KENTUCKY PEST NEWS

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TOBACCO

SYSTEMIC BLUE MOLD STILL IMPACTING CROP

By William Nesmith

Blue mold activity has declined sharply in all areas of Kentucky. Crop maturity, low relative humidity, and drought-stressed plants have greatly reduced the potential for new blue mold to develop. Low levels of activity continue in foggy sites and irrigated plantings. New activity is occurring as systemic infections of midribs and leaf veins. The only damaging cases of new activity reported the past two weeks involved over-fertilized, irrigated, late-set crops located in foggy river bottoms. The 1998 blue mold epidemic is over for most growers.

However, this crop is still sustaining damage from systemic stem infections of blue mold that happened earlier. Such damage is causing increased sensitivity to drought due to reduced root systems, especially in crops that sustained serious lower leaf blighting and systemic infection of the lower stem during the field epidemic in late June and July. This phase of blue mold is different from that occurring when systemically infected plants are set into the field or where systemic infections occur shortly after transplanting. The importance of this form of systemic blue mold was much under estimated in the 1995 epidemic when drought started in early July. Cuts need to be made into the lower stalk near dried leaves to reveal the systemic infections. Look for brown discolorations associated with the area between the "bark" and woody portions of the lower to mid stalk. Root systems are reduced significantly on plants with systemic blue mold and secondary stem cankers are often also involved.

Crops with systemically infected plants are also experiencing much more lodging, which is complicating late-season operations such as topping, sucker control, pest control, and harvesting. However, not all lodging is related to systemic blue mold, so the cut-stem examination method should be used in diagnostic efforts. Where lodging is related to systemic blue mold, plants have fallen in all directions at several different times as contrasted with lodging resulting from strong winds where fallen plants are all usually oriented in identical directions, initially anyway.
If black shank or soreshin are present in the crop, expect increased activity from either or both diseases as weakened plants are killed late in the season, further complicating the picture. Blue mold does not kill older plants, but it can greatly increase their predisposition to pathogens that do kill plants.

Increased incidence of bacterial soft rot and hollow

stalk rot of the lower stem are also associated with plants having systemic blue mold infection. The soft rot bacteria colonized the leaves and stems earlier during wet periods and during the past month have been entering the tobacco plant through wounds connected to systemic infections of midribs and lower stems. Most of this soft rot activity was initiated in late July during heavy rain events, even though most growers do not find it until they start harvesting and discover the slimy rotting lower stems during cutting operations. Recently I documented a 94% reduction in lower stem soft rot associated with plants having received a full season spray program with Acrobat MZ as compared with untreated checks. Housing of soft rotting tobacco could result in increased houseburn during curing, especially when placed in barns or sheds. Crops with systemic blue mold are better candidates for curing in outside structures where rotted plants or plant parts fall to the ground rather than dropping into lower tobacco and starting new soft rot activity.

CORN

POTENTIAL FOR AFLATOXIN IN CORN IS A MAJOR CONCERN
By Don Hershman

I have received a lot of phone calls recently from county ag agents and farmers asking me my thoughts on the potential for an aflatoxin contamination problem in corn in Kentucky. The concerns are based on reports from southern states where aflatoxin problems have been widespread. One common denominator in all areas where aflatoxin problems have arisen, is a hot, dry period during early grain fill. This is something we did not experience. In fact, most areas in Kentucky have experienced a net surplus of moisture until just recently. This fact, plus similar historical experiences, leads me to believe that the potential for a aflatoxin in Kentucky corn is not too great. Of course, very few corn acres have been combined as of this writing, so the jury is still out. But of those acres that have been harvested, I have not heard of a single incidence where aflatoxin levels were out of the acceptable range.

As further corn acres are harvested, I will keep you informed of any new developments. But remember, aflatoxin contamination can only be determined by specific tests run by qualified laboratories. The black light test only indicates the potential for aflatoxin contamination. As such, decisions about how to handle specific loads should not be based solely on black light test results.

SOUTHWESTERN CORN BORER UPDATE
By Ric Bessin

The third distinct moth flight of the season was recorded in Princeton last week. This means that the third generation larvae will soon be attacking corn. This generation will move to the bottom of the plant to overwinter . The larvae will girdle the stalk one to two inches above the soil line in September. Later planted fields will be more attractive to adults for egg laying, so they will be more likely to be damaged. In parts of the state where only two generations occur, the overwintering second-generation larvae do the same type of damage.

At this point, what can we do to control the larvae? Not much. Fields that were planted with full-season-control Bt hybrids should not sustain much damage. Insecticidal control at this point would not be a good decision, but identifying fields with the worst infestations and selecting them for the earliest reasonable harvest would be a good decision.

SOYBEAN

SOYBEAN INTERNET WEB SITES OF INTEREST
By Don Hershman

I have found that the internet is an extremely valuable resource which helps me in my daily chores as an extension plant pathologist. Many web sites have been developed which either provide information on specific soybean diseases and their management or they are gateways (links in the internet vernacular) to additional information which is available to computer savvy producers and others. I have listed, below, some of the soybean web sites which I have found to be very useful. One of the many different internet search engines, such as infoseek, lycos, or yahoo, can also be very helpful when you are looking for specific or general information on just about any agricultural related topic. A note of warning: not all web sites remain current and there are still big voids in information for a lot of soybean diseases. Most web sites will give a lot of general information, but finding exactly what you want may take a lot of time and patience. As far as being current is concerned, always look for the date the web site was last updated. This

information is invaluable in determining how much stock you should place in the information you have accessed.

Another caution concerns whether the specific information given fits Kentucky's soybean disease situation. In some cases, the specific disease management recommended may not be appropriate for our state, so compare the information found with that given in UK's publications. These web sites also provide much needed information on varieties and disease resistance, but often they do not include enough Group III maturity varieties, which is needed for Kentucky.

StratSoy: This is the Granddaddy of all soybean web link sites. It is the gateway to 667 soybean links a great wealth of soybean information. This site is a good place to start when you know what you are looking for, but aren't sure where to find it. All the web sites listed below can be accessed through StratSoy.

http://www.ag.uiuc.edu/~stratsoy/new/indexes/everything.html#GovernmentandPublicResources

Kentucky Soybean Association and Promotion Board : It has lots of local soybean information; what is going on and how checkoff dollars are being spent.

http://stratsoy.ag.uiuc.edu/~ky-qssb/welcome.html

University of Missouri: This site has great information on Phytophthora root rot resistance and tolerance for maturity group III-V soybean varieties.

http://www.missouri.edu/~moipm/prripm.html

Mississippi State University: This site has varietal information on Stem canker, Phytophthora Root Rot, and SCN, but it does not have any information on Group III varieties.

http://gopher.ces.msstate.edu:8070/departments/ppath/soybean/

North Carolina State University: This site has varietal information on Phytophthora root rot, SCN, and Frogeye leaf spot, but it does not have any information on Group III varieties.

http://www.ces.ncsu.edu/depts/pp/notes/Soybean/soy006/soy006.htm

Ohio State University: This site has resistance/tolerance information on Phytophthora Root Rot, but it does not have any Group V resistance/tolerance information..

http://www.ag.ohio-state.edu/~perf/soybean/index.html

University of Missouri: This site lists disease resistance for a large number of soybean varieties (all maturity groups) to SCN.

http://www.psu.missouri.edu/plantpath/soybean/sscnr.html

Southern Illinois University: This site has general information on Sudden Death Syndrome, including some resistant varieties. It also outlines traditional breeding strategies.

http://www.siu.edu/~soybean/sds.htm

GREEN STINK BUG IN SOYBEAN
By Doug Johnson

September marks the beginning of green stink bug damage in many Kentucky soybean fields. The bugs have been around for some time but the numbers are generally low and the stage of the beans not right for major damage. Late-planted beans are generally the ones in pod fill during this time of year, and should be examined first. Like the soybean podworm, stink bugs are not easily seen by casual examination. You must get into the field and look directly at the pods. Scout from late bloom (first pod set) through maturity, damage will decrease as plants begin to yellow.

Adults are ½ inch long, green insects with sucking mouthparts. The body is shield-shaped. Nymphs are wingless and quite variable in color. They are often black with patches of red. They tend to be more rounded than shield-shaped but when you see them you will recognize their overall similarity to the adults.

Stink bugs feed on beans in the pod. This causes discolored, shriveled beans. The hole caused by the puncture of their sucking mouth parts can allow for the entrance of plant disease organisms allowing for further damage and often pod abortion.

Scout by using a sweep net or a shake cloth. Stink bugs usually first appear in field margins and border rows. Choose the two field borders nearest woody vegetation in the field you initially sample with a shake cloth. Shake cloth—Take five samples along each of the two borders. Take samples at least 20 paces apart, and examine four row feet at each location. This is done by shaking two feet of row on each side of shake cloth. Record the number of stink bugs counted in each sample. Sweep Net —choose the same number and location of sample sites as with the shake cloth method. Then take 50 sweeps at each sample site. Again, record the number of stink bugs at each collected site.

Economic Threshold: Chemical treatment may be needed if shake counts average two stink bugs per four foot of row or 20 stink bugs per 50 sweeps. The shake cloth method is more accurate and is preferred. If insecticide treatment is warranted you may find products for use in ENT-13.

If you would like to know more about this and other soybean pests and beneficials check the publications listed below.

Other Sources of Information from Kentucky
IPM-3 Kentucky Integrated Crop Management Manual for Soybeans
ENT-13 Insecticide Recommendations for Soybeans

Additional References
Davidson, R. H.,; Lyon, W. F. Insect Pests of Farm, Garden, and Orchard. New York: John Wiley & Sons; 1979.
Higley, L. G.;Boethel, D. J., editors. Handbook of Soybean Insect Pests. Lanham, MD: Entomological Society of America; 1994.
Metcalf, R. L.; Metcalf, R. A. Destructive and Useful Insects. New York: McGraw-Hill, Inc. 1993.
Pedigo, L. P. Entomology and Pest Management. New York: Macmillan Publishing Co.; 1989.

WHEAT

WHEAT FOLLOWING CORN: TO TILL OR NOT TO TILL
By Don Hershman

Because of logistical reasons, most of the wheat in Kentucky is planted in fields behind corn. In the majority of those fields, the corn residue is disturbed by some sort of tillage operation prior to planting wheat. True conventional tillage (i.e., plowing and discing) is rare, but one to three discing operations is very common, and is often preceded by shredding or mowing of corn stubble in order to facilitate wheat planting.

There is a movement by the Kentucky Small Grain Growers Association to encourage more no-till wheat production in the state of Kentucky. To this end, the KySGGA Board of Directors has set a goal of 75% of the wheat acres in no-till production by the year 2005. Currently, only about 30% of the wheat in the state is planted following no-till practices. One of the obstacles to achieving the goal set by the KySGGA is the general fear, by producers, that head scab is enhanced by planting wheat, no-till, following corn. Opinions on whether of not this fear is justified are wide-ranging, but no data exists which either refutes or confirms the relationship between corn residue in a field at planting and subsequent head scab levels following wheat flowering in the spring.

The residue-head scab connection is, in fact, based on a biological reality that the head scab fungus, *Fusarium graminearum* (telemorph: *Gibberella zea*), affects both corn and wheat and that the fungus survives in corn residue. Most farmers are concerned that planting wheat into undisturbed corn residue will provide a large “crop” of spores of *F. graminearum/G. zea* and the result will be greater levels of head scab compared to where corn residue is “tilled”.

My observations over 14 years have not supported the fear of no-till wheat following corn. My opinion has been that widely scattered corn fields in Kentucky provide more than adequate spores of the head scab fungus, state-wide, and that the most significant variable is the weather in relation to crop flowering. Basically, if the weather favors infection by the head scab fungus and wheat is in a susceptible stage (i.e., flowering), than significant head scab will develop regardless of the previous crop or tillage . However, because of a general lack of field data on this question, I am unable to make a very strong case to support my opinions.

To address the lack of field data connecting corn residue with head scab in wheat, the KySGGA funded a head scab survey during 1997-98. The survey involved 99 fields. 83 of those fields were in 14 widely-scattered counties in Kentucky. The remaining 16 fields were in neighboring counties in Illinois, Indiana or Tennessee. Survey data were compiled by crop consultants with Miles OptiCrop

and WheatTech. Actual crop residue data were collected for each field in the fall following wheat planting operations, and head scab ratings were made in the spring using a standardized rating procedure.

The first-year results of the survey indicated a significant (P=<0.001), but relatively poor (R-square = 0.28), relationship between corn residue levels in the fall, and incidence and severity of head scab in the spring. Basically, there was a highly variable relationship between head scab and corn residue, which suggests that factors other than corn residue were more important in determining the level of head scab in a field. My opinion is that weather conditions at the time the wheat was flowering (which were not accounted for in the survey) probably played the greatest role in determining head scab levels. Plans are already underway to conduct a similar survey in 1998-99.

VEGETABLES

IT'S TIME TO CLEAN UP YOUR ACT
By Ric Bessin

With vegetable production winding down, now is the time to clean up these fields for next year. Early sanitation at this time of the year can (1) cause adult insect pests to move out of the field and (2) eliminate the food source for immature pests so that they cannot complete their life cycle. Keep in mind, that although it may not be profitable to continue to harvest some vegetables because of the low price in the market of the poor quality of this tail-end produce, it is still attractive to pests. Many of these pests that develop at the end of the season will be the early colonizers of fields next spring.

Several of the more serious insect pests such as European corn borer, squash vine borer, Mexican bean beetle, squash bug, diamondback moth, tobacco and tomato hornworm, cabbage looper, and imported cabbageworm are able to continue development on crop residues in the garden long after we take what we consider the edible vegetables. Other pests such as flea beetles can find food and shelter from weeds as well as crop residues throughout the winter. The two-spotted spider mites continue to feed on weeds after the crops have withered.

A thorough fall cleanup should help to discourage some of the pests that may cause problems next year. Commercially, fields can be disked to destroy crop residues. Home gardeners can compost or till these residues into the soil. It is important to keep in mind that this should not be just a fall practice to destroy crop residues, as soon as a crop has been harvested for the last time, clean up should begin, even if that is early summer for spring crops.

SHADE TREES AND ORNAMENTALS

WHY ARE TREES AND SHRUBS DYING IN THE LANDSCAPE?
By John Hartman and William Fountain*

County Extension Agents, professional horticulturists, and homeowners are concerned with recent observations of poor health and decline of landscape trees and shrubs. During recent weeks, we have made notice of and received reports and laboratory specimens of plants in diverse states of sudden wilting, dieback, decline, and death. What follows are commentaries that hopefully will describe or explain most of the woody plant decline being seen this summer.

• The causes for the problems are very diverse. Not all woody plant decline and the death we see this season is due to a single cause.

• Three weather events are playing a big role in the difficulties we see now: a) the March 12 freeze, b) the periods of excess rainfall we had in spring and lasting until mid July, c) the lack of rain and hot weather for the entire month of August.

• The March 12 freeze (single digit temperatures nearly statewide at a time when flowering pears and flowering crabapples were just opening their flowers) caused injury to and death of phloem and cambium tissues of twigs, branches, and possibly the trunk. This caused immediate death of many smaller twigs and branches and allowed invasion of injured phloem by opportunistic canker-forming fungi such as *Botryosphaeria*, *Cytospora*, and others. When additional stresses are placed on the plants (wet or dry weather this year), the cankers enlarge and stem, limb, branch, and twig dieback are the result. We are seeing this problem on maple, white pine, redbud, pyracantha, and many different shrubs. Many of the low-growing junipers died back extensively this spring and summer as a result of the freeze.
• Excess rainfall caused temporary flooding of soils in some parts of Kentucky in April, May, June, and

July. Since woody plant roots need air to function, excess moisture placed stress on these plants. Some woody plants relied on shallow root systems in order to survive. In addition, flooding affects root systems by making them more attractive to root rot-causing pathogens such as *Phytophthora*; moist soils are also favorable for fungal growth and development. Phytophthora root rot diseases were found in pines, maples, and flowering fruit trees and shrubs. In maple, a bleeding canker of the trunk and buttress roots associated with *Phytophthora* was found. Some rainstorms were accompanied by high winds, and if not toppling trees, may have further weakened root systems.

• Most areas of Kentucky have received little or no rain for the month of August. Hot, dry weather caught those plants relying on shallow root systems off-guard, and many are wilting because their roots can't keep up. In addition, cankers initiated by the spring freeze are enlarging during this period of tree or shrub stress, with the result that branches are dying back suddenly. Dry weather has affected all woody plants, some seriously.

• There are still many problems in the way trees and shrubs are planted and grown that are not directly related to the weather that are causing troubles in the landscape. A few brief examples include: a) Large numbers of woody plants were planted into compacted soils in Jefferson County (and elsewhere) and expected to survive. b) Several 4 or 5-inch hemlock trees were transplanted having 2-foot root balls (3 or 4-foot root balls are recommended) in Fayette County and expected to live. c) Self-girdling roots have "strangled" maples and other trees statewide. d) Construction activity injured roots of established trees in Daviess County. e) Unimproved, poorly drained soil was used for landscape plantings in Woodford County. f) Trees in many locations were planted too deep. The list could go on and on; these are just a few examples.

• Infectious diseases causing decline, dieback, and death were and are still active in landscapes. In addition to the cankers and root rots mentioned already, Verticillium wilt has been observed in maple, catalpa, redbud, and tuliptree. Trunk and root and butt rot diseases have been observed in oaks, black locusts, and many other plants. White pine root decline disease, white pine decline syndrome, Sphaeropsis tip blight, and pine wilt nematodes are still plaguing Kentucky pines. Chronic bacterial leaf scorch is causing twig and branch death. Juniper tip blight was active. Black root rot is causing dieback of holly shrubs. Although many of these infectious diseases were made worse by the weather, they often become serious problems even without unusual weather.

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FALL WEBWORMS
By Joe Collins and Lee Townsend

The fall webworms will feed on almost all shade, fruit and ornamental trees except for evergreens. In Kentucky some of the preferred trees include American elm, maples, hickory, and sweetgum.

Fall webworms construct their tents on the ends of branches and there is usually more than one generation each year. The caterpillars are an inch long, very hairy and pale green or yellow. They may have either a red or black head. The blackheaded larvae have black spots along their backs while the redheaded have orange to reddish spots. The blackheaded larvae will create a flimsy web while the redheaded makes a larger, more dense web.

When control is considered, such as on small trees or decorative plantings, the first choice of control is to destroy the tents. The best done around dusk or early morning when the larvae are in the tent. Don't burn the tents, the fire and intense heat will cause more damage to the tree than the caterpillars will. It is late in the season to spray but if a treatment is to be applied, use Bacillus thuringiensis (Bt) because of its safety and selectivity. The insecticide should be applied in the evening or early morning when the insects are in the nest. A high pressure spray may be needed in order to get the insecticide into the tents.

The caterpillars overwinter as pupae in cocoons that are hidden either in the bark of trees or in the soil. The moths emerge from mid-March to mid-late April.

HOUSEHOLD

THE YELLOWJACKETS ARE COMING

By Mike Potter

If you haven't already begun receiving calls about yellowjackets, you will shortly. During late-summer and fall, yellowjacket colonies are nearing maturity and huge numbers of workers are out foraging for food for the developing queens. With insect prey (their usual diet) becoming scarce, yellowjackets scavenge widely for other sources of nutrition. They're particularly fond of sweets, e.g., fruit, soft drinks, ice cream, beer, but will also feed on meats, potato salad, and just about anything we eat. The persistent foraging of yellowjackets at picnics and other outdoor activities prompts many calls from homeowners and businesses, wanting to know what can be done to alleviate the problem. Here are their options:

1. **Sanitation** - The best way to reduce the threat of foraging yellowjackets is to minimize attractive food sources. People eating outdoors should keep food and beverages covered until ready to be eaten. Spills and leftovers should be cleaned up promptly. Trash cans should be equipped with tight-fitting, preferably, self-closing lids. Similar sanitation recommendations should be made to commercial establishments, including ice cream parlors, outdoor cafes, and produce stands. Whenever possible, trash cans and dumpsters should be located away from serving tables, doors, and other high-traffic areas. Trash cans should be equipped with a plastic liner and emptied and cleaned frequently.

Maintaining high levels of sanitation throughout the summer will make areas less attractive to yellowjackets later in the fall. This strategy is especially useful for parks and other outdoor recreation areas. Apples and other fallen tree fruits should be raked up and discarded.

2. **Avoidance** - Combined with sanitation, avoidance is the best advice in most situations. Yellowjackets foraging away from their nests are seldom aggressive and usually will not sting unless provoked. People should resist the temptation to "swat" at the wasps; most stings occur when foragers are slapped or trapped against skin. *Be extremely careful when drinking from beverage cans into which a foraging yellowjacket may have crawled. Swelling resulting from a wasp sting inside the mouth can be life threatening.*

Avoidance may also be the best advice if a yellowjacket, hornet, or bumble bee nest is located in a tree or other out-of-the-way location. Yellowjacket colonies die off on their own in late autumn with the onset of cold weather. Abandoned nests are not reused and soon disintegrate.

3. **Repellents** - Standard mosquito repellents will not deter yellowjacket foraging, or reduce the chances of being stung. A dilute solution of ammonia and water (approximately 6 oz of ammonia per gallon of water), sprayed in and around trash cans and sponged onto outdoor eating tables will help to mask food odors and minimize attraction to these areas. Use household ammonia, not Clorox (bleach).

4. **Traps** - While only of marginal benefit, lawn and garden shops sell yellowjacket traps which catch impressive numbers of wasps when properly baited and positioned. Business establishments such as outdoor cafes may find such traps worthwhile when used in conjunction with sanitation and other approaches. Fruit juice or jelly has been an effective attractant. Placement should be around the outer perimeter of the area you wish to protect.

5. **Insecticides** - Elimination of yellowjackets is best accomplished by locating and destroying the nests. *However, with foraging yellowjackets this is often impractical since the nest, or nests, may be located several hundred yards away.* People still should inspect the area around their homes for nests. The best time to do this is during the daytime, when yellowjackets are entering and exiting the nest opening.

If the nest entrance can be located— typically underground in an abandoned rodent burrow, beneath rocks or landscape timbers, or in a stone wall or wall of a building — it often can be eliminated by applying an aerosol-type wasp and hornet spray into the nest opening. Insecticide dust formulations, e.g., Sevin, Ficam, Drione, are especially effective provided a hand duster or similar type application device is used to dispense several puffs of the dust into the nest opening. A dry, empty liquid detergent bottle filled no more than halfway with dust and shaken before dispensing works fairly well in lieu of a commercial duster. A few pebbles or marbles added to the bottom of the bottle prevents the dust from caking.

Treatment should be performed at night, when most of the yellowjackets are in the nest and less active. Pinpoint the nest opening during the daytime, so you will remember where to direct your treatment

after dark. Approach the nest slowly and do not shine the beam of your flashlight directly into the nest entrance as this may startle the wasps; instead, cast the beam to the side to illuminate the nest indirectly. If possible, place the light on the ground rather than in your hand. As with hornets, yellowjackets are extremely aggressive when the nest is disturbed. It's often prudent to refer homeowners to a professional pest control firm, particularly when access to the nest is difficult.

Wasp, hornet and yellowjacket stings can be life-threatening to persons who are allergic to the venom. People who experience extensive swelling, hives, dizziness, difficulty breathing or swallowing, wheezing, or similar symptoms of allergic reaction should seek medical attention immediately. Itching, pain and localized swelling can be reduced with antihistamines and an ice pack.

DIAGNOSTIC LAB-HIGHLIGHTS

By Julie Beale and Paul Bachi

We are seeing several disease problems on **soybean**, including **stem canker, sudden death syndrome, frogeye leaf spot, downy mildew and soybean mosaic virus.** On **corn** we have seen **gray leaf spot**. **Tobacco** diagnoses are slowing down and the harvest progresses, but we have still seen a number of cases of **black shank, blue mold** (much of it systemic) and the **virus complex.**

In the landscape, stress-related symptoms and transplant shock are common on woody plants, as well as a few cases of **anthracnose**--on **walnut, chestnut and maple**; **Verticillium wilt** on **maple**; **black root rot** on **holly**; and **Pseudonectria canker** on **boxwood**. **Turf** diseases have included **anthracnose, brown patch, gray leaf spot and summer patch**.

On fruits and vegetables we have seen **bitter rot** of **apple**; **powdery mildew, downy mildew, bacterial wilt and Fusarium crown and stem rot** on **pumpkin**; and **southern stem blight** on **pepper**.

INSECT TRAP COUNTS

August 14 - 20

Fall Armyworm 6
Corn Earworm 3
European Corn Borer 36
Southwestern Corn Borer 149

August 21 - 28

Fall Armyworm 0
Corn Earworm 5
European Corn Borer 16
Southwestern Corn Borer 183

Lee Townsend, Extension Entomologist