



KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • AGRONOMY

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APPROVED PESTICIDE TRAINING MEETINGS

The meetings listed below have been approved by the Division of Pesticides, Kentucky Department of Agriculture, for continuing education credit for commercial applicators in the listed categories.

Environmental Engineering Technical Services Training Seminars **Category 2B**
Sep. 22, Holiday Inn Airport, Pittsburg, PA
Sep. 28, Embassy Suites, Charlotte, NC
Oct. 2, Excelsior Hotel, Little Rock, AR
Oct. 8, Sheraton Inn (Bloomington) Minneapolis, MN
Oct. 13, Radisson Riverwalk Hotel, Jacksonville, FL
Oct. 27, Holiday Inn Airport Birmingham, AL
CONTACT: Tommy Kyzer 1-800-421-8661

Industrial Fumigant Co & Food Industry Sanitation Auditors Seminar, Oct. 6-7, Park Plaza, Atlanta **Category 8** CONTACT: Anita L. Reed (913) 782-7600

U of K Pest Control Short Course
Oct 6-8, Hyatt Regency - Lexington **Categories 8, 10**
CONTACT: Dr. Michael Potter (606) 257-7450

Oct. 19-22, Plant Operations Seminar, Atlanta **Category 2B** CONTACT: Esther Dunn (404) 363-8585

Oct. 20-21, Industrial Fumigant Co & Food Industry Sanitation Auditors Seminar, Four Points Hotel Pleasanton, CA **Category 8**
CONTACT: Anita L. Reed (913) 782-7600

Oct. 21-22, Training Course for Purchases Sellers, & Users of Treated Wood, Timber Products Inspection, Inc 1641 Sigman Road Conyers, GA
CONTACT: Elaine F. Bullock (770) 922-8000

Nov. 5-7, TCI Expo '98', Baltimore, MD **Category 3**
CONTACT: Robert Rouse 1-800-733-2622

Nov. 13-17, Professional Lawn Care Assoc., Opryland Hotel **Category 3** Nashville, TN
CONTACT: Thomas J. Delaney 1-800-458-3466

SOYBEANS

PREMATURE DEATH OF SOYBEAN COMMON

By Don Hershman

Producers rarely look closely at soybean this time of year; plants are shutting down and leaves are turning yellow and dropping as part of normal senescence, so usually there is not much to catch a producer's attention. However, if you take a close look at many fields this year, you will notice that leaf drop in many fields is not progressing normally. Basically, small to large areas of many fields have been prematurely killed as a result of

disease or other adverse conditions. The net effect of premature death has been that leaves have died on the plant and are being retained on the stem much like you would see if the plants had been prematurely killed by an early frost. Most fields I have been in which have this problem will not be greatly hurt by premature death since it appears to have happened very late in the season, well into physiological maturity. I believe the main effect will be to reduce seed size, but the ultimate effect of premature death will be variable between fields and will depend on extent and cause(s) of premature death in individual fields.

The following are some of the most common causes of premature death of soybean at this time :

Moisture deficiency: Many fields in west and central Kentucky received almost no rain during August and so far through September. Some areas of fields, especially hill ground and compacted areas along field edges, have completely run out of moisture. The situation has surely aggravated late-season problems in many fields. However, according to Jim Herbek, Extension Grains Specialist, drought in itself is not likely to cause leaves to die and be retained on plants. Rather, he has observed that moisture deficiency usually speeds up the process of leaf yellowing and drop from the stem.

Charcoal rot : Charcoal rot is caused by a very common soil fungus, *Macrophomina phaseolina*. Charcoal rot is usually most severe when mid- to late-season conditions are hot and dry. Of course, these are precisely the conditions experienced by many fields in August and early September throughout Kentucky this year. Normally, charcoal rot is not a widespread problem in Kentucky because we tend to have adequate soil moisture throughout the season. When charcoal rot does appear, it is usually first evident and most severe in the drought-prone areas of fields. However, it is not uncommon for large areas of fields to have a very high percentage of plants prematurely killed by charcoal rot. This is because the fungus is very widespread and all varieties are susceptible to infection. Thus, if the conditions are dry and irrigation is not possible, widespread disease can occur.

Plants prematurely killed by charcoal rot are easy to detect. Pull or dig suspect plants from the soil, and scratch the top of the tap root with the side of your thumb-nail. Plants with charcoal rot will have a

grayish coloration with very small black specks embedded in the diseased tissue. Above ground, plants will have dried leaves attached to the stem.

Stem Canker : I have indicated in a previous article that stem canker is very common this year. I believe this is primarily due to the widespread wet conditions we experienced throughout much of the state early in the season. Stem canker infection occurs during the early vegetative stages when moisture is sufficient and spores of the causal fungus are common. Infections then go dormant until the plants enter the reproductive stages. At that time, extensive cankers can develop and plants can be prematurely killed.

Plants killed by stem canker will not show evidence of root rot, but stems will have extensive canker development. The interior of severely cankered stems will be very deteriorated and will often be brittle. Cankers will frequently be present on one side of infected stems, but entire stems may show cankers. Minor cankers may be associated with leaf nodes. Prematurely killed plants are usually matted down and the dead leaves will remain attached to the plants.

Sudden Death Syndrome: SDS is common this year because of the excessive early season moisture and late-season plant stress. My observation is that SDS is the least common problem in fields at this time. Where it does exist, it is often present in hot spots ranging in size from 20-50 ft in diameter. Because SDS is caused by a root-infecting fungus, the disease is often most severe in compacted or low (i.e., wet) spots in fields. Late season stress encourages symptoms expression and premature plant death.

It is rather easy to determine which plants have been prematurely killed by SDS. First, the roots will be extensively rotted and if you look closely, you may see a sign of the causal fungus which will be evident as sapphire blue specks on diseased roots. Second, leaves of plants prematurely killed by SDS drop from the plant; this is in stark contrast to what you would see with either stem canker or charcoal rot. Plants prematurely killed by SDS have a very odd look because they have no leaves and few pods, so they have the appearance of groups of sticks instead of the fully podded plants, which you would hope to see. Finally, plants killed by SDS will show a gray-brown discoloration if you slice into the lower stem with a knife. Note that plants

affected late in the season by SDS may be fully

podded, but leaves will not be retained on plants.

In addition to the above, other factors, such as soybean cyst nematode, frogeye leaf spot, Cercospora leaf blight, pod and stem blight, anthracnose, Phytophthora root rot, and herbicide injury, are also present in many fields and may be contributing to the premature death problem. Don't rule out the possibility that several factors may be at work in a field at the same time.

VEGETABLES

BACTERIAL LEAF SPOT IN RESISTANT VARIETY

By William Nesmith

I have received several calls recently about bacterial leaf spot developing in bell pepper varieties resistant to this disease. Most of the calls have involved the variety Boynton Bell (resistant to race 1, 2, and 3), but some of the other resistant varieties have also been involved. In some cases, the true identity of the variety involved was still in question. Also, tests have not been completed to determine the race of the bacterium.

It is important that the race of bacterium be determined in cases involving bacterial spot resistant varieties, especially varieties with resistance to races 1, 2, and 3. So please submit samples to the Plant Disease Diagnostic Lab in Lexington if bacterial spot is active in a resistant variety. Avoid submitting wet samples, because it greatly complicates isolation of the true cause of the disease. Our lab is not specifically set up to determine the races of bacteria, but we will isolate the bacteria involved and insure it causes bacterial leaf spot of peppers, then some isolates will be sent to laboratories that specialize in race identification.

In most cases the caller has been very surprised when informed that they should expect bacterial leaf spot to appear in resistant varieties. However, this should not come as a total surprise, because we have recommended from the outset that resistance to this disease is race specific and that other races could and will appear. The unknown is when will it happen and how serious the problem might become, not if it will happen, because races for which these varieties are not resistant are known to exist. For example, race 4 was identified in Ky in 1996. Dr. Dave Richie at NC State University reports they have found both race 4 and 6 this year.

This is the reason we have recommended that growers not rely only on resistant varieties for control of this disease, but to keep the bacterial leaf spot control program (seed treatments and foliar sprays, etc.) in place with resistant varieties to control races of the bacterium not controlled by the variety.

FRUIT CROPS

APPLE WHITE ROT - THIS YEAR'S FRUIT DECAY

White rot appears to be the most prevalent apple fruit disease in Kentucky this late summer. This fruit decay, sometimes also known as Bot rot, is caused by the fungus *Botryosphaeria dothidea*. Like most apple fruit rot diseases, the fungus is also capable of infecting twigs and branches, causing reddish brown cankers.

White rot fruit symptoms. The fruit decay begins as small spots, but soon overtakes much of the fruit. On the surface of the fruit, an expanding, soft tan spot forms. The decayed interior consists of a soft, watery light tan rot which extends as a cylinder of decay all the way to and surrounding the core. Other common fruit rots such as black rot or bitter rot have a darker color, firmer consistency, or cone-shaped decay pattern. White rot infections developing during cool weather tend to be firmer and darker and may resemble the other rots some years. In Kentucky, our warm temperatures in late summer favored the softer, lighter colored decay symptoms.

White rot twig and branch symptoms. Branch and twig infections begin as small sunken discolored lesions surrounding lenticels or at the margins of wounds. The bark in the cankers becomes depressed as the cankers enlarge, and blister-like structures may appear. Branch and twig infections are most severe in hot, dry summers when trees are under drought stress. In older cankers the outer bark becomes orange and papery and canker margins become cracked. Tiny, dark fungal fruiting structures may form in the cankered area. Infected branches and mummified fruits left in the tree will become a source of fungal inoculum for infections the next year.

Disease development. During the growing season, ascospores and conidia are not only produced in cankers, dead twigs and branches in the apple tree,

but also in dead twigs and branches of many species of landscape or forest trees that might be growing nearby. The spores are carried by air currents or splashed by water to other weakened branches or to the fruit. Fruit infection can occur throughout the season in as few as 2 to 4 hours under warm conditions. Rot symptoms usually do not develop until fruit begin to ripen, when soluble solids reach about 10%. Orchards with heavy fruit infections very likely have a problem with dead, canker laden twigs and branches in the orchard.

Control. Pruning out dead spurs, twigs, and branches from the orchard is essential for control. The white rot fungus also rapidly colonizes fire blight-infected branches, so they need to be removed as well. Sanitation should also include removal of mummified fruit each year. Apple trees must be irrigated during drought periods. Full season fungicide spray programs containing captan plus either benomyl or thiophanate-methyl can prevent white rot and other fruit decays.

HOUSEHOLD

HOW TO PEST-PROOF YOUR HOME

By Mike Potter

According to a statewide poll of Kentucky householders, 93% expressed concern over finding insects inside their home. More than half indicated that a *single* cockroach, cricket, or spider would prompt them to use a can of bug spray or call an exterminator. What many people do not realize, however, is that most 'pests' discovered indoors have flown or crawled in from outdoors. One of the best ways to limit unwanted intrusions by insects, rodents, birds, squirrels and other pests is to deny them entry—a procedure known as *pest proofing*. Many pests seek refuge in homes and buildings in response to changes in weather, such as extended periods of rain or drought, or the onset of cooler autumn temperatures. Taking steps to block their entry *before they end up inside* can greatly reduce the chances of future sightings.

Outlined below are six useful tips for pest proofing one's home or place of business. Steps 1-3 will also conserve energy and increase the comfort level during summer and winter. Equipment and materials mentioned can be purchased at most home improvement or hardware stores.

1. *Install door sweeps or thresholds* at the base of all

exterior entry doors. While laying on the floor, check for light filtering under doors. Gaps of 1/16" or less will permit entry of insects and spiders; 1/4"-wide gaps (the diameter of a pencil) are large enough for entry of mice; 1/2" gaps are adequate for rats. Pay particular attention to the bottom corners as this is often where rodents and insects enter.

Apply caulk (see #3 below) along bottom outside edge and sides of door thresholds to exclude ants and other small insects. Garage doors should be fitted with a bottom seal constructed of rubber (vinyl seals poorly in cold weather). Gaps under sliding glass doors can be sealed by lining the bottom track with 1/2 to 3/4 inch-wide foam weatherstripping.

2. *Seal utility openings* where pipes and wires enter the foundation and siding, e.g., around outdoor faucets, receptacles, gas meters, clothes dryer vents, and telephone/cable TV wires. These are common entry points for such pests as rodents, ants, spiders and yellowjackets. Holes can be plugged with caulk, cement, urethane expandable foam, steel wool, copper mesh, or other suitable sealant.

3. *Caulk cracks around windows, doors, fascia boards, etc.* Use a good quality silicone or acrylic latex caulk. Although somewhat less flexible than pure silicone, latex-type caulks clean up easily with water and are paintable. Caulks that dry clear are often easier to use than pigmented caulks since they don't show mistakes.

Buy a good caulking gun. Features to look for include a back-off trigger to halt the flow of caulk when desired, a built-in "slicer" for cutting the tip off of new caulking tubes, and a nail for puncturing the seal within. (Hardware stores sell guns with these features for less than \$10.00.) Prior to sealing, cracks should be cleaned and any peeling caulk removed to aid adhesion. For a professional look, smooth the bead of caulk after application with a damp rag or a moistened finger.

4. *Repair gaps and tears in window and door screens.* Doing so will help reduce entry of flies, gnats, mosquitoes and midges during summer, and cluster flies, lady beetles, and other overwintering pests in autumn. Certain insects, in particular leafhoppers and hackberry psyllids, are small enough to fit through standard mesh window screen. The only way to deny entry of these tiny insects is to keep windows closed during periods of adult emergence.

5. Install 1/4-inch wire mesh (hardware cloth) over attic, roof, and crawl space vents in order to prevent entry of birds, bats, squirrels, rodents, and other wildlife. Be sure to wear gloves when cutting and installing hardware cloth, as the wire edges are razor sharp. Invest in a chimney cap to exclude birds, squirrels, raccoons and other nuisance wildlife.

6. Consider applying an exterior (barrier) insecticide treatment. While sealing is the more permanent way to exclude pests originating from outdoors, comprehensive pest-proofing is labor-intensive and sometimes impractical. For clients requiring an alternative, pest proofing can be supplemented by an exterior treatment with an insecticide. Homeowners will get the most for their efforts by applying longer-lasting liquid formulations containing synthetic pyrethroids (e.g., Spectracide Bug Stop™, Ortho Home Defense System™) or microencapsulated, slow-release Dursban, sold at hardware/lawn and garden shops.

Apply with a pump up sprayer, hose end sprayer, etc., treating at the base of all exterior doors, garage and crawl space entrances, around foundation vents and utility openings, and up underneath siding. It may also be useful to treat around the outside perimeter of the foundation in a 2 to 6-foot-wide band along the ground, and 2-3 feet up the foundation wall.

Clients who choose not to tackle these activities may wish to hire a professional pest control firm. Many firms are beginning to offer pest proofing as an adjunct to other services. When all else fails, a vacuum cleaner or broom is often the best response to the occasional bug that wanders in from outdoors.

PLANT DIAGNOSTIC-HIGHLIGHTS
by Julie Beale and Paul Bachi

In the diagnostic laboratories, we are seeing typical late season problems of corn and soybeans, such as *Stenocarpella* (formerly *Diplodia*) ear rot and *Gibberella* stalk rot of corn; and brown spot (*Septoria*), frog-eye (*Cercospora*), stem canker, sudden death syndrome, soybean cyst nematode and nutritional problems on soybean. Although much of the tobacco crop is in the barn at this point, we are still seeing a few cases of black shank and systemic blue mold (severely stunted plants).

Landscape plants are showing the effects of drought in many areas as foliage on many woody plants

browns and begins to drop prematurely. In addition to this stress, we have diagnosed black root rot of holly; *Botrytis* blight of giant Sequoia; bacterial scorch of oak; and rose mosaic virus of rose. Commercially grown mums have been diagnosed with *Septoria* leaf spot, *Rhizoctonia* stem rot, and various nutritional problems.

On vegetables, we have seen sunscald on tomatoes (lesions often colonized by secondary fungi); *Alternaria* fruit rot on pepper; wirestem (*Rhizoctonia*) and *Alternaria* leaf spot on broccoli; and bacterial wilt on watermelon.

INSECT TRAP COUNTS

August 28-September 4

Fall Armyworm	2
Corn Earworm	3
European Corn Borer	9
Southwestern Corn Borer	91

September 4-11

Fall Armyworm	36
Corn Earworm	3
European Corn Borer	2
Southwestern Corn Borer	8

Lee Townsend, Extension Entomologist

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