



KENTUCKY PEST NEWS

ENTOMOLOGY & PLANT PATHOLOGY & WEED SCIENCE

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PESTICIDE TRAINING MEETINGS

Here are some educational meetings that have been approved for continuing certification credit in various categories. A complete listing is available at the Kentucky Department of Agriculture web site at www.KYAGR.COM/index.htm

Nov 5 - 8 - Categories 3, 10, and 12 2001 Ky Turf Council Conference and Show, Bowling Green Convention Center, Bowling Green, KY David Williams (859) 257-2715 Initial training and testing 1 pm - 5 pm Nov 6.

Nov 15 - Categories 6, 10, and 12 Ky Arborists Meeting, Holiday Inn Cincinnati Airport, Erlanger, KY Gary Ressler (800) 616-4221

***Nov 29 Categories 1, 10, and 12** Annual CCA Meeting, UK Research and Education Center, Princeton, KY (approval pending as of publication date)

Dec 6 - Categories 3, 10, 12 Turf and Ornamental Pest Training, Fayette Co Extension Office, Lexington. (9 am - 3:30 pm). There is limited seating at this location; call the extension office, (859) 257-5582, to register. (Certification testing may not be available following this meeting.)

***Dec 6-7 - Categories 1, 10, 12** Kentuckiana Crop Production Seminar, Executive Inn, Owensboro, KY (approval pending as of publication date)

Dec 12 - Categories 1, 3, 10, and 12 Pesticide Certification Training, Agriculture Building, Morehead State University, Morehead, KY (9 am - 3:30 pm) Darlene Thorpe (859) 257-5955 (Certification testing may not be available following this meeting.)

TOBACCO

BLUE MOLD OOSPORES NOT FOUND DURING THE NATIONAL SURVEY by William Nesmith

The Eastern Regional Office of USDA APHIS PPQ, in Raleigh, NC notified states on October 23 that the Blue Mold Oospore Survey had been completed. This survey was in support of efforts to export US-grown flue cured and burley tobacco to The Peoples Republic of China. There were 152 counties surveyed representing 185 tobacco producing counties in the states of Indiana, Kentucky, North Carolina, Ohio, South Carolina, Tennessee and Virginia.. Kentucky contributed 80 counties to the national survey, more than any other state, but that was necessary due to the pattern of the epidemic in Kentucky during the 2001 season.

All assays, from all states and counties surveyed, were negative for oospores of the blue mold pathogen. These data should be of significant value in the trade of US-grown tobacco with China.

CORN

BT CORN UPDATE

by Ric Bessin

The five-year EPA conditional registration for Bt corn expired in September of 2001. Prior to the expiration, the EPA had requested a number of additional studies to be conducted to evaluate environmental and food safety concerns about Bt corn. The EPA conducted an extensive review of all Bt plant incorporated protectants (PIP's) has granted a new conditional 7-year registration for Bt corn. They have also granted a new 5-year conditional registration for Bt cotton. Based on the information available, the EPA has concluded that these Bt-protected crops are safe to the environment and consumers.

It's unusual to see such a controversy in agriculture as brought about by a paper in the journal *Nature* in 1999. This paper alerted us to the potential threat to monarch larvae caused by pollen drifting from Bt corn. Prior to this, many had thought of Bt corn as a high selective, precisely targeted tactic. It would only affect larvae of Lepidoptera and only those that fed on corn. But we learned from this study that Bt corn does share one unwanted characteristic of some types of pesticide applications, pesticide drift. The protein that kills caterpillars is in the pollen and it can drift onto other plants. Insects that don't feed on corn may also be exposed to the Bt toxin. But this laboratory study never addressed the risk posed by Bt corn in the field to monarch populations. Since then, environmentalists and government regulators called for more detailed studies to evaluate the environmental impact of Bt corn. Entomologists in several states and Canada responded by conducting extensive lab and field studies to study its impact on monarch and black swallowtail larvae. The Proceedings of the National Academy of Sciences recently published a set of six scientific papers in their October 2001 issue that address the Bt corn pollen and monarch caterpillar controversy. These papers critically evaluate the potential for impact of Bt corn pollen on monarch populations. They summarize much of the work that has been conducted on this issue.

The studies concluded that Bt protein expression in corn pollen in commercial lines greatly varies among events, but is generally low. Only pollen from event 176 consistently affected monarch larvae at levels that are encountered in the field. Bt pollen from the other commercialized events, Bt11 and Mon810, should have no acute effects on the monarch larvae under field conditions. Event 176 is commercialized under the trade names of NatureGard and Knock Out. Events Bt 11 and Mon810 are sold as YieldGard. Currently, corn hybrids derived from event 176 make up only a small fraction of the Bt corn acreage and that event will likely be phased out by 2003.

These studies also noted that for monarch larvae to be exposed to the Bt toxin, the larvae must be feeding on the milkweed in or next to corn fields during or immediately following pollen shed in corn. But monarch feeding is not synchronized with pollen shed in corn. Only a small fraction of the larvae are feeding during pollen shed and the overlap between pollen shed and monarchs is greater in the north than in the south. In southern corn belt states there will be little overlap.

Other factors that limit the effect of Bt corn on monarch populations are 1) only a fraction of the larvae feed on milkweed in or adjacent to corn fields and 2) a Bt corn is grown on only 19% of the acreage in the corn belt. Overall, the probability monarch butterfly larvae being exposed to dose of Bt pollen that would cause an observable effects would be only 8 out of 1000. These papers conclude that potential effects of current Bt corn hybrids to monarch populations to be negligible.

SOYBEANS

LATE-SEASON SOYBEAN CONCERNS

by Don Hershman

The end of this season has brought about two major soybean "disease" concerns which I would like to discuss briefly.

The most widespread concern appears to be what is commonly referred to as "Green Stem" or more precisely, "Green Stem Syndrome". This syndrome has become a major concern throughout the Midwest and is not just limited to Kentucky. The name "green stem syndrome" is fairly descriptive of symptoms associated with the syndrome: that is, that stems of some to many plants in a field do not mature normally and retain a green coloration. In some cases affected plants retain their leaves, even though pods may be mature and ready to harvest. In some cases, pods are also affected and may be distorted with a reduced number of seed per pod; pods may also be very slow to mature. Plants exhibiting symptoms of green stem syndrome at harvest time are in stark contrast to unaffected soybean plants which have dropped their leaves prior to harvest and are devoid of green color. The net effect for producers is that harvest is significantly slowed because of green stems and leaves, and grain yield is reduced due to a reduction in seed numbers and lack of seed maturity at the time of harvest. If harvest of a crop is delayed until plants with green stem syndrome are ready to harvest, shattering of seed from unaffected plants is often a problem due to delayed harvest. Seed quality problems can also develop, again the result of delayed harvest of plants affected by green stem syndrome.

The reason this problem is called a syndrome is because

the symptoms expressed are highly variable and no one causal factor results in green stem syndrome. A common denominator in many fields appears to be virus infection. We conducted a soybean virus survey during 2001 and determined that a severe strain of Bean Pod Mottle Virus (transmitted by bean leaf beetles) was extremely common in many fields state-wide. Soybean mosaic virus (transmitted by aphids and in seed) was also present to a very limited extent. Nonetheless, all scientists agree that not all fields with green stem syndrome are affected by virus. Similarly, not all plants with virus develop green stem syndrome. Obviously, other factors which have yet to be accurately determined, are also involved with green stem syndrome beside virus.

Agronomists have identified certain agronomic factors which may contribute to green stem syndrome. These include soybean variety, delayed canopy closure due to wide row spacing, low soil moisture conditions, low plant populations, and delayed canopy development due to herbicide injury and perhaps certain root diseases. Until the exact cause(s) of green stem syndrome is (are) identified, the syndrome will continue to be a problem. The good news is that because green stem syndrome has now reached a "critical mass" as a problem, many scientists are now working on unraveling the nature and management of the problem. I anticipate that significant progress on managing green stem syndrome will take place within the next few years.

The other serious concern at the end of the 2001 season has been charcoal rot, caused by the soil-borne fungus, *Macrophomina phaseolina*. This disease organism is very common in fields where soybean, corn and/or grain sorghum have been produced on a regular basis. These crops are all excellent hosts of *M. phaseolina*. We typically see the most serious problems with charcoal rot during drought seasons. However, during drought years, most producers overlook the fact that charcoal rot is also present and focus exclusively on the lack of soil moisture as being the cause of crop failures. The fact is that in drought years, both charcoal rot and lack of soil moisture usually interact to result in seriously reduced grain yields.

Although the 2001 season was not considered to be drought season, there were many fields that were very dry at some point during the season. Typically, we see the most serious problems with charcoal rot when soil moisture is lacking in the latter part of the growing season. This was also the case this year. The most common consequence of charcoal rot is the premature killing of plants and an associated reduction in seed numbers. Shattering is also a problem in affected fields because of delayed harvest of the prematurely killed plants. Diseased plants are very brittle and roots are rotted. The internal tissues of diseased roots and stems will have a gray coloration and there will often be wavy black lines throughout the diseased stem tissues.

This season, we also saw signs of the charcoal rot fungus on harvested seed. The result was what has been referred to as "black seed". This black seed situation is something which I had not seen before. Obviously, weather and crop conditions favored movement of the fungus into the pods and resulted in black and shriveled seed on many affected plants. Some fields have been reported to have a high incidence of black seed this season. I have observed a few seed samples that had 1-5% black seed.

Charcoal rot is a difficult disease to control in dry years and it is a non-factor in non-dry years. There is little to no true resistance to charcoal rot available at this time, but selecting varieties that hold up well under dry soil conditions may help considerably. Crop rotation is of little benefit in most grain producing operations since the disease organism is maintained on corn as well as soybean. Any cultural practice which limits soil moisture loss and drought stress will greatly help to limit problems with charcoal rot. No-till soybean production, for example, may be an excellent way to retain soil moisture and reduce problems with charcoal rot. Timely irrigation, where possible, would also be an excellent charcoal rot management tool. Narrow row soybean production may help due to more rapid canopy closure and, thus, soil moisture retention. Lower plant populations have also been shown to help reduce the impact of charcoal rot in a few studies. Finally, using planting date and variety maturity combinations which result in crops which avoid being in the latter reproductive phases during the driest part of the summer may also help to reduce charcoal rot severity.

FRUIT CROPS

MORE ON PIERCE'S DISEASE SYMPTOMS by John Hartman

Grape growers can be looking for symptoms of Pierce's disease in their vineyards now. Although the leaf scorch typically associated with the disease is presently masked by frost and late-season senescence, there are two symptoms that should be highly visible now.

- Leaf blades will be dropping from the vines leaving their petioles behind. Thus, the vine hanging on the trellis may have rows of leaf petioles still attached, an unusual sight.
- Young shoot growth will show alternate brown and green areas along the stem. It resembles a striping effect of alternating green and brown with the green primarily at the nodes and the brown in the internodes.

Growers and agents are urged to examine their local vineyards now for these symptoms. Let your County Extension Office know if these symptoms exist and prepare

to submit specimens to us for testing for Pierce's disease. This effort will be a great help to our Extension educational efforts in combating this serious disease of grapes.

SHADE TREES & ORNAMENTALS

PREVENT TULIP AND DAFFODIL DISEASES NOW

by John Hartman

Tulips and daffodils are planted in fall with the expectation that they will provide a colorful show in spring. Tulip and daffodil bulbs are fleshy structures, and are subject to decays caused by fungi, nematodes, and bacteria. Recognizing diseased bulbs and using control measures now are important to producing healthy plants and flowers in spring.

Diseases of tulip and daffodil bulbs include basal rot, caused by *Fusarium oxysporum*; black slime (black rot), caused by *Sclerotinia bulborum*; blue mold, caused by species of *Penicillium*; and crown rot (southern wilt), caused by *Sclerotium rolfsii*. Various nematodes can cause discolored patches and a soft and spongy decay of the bulbs as well.

The following are suggestions for control of tulip and daffodil bulb rots.

- Buy bulbs from a reliable source.
- Use crop rotation in the flower beds.
- Plant in a cool, well-aerated and well-drained soil.
- Do not use excessive amounts of nitrogen, phosphorus, or organic matter.
- Avoid unnecessary injury to bulbs before planting.
- Sort through the bulbs and discard those that are partly decayed. Look especially at the neck and basal areas of the bulbs. Healthy tulip bulbs immersed in water will sink, decayed bulbs will float. If this method is used for sorting, the bulbs must be treated with fungicide such as thiophanate- methyl after dipping, because dipping spreads fungal spores from diseased to healthy bulbs.

PESTICIDE NEWS AND VIEWS

PESTICIDE SAFETY AND SITE SECURITY

The Environmental Protection Agency is issuing this Alert to all pesticide industry organizations, facilities, and handlers as a precaution during this heightened state of security awareness. This Alert highlights some general security areas that companies may want to review to ensure that appropriate measures are being implemented. EPA's Office of Pesticide Programs has developed this tailored summary of the Agency's Chemical Safety Alert entitled, "Chemical Accident Prevention: Site Security,"

which outlines measures to ensure secure and accident-free operations. Published in February 2000, the more detailed Chemical Safety Alert is available on the Web at: www.epa.gov/swercepp/p-small.htm#alerts.

It is important that all pesticide establishments review this information and take appropriate steps to minimize risk. This document does not substitute for EPA's regulations, nor is it a regulation itself. It cannot and does not impose legally binding requirements on EPA or the regulated community, and measures it describes may not apply to a particular situation based upon circumstances. The Agency may continue to provide further guidance in the future, as appropriate.

Knowing and Understanding Potential Security Threats

Businesses that manufacture, reformulate, sell, distribute, transport, store, or apply pesticides have long known the importance of risk mitigation steps for the safety of their workers, their customers, and their communities. For manufacturers and reformulators, efforts focus on ensuring that the facility is operated safely on a day-to-day basis. Manufacturers must use well-designed equipment, conduct preventive maintenance, implement up-to-date operating procedures, and employ well-trained staff. Those who distribute pesticides have focused on safe storage and accurate labeling of their products. For the pesticide user community, safety efforts have focused on strictly reading and following all label directions. Today, these efforts aren't necessarily enough.

While many of the steps to ensure an effective security program seem routine, they are critical to the health and safety of your business, facility, and community. Without effective security procedures, your business may be vulnerable to both internal and external threats, posing risks to yourself and employees, your building and machinery, stored pesticides, and even sensitive business information. If you have mobile pest application equipment, particularly aerial application equipment, special precautions should be taken to protect both your equipment and the surrounding community.

Recommended Considerations in Evaluating Pesticide Security

The security needs and critical control points will differ for every business and facility. However, some of the fundamental security control points include:

! **Securing Buildings, Manufacturing Facilities, Storage Areas, and Surrounding Property:** One of the most fundamental security needs is the prevention of intrusion to areas used to manufacture or store pesticides and other toxic chemicals. Elements of an effective security plan can

range from basic fencing, lighting, and locks, to intrusion detection systems, cameras, and trained guards. For more information on basic tips on protecting your site, review EPA's report AChemical Accident Prevention: Site Security" listed below in the section entitled "For More Information."

! Securing Pesticide Application Equipment and Vehicles: Facilities and pesticide businesses should ensure that they have appropriate security protections to prevent intruder access to equipment used in mixing, loading, and applying pesticides. Before operating pesticide application tools and vehicles, handlers must have proper authorization and identification.

! Aerial Application Equipment: Security awareness is particularly important for large-scale pesticide application equipment like aircraft and large trucks. The FBI has requested that aerial applicators be vigilant to any suspicious activity relative to the use, training in, or acquisition of dangerous chemicals or airborne application of same, including threats, unusual purchases, suspicious behavior by employees or customers, and unusual contacts with the public. Any suspicious circumstances or information should be reported to the FBI.

! Protecting Confidential Information: As business, safety, and security systems become more reliant on computer and communications technology, the need to secure these systems has grown. Such efforts include contingency planning for power losses, effective monitoring of access ports, adherence to password and backup procedures, and other mechanisms to maintain access for authorized personnel only.

! Designing Facilities and Equipment to Minimize Risk of Damage: Whether an intrusion to a computer by a hacker or a physical intrusion of your facility by a vandal or saboteur, it is important to take steps to minimize the extent of damage. For example, in order to prevent damage, the use of sturdy, reliable, and potentially blast-proof materials is essential in the construction of equipment used to transport and apply pesticides.

! Developing Procedures and Policies that Support Security Needs: Even the best hardware and staffing budgets are only as effective as the procedures and policies that control their use.

Effective hiring and labor relations policies are important to obtain and retain good employees who will support and follow safety precautions. For example, the hiring process should ensure that pesticide handlers have all requisite training necessary to handle pesticides safely. Background checks of staff who have access to secure areas, particularly those areas where pesticides may be stored, are also necessary.

Inventory management policies can help limit the amount of potentially hazardous pesticides stored on site, reducing the risks of accidental or intentional release or theft.

Effective advance emergency response procedures can be critical, helping ensure that business officials and employees understand how to respond and whom to contact in the case of an emergency. Aside from accidents, such plans must also consider vandalism, bomb threats, and potential terrorist activity.

Timely Coordination With Authorities

If a breach of security or suspicious activity does occur, timely cooperation authorities is crucial. In addition to cooperation with your local police department, the FBI requests that you expeditiously report any threats or suspicious behavior to your local FBI field office. These agencies also must be informed if, as a registrant, you are made aware of any reports of adverse exposure under circumstances that are incongruous with your pesticide product's normal use pattern. Information on the location of the appropriate FBI office is available at www.fbi.gov.

For More Information

EPA and other Federal agencies have developed a variety of reference materials that may be helpful in reviewing the security of your business or operation.

Many of the tips listed in this fact sheet are described in more detail in the Chemical Safety Alert entitled: AChemical Accident Prevention: Site Security,@ published by EPA on February 2000 and available on the EPA Web site at: www.epa.gov/swercepp/p-small.htm#alerts.

For information on other Agency programs to promote facility security and readiness, visit <http://www.epa.gov/swercepp/>.

DOT has produced a separate advisory for transporters, available by contacting DOT at 202-366-6525. For objective science-based information about a variety of pesticide-related subjects, including pesticide products, recognition and management of pesticide poisonings, toxicology, and environmental chemistry, contact the National Pesticide Telecommunications Network (NPTN). NPTN, a toll-free hotline funded, in part, by EPA, lists state pesticide regulatory agencies and provides links to their Web sites. NPTN can be contacted at: 1-800-858-7378, by e-mail at nptn@ace.orst.edu, or by visiting the Web at: <http://ace.orst.edu/info/nptn/>.

DIAGNOSTIC LAB HIGHLIGHTS
by Julie Beale and Paul Bachi

Diagnostic lab samples for the two weeks of October 15 through October 26 have included ear rot and stalk rots (Stenocarpella), gray leaf spot, and southern leaf blight on corn; charcoal rot and frogeye leaf spot on soybean; frogeye leaf spot on tobacco; Pythium root rot on poinsettia; boron deficiency on pansy; Rhizoctonia root/crown rot on daylily; dollar spot on bentgrass; Phomopsis twig blight and normal leaf drop on arborvitae; Pseudonectria canker on boxwood; bacterial leaf scorch and Hypoxylon canker on oak; Sphaeropsis tip blight on pine; and black spot and rose rosette virus on rose; wirestem (Rhizoctonia) on broccoli; black rot (Xanthomonas) on cabbage; Phytophthora blight and bacterial canker on pepper; and boron deficiency on turnip.

NOTE: Trade names are used to simplify the information presented in this newsletter. No endorsement by the Cooperative Extension Service is intended, nor is criticism implied of similar products that are not named.