



KENTUCKY PEST NEWS

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ANNOUNCEMENTS

CONTINUING EDUCATION MEETINGS FOR STORED GRAIN

Two meetings on IPM for stored grain have been approved by the Division of Pesticides, KDA for continuing education credit in the following categories. These meetings are a cooperative venture with Purdue University and the University of Tennessee.

- 1c Agricultural Fumigation
- 4 Seed Treatment
- 10 Demonstration and Research Pest Control
- 12 Pesticide Sales Agent
- 14 Pest Control Consultant

The meetings will be held from 9:00 am to 3:00 pm local time at

- March 22 Henderson Community College
- March 29 Warren Co Extension Office

- 9:00 – 9:30 Living in a Post Starlink World, Dirk Maier
- 9:30 – 10:00 Handling Considerations for IP Grain, Dirk Maier
- 10:00 – 10:30 Prevent Molds and Toxins in Stored Grain, Chuck Woloshuk
- 10:30 – 11:00 Temperature Monitors and Aeration Controllers, Sam McNeill

- 11:00 – 11:30 Personal Protection Equipment for Stored

Grain, Larry Piercy

11:30 – 12:30 Lunch (provided)

12:30 – 1:00 Protect Stored Grain from Insect Invasion, Doug Johnson

1:00 – 1:30 Monitor Stored Grain for Insect Activity, Linda Mason

1:30 – 2:30 Grain Fumigation Tips, Kevin Pass

2:30 – 3:00 Grain Marketing Tips, Steve Riggins

BUYERS BEWARE: SOME CHEMICALS MAY BE DUDS

Frankfort, KY—If it sounds too good to be true, chances are, it is. That's according to officials in the Kentucky Department of Agriculture who say several vendors usually appear across the Bluegrass State about this time every year, selling ineffective chemicals at cut-rate prices.

"Each spring, we in the Department receive many complaints from home gardeners, farmers, and others who purchase cheap but ineffective chemicals over the telephone or on the Internet," said Billy Ray Smith, Commissioner of Agriculture. "The sellers of these products usually claim they're comparable to well-known national brands, and for some folks, the cheaper prices are hard to resist."

Pressure tactics are frequently used by sellers of such chemicals. "If the seller tells you to buy his product now or the deal will be gone forever, that's a strong



indication that his product is no good,” said John McCauley, Director of the Division of Pesticide Regulation.

The KDA’s Ken Franks works with licensed pesticide retailers throughout Kentucky and says if you are considering buying a chemical product over the phone or on the Internet, you should ask the seller several questions.

- Ask for the products’ EPA registration number.
- Call the KDA to ensure the product is registered for use in Kentucky.
- Ask for the product’s active ingredients and record the percentages of each.
- Ask how many square feet or acres the product will cover.
- Request complete directions for use of the product.
- Ask for the company’s name, address, and telephone number.
- Compare the product to a similar one offered by your local retailer.
- Ask if the seller has a license to sell in Kentucky and ask for his name and license number.
- Keep a record of all of this information.

“You should never buy a product that requires cash upon delivery,” Franks said. “Sometimes these vendors will send you the product whether you ordered it or not, so be careful about who you talk with.” For more information, contact Ken Franks at (502) 564-7274 or ken.franks@kyagr.com.

CHEMICAL OPTIONS FOR DISEASE CONTROL IN TOBACCO TRANSPLANT PRODUCTION SYSTEMS - 2001 CROP

by William Nesmith

An adequate supply of healthy transplants is an important first step to having a successful tobacco crop. Based on recent studies this is especially important for crops without adequate rotation, which is the majority of Kentucky’s burley crop. Infectious diseases can be a limiting factor to successful transplant production, plus diseased transplants are predisposed to additional attacks in the field and they can serve as important sources of pathogen introduction to the field and community.

Tobacco transplant production in Kentucky occurs in greenhouses, float-beds, and traditional ground beds. The following infectious diseases have given growers problems in the past: Bacterial diseases: angular leaf

spot/wildfire and bacterial soft rot/blackleg; Fungal diseases: anthracnose, blue mold, black shank, black root rot, Fusarium wilt and root rot, Botrytis blight, Collar Rot (*Sclerotinia*), and blights, root rots, and damping-off caused by either *Pythium* or *Rhizoctonia*; and, Virus diseases: Tobacco Mosaic Virus (TMV), Cucumber Mosaic (CMV), Tomato Spotted Wilt, and the Poty-Virus Complex of etch, vein mottling, and PVY.

Use of chemicals is not the key to disease control in transplant production. Instead, a systems approach involving many factors is needed. Control of transplant diseases is achieved through rigorous sanitation measures, careful management of the production environment, careful fertilization, controlling insect vectors, avoiding plant stress, and timely application of pesticides. Both the incidence and severity of diseases in seedling production can be greatly reduced through preventive spray programs. Even where a chemical is labeled for rescue treatments, I urge it be used in a preventive manner. Why, because a wound remains if infection occurs, and that wound may serve as an infectious site for other diseases, especially when it involves the root and lower stem. Unfortunately, since adequate labeled materials are not available for all problems or for use in all transplant production systems, growers will need to read and follow labels carefully to avoid problems.

Below is a review of the preventive fungicide and bactericide treatments labeled for use in Kentucky for control of tobacco transplant diseases. I have recently reviewed the labels and believe only the following materials and uses are labeled for the sites mentioned.

* FERBAM GRANUFLO - I had delayed the publication of this article for several weeks, awaiting finalization of the state label of Ferbam for use in greenhouse and float systems. The Kentucky label was approved on March 6, 2001. This is a very important fungicide for disease control in small seedlings. It is labeled for prevention of blue mold and Botrytis blight. FERBAM GRANUFLO is labeled in Kentucky for use in all tobacco transplant production systems (beds, floats, and greenhouses) at 1.5 - 3.0 lbs/100 gallons of water (1 to 3 tablespoons/gallon). Spray preventively twice weekly starting when seedlings have the first true leaf or immediately after plugging with the plug-and-transfer system. Apply as a fine spray to the point of run-off, using 3 gallons of spray material per 1000 sq

ft when seedlings are small increasing gradually to 6 to 12 gallons as plants increase in size and the canopy increases. The label has a specific restriction to avoid contamination of the float-water. We have not observed phyto with this fungicide, but it does leave a dark residue of the seedlings.

* DITHANE DF is an important preventive fungicide for use against anthracnose and blue mold, and suppression of damping off diseases once the plants are large enough to tolerate it. It can be used in all tobacco transplant production systems. Apply it as a fine spray at high pressure to the point of run-off, but be careful not to saturate the root zone on small seedlings. For float and greenhouse systems use at 0.5 lbs/100 gallons of water (one teaspoon/gallon). Spray preventively on a 5-7 day schedule starting when seedling leaves are about the size of a dime and continue until transplanting to the field. Use 3 gallons of spray material per 1000 sq. ft. while plants are small, but increase gradually to 6 to 12 gallons as plant size and canopy increase. Be sure sufficient water is used to wet the base of the stems with run-off to increase the potential for control of damping off. Avoid contamination of the float-water and root zone during applications.

*TERRAMASTER 35WP is labeled for use in greenhouse and outdoor float systems, but IS NOT labeled for use in any other transplant production systems. In our experiments, it has provided a very high level of control of Pythium root rot, but no other diseases. The use rate is 2 oz/100 gallons of float bed water. This application should be made directly to the float water, but be sure to thoroughly distribute it in the water. Preventive applications should be made two weeks after seeding, or a week after plugging with the plug and transfer system. If additional applications are needed, make a second application no later than eight weeks after seeding. Terramaster is also labeled as a rescue treatment, but I urge it be used as a preventive treatment followed by a follow-up application if needed rather than letting the fungus damage the root system and then trying to stop it. Wounded roots are prime targets for opportunistic pathogens in the field - black shank, soreshin, and Fusarium root rot.

* STREPTOMYCIN (AGRIMYCIN 17, AGRI-STREP, etc.) is labeled for use in outdoor beds, but not greenhouses. Also, there is not specific wording on the label to cover float beds. The rate is 100 to 200 ppm (1-2 teaspoons/ gallon), using 3 to 5 gallons of

material per 1000 sq ft of bed. Control of angular leaf spot, wildfire, and blue mold are on the label. Streptomycin-resistant strains of the angular leaf spot pathogen are present in Kentucky, and it is not highly effective with bacterial soft rots. Sprays can begin as early as the two-leaf stage and should be repeated weekly until transplanting for control of bacterial leaf spots, such as angular leaf spot. However, it will not control most strains of blue mold. Yellowing and stunting can occur if high rates are used.

*MILK (Whole or skim at 5 gals /100 gallons water or dried milk at 5 lbs/100 gallons water per 100 sq. yds. of plants) can be used to reduce the spread of Tobacco Mosaic Virus. Spray plants 1 to 24 hrs before handling them. This treatment has also been used successfully prior to clipping of large plants, but it can be very messy unless the system dries well following the application. It should be combined with washing the hands at 15 minute intervals either in the clean milk solution or a phosphate detergent. This treatment is needed only if TMV susceptible varieties are being used or mixed resistant and susceptible varieties are in the same operation.

* BORDEAUX MIXTURE (bluestone-lime mixture) is labeled for ground beds as a drench to the soil when the plants have emerged and again 10 days later. This treatment will control algae and aid in the control of diseases caused by bacteria (wild fire, angular leaf spot, and blackleg). Follow the label EXACTLY as to mixing instructions, because Bordeaux mixture can be toxic to tobacco seedlings. Do not apply this mixture to large seedlings. The target is actually the soil and not the tobacco plant.

* **Ridomil 2E** is labeled for use in outdoor, ground beds for use at seeding. Apply 4 teaspoons of Ridomil 2E per 100 square-yard bed (900 square feet). Apply in sufficient water to spray the entire bed, then rake or rototill the treatment into the top 2 inches of soil before seeding. **Note, Ridomil Gold EC and Ultra Flourish are not labeled for plant-bed use.**

CORN

SOUTHWESTERN CORN BORER SPRING SURVEY

by Ric Bessin, Doug Johnson, Wayne Mattingly, and Mike Smith

A survey of Southwestern corn borer damage and larval survival was conducted in Caldwell, Daviess and Henderson counties on March 6 and 7. These counties were selected because of the past history of damage in those areas. The purpose was to estimate the extent of SWCB damage as evidenced by basal stalk girdling. In addition, we wanted to estimate the survival of the larvae in the crowns of these damaged plants. In each county, four non-Bt corn fields were evaluated. Within each field, 10 groups of 10 plants were examined for girdling damage and presence of live SWCB larvae. An additional 50 damaged plants were examined for the presence of live SWCB larvae.

2001 SWCB Spring Survey Results

	Damaged plants	Live SWCB recovered
Daviess Co.		
Farm #1	35 / 100	9 / 85
Farm #2	56 / 100	15 / 106
Farm #3	25 / 100	0 / 58
Farm #4	51 / 100	12 / 101
Henderson Co.		
Farm #1	46 / 100	10 / 96
Farm #2	53 / 100	16 / 103
Farm #3	32 / 100	11 / 82
Farm #4	67 / 100	11 / 117
Caldwell Co.		
Farm #1	23 / 100	2 / 73
Farm #2	40 / 100	7 / 90
Farm #3	31 / 100	4 / 66
Farm #4	28 / 100	5 / 78

This is the third year that we have conducted such a survey. Unlike the previous two winters, we had a severe cold period in December and January. Survival this winter is less than we estimated last year. Last year we estimated SWCB survival to be between 20 and 24% in those counties. In Daviess and Henderson counties the rate of survival is about half of what we saw the last two years. In Caldwell county it is

considerably less. The average survival rate for Caldwell, Henderson and Daviess counties is 5.8%, 12.2%, and 9.2%, respectively. Why the difference among counties, it may be due to snow cover during the cold period. There was more snow cover in the Daviess and Henderson counties than in Caldwell county.

Keep in mind that overwintering survival is just one of the variables that will, in part, determine the potential for SWCB problems in 2001. Historically, the date of planting of individual fields has been a key variable contributing to the potential for late season SWCB damage. Typically, fields planted after May 10 have an increased potential for this type of damage.

What we can conclude:

- ! Despite the coldest December on record, we found live SWCB larvae in each of the counties surveyed.
- ! Winter temperatures were not sufficient to eliminate SWCB larvae
- ! SWCB remains a threat in some areas for 2001, but survival is lower than what we estimated after the previous two winters
- ! Date of planting is still important and will determine the potential for SWCB injury in western Kentucky.

WHEAT

STRATEGO FOLIAR FUNGICIDE LABELED FOR WHEAT by Don Hershman

About the 20th of July, 2000, Novartis received a wheat label for the product Stratego. However, subsequent to getting this label, Novartis merged with Zeneca, the manufacturer of Quadris, which also has a wheat label. During the merger between Novartis and Zeneca (they become Syngenta), Novartis acquired Quadris and, in turn, divested itself of Stratego. At that point, Stratego was picked up by Bayer who is now (or will soon be) offering the product for sale nationally for use on wheat. Confused? Me too, but the above is an accurate description of what events transpired to bring Stratego to Bayer, and raise Syngenta out of the merger between Novartis and Zeneca. The net impact of the formation of Syngenta on the wheat fungicide market is that Syngenta now holds the labels for both Tilt and Quadris and Bayer holds the label for Stratego.

So, as of this writing, there are now three main foliar fungicides that may legally be applied to wheat. Tilt, which everyone is familiar with, Quadris and Stratego. Quadris received a wheat label before the 2000 growing season, but very little product was used in Kentucky due to the established use patterns for Tilt, and the unacceptably high price (under current wheat economics) of Quadris. Syngenta may opt to sell Quadris at a lower price, but as of this writing I do not know if that will be the case.

Stratego is a mixture of Tilt and Flint (Tilt is very similar to Quadris). Because of the Tilt component in the mix, Stratego has the same time of application restriction as does Tilt. That is, the product cannot be applied later than Feeke's stage 8 (flag leaf emergence). Unlike Tilt, however, Stratego has a plant-back restriction which precludes double crop soybean being planted the same season Stratego is used. Bayer is working feverishly to get this restriction lifted from the existing Stratego label. Obviously, in a state like Kentucky where almost all harvested wheat acres are planted to doublecrop soybean, this is a serious label restriction.

Based on my experience and my perusal of the literature, Stratego will do an excellent job in the control of leaf rust, and various fungal leaf spot/blotch diseases. It will be weak against powdery mildew. Please note, that as with all fungicides, early application may result in poor disease control if sufficient fungicide active ingredient is not present in and on crop tissue at the time disease develops. This situation is very common when fungicides are applied well before crop heading, but disease develops during the post heading period.

Price, availability, and a relaxing of the doublecrop soybean restriction will be the main factors that determine whether or not Stratego will be a major competitor to Tilt in Kentucky. As of now, the price structure of Stratego has not been made known by Bayer. I suspect availability will follow if use patterns justify product movement into Kentucky.

I will keep you updated as new information becomes available.

FRUIT CROPS

ANTHRACNOSE OF GREENHOUSE AND OUTDOOR STRAWBERRIES

by John Hartman

Kentucky growers have traditionally raised small fields of May-bearing strawberries outdoors in matted row beds. Now, some growers are experimenting with day-neutral strawberries and growing them in the greenhouse. In both field and greenhouse, strawberry growers sometimes have to manage anthracnose disease which affects foliage, runners, crowns, and fruit. Our most recent examples in the Plant Disease Diagnostic Laboratory have been from the greenhouse. One of the graduate students in our department has recently identified the fungus *Colletotrichum acutatum* as the cause of the greenhouse strawberry anthracnose. Other species can also cause anthracnose.

Symptoms. Affected stems are sometimes girdled by lesions, causing individual leaves or entire daughter plants to wilt. When crown tissue is infected and becomes decayed, the entire plant may wilt and die. When infected crowns are sliced open, internal tissue is firm and reddish brown, uniformly discolored or streaked. On fruit, symptoms first appear as small whitish water-soaked lesions which turn brown and enlarge within a few days to involve most of the fruit. Green fruit and ripe fruit are both susceptible to infection by the anthracnose fungus. Under warm, humid conditions, salmon-colored spores may form on fruit and stem lesions.

Disease development. Anthracnose is probably introduced into new plantings on infected plants. Spore production, spore germination, and infection of strawberry fruits are favored by warm (near 80 F), humid weather and by rain which disperses spores. The fungal spores require free water on the plant surface to germinate and infect. Thus, the disease is primarily a problem in Kentucky when warm temperatures and rainfall occur during fruit set and harvest. Once the disease is established in the field, the fungus can overwinter on infected plant debris, primarily on mummified fruits.

Disease Management. For greenhouse strawberries, there are no fungicides labeled for use in managing anthracnose. In the field, Captan is labeled for strawberry anthracnose management. (See U.K. Cooperative Extension Service Publication ID-94, *Kentucky Commercial Small Fruit and Grape Spray Guide 2001*.) Research done on outdoor day-neutral strawberries at Iowa State University suggests that captan will provide moderate control of anthracnose. The same research team found that the addition of

straw mulch reduced levels of anthracnose, but did not prevent the disease entirely. Straw mulch may slow down row-to-row spread of the anthracnose fungus. Growers of both greenhouse- and field-grown strawberries need to be very careful to obtain disease-free plants to start their plantings and to take care not to spread anthracnose from old, infected fields to new ones.

HOUSEHOLD

MORE 'BUGS' APPEARING IN BUILDINGS

By Mike Potter

Many clients continue to complain about bugs "mysteriously" appearing inside and on the outside walls of their homes. The biggest culprits have been ladybugs and boxelder bugs. Detailed information about these pests can be found in ENT-64, *Asian Lady Beetle Infestation of Structures*, and Entfact- 444, *Boxelder Bugs*. For those unfamiliar with boxelder bugs, adults are black with reddish lines on the back, about ½ inches long. Adults and nymphs feed on the seeds of boxelder trees (and occasionally silver maples) in late-spring and summer.

Why Are They Showing Up Now?

Both critters actually entered the building last fall through cracks and openings, and spent the winter hibernating behind exterior siding and in attics, soffits, wall voids, window/door casings, and similar protected areas. With the onset of warmer weather, the bugs are becoming active and are emerging from their overwintering sites. As they attempt to escape to their natural habitat outdoors, some inadvertently disperse inward into living areas, emerging from beneath baseboards, behind window and door frames, from within sash-cord openings, and around light fixtures and ventilators. Large numbers also congregate on exterior foundations and siding, usually on the sunny (south/southwest) side of the building.

What Can Be Done?

Although most callers want immediate and complete relief, this simply is not possible, since the bugs are emerging from hidden areas – most of which are inaccessible to insecticides. Setting off household foggers or "bug bombs" will not penetrate and control pests in these areas! (See Entfact-643, *Limitations of Home Insect Foggers*). The best way to dispose of lady bugs and boxelder bugs appearing indoors is with a vacuum cleaner. Both insects tend to emit substances

which can stain surfaces, making a broom less desirable. Large aggregations on outdoor surfaces can also be removed with a vacuum cleaner. Clients demanding "the thrill of the kill" can spot-spray with an insecticide such as Sevin, Dursban, or Bayer Advanced Multi-Lawn & Garden Insect Killer.

What Can Be Done To Minimize Future Problems?

It is hard to predict whether the client will have problems again next year (past history is perhaps one indication). In the case of boxelder bugs, seed-bearing boxelder trees and silver maples can be inspected during summer, and treated or removed if necessary. This is best done by a professional. Consideration should also be given to whether infested trees are on a neighbor's property, since the adults often fly to nearby buildings to overwinter. Since both of these pests seek out overwintering sites in late-summer/fall, cracks and other openings can be sealed as a preventive measure (see Entfact-641, *How to Pest-Proof Your Home*).

Since sealing and weatherstripping can be impractical, frustrated clients may also want to enlist the services of a knowledgeable pest control firm. Many companies offer strategically placed, preventative insecticide treatments to building exteriors, which can help prevent pests from initially entering in the fall. Long-lasting, rapid-knockdown formulations of synthetic pyrethroids can be professionally applied around eaves, vents, windows, under siding, and other likely points of entry. The key is to apply the treatments in September and early October, before pests enter buildings to overwinter. *Such treatments would have limited effectiveness at this time, however, since the pests already are indoors.*

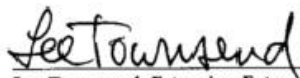
Clients should be reminded that this is a temporary nuisance that will run its course as the weather warms. Ladybugs and boxelder bugs typically do not bite, sting, or carry diseases, nor do they infest food, clothing or wood. They do not breed (reproduce) inside buildings and generally will not survive indoors for more than a few days.

DIAGNOSTIC LAB-HIGHLIGHTS

By Julie Beale and Paul Bachi

We are beginning to see more samples arriving in the Diagnostic Lab after the normal "winter lull." Among the more common problems noticed at this time of year are Botryosphaeria canker and dieback on rhododendron, winter drying on southern magnolia,

salt damage (from de-icing salts) on white pine and other conifers, burr knot on apple, and winter damage on ground covers and herbaceous ornamentals (examples have included English ivy and liriopse). We have seen a few greenhouse problems as well, including Pythium and Rhizoctonia root rots on daylily, Pythium root rot and powdery mildew on petunia, and spiral root disorder on cabbage seedlings in a float system.


Lee Townsend, Extension Entomologist