ANNOUNCEMENTS

COMMERCIAL PESTICIDE TRAINING MEETINGS

The most complete and up-to-date listing of meetings approved for continuing education for certified commercial pesticide applicators (CEUs) is posted at
www.kyagr.com/enviro_out/pesticide/programs/testing/CEUlistAG.htm

Meetings for Pest Control Operators are listed at www.kyagr.com/enviro_out/pesticide/programs/testing/CEUlistPCO.htm


ALFALFA

MILD WINTER TEMPERATURES CAN MEAN EARLY WEEVIL FEEDING by Lee Townsend

Temperatures in the 50’s and 60’s have allowed normally inactive alfalfa weevils to move about and lay eggs when they should be lying inert on the ground. This makes it more important to check established alfalfa fields for early tip feeding damage this spring.

After dispersing to spend the hot summer months hidden under leaf litter and surface debris, weevils return to alfalfa fields in the fall. Usually, temperatures drop and the small snout beetles are inactive until spring. When temperatures climb above 48°F, females begin to lay their eggs in live and dead alfalfa stems. Normally, this means that most of the eggs are laid in the spring with feeding damage first appearing in late April or early May. When conditions allow a significant amount of winter egg-laying, then damage can appear earlier than we are accustomed to seeing, especially on south-facing slopes.

A degree day (dd) forecasting system helps to keep field checks on track. The first field visit should be made when the accumulation for your area reaches 190. This information is available from your county extension office. In most years there is little feeding to find until later in the season. There are two important dd accumulations to watch the 275 to 325 dd range is when damage from winter-laid eggs should be evident. The 375 to 575 dd range is when larvae from spring-laid eggs will be near their feeding peak.

Winter grazing can allow cattle to remove 50% or more of weevil eggs but the ground must be hard and dry so that plants are not injured. Unfortunately, weather patterns that allow egg-laying often are not conducive to winter grazing.
CORN

ROTATING CORN FOR INSECT MANAGEMENT
by Ric Bessin

To rotate or not to rotate. This is a question that many growers are asking. Corn prices and soybean prices remain volatile and soybean rust is now a concern. Many are considering having more corn follow corn than they have in the past. But a question that growers should ask themselves is, how will this impact insect pest management for 2005? As always, crop rotations and planting dates will, in part, be a major determining factor for certain insect pest problems this year.

Corn growers that have been growing corn continually on the same ground should watch for western or northern corn rootworms. Throughout the state, the spotted western corn rootworm is much more common than the spotless northern. Typically crop rotation is the most effective means of controlling these pests. Eggs laid in last summers corn fields will hatch in late spring and the larvae will feed on the root systems of corn plants. Generally, keeping a field in corn a second year only increases the potential for rootworms slightly. But each year a given field is kept in continuous corn, the risk of economic losses to corn rootworms increases.

So how do you decide if you need to control corn rootworms in your corn this year? You are advised to use a rootworm seed treatment (Cruiser Extreme Pak Rootworm, Poncho 1250, or Prescribe), a soil insecticide at planting, or plant Bt-rootworm corn (YieldGard Rootworm or YieldGard Plus) if you are growing continuous corn and you noticed an average at least of one beetle per plant last summer. In fields where something other than corn was grown last year, no control is needed for rootworms.

If a soil treatment will be used, planters will need to be calibrated next spring soon. During calibration, the equipment should be examined and repaired as necessary. There are liquid and dry insecticide alternatives that are very effective against corn rootworms. Bt-corn hybrids that protect against corn borers only will not provide any control of corn rootworms, be sure to use the proper type of Bt corn to match the protection needed. Seed treatments can be convenient in that no calibration is need and several pests can be managed.

UPDATE ON FUNGICIDES FOR USE AGAINST NORTHERN LEAF BLIGHT
by Paul Vincelli

In several issues of Kentucky Pest News published late last year, I discussed the potential for localized epidemics of northern leaf blight (NLB), caused by the fungus Setosphaeria turcica in 2005, and I encouraged producers to use hybrids with adequate levels of NLB resistance for the upcoming season. The last of the series of articles (published 22 Nov 2004) discussed the potential role of fungicides for control of northern leaf blight. Below is the same information provided in that earlier article but with an update to include Stratego® and PropiMax EC® as well as retail pricing information for 2005.

A Possible Scenario
As of this time, I see no reason why most fields would need to be treated with fungicide. In most fields, a combination of rotation and selection of a hybrid with moderate to high resistance should help keep NLB from causing damaging yield losses.

However, there could be isolated instances where the producer may see a benefit to the application of a fungicide next year. For example, imagine a field sown to a susceptible hybrid that has a 180+ bushel/acre yield potential within two weeks on either side of tasseling. If that field is showing large (3-6 inches) lesions indicative of a susceptible reaction of NLB on or above the ear leaf, and the long-term forecast calls for continued cool, wet weather, it may be worthwhile to protect the high yield potential by applying a fungicide. Such cases would be few in number, but they may occur next year, depending on the weather.

Fungicide Options
There are several fungicides labeled for use against NLB. Based on the research I have seen, the most effective against this disease is Quadris Flowable®. If applied once at 9.2 to 15.4 fl oz/acre rate, a producer would pay about $21.56 to $36.09 for the product and $7.50 to $8.00 per acre for aerial application (assumes a product price of $300/gal). Be aware that the label requires a minimum application volume of 5 gal/acre in grain crops. I’ve seen indications of yield losses of anywhere from 5 bu/acre to 50 bu/acre from NLB on susceptible and moderately susceptible hybrids during the 2004 season. Given the above cost estimates for applying Quadris®, one would have to avert a yield loss of at least 14-21 bu/acre to break even for the costs of applying fungicide (assuming a $2.25/bu crop
value). Quadris® has a seven-day pre-harvest interval for field corn.

Tilt® (or PropiMaxEC®, which has the same active ingredient) also can be applied for control of NLB, but in the research I have seen indicates that Tilt® is not consistently as effective as Quadris®. When applied once at 2-4 fl oz/acre, a producer would pay $5.59-11.19 /acre for the Tilt® and $7.50-8.00 for application costs (assumes a product price of $358/gal). Like Quadris®, Tilt® has a restriction of a minimum of 5 gal/acre when applied aerially. Other important label restrictions include: (1) Tilt® may not be applied after silking, and (2) there is a 30-day pre-harvest interval in field corn.

Stratego®, a pre-mix of propiconazole and trifloxystrobin, is labeled also for NLB control. I am aware of only one 6-year old field test evaluating the performance of Stratego® specifically for NLB control, and that test does not include rates on the current label. Therefore, I can’t make a definitive statement about its relative efficacy against this disease. When applied at 10-12 fl oz/A, a producer would pay $11.72-14.06/acre for the Tilt® and $7.50-8.00 for application costs (assumes a product price of $150/gal). Among several restrictions indicated on the label is the prohibition against application to field corn after silking.

Products containing chlorothalonil (Bravo®, for example) or mancozeb (Dithane®, etc) are labeled for NLB control. However, research shows these contact fungicides are not as effective as either systemic fungicide listed above. Furthermore, it seems likely that the incomplete coverage of leaf surfaces that one expects with aerial applications would be a serious limitation for these two contact fungicides.

Note that for several of these fungicides, the disease on the label is called “Helminthosporium leaf blight” caused by “Helminthosporium turcicum”, an old name for the fungus that causes NLB.

Potential Benefits of Fungicide Application in Limited Instances

In the situation of high disease pressure described above, one would probably at least recoup the cost of a fungicide application, and exceed it in some instances. In addition to protection of yield, if NLB is “brewing” in a susceptible hybrid, a fungicide application could help protect test weight and stalk quality. When leaves are blighted during grain fill, the corn plant draws reserves out of the stalk in order to fill the grain. This results in weak stalks susceptible to lodging. Thus, some producers may feel a fungicide treatment is justified on the basis of retention of stalk quality. The application might allow the producer to let the crop dry down for a time in the field, instead of having to rush in to harvest at black layer and dry the corn down from 30-35% moisture content, resulting in less flexibility in scheduling harvests, higher drying costs, and increased risk of stress cracks from drying operations.

There are no simple answers as to whether a fungicide application will be worth applying. So much depends on complex factors that are often unpredictable. However, perhaps these comments will help producers think through some of the ramifications of applying a fungicide if faced with a NLB outbreak next year.

SHADE TREES & ORNAMENTALS

SURVEY FOR PHYTOPHTHORA RAMORUM (SUDDEN OAK DEATH) IN KENTUCKY NURSERIES, 2004
Departments of Plant Pathology and Entomology, University of Kentucky

Introduction. During recent years, sudden oak death (SOD) caused by a fungus-like organism new to the U.S., Phytophthora ramorum, has appeared in the coastal regions of northern California and Oregon. P. ramorum causes bleeding necrosis on the trunks and limbs of affected oak (Quercus) and tanoak (Lithocarpus) trees and can girdle and kill infected trees. The fungus also infects foliage, causing spots, blotches, or leaf tip necrosis of many kinds of plants without much notice or harm to the plants. These infected “carriers” of SOD in the West may include rhododendrons, camellias, bay laurels, maples, viburnums, honeysuckles, buckeyes and many other trees and shrubs.

In Kentucky, we are concerned about whether or not this disease would be similarly devastating to oaks if the pathogen were introduced into the state. P. ramorum thrives in the relatively cool and moist climate of coastal California and Oregon. Since we also can have periods of cool, moist weather in spring and sometimes in fall, the disease might
thrive here, too. According to U.S. Forest Service disease risk maps, all of eastern Kentucky would be at high risk and most of southern and western Kentucky at moderate risk from *P. ramorum*. The wide host range of the fungus in nature and in greenhouse inoculations includes Kentucky native woody plants such as red oaks, rhododendrons, viburnums, and mountain laurels and domestic species such as rose and lilac.

Effective February, 2002, a federal quarantine was imposed to prevent movement of infected plants or the pathogen from the west coast to Kentucky and other states. Despite the quarantine, during the 2003 growing season, infected Camellias were shipped from California nurseries outside the quarantine zone to Eastern states, mostly in the Southeast. In 2004, as part of a national nursery survey, all nurseries and garden centers in Kentucky were examined for plants with symptoms of *P. ramorum* infections.

**National nursery survey.** The survey was done mainly during May, June, and July, 2004. Nursery collections were done by USDA-APHIS personnel and nursery inspectors operating from the Office of State Entomologist. Nurseries were examined for plants showing abnormal symptoms including bleeding necrosis, leaf spots, blottches and leaf tip necrosis. Nursery blocks and garden center sales areas containing oaks, rhododendrons, viburnums, camellias, lilacs, and mountain laurels were especially scrutinized.

Nursery specimens were collected, labeled, placed in plastic bags, double bagged and immediately taken to the laboratory for analysis. Small pieces of infected plant material were tested for presence of *Phytophthora* using an enzyme-linked immunosorbant assay (ELISA) test. Samples were also plated on a culture medium selective for *Phytophthora* (PARP) and some were additionally floated on water in Petri dishes. Samples testing positive with the ELISA test were further tested for *Phytophthora* fungi closely related to *P. ramorum* with a polymerase chain reaction (PCR) test. ELISA- and PCR-positive samples were considered presumed positives and were sent to the USDA-APHIS in Beltsville, Maryland for confirmation.

**Nursery survey results.** Examinations were made of 126 nurseries in 28 counties statewide (Figure 1). Collections were made from 231 nursery plants involving 34 plant species showing disease symptoms. The survey data are summarized in Table 1.

<table>
<thead>
<tr>
<th>Host plants</th>
<th>Number of samples</th>
<th>Diagnoses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>examined</td>
<td>ELISA (+)</td>
</tr>
<tr>
<td>Rhododendron</td>
<td>80</td>
<td>35</td>
</tr>
<tr>
<td>Viburnum</td>
<td>36</td>
<td>2</td>
</tr>
<tr>
<td>Lilac</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td>Pieris japonica</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Camellia</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Magnolia</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>
Mandevilla | 6 | 3 | Anthracnose (3), undiagnosed disorders (3)
---|---|---|---
Azalea | 6 | 1 | Rhizoctonia web blight (2), fungal leaf spots (3), undiagnosed (1)
Various hosts (<5 plants each) | 46 | 4 | Fungal leaf spots and abiotic disorders from the following plants: Cherry Laurel, Holly, Mahonia (4 each); Canna, Clematis, Fern, Mt. Laurel, Leucothoe, (3 each); Hamamelis, Hydrangea, Maple, Weigela (2 each); Aesculus, Carpinus, Lily, Liriope, Mt. Laurel, Oak, Pin Oak, Red Oak, Pulmonaria, Pyracantha, Spirea, Taxus, Wisteria (1 each)

The warmth stirs them to activity and they can provide some temporary excitement but little in the way of problems. Firewood inhabitants usually belong to one of two groups: 1) shelter seekers and 2) wood-infesting insects.

**Shelter Seekers**
Many arthropods hide under loose bark or in cavities. Possibilities include many types of beetles, wood cockroaches, and even overwintering wasp or hornet queens. Spiders and their egg sacks, praying mantid egg masses, and moth cocoons are part of the "fauna" that may be associated with trees or fallen logs. These creatures will become active after warming up indoors. They can be swatted and discarded as they appear. These insects are not able to survive for extended periods indoors and they will not multiply or become established in the home.

**Wood Infesting Insects**
Many insects attack stressed or dead trees. Their activities ensure that the resources in the wood are broken down and recycled. Beetles are the most common group found developing in firewood. These include roundheaded wood borers, flatheaded wood borers, and shothole borers, also called powderpost beetles. The legless, white larval stages of the first two types can be found while splitting logs. Piles of sawdust appear from small holes in logs infested by powderpost beetles. The potential for these insects to infest structural wood in the house is very low. Often these borers attack only certain types of wood and the moisture content must be much higher than that found in structural wood.

Sometimes adults emerge after logs are brought indoors. Roundheaded wood borers are brightly marked, fast beetles with long antennae. The elongate flatheaded wood borers often have a metallic sheen. Powderpost beetles are small, brown to black insects. Any of these may be seen crawling or flying in the room or accumulating at windows or
light fixtures as they move to light. These insects are harmless. Carpenter ants and termites may also be found in firewood that has been wet or stacked in one place for a long time. Termite colonies are in the soil so only workers are found in the wood. Termites form mud tunnels and this mud can be found in wood that they are attacking. Carpenter ant galleries are very clean, with no mud or sawdust. Individuals brought into the house in logs will not start an infestation but a colony may exist in old wood piles outdoors.

Insect invasion of homes from firewood can be reduced by following these rules:

Inspect wood as you pick it up. Check surfaces that were on the ground or against other pieces. Brush off the creatures that you see and knock wood together to dislodge what you don’t see.

Bring in small supplies that will be burned in a few days rather than large amounts that could stay in place for weeks.

Outdoors, avoid stacking the wood directly on the ground, especially right beside the foundation. This will keep it from getting too wet and reduce the chances for infestation by termites and ants.

PESTICIDE NEWS & VIEWS

FINAL REMINDER OF “STOP SALE” DATE FOR DIAZINON

EPA is issued a final reminder notice to pesticide retailers that the stop-sale date for all outdoor diazinon home, lawn and garden products was Dec. 31, 2004. After that date, it is unlawful to sell diazinon outdoor non-agricultural use products in the US. This provision is part of an agreement between EPA and diazinon registrants to phase out and eliminate virtually all residential uses of the insecticide. Discontinuing diazinon use in home, lawn and garden care is part of EPA’s ongoing effort under the 1996 Food Quality Protection Act to reduce the risk of pesticides, especially to children.

After Dec. 31, 2004, diazinon registrants are offering a “buy back” program to assist with removing these products from the market and preventing further sale. The registrants will repurchase any unopened, unused outdoor residential products from retailers or formulators. As of Jan. 1, 2005, retailers should remove all diazinon outdoor home, lawn and garden products from store shelves and store them safely until these products can be sold back to the manufacturers or disposed of properly.

Consumers may continue to use diazinon residential products according to label directions and precautions. If consumers choose to discontinue use, they should contact their state or local hazardous waste disposal program or local solid waste collection service for information on proper disposal. Consumers are advised not to dispose of pesticides in sinks, toilets, storm drains, or any body of water. The local government may recommend that consumers take diazinon products to a household hazardous waste collection site. An organophosphate pesticide, diazinon has been one of the most widely used insecticides in the US for household lawn and garden pest control, as well as for indoor residential treatments. All indoor use product registrations have been canceled, and retail sale of these products ended on Dec. 31, 2002. More information on diazinon is available at: http://www.epa.gov/pesticides/op/diazinon.htm

ILLEGAL USE OF SODIUM CYANIDE

The United States Environmental Protection Agency (EPA) and state departments of agriculture have recently been alerted that some beekeepers have been using sodium cyanide compound to control pests in their honey bee colonies/hives. Specifically, apiarists have been purchasing and using a sodium cyanide compound as a fumigant in beehives to destroy or mitigate wax moths including the caterpillar and larvae, as well as to cull out weaker hives. These practices are illegal and have the potential for serious harm to human health and the environment.

All pesticides distributed in the United States must be registered by the EPA. The Federal pesticide law [the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)] defines “pesticide” to include any substance intended for controlling, mitigating or destroying pests. A substance is a pesticide and requires registration as such if the person distributing the substance (1) makes claims, either expressed or implied, that the substance can be used as a pesticide or (2) distributes the substance with the knowledge that the substance will be used to control pests. Any individual selling or distributing sodium cyanide compound for mitigating any pest, including the wax moth, caterpillar and larvae, or any other pest for use in bee hives or colonies is selling and distributing an unregistered pesticide and subject to penalties of up to $6,500 per violation under FIFRA.
Currently, there are no sodium cyanide or similar cyanide compound products registered by the EPA for pest control in honey bee colonies/hives. Also, there are no established residue tolerances for any cyanide compound in honey or beeswax. Honey analyzed and found to contain any cyanide compound residue would be considered adulterated under the Federal Food, Drug and Cosmetic Act, and could be seized. The seizure of honey due to adulteration with a highly toxic chemical would be detrimental to the entire apiary industry.

Further, use of sodium cyanide in an apiary setting can be extremely dangerous. The compound is highly toxic to humans and other warm-blooded animals, and it is a Toxicity Category I compound - EPA’s highest toxicity level for pesticides. This rating indicates the greatest degree of acute toxicity for oral, dermal, and inhalation effects. It is highly corrosive to the skin and eyes. Cyanide can be absorbed through the skin and its vapor is absorbed extremely rapidly via the respiratory tract.

Beekeepers who are currently in possession of the highly toxic, unregistered sodium cyanide compound or related products should contact their state agricultural agency for instructions on proper storage and disposal of the product. The state agricultural agency can also provide information on registered pesticides, such as paradichlorobenzene and aluminum phosphide products, that are legal to use to mitigate pests in honey bee colonies/hives.

1Wax moth includes both the Greater Wax Moth, *Galleria mellonella*, and the Lesser Wax Moth, *Achroia grissella*, both of which are sometimes referred to the wax wing moth.

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.