deoxynilalenol (DON) if the weather was wet during and immediately after head emergence. Conversely, if the weather was hot and dry, I knew FHB/DON would probably not be a problem. As it turned out, FHB was not a significant problem in Kentucky this spring. The weather turned dry during May and unseasonably moderate temperatures favored grain fill. Folicur and Orius were granted a section 18 label for FHB/DON suppression in Kentucky, but very little of either fungicide was used for FHB or DON suppression. DON levels are not always linked to FHB symptoms in the field, and because wheat is just now being harvested, it is too early to say for sure that DON will not be a problem. This said, I would be very surprised if DON was a problem in many harvested fields in Kentucky since the weather leading up to harvest has been generally dry and crop lodging minimal (despite significant stem damage due to the freeze).

In addition, I expected to see greater incidence and severity of Stagonospora leaf and glume blotch. The latter disease can really hurt seed quality, so where maximized seed quality was a goal, I anticipated that many of those acres might need to be treated to control glume blotch. I reasoned that harvest may be delayed due to the large number of secondary tillers formed following the freeze kill. As it turned out, neither leaf nor glume blotch were much of a concern because of the dry weather during grain fill. In fact, no single fungal disease was serious in any field I looked at this year. Many common foliar fungal diseases (stripe rust, leaf rust, powdery mildew, speckled leaf blotch, Stagonospora leaf and glume blotch, and tan spot) were present at minimal levels in many fields, but the freeze damage did not seem to exacerbate the disease situation in any field I observed.

In summary, the consecutive nights of hard freezes in early April significantly damaged a majority of wheat fields in Kentucky. The extent of the freeze was unprecedented and, as a result, many fields were destroyed and replanted to other crops. There was concern that common wheat diseases, especially Fusarium head blight and Stagonospora leaf and glume blotch, could become a problem and further compromise yields and grain/seed quality. This situation never materialized, apparently due to the dry weather from early May to mid-June.

HOME GARDEN PLANTS

ORNAMENTALS, VEGETABLES, AND FRUITS SHOWING FOLIAGE ABNORMALITIES
By John Hartman, Julie Beale, and J.D. Green

During recent weeks plant samples with distorted, abnormal-appearing foliage have been submitted to the U.K. Plant Disease Diagnostic Laboratory. Affected plants have included vegetables, fruits, trees and shrubs. Leaf

and shoot malformations, remnants of spring freeze injury, still remain on some trees and shrubs. Drought-stressed plants may also show rolled up or curled leaves. Powdery mildew is causing deformed and stretched crabapple and dogwood leaves and shoots in many landscapes and leaf cupping symptoms appear on many plants due to aphids or other insect infestations. However, in many cases the cause of foliage distortion appears to be related to off-target exposure to herbicides.

When carelessly used, various herbicides, or weed killers, can damage or even kill garden plants. Some of the most commonly used materials are growth regulators, applied to existing weeds in the landscape. Herbicides containing plant growth regulators such as 2,4-D (2,4-dichlorophenoxyacetic acid) or dicamba are often used for eliminating weeds in home lawns. Since their chemical structure mimics plant hormones, when they are taken up by trees and garden plants they have an effect on the normal development of leaves and shoots. The most general symptom is a distortion or malformation of leaves and twigs. Leaves may also roll upward or downward at the midrib or along the edges, thus becoming cupped. Leaf petioles may curl, in some cases forming loops. Although these herbicides are almost always used without incident, growth regulator chemical injury can be noted on many trees, including elm, dogwood, boxelder, hawthorn, Norway maple, tuliptree, various oaks, sassafras, and yew. In the garden, grapes, strawberries, tomatoes, peppers, and cucumbers are most affected. While most trees exposed to low levels of herbicide recover, tomatoes and other vegetables may not fully recover or be useable for human consumption.

Weather during much of the past month has been warm and breezy–conditions that can favor herbicide drift. Applying herbicides with volatile formulations of 2,4-D even some distance from the garden or landscape trees invites potential injury. Users of herbicides should use the less volatile forms of herbicide, avoid windy days, and use a coarse droplet spray at low pressure to reduce drift. Follow herbicide label directions and do not use the herbicide sprayer for other spraying jobs; even minute traces of 2,4-D in such sprayers can cause plant injury. Be aware that some herbicide products can contain more than one chemical and that although the main ingredient may not be injurious, other components or active ingredients may be.

SHADE TREES & ORNAMENTALS

MANAGING DIPLODIA TIP BLIGHT
by Amy Bateman, Plant Pathology Grad Student

Diplodia tip blight has been a very serious problem in Kentucky for years. Previous management recommendations consisted of applying protectant fungicide sprays in the spring as well as pruning away diseased shoots. These measures were only partially effective or not working and new management tactics were needed. Protectant fungicides were most likely not working because it could not penetrate into the crevices between the needles and shoots where fungal propagules are often found. Pruning does not always help reduce disease because many healthy looking shoots are latently infected with the fungus, and these latent infections have the potential to turn symptomatic.

In 1999, UK plant pathologists started a 4-year study on fungicide injections on both diseased and healthy Austrian pines on campus. The goal of the study was to determine whether or not injected fungicides could prevent new infections as well as prevent further spread of tip blight within diseased trees. The fungicides tested were oxycarboxin (Carboject), debacarb (Fungisol), and tebuconazole (Tebuject). Each spring injections were made into the trunk/buttress roots, and the percentage of diseased shoots was taken. Fungisol was the only fungicide that significantly slowed disease progress in the trees, but as with the other fungicides, did not prevent new infections. This was only the case for mature trees as none of the fungicides slowed disease progress or prevented new infections in young trees. *D. pinea* latent infections were also determined each year of the study, and none of the injections reduced the levels of latent infections. Overall, fungicide injections were determined to not be an effective management tactic.

The chemical Cambistat (paclobutrazol) is a plant growth regulator which inhibits gibberellin biosynthesis and has been shown also to be a weak fungicide. In 2003, UK plant pathologists began a study to test the effects of Cambistat applications on diseased Austrian pines. Cambistat was applied as a soil drench around the base of the tree and taken up systemically. The application was done only in July 2003. Each year for 4 years, asymptomatic shoots from the base, middle, and top of the tree were tested by PCR for the presence of latent *D. pinea* infections. Disease levels were also taken each year for 4 years. After 4 years, only 18 of 41 trees remained alive, and all that were alive had many symptomatic tips. By 2006, so many of the shoots on the trees were dead that it was impossible to get all three samples from each tree. Cambistat did not help to decrease the number of new infections nor did it significantly slow down the spread of already present infections. Overall, Cambistat treatments are not an effective management tactic against Diplodia tip blight.

Since fungicide sprays, fungicide injections, Cambistat

drenches, and pruning are ineffective tactics at managing Diplodia tip blight, Austrian and Scots pines may not be a good choice for Kentucky landscape and Christmas tree farms. If Austrian and Scots pines are desired in Kentucky, it is recommended to try and reduce stress on the trees as much as possible, especially drought stress as stress is known to induce tip blight symptoms.

INSECTS PESTS OF HUMANS

CHIGGER BITE!
by Mike Potter

Chiggers are one of the most irritating pests encountered outdoors during summer. They are the tiny immature stage of a certain type of mite which feed on animal or human hosts. Chiggers are extremely small (0.5 mm) and are difficult to see without magnification. They are usually encountered outdoors in low, damp places where vegetation is rank and grass and weeds are overgrown. Some species also infest drier areas, however, making it hard to predict where infestations occur.
Chiggers overwinter as adults in the soil, becoming active in the spring. The adult stage is red, visible (about the size of a pinhead), and sometimes seen running over the ground. Adults feed on small invertebrates and organic matter and do not attack humans. Eggs are laid on the soil. Upon hatching, the newly-emerged chiggers (larvae) crawl about until they locate and attach to a suitable host. The larvae do not burrow into the skin or suck blood like a mosquito ¾ but rather inject a salivary fluid which produces a hardened, raised area around them. Fluids from digested skin cells of the host are withdrawn through a feeding tube. Larvae feed for about 4 days and then drop off and molt to non-parasitic nymphs and adults. Chiggers feed on a variety of wild and domestic animals, as well as humans. The life cycle (from egg to egg) is completed in about 50 days.

Reaction to Bites. Most people react to chigger bites by developing reddish welts within 24 hours. Intense itching accompanies the welts, which may persist for a week or longer. The itch results from salivary enzymes which the mite uses to digest skin cells as it feeds. Bites often are concentrated around the ankles, behind knees, waistline, armpits, or other areas where clothing fits tightly against the skin. Location of welts, therefore, can be a useful diagnostic feature when appearing the day after recreating or working in chigger-prone areas. Besides causing intense itching, chigger bites that are scratched may result in infection and may warrant a trip to the physician. Chiggers in North America are not known to transmit disease however.

Personal Protection. The best way to avoid an encounter with chiggers is to stay out of uncut fields and overgrown vegetation. Walk in the center of mowed trails and avoid brushing up against vegetation where chiggers and ticks congregate. Persons who must walk or work in chigger-prone areas can be somewhat protected by treating clothing (shoes, socks, cuffs, pant legs, shirt sleeves) or exposed skin with insect repellent. Some repellents should only be used on clothing and it is important to follow label directions. People who suspect they may have been in chigger-infested areas should take a soapy bath or shower as soon as possible. This can often help dislodge mites from the skin. Anti-itch medications such as hydrocortisone can be applied to provide temporary relief from itching. The oft-mentioned 'remedy' of applying nail polish to welts to "suffocate" chiggers is ineffective and not recommended.

Controlling Chiggers Outdoors. Regular mowing and removal of weeds and brush make areas less suitable for chiggers and their animal hosts. Chigger populations can be further reduced by treating infested areas with insecticides. Sprays containing pyrethroid active ingredients permethrin, cyfluthrin, bifenthrin or lambda-cyhalothrin (e.g., Bayer Advanced Home/GardenJ Multi-Insect Killer, Spectracide TriazicideJ, Ortho Home Defense SystemJ) are effective. Such products are sold at hardware and lawn and garden shops. For better wetting and coverage of vegetation, it=s best to purchase these products as concentrates so that they can be diluted and applied with a hose end or pump-up sprayer. Applications should be thorough and applied at sufficient volume to wet overgrown vegetation along edges of property, walking trails, borders and fences. Treating lawns is of little benefit since mowed areas are not normally infested. One to two applications during late April/May and perhaps mid-summer is often all that's required.

SOME INSECTS ARE NUISANCES AROUND SWIMMING POOLS BUT CONTROL ALTERNATIVES ARE FEW
by Lee Townsend

Pools will attract certain aquatic insects every year but during dry periods the rush to water may bring in many seldom seen creatures. The most dramatic appearance so far has been thrips, tiny elongate yellow insects that were described on the accompanying Insect ID form as follows: *"These little biting things covered an aboveground pool and deck. They were so thick that you could wipe them off with your hand. They have a painful bite, children could not play in the pool for them."*

Thrips have shown up in these circumstances before, probably drawn to water and perhaps driven there from

nearby recently-cut hay fields. On normal days thrips use their abrasive mouthparts to rasp at plant tissue, especially flowers. However, they will scrape skin, perhaps as they attempt to pick up small amounts of moisture. An occasional thrips scrape probably is tolerable but lots of them do not add to the swimming experience. A strong jet of water may be used to plaster them to decks and other surfaces where they have accumulated.


Thrip

Honey bees need water to air condition their hive. They are able to communicate with hive mates and recruit increasing numbers of workers to a good water source. A small wading pool could be relocated if necessary but this is not an option with large pools. Usually, the bees are focused on their task and are not aggressive. Their presence may be disconcerting but if not disturbed, they should pose no problem. The occasional wasp may show up, too but they are less likely to bring help with them.

Several water bugs will come plopping into pools because they figure any water is fair game and some unlucky non-aquatic insects may fall in and be unable to escape. These can be taken out with a dip net.

Some persistent problems can develop around chronic wet areas. Springtails are particularly common in these situations. Correcting these wet areas should lead to the elimination of the infestation.

DIAGNOSTIC LAB-HIGHLIGHTS

by Julie Beale and Paul Bachi

Agronomic samples over the past week included deficiencies of magnesium, potassium and zinc on corn; Cercospora leaf spot on alfalfa; potassium deficiency on soybean; black shank, Pythium root rot, tomato spotted wilt virus, manganese toxicity and transplant shock on tobacco.

On fruit and vegetable samples we have diagnosed cedar-apple rust on apple; bacterial wilt on muskmelon and cucumber; bacterial canker, Sclerotinia stem rot (timber rot), Rhizoctonia root/stem rot, Fusarium wilt, early blight and magnesium deficiency on tomato.

On ornamentals we have seen Rhizoctonia stem/root rot on balloon flower and vinca; Pythium root rot on begonia; Sclerotinia stem rot on rudbeckia; spot anthracnose on dogwood; fire blight on serviceberry; black root rot and spider mite injury on holly; Botryosphaeria canker on ash; and herbicide injury on various landscape species.

INSECT TRAP COUNTS

UKREC, Princeton KY

Kentucky — Tennessee

June 8-15, 2007

►***Jackson, TN***

Black cutworm	12
True armyworm	25
Corn earworm	0
European corn borer	0
Southwestern corn borer	0
Fall armyworm	0

►***Milan, TN***

Black cutworm	0
True armyworm	0
Corn earworm	0
European corn borer	0
Southwestern corn borer	4
Fall armyworm	0

►***Princeton, KY***

Black cutworm	2
True armyworm	394
Corn earworm	20
European corn borer	0
Southwestern corn borer	0
Fall armyworm	1

►***Lexington, KY***

Black cutworm	84
True armyworm	669
Corn earworm	16
European corn borer	4
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.