ANNOUNCEMENTS

• Upcoming pesticide training meetings
• Random checks of private applicator pesticide records and WPS compliance
• March 6 - Vegetable Pest Management Training
• March 19 - IPM Training School
• Southern stem blight of tobacco
• Moving towards more continuous corn in Kentucky

WHEAT
• Headline fungicide added to wheat disease control arsenal

FRUIT
• Will fire blight be a problem in high-density apple orchards?

VEGETABLES
• NEW pest status for squash bug

PESTICIDE NEWS & VIEWS
• Stored grain “protectant” insecticides: some confusion on availability

UPCOMING PESTICIDE TRAINING MEETINGS

• Feb 21 - Vegetable Meeting, Wayne Co. Farm Bureau Bldg, Monticello, 2 general hrs and 1 specific hr for Categories 1a Ag Applicator, 10 Demo and Research, and 12 Retail Pesticide Sales Agent. For details contact the Wayne Co Extension office (606) 348-8453.

• Feb. 24-28 - Turfgrass Short Course, Executive Inn East Louisville. Categories 3 Turf and Ornamental, 18 Golf Course, and 20 Sports Turf. Feb 24 Initial Training and Testing only (no continuing education credit), Feb 25 - 28, variable credit hours for continuing education. For details contact Dr. A.J. Powell (859)257-5836

• Feb 26 – Elizabethtown, Hardin Co Extension Office (4 gen + 2 specific) 1a, 1b, 10, 12. 9 am - 3 pm local time. No testing

A complete listing of approved training meetings is always available on the Ky Dept of Ag web page at www.kyagr.com/enviro_out/pesticide/programs/testing/CEUlistAG.htm

• March 6 - Vegetable Pest Management Training
A vegetable pest management training will be held at the University of Kentucky College of Agriculture’s Robinson Station in Jackson. Registration begins at 9 a.m. eastern

The program will start at 9:30 and concludes at 4 p.m.

Topics will include an overview of common insect pests and pest monitoring using pheromone traps; managing vegetable insecticides – control, resistance and cost; herbicide selections and calculations; recognizing and understanding infectious diseases in vegetables; and the principles of fungicide use in a vegetable integrated pest management program including the proper use and limitations of available products.

The program is open to anyone and free of charge. Lunch will be on your own. The program has been approved for 3 general and 2 specific hours for Pesticide Applicator Training certification for categories 1, agriculture applicator; 10, demonstration and research; and 12, retail pesticide sales agent (dealer) for Kentucky Pesticide Applicator Training.

For more information contact Patty Lucas at plucas@uky.edu or 270-365-7541 ext. 218 or Terry Jones at (606) 666-2438 or tjones@uky.edu.
March 19 - IPM Training School
Weed, insect and disease problems of corn, soybeans, small grains and alfalfa will be covered during the integrated pest management training school at the University of Kentucky Research and Education Center in Princeton. Registration will begin at 8:30 a.m. The program begins at 9 a.m. and ends at 4 p.m. It is open to the public and free of charge. Advance registration is not needed. An update of pest problems in Kentucky will include soybean stem borer, soybean rust and pesticide resistant pests. The program has been approved for 5.5 continuing education credits for certified crop advisors in the areas of pest management, 3 hours; crop management, 2 hours; and soil and water management, 0.5 hours. The program has also been approved for 3 general and 2 specific hours for Pesticide Applicator Training certification for categories 1, agriculture applicator; 10, demonstration and research; and 12, retail pesticide sales agent (dealer) for Kentucky Pesticide Applicator Training.

For additional information contact Patty Lucas at (270) 365-7541 ext. 218 or plucas@uky.edu.

Tobacco

Southern Stem Blight of Tobacco
by William Nesmith

Southern stem blight, caused by the fungus Sclerotium rolfsii, has been increasing slowly during the past decade in Kentucky on tobacco and other plants. Why the increase is not understood, but in tobacco it may be partially related to the string of mild winters, hot summers, and rotation with vegetables. It still is not a major problem but the fact that several cases have occurred with black shank or following vegetables, and that this disease has a wide host range are reasons it warrants attention. The disease is also called southern stem rot or just stem rot.

This disease is sometimes confused with black shank and soreshin, because it too develops as a dark-colored, girdling canker on the stem at the soil line or nearby. If examined carefully, the signs of the fungus are usually present at the soil line or on the stem as coarse white mycelium with small mustard seed-like bodies, called sclerotia. This disease develops most rapidly during hot humid weather. The most severe cases I have observed involved late-turning of either heavy cover crop, sod crops, or had late-summer/fall vegetables the previous year. We also have observed this disease several times in fields with significant black shank, especially where herbicide was used to kill grasses post transplanting. Decomposing organic matter and freshly killed plant tissues in contact with plants stems are known to enhance southern blight in other crops. Effective controls have not been established for southern stem blight in tobacco.

Agents observing outbreaks of southern stem blight are urged to inform me or the Plant Disease Diagnostic Lab, so we can follow up on determining what factors are responsible for promoting this disease in Kentucky.

Corn

Moving Towards More Continuous Corn in Kentucky
by Ric Bessin

With changes in the new Farm Bill, as well as marketing concerns, many corn growers are pulling away from corn soybean rotations toward continuous corn. Listening to growers at winter meetings, I have heard some indicate that they have given up the traditional 50/50 split of corn and soybeans. Some are going 60/40, 70/30 or even as high as 80/20 in favor of corn. While this may be a good marketing decision, it will create some new insect management issues. In particular, growers need to watch carefully for building corn rootworm populations. Corn rootworm is a very destructive pest that was nearly completely controlled with rotation. A typical sign of corn rootworm during the early summer is plant lodging due to a lack of brace roots. They brace roots are eaten away by the rootworm larvae.

Corn growers that have begin to grow corn continually on the same ground should watch for western corn rootworms. 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 rootworm slightly. But each year a given field is kept in continuous corn, the risk of economic losses to corn rootworm increases.

So how does a grower decide if they need to control corn rootworm in continuous corn? They need to scout fields in the summer to make management decisions in the spring. In Kentucky, growers are encouraged to scout corn weekly during the July for the rootworm adult beetles. The number of beetles per plant are counted on each of twenty consecutive plants in at least five locations per field. Growers are advised to use a soil insecticide at planting if they are growing continuous corn only if they noticed an average at least of one beetle per plant last summer. In fields where something other than corn was grown last year, no soil insecticide is needed for rootworm. Once above-ground symptoms of corn rootworm begin to appear, there are no effective rescue treatments.
If a grower decides that they will control corn rootworm, there are several types of control options now available. This includes tradition granular insecticides and liquid insecticides used during planting, but these treatments do require special equipment for the planter. Seed treatments for corn rootworm are a relatively new to soil applications. This includes Prescribe and Cruiser. Cruiser just recently received approval from the EPA. Unlike the old hopper box treatments for secondary pests, these cannot be applied by the grower or dealer, rather these are ordered with the seed. The new seed treatments are low dust and systemic.

Current Bt-corn hybrids that protect against corn borers does not provide any control of corn rootworm. There is a type of Bt corn that controls rootworm, but it has not yet been approved by the EPA. Just as Bt corn that controls corn borers does not control rootworm, Bt corn that controls rootworm does not control corn borers.

Besides consideration of equipment needed, growers should also consider cost of these treatments and the spectrum of pests controlled. Some rootworm controls may also control white grubs, wireworms, seedcorn maggot, corn flea beetle, black cutworm, and corn leaf aphids. If other pests are a concern in a particular field, then growers may want to select a single product that controls rootworms and those other pests with a single application. Likewise, if only rootworms are a concern, they should select the cheapest product that provides satisfactory control of rootworms.

WHEAT

HEADLINE FUNGICIDE ADDED TO WHEAT DISEASE CONTROL ARSENAL
by Don Hershman

In September 2002, BASF Corporation received an EPA Section 3 registration for the foliar fungicide, Headline.

<table>
<thead>
<tr>
<th>Product</th>
<th>Powdery mildew</th>
<th>Leaf/glume blotch</th>
<th>Leaf rust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline</td>
<td>++(+)</td>
<td>+++</td>
<td>++++</td>
</tr>
<tr>
<td>Quadris</td>
<td>+(+)</td>
<td>+++</td>
<td>++++</td>
</tr>
<tr>
<td>Stratego</td>
<td>++(+)</td>
<td>+++</td>
<td>++++</td>
</tr>
<tr>
<td>PropiMax or Tilt</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
</tbody>
</table>

Very good control = ++; excellent = +++; superior = ++++; (+) = Control at higher use rates.

This is important news for Kentucky's wheat producers because it adds yet another "tool" to the wheat disease control "tool box". Headline contains the active ingredient pyraclostrobin (23%). Pyraclostrobin is a strobilurin in the same chemical class as the active ingredient in Quadris (azoxystrobin), and one of the two active ingredients in Stratego (trifloxystrobin). Headline will be available for sale and use on wheat (and barley) this spring.

Headline is a valuable addition to the wheat fungicide arsenal because, like Quadris, it may be applied until the crop begins to flower, post head emergence. In contrast, Tilt, PropiMax and Stratego, all of which contain propiconazole, must be applied to the crop before 50% crop flag leaf emergence. This is an important distinction since research and experience with fungicides in Kentucky indicate that fungicides are usually most effective when applied during early to late head emergence. An exception is when powdery mildew is a problem; in those cases, flag leaf and earlier applications may be appropriate.

Headline, PropiMax, Quadris, Stratego, and Tilt are all excellent fungicides. I came to this conclusion after reviewing published research reports from seven different states for 1999-2002. The bottom line is this: assuming proper timing, rate, and method of application, there is very little practical difference in disease control achieved between the different products (see Table 1). Quadris, and to a lesser extent Headline and Stratego, have somewhat less activity against powdery mildew compared to Tilt, and the opposite is true for leaf rust (i.e., Tilt has somewhat reduced activity compared with Headline, Quadris, and Stratego). Nonetheless, I have not seen any data which indicates that any one fungicide is "head and shoulders" above the others as long as sufficient rates of active ingredient are applied at the proper time, and sufficient disease pressure exists.
Cost is a big factor in making wheat foliar fungicide selection decisions. Recently, we called various ag dealerships in different parts of the state and conducted a limited price comparison survey for the different foliar fungicides available for use on wheat. The results are as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Ave. retail price/gal</th>
<th>Price range</th>
<th>Cost per rate applied*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline</td>
<td>$209</td>
<td>$200-$229</td>
<td>6.0 fl. oz. = $9.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9.0 fl. oz. = $14.70</td>
</tr>
<tr>
<td>PropiMax</td>
<td>$292</td>
<td>$280-$305</td>
<td>4.0 fl. oz. = $9.12</td>
</tr>
<tr>
<td>Quadris</td>
<td>$271</td>
<td>$250-$289</td>
<td>6.2 fl. oz. = $13.12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.2 fl. oz. = $17.36</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10.8 fl. oz = $22.90</td>
</tr>
<tr>
<td>Stratego</td>
<td>$140</td>
<td>$137-$143</td>
<td>10.0 fl. oz = $10.98</td>
</tr>
<tr>
<td>Tilt</td>
<td>$341</td>
<td>$295-$380</td>
<td>4.0 fl oz = $10.66</td>
</tr>
</tbody>
</table>

*Based on average retail price at different use rates. Does not include cost of additives or application.

As can be seen in the above table, the price-competitiveness of Headline and Quadris, compared with the industry standard, Tilt, is dependent on the rate applied. Because of the newness of these fungicides, I do not yet feel qualified to recommend a specific use rate for either fungicide. This, obviously, is an important decision with great potential for economic impact. Thus, I suggest you consult your company sales rep for specific use rate recommendations for both Quadris and Headline.

Anytime you decide to spray a foliar fungicide, it is always a good idea to leave a small amount of wheat unsprayed for comparison purposes.

FRUIT

WILL FIRE BLIGHT BE A PROBLEM IN HIGH-DENSITY APPLE ORCHARDS?
by John Hartman

Fire blight has been a destructive disease the past two seasons in Kentucky. This bacterial disease, caused by *Erwinia amylovora*, attacks apples and pears and kills blossoms, shoots, limbs, and, sometimes, entire trees. Although common and widespread here the past two years, disease outbreaks are typically very erratic, causing severe losses in some orchards in some years and little or no significant damage in others. Fire blight occurrence is erratic due to differences in the availability of overwintering inoculum, variations in local weather conditions, and the stage of development of the cultivars when inoculum and weather are favorable. Thus, this disease is difficult and costly to control. During recent years, many Kentucky growers have been using knowledge of the biology of the disease, weather monitoring instruments, and computer-based forecasts, to improve disease prediction and better manage fire blight than in years past.

High density apple plantings, common in Europe, are becoming more popular in Kentucky. Growers trying high-density methods find that apples in high-density plantings come into bearing sooner, require less pruning, and are more easily sprayed and harvested. However, high-density plantings could increase the risk of fire blight. There are several reasons for this.

- More trees per acre means potentially more disease. Instead of planting 100 to 200 trees per acre, high-density requires setting between 500 and 1,000 trees per acre.
- High tree densities are accomplished by use of size-controlling rootstocks such as Mark, M-9 and M-26 which are widely used and very susceptible to fire blight. We know that rootstock fire blight can kill trees and that bacteria infecting shoots and blooms may enter the rootstock internally through the apparently healthy limbs and trunk of the scion as well as through rootstock suckers and bark cracks and injuries. Trees with rootstock blight may die or they may survive, but with less vigor. Rootstocks such as M-7A and M-111 appear to be more tolerant.
- Fresh fruit market demands have encouraged widespread plantings of many new varieties such as Gala, Fuji, Braeburn, Granny Smith, Empire, Gingergold, and Jonagold which, along with older favorites like Rome, Ida Red and Jonathan, are all very susceptible to fire blight.
- It is possible that the tree training systems needed to make high-density plantings more productive earlier, are reducing some of the natural physiological mechanisms that resist the progress of infections.
• When fire blight is active and thin strands of bacteria are being blown about in a rainstorm, it would seem that these infective bacterial strands would reach more nearby trees in a high-density planting than in a conventional one.

Managing Fire Blight. With changes in how apples are grown, reminders of fire blight disease management may be in order. Most growers will need to take a more aggressive approach to managing fire blight in high-density plantings. Many of these strategies were developed by the late Dr. Paul Steiner, and are based on his tree fruit research at the University of Maryland.

• Use less susceptible rootstocks, if possible.
• Remove and destroy all visibly infected spurs, shoots and limbs during the dormant pruning period. This is essential. Remove pruned material from the orchard.
• Apply a complete coverage of copper spray at green tip using a spray volume that ensures thorough wetting of all bark and bud surfaces on all trees in a given orchard block, not just on susceptible varieties. This retards primary colonization of these surfaces during the pre-bloom period. Copper is not effective in killing the bacteria harbored within cankers or in preventing that inoculum from being extruded onto the bark surface. One benefit of the high-density planting scheme is that improved spray coverage is likely.
• Use the MARYBLYT forecasting program, which has worked very well in Kentucky for identifying periods of high risk for infections and in identifying specific infection events when they occur.
• Apply the antibiotic streptomycin as needed based on the MARYBLYT forecast. This results in better timing and more efficient fire blight control. Be aware that excessive use of streptomycin can result in fire blight bacteria that are resistant to the antibiotic.
• Remove and destroy all visibly diseased cankers in the dormant period.
• Cut to remove fire blight should be done following the "ugly stub" procedure. Here, blighted shoots and limbs are cut 8 to 12 inches or more below any visible symptom (same as in traditional recommendations), but leaving a naked stub in wood that is at least 2 years old and approximately 4 to 5 inches short of the next branch union or spur. The inevitable cankers that will form on many of these cuts are then in a position so that they can be easily removed during the dormant period when it is too cold for the bacteria to produce a new canker. Finding such "ugly stubs" in the winter is made easier if, at the time of cutting, the stubs are spray painted with bright orange paint. This two-step cutting procedure is designed to reduce inoculum by eliminating cankers from the orchard and to reduce early orchard colonization the following season. Where removal cuts are made in the traditional fashion of pruning back to the next healthy branch union, many small cankers will be missed during the dormant pruning effort and will provide inoculum for the next year’s epidemic. Remember that, in years when fire blight is not severe and only a few trees are involved, one can afford more severe cutting operations.
• Do not combine the practices of fire blight removal with summer pruning and training of young, high-density trees.
• Although biological control agents are being developed, more effective biological agents are required if their use is to become widespread.
• Manage insects such as leafhoppers, plant bugs, and psyllids to reduce possible disease transmission.
• Use less nitrogen fertilizer to reduce orchard vigor; integrate use of the growth regulator Apogee to retard shoot growth.
• Long range plans for establishing new orchards with fire blight susceptible cultivars should include contingency plans for controlling the disease without streptomycin.
VEGETABLES

NEW PEST STATUS FOR SQUASH BUG
by Ric Bessin

Control of squash bug has always been important in cucurbit crops, particularly on its preferred hosts, squashes and pumpkin. In the past, I had recommended that growers wait until seedlings showed signs of wilting due to adult squash bug sap removal or until larger plants had an average of one egg mass per plant before a decision was made to control squash bug. But the situation has changed. Squash bug has now been identified as a persistent vector of the newly recognized disease, Cucurbit Yellow Vine Decline (CYVD). We cannot wait for squash bug numbers to buildup before applying a control as we did when it was considered an indirect pest.

An insect-control study at the UK South Farm in 2002 indicated that control of squash bug helped to delay and reduce the impact of CYVD. A single, at-planting, soil-drench, applications of either Admire or Platinum used for cucumber beetle control also reduced squash bug numbers. This delayed the development of the disease and reduced the yield loss caused by CVYD in acorn squash. Foliar applications of other insecticides for squash bug should also help to reduce losses by this disease, but foliar applications may need to be applied several times to provide lasting control.

Observations made by Dr. Nesmith and myself indicate that CVYD infection is likely occurring either almost immediately after transplanting, or prior to transplanting. It is critical to keep squash bug from feeding on small seedlings, regardless of whether the plants are in the greenhouse or field.

In the past, squash bug was of minor concern on its less preferred hosts, melons and watermelons. But they do feed on these and the disease is appearing with these crops. Fortunately, control of squash bug should aids in the control of striped and spotter cucumber beetles, the persistent vectors of bacterial wilt of cucurbits.

Growers using plasticulture for cucubit production should note that squash bug does attack the plants beneath the plastic. Control should be aimed at eliminating the adults early, below and above the plastic. Foliar sprays directed above the row may provide better control down in the hole. Water-sensitive paper can be used to evaluate spray coverage.

PESTICIDE NEWS & VIEWS

STORED GRAIN “PROTECTANT” INSECTICIDES: SOME CONFUSION ABOUT AVAILABILITY
by Doug Johnson, Extension Entomologist

You may have read or heard me speak about some label changes that were anticipated in time for the 2003 wheat harvest. Some of this information is already out of date. I will try to clear up the situation in this article but as always – READ THE LABEL before any use. The label is the best authority on the use of that product.

Tempo® 2 (cyfluthrin) – You may have heard that there were uses added to the Tempo® 2 label. Please remember there are three formulations of Tempo® for insect control in various facets of stored / processing grain sites. They are: Tempo® 2, Tempo® SC Ultra, and Tempo® 20 WP. These compounds have long been used for treating inside empty bins before filling with grain, but NOT for use directly on grain as a “protectant.” As far as I can tell, these uses are still current.

In 2002 Tempo® 2 (NOT SC Ultra or 20 WP) received a label change to allow it to be used directly on grain. However, it appears that this product will not be sold for that use. In fact, it may not be sold at all. This has to do with international marketing concerns. You will see this product listed in my printed recommendations for use as a “protectant” on stored; wheat, grain sorghum, and popcorn. However, I recommend you DO NOT APPLY ANY Tempo formulation directly to the grain.

Storcide™ (cyfluthrin and chlorpyrifos-methyl) – This product is a mixture of cyfluthrin (Tempo®) and chlorpyrifos-methyl (Reldan®). It was generally expected that Storcide™ would be available for use on wheat by the time of harvest. However, it appears that this may not be the case.

The Gustafson web pages list labels for Storcide™ but only for states with “Section 18 Emergency Exemption Use Only” labels. Gustafson does have a Sec (3) “National” label but there are some business / liability issues on the international front that complicate its use. Gustafson is expected to make a decision in the next month or so on how Storcide™ will be marketed.

Reldan® (chlorpyrifos-methyl) - Currently, Reldan® 4E is being sold and is available for use. Reldan® 4D is NOT being sold but existing stocks may be used.

The fate of Reldan® is still undecided. The base manufacture and Gustafson expect to meet with appropriate government agencies to discuss the fate of
this product. I believe that they will argue that there is no appropriate replacement for the product and removal will leave the industry with no product to use in its place.

Summary

- Tempo® 2 will not be sold, at least not for stored grain. Do not use it as a protectant.
- Tempo® SC Ultra and 20WP are still available for use in empty bins but NOT on grain!
- Reldan® is available in the 4E formulation. It’s fate could change at any time.

DO NOT use any pesticide in a way that is not consistent with the label.

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.