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WATCH FOR:

FOREST TENT CATERPILLAR and EASTERN TENT CATERPILLARS are reaching sizes that will make them easier to see; ALFALFA WEEVIL tip feeding; "flagging" on new growth as small larvae of the ORIENTAL FRUIT MOTH enter terminal twigs; BOXWOOD LEAFMINER adults active soon; COLORADO POTATO BEETLES will begin to fly soon; REDBANDED LEAFROLLER flight; expect HONEY BEE swarms to begin to appear.

CORN

CHANGE IN WEATHER COULD AFFECT WIREWORMS
by Ric Bessin

The drastic shift in cold weather toward the south could affect the damage caused by wireworms in field corn. While we have been enjoying the early spring weather, things will change later this week. The colder weather on its way will result in lower soil temperatures and retard seed germination and seedling growth in early planted corn fields. Slower germination and growth means that these seedlings will remain vulnerable to wireworm damage for a much longer period of time. This is often where we find the worst wireworm damage, early planted fields with conditions favoring slow seed germination and growth.

Fortunately most corn is now coated with an insecticide. This helps to prevent wireworm losses, but it does not prevent all losses. Growers are advised to monitor seed germination and emergence of these early planted fields closely through April. Early-planted fields with a history of wireworm damage are at higher risk. Significant losses have been observed in early-planted high risk fields, even where a seed treatment has been used. If replanting is needed, then the decision needs to be made as early as possible to avoid yield reductions due to late planting.

WHEAT

FOLICUR 3.6F AND ORIUS 3.6F APPROVED BY EPA FOR MANAGING FUSARIUM HEAD BLIGHT AND DEOXYNIVALENOL IN WHEAT
by Don Hershman

Fusarium head blight (FHB) of wheat, and deoxynivalenol (DON) accumulation in harvested grain, are periodically very serious problems in Kentucky. There was very minimal FHB in 2006 and Kentucky had the highest state wide yield average in its history. But each year brings new possibilities, so we must be on guard for FHB/DON in 2007 and not become complacent.

On April 2, 2007 the Environmental Protection Agency (EPA) granted the Kentucky Department of Agriculture's section 18 request to allow applications of Folicur 3.6F or Orius to suppress FHB/DON in Kentucky during 2006. Technical tebuconazole, produced by Bayer CropScience, is the active ingredient in both products. Folicur 3.6F is manufactured by Bayer and Orius 3.6F, a subregistration of Folicur, is distributed by Makhteshim Agan of North America. This is the fourth consecutive year that EPA has granted our request to allow producers to apply tebuconazole in Kentucky. The section 18 expires on May 30, 2007.

This year, we had to jump through some additional "hoops" to get this section 18 request renewed. The reason is that another Bayer product, Proline 480 SC, has just been granted a section 3 registration by EPA and once it is approved by Kentucky officials, Proline will also be available for use by Kentucky wheat producers. The active ingredient in Proline is prothioconazole, which is another triazole fungicide. Research has shown that prothioconazole is actually slightly better at suppressing FHB/DON than tebuconazole, but the cost of Proline is expected to be significantly higher than Folicur and Orius. This significant price discrepancy was the basis of our argument to EPA that our producers needed to have access to tebuconazole. Plus, prothioconazole is not as effective at controlling leaf rust as tebuconazole. This is a weakness of Proline and is the reason why Bayer intends to make a future mix product of prothioconazole + tebuconazole (i.e., Prosaro) their main product for use on wheat in the US. That registration, however, has been held up in EPA for the time being.

The proper use of Folicur or Orius will help suppress FHB and DON when used with other FHB/DON management tactics (see [http://www.ca.uky.edu/ukrec/newsltrs/news03-2.pdf)](http://www.ca.uky.edu/ukrec/newsltrs/news03-2.pdf).

Folicur or Orius are not "silver bullets" for managing FHB/DON. A great deal of research suggests that about 30-40% reduction in FHB symptoms and DON accumulation is a reasonable expectation for winter wheat. Sixty percent control or more has been achieved in rare field studies in the U.S., but these are atypical results. In other words, do not expect Folicur or Orius to provide the same level of FHB/DON control as you have come to expect when fungicides are used to control other wheat diseases. The key is to think in terms of disease suppression, not control. Nevertheless, a 30-40% reduction in FHB and DON can have a significant economic impact locally, state-wide, and regionally if FHB is moderate to severe in 2007. But be advised that significant losses due to FHB and/or DON may occur even where Folicur or Orius are applied if FHB is severe this spring,

The section 18 label allows for a single ground or aerial application of 4 fl oz/A of Folicur or Orius 3.6 F to wheat through very early flowering (Feeke's stage 10.51) or May 30th, whichever comes first. Applications cannot be made within 30 days of harvest. A copy of the section 18 label must be in your possession at the time of application.

Excellent fungicide coverage on wheat heads is crucial to achieve the greatest possible FHB/DON suppression. This is no small challenge since most spray systems used in wheat were developed to deliver pesticides to foliage (horizontal structures). In order to maximize coverage on heads (vertical targets), significant changes may need to be made to the sprayer boom system. Also, discipline must be exercised to ensure that proper sprayer pressure and volumes are used.

For ground application, research has shown that best head coverage is achieved with a double-swivel nozzle configuration of XR8001 flat-fan nozzles oriented forward and backward at a 45 degree angle. Acceptable coverage can also be achieved with a single nozzle configuration using TwinJet TJ8002 nozzles. When using either the double-swivel nozzle or the single TwinJet configuration, best head coverage is achieved when the boom is set 8 to10 inches above the heads, spray pressure is 30 to 40 psi, and fungicides are delivered in 15 or more gallons or water/A (ground). Speed should not exceed 8 mph.

For aerial application, nozzles should be angled to direct spray 90 degrees to the direction of travel. Spray droplet size should range from 300 to 400 microns and Folicur should be delivered in no less than 5 gallons of water/A. It is best to spray early in the morning or at other times when heavy dew is present. This will facilitate fungicide coverage on heads.

Regardless of the method of application, be sure to tank mix the lowest rate of a non-ionic spray surfactant with Folicur or Orius to enhance coverage and optimize treatment effectiveness.

Folicur or Orius must be applied at a specific time, early flowering, in order to be effective against FHB/DON. The optimal time for application is 25% of primary heads, scouted at several random sites in a field, showing anthers (pale, yellow-green structures about 1/8-in-long). Much beyond 25%, and it may be too late. The flip side - applying Folicur or Orius **before** full head emergence/early flowering can seriously compromise FHB/DON suppression. This brings up a point of tension that wheat producers may face this spring. Delaying application to achieve FHB/DON suppression could allow for excessive build-up of other fungal diseases. Conversely, application of the fungicides before full head emergence will control other diseases, but will have little impact on either FHB or DON. I would advise growers that foliar disease development should take precedence since little is to be gained by suppressing FHB/DON if serious losses are incurred by allowing fungal diseases to develop.

One desire we all have is for fungicides to be used only when needed. Regular field scouting for foliar fungal diseases has been successfully used by growers for many years to determine if and when to spray fungicides. However, this is not possible with FHB since once symptoms are present it is TOO LATE to spray. Below are some general guidelines to help you determine if you should spray Folicur or Orius for FHB/DON suppression this spring:

- Soil moisture has been good and rain is expected in the near future (relates to spore production, dispersal of

Fusarium graminearum spores, and crop infection).

- Crop has good yield potential (relates to economics and crop density, which increases canopy humidity and may increase spore production, facilitate spore dispersal, and encourage crop infection).

- Temperatures 68-86 F (relates to spore production and crop infection).

- Humidity is high (80% day or night) and/or free water (such as dew) is present on the heads during this period (relates to spore production, dispersal, and crop infection).

- Rain showers and/or free water were available 5-7 days before flowering (relates to spore release, dispersal, and crop infection).

If most or all of the above conditions exist when the crop is at 10-15% flower, you should consider spraying Folicur or Orius within one or two days.

An exciting new tool that can be used to help determine the FHB risk is a new web-based, disease forecasting model recently made available by Penn State University, Ohio State University, and the U.S. Wheat and Barley Scab Initiative. This forecasting model, which is reported to be 80+% accurate in predicting conditions conducive for FHB epidemics, utilizes real-time weather data from numerous National Weather Service stations within each state. When you enter into the "Risk Map Tool" section of the FHB prediction center home page, you will be asked if you are growing winter or spring wheat. At that point you will come to US map and are asked to click on your state. This will bring you to the main FHB Risk Management Tool page.

The FHB Risk Management Tool page will have a map of Kentucky showing the locations in the state where the weather data are being retrieved. To the upper left corner of the page is a calendar section labeled "Flowering Date". This section needs a bit of explaining. You will note right away that the model will only let you input a "flowering date" as late as the current day. It also covers the preceding 7 days. So, if you estimate your crop will flower on May 7, but it is only May 3, the best you will be able to do is to determine if the weather on May 3 is favorable for FHB, and establish what the FHB risk has been for the preceding 7 days (April 26 - May 2). Of course, since your crop is not flowering, the real FHB risk is zero, no matter what the forecast model says. Nevertheless, that information will tell you if FHB is brewing or not. My advice is to begin determining the FHB risk using this model several days out from crop flowering. Keep checking your wheat and keep checking the model every 1-2 days. By the time your crop reaches 10-15 % bloom, you will have a good feel for the FHB risk in your area. If the forecast model says the FHB risk is high (medium if you are not a risk taker), and the forecast matches your local weather reality, then you might consider spraying Folicur or Orius within 1-2 days.

The web address for the FHB Prediction Center is http://www.wheatscab.psu.edu/. Check it out. Once you actually see it and play around with it, what I have said above will make much more sense. The model does have several practical limitations in predicting final FHB levels; these are clearly discussed within the Prediction Center web site. Perhaps the greatest limitation of the model is that it does not account for weather conditions during flowering and grain fill, specifically, if disease-favorable weather occurred during late flowering and grain fill and greatly impacted final FHB/DON levels. As I said earlier, the forecast model is 80+% accurate, so final FHB/DON conditions will not always be reflected by the model's risk output. The authors of the model discuss this limitation under "Reality Check" in the "Model Details" section of the Prediction Center.

We all hope that FHB is non-existent this spring and growers achieve record yields and grain quality as they did in 2006. However, if this is not the case, wheat producers now have an additional tool to consider, and possibly use, to minimize FHB and DON development this spring.

VEGETABLES

PRODUCT UPDATES AND LABEL CHANGES FOR 2007 — CUCURBITS
by Kenny Seebold

In a previous issue of Kentucky Pest News (2/12/07, #1117), we discussed new fungicide products and formulations labeled for use on pepper and tomato in 2007. New products and formulations of old products will be available this season for cucurbits as well and are not listed in the most recent version of ID-36. In this article, we'll take a look at the latest product listings for cucurbit disease control.

The following is a summary of new products or approved for use on cucurbits in Kentucky, and includes the preharvest interval (PHI) and FRAC grouping (code). The FRAC grouping refers to the code assigned by the Fungicide Resistance Action Committee to the active ingredient(s) in a given product. Some of the products in this list have specific modes of action and are thus more at risk for the development of resistance by certain plant pathogens. Fungicides in the same FRAC group share the same mode of action, regardless of the active ingredient. Thus FRAC groupings help can help growers adhere to resistance management guidelines by allowing them to recognize fungicides with the same mode of action and avoid using them in a manner that is not consistent with published guidelines. Resistance management guidelines are published by the manufacturers of these products and should be adhered to strictly. As with all pesticides, refer to product labels for specific information on application rates and safe use.

New Products and Formulations for Management of Cucurbit Diseases, 2007

Badge SC (copper hydroxide + copper oxychloride 27%) [1.2-2.8 pt/A] – foliar-applied fungicide/bactericide for management of Alternaria leaf spot, angular leaf spot, anthracnose, downy mildew, gummy stem blight, powdery mildew, and bacterial fruit blotch of watermelon (suppression only); field and greenhouse uses approved. All cucurbit crops are listed on the product label. FRAC Group M1; PHI=0 days.

Chloropicrin from Arvesta (chloropicrin 99.5%) [300-500 lb/A] – soil-applied, pre-plant fumigant for management of soilborne diseases and nematodes; field use only. FRAC Group 8b (insecticide); PHI=0 days (product can be applied only prior to seeding or transplanting).

Cuprofix Ultra 40 Disperss DF (basic copper sulfate 71%) [1.25-2 lb/A] – foliar-applied fungicide/bactericide for management of Alternaria leaf spot, angular leaf spot, anthracnose, downy mildew, gummy stem blight, powdery mildew, and bacterial fruit blotch of watermelon (suppression only); field and greenhouse uses approved. All cucurbit crops are listed on the product label. FRAC Group M1; PHI=0 days.

Forum SC (dimethomorph 50%) [6 fl oz/A] – similar to Acrobat 50WP; foliar-applied fungicide for management of downy mildew and Phytophthora blight; field use only. FRAC Group 40; PHI=0 days.
Quintec (quinoxyfen 25%) [4-6 fl oz/A] –foliar-applied fungicide for management of powdery mildew on citron melon, muskmelon, and watermelon; field use only. FRAC Group 13; PHI=3 days.

Kocide 3000 (copper hydroxide 46%) [0.5-1.25 lb/A] – foliar applied fungicide for management of Alternaria leaf spot, angular leaf spot, anthracnose, downy mildew, gummy stem blight, powdery mildew, and bacterial fruit blotch of watermelon (suppression only). All cucurbit crops are listed on the product label; field and greenhouse uses approved. FRAC Group M1; PHI=0 days.

Ranman (cyazofamid 40%) [2-2.75 fl oz/A] – foliar-applied fungicide for management of downy mildew and Phytophthora blight. All cucurbit crops are listed on the product label; field use only. FRAC Group 21; PHI=0 days.

Reason 500SC (fenamidone 50%) [5.5 fl oz/A] – foliar-applied fungicide for management of Alternaria leaf spot and downy mildew. All cucurbit crops are listed on the product label; field use only. FRAC Group 11; PHI=14 days.

Ridomil Gold Bravo SC (mefenoxam + chlorothalonil 44%) [2.5-3.25 pt/A] – foliar-applied fungicide for management of Alternaria leaf blight, anthracnose, Cercospora leaf spot, downy mildew, gummy stem blight, and scab. All cucurbit crops are listed on the product label; field use only. FRAC Groups 4, M5; PHI=0 days.

Sovran 50WG (kresoxim-methyl 50%) [3.2-4.8 oz/A] – foliar-applied fungicide for management of gummy stem blight and powdery mildew. All cucurbit crops are listed on the product label; field use only. FRAC Group11; PHI=0 days.

LAWN & TURF

SLUGS
by Lee Townsend

There is no sure-fire solution to slug problems in landscape plantings and gardens during early spring. Slugs are favored by cool, wet weather and can remain active until hot, dry conditions force them into protected sites. Slugs feed on a wide variety of plants, shredding the leaves with their rasping mouthparts. They can be especially damaging to newly-set transplants and bedding plants.

In general, insecticides have little effect on slugs and chemical control is limited to applications of baits containing metaldehyde, metaldehyde + carbaryl (Sevin), or iron phosphate as the active ingredient(s). The bait needs to be scattered evenly over the ground so that slugs encounter the pellets as they slide along in search of food. Baits disintegrate following rain or heavy dew so additional applications may be necessary. Also, metaldehyde is broken down by sunlight so it is relatively short-lived. Spreading the bait late in the day, rather than early in the morning, will help to get in front of the slugs with minimal loss.

Slugs will move under shelter during bright sunny days or when the humidity is low. Removing hiding places, such as boards, rocks, etc. will force them to find other shelter and perhaps relocate and do less feeding in the area. Also, hiding places can be used against them. Pieces of moist cardboard, rolled-up newspaper, boards, or upturned flower pots can be left on the ground in a few spots. Slugs will tend to accumulate under the shelter and can be scooped up and discarded. It is good to have these items propped about 1" above the ground so that the slugs can get under them easily. Keep the shelters in place during "slug season". This approach is most successful when there are not many other hiding spots and weather conditions cause the slugs to seek shelter.

Beer traps will collect many slugs because they are attracted to fermentation odors and drown in the liquid. Adjusting the trap so the rim is about one-half inch above the soil line will reduce the number of ground beetles and other non-target creatures from being caught. Fill the container about half-full and replace the contents every few days. Sugar water with some yeast can be used in place of beer.

Barriers can provide some relief if the slugs are moving in from outside the area that is being protected. Wood ash or fine lime can be used but both lose their effectiveness when wet and too much wood ash is not good for the soil. Slugs do not like to cross copper. A copper barrier tape (about 1" wide) can be used along borders or around the legs of greenhouse tables to deter slugs. There are wider copper barriers that can be set in the soil as fences but the expense makes this most suitable for small areas

.SHADE TREES & ORNAMENTALS

EASTERN TENT CATERPILLAR AND FOREST TENT CATERPILLAR FEEDING NOW
by Lee Townsend

Eastern tent caterpillars (ETC) are developing normally this spring and egg hatch should be complete in central Kentucky. There is no indication of widespread high populations but ETC is abundant ins some localized areas. Now is the time to assess caterpillar populations.

Small ETCs have been moving to feed on expanding leaves and have built tents at branch and limb forks. Initial growth of the caterpillars will be slow but over the next two to three weeks caterpillars in limb nests will begin to move to main trunk branch angles and join in a smaller number of larger tents on individual trees. This aggregation behavior can be used to advantage in managing the insect by physically destroying or treating accessible aggregations. Caterpillars will leave defoliated trees in search of food on which to complete development. When full grown, they will wander to find a pupation site. In either case, successful control of dispersing caterpillars is difficult.

Foliar sprays for caterpillar control can be made during this time period, as well. Spray residues of products based on Bacillus thuringiensis (Bt) must be eaten by small caterpillars to be effective; there is no contact effect. Consequently, applications should be made to as much of the canopy as is feasible, especially the foliage around active nests. Direct application to nests will not provide any control. Bt residues on foliage can be broken down by sunlight in 3 to 4 days so it is important to assess control and re-treat if necessary. Effectiveness of Bt decreases as caterpillar size increases.

Foliar sprays with products such as bifenthrin (Talstar) or carbaryl (Sevin) have both stomach and contact activity so they can be effective when sprayed on to foliage or tents. The residual life of carbaryl is about a week; that of bifenthrin is at least 2 to 3 weeks. Another option is to inject trees with either bidrin (Inject-A-Cide “B” or 2% Abacide. Regardless of the treatment used, it is important to re-visit the sites in about 5 days to assess caterpillar activity.

The first reports of the forest tent caterpillar (FTC) have come in from Boone county. This insect has been active along the Ohio River for the past two years and has moved east from the Madison, IN area during that time. The FTC is a "hairy" caterpillar that looks a lot like its close relative the ETC. The FTC has a single row of footprint-shaped whitish spots down the center of the back instead of the light stripe along the center of ETC back.

The FTC feeds on a wide range of deciduous trees including maples, oaks and many other hardwoods. When abundant, these caterpillars will defoliate host trees and move to shrubs, fruits, and vegetables to finish feeding. As with the ETC, dispersal of FTC can cover houses and mature caterpillars move from trees to find pupation sites. Wandering caterpillars are difficult to control, even with direct spray of an insecticide. It may be possible to sweep up masses on patios or decks.
Fortunately, there is one generation each year.

FTC outbreaks last for about 3 seasons and then decline but can linger for 5 to 7 years. Growth of defoliated trees may be reduced significantly (up to 90 percent) but trees rarely die unless other factors are acting as stressors. FTC do not spin the tents associated with ETC. Instead., the group together on silken mats which they lay down on trunks and branches. Development takes 5 to 6 weeks ending with pupation in crevices or wrapped in folded leaves.

DISEASE RESISTANT "NO-SPRAY" ROSES?
by John Hartman

Roses are grown in many Kentucky gardens, but roses are often difficult to grow because of susceptibility to diseases, especially black spot. Fortunately, many of the new shrub roses show resistance to black spot and other diseases and are gaining in popularity with many gardeners. However, a word of caution is advised regarding claims of disease resistant "no-spray" roses. Dr. Mark Windham, plant pathologist at the University of Tennessee has provided some research-based insight into disease reactions of some of the new shrub roses.

All of us have seen disease resistance claims in the plant and nursery catalogs with their showy descriptions of rose cultivars. Examples of these claims are 'Rainbow Sorbet' described as having remarkable disease-resistance and 'Showbiz' having glossy dark green leaves with excellent disease resistance. Are these claims of disease resistance and no need for sprays accurate? Unfortunately, the assertions are often anecdotal and without proper experimental controls. Fortunately, Kentucky gardeners can get the facts on these roses. Plant Pathologists at the University of Tennessee are testing these so-called "no-spray" roses at various locations, one of which will be in the Cumberland Plateau which has a climate similar to that of northern Kentucky. From their rose plots they already have some preliminary results that should be of interest to Kentucky rose growers. In their test, the cultivar 'Peace' served as a susceptible control and was placed in a grid throughout the test to confirm that disease pressure was high (which it was). Black spot and Cercospora leaf spot both appeared in the plots.

Out of this test of 64 roses, they have identified 10 shrub rose cultivars that could claim the title of "no-spray roses. Note that these are preliminary results. The resistant roses include:

- Yellow roses - 'Carefree Sunshine' and 'Topaz Jewel.'
- Red roses, 'Homerun' and 'Knockout.'
- Pink roses - 'Hansa,' 'Pink Knockout,' 'Wildberry Breeze,' and 'Pretty Lady,' which is a light pink.
- White roses - 'Snowcone' and 'Wildspice.'
- The shrub rose cultivars 'Belinda's Dream,' 'Crystal Fairy,' 'Fairy Queen,' 'Lovely Fairy,' and 'Wild Thing' were moderately resistant, but not in the "no-spray" category.
- Many other roses with claims of disease resistance did not make the list.

In 2007, these cultivars will be tested again to confirm their resistance. In addition, many more cultivars, all with resistance claims in industry publications or catalogs, will be added to the test. This is a good example of land-grant University research that benefits gardeners throughout the region and how the Cooperative Extension Service collaborates to foster rapid dissemination of science-based results. Thus, at the same time that Tennessee gardeners might benefit from U.K. work on shade tree bacterial leaf scorch or pine tip blight diseases, for example, Kentucky gardeners can benefit from U.T. work on disease-resistant roses. In the meantime, be skeptical of some of the rose catalog claims of "no-spray" roses, at least until you see the results of science-based research.

DIAGNOSTIC LAB-HIGHLIGHTS
by Julie Beale and Paul Bachi

Diseases on greenhouse ornamentals and vegetables over recent weeks have included black root rot on petunia; oedema, rust and pelargonium flower break virus (producing foliar ringspots) on geranium; and lettuce mosaic virus on lettuce.

We continue to see numerous samples of winter injury/ winter drying on broadleaf evergreens such as holly and magnolia. Aside from winter injury problems, we have seen samples of bacterial soft rot and cold injury on daylily; Phomopsis dieback on holly; Pestalotia twig blight on taxus; Botryosphaeria canker on dogwood; Volutella blight on pachysandra; cedar-apple rust galls on juniper; and yellow patch on bentgrass. We received a sample of white pine blister rust on white pine, which is a very unusual find in our area. Trees had been shipped from out of state and the disease was detected before trees were planted.

INSECT TRAP COUNTS
UKREC, Princeton KY
Kentucky—Tennessee
March 23-30, 2007

Jackson, TN
Black cutworm........ 0
True Armyworm........ 1
Corn earworm........ 0

Milan, TN
Black cutworm........ 0
True Armyworm........ 0
Corn earworm........ 0

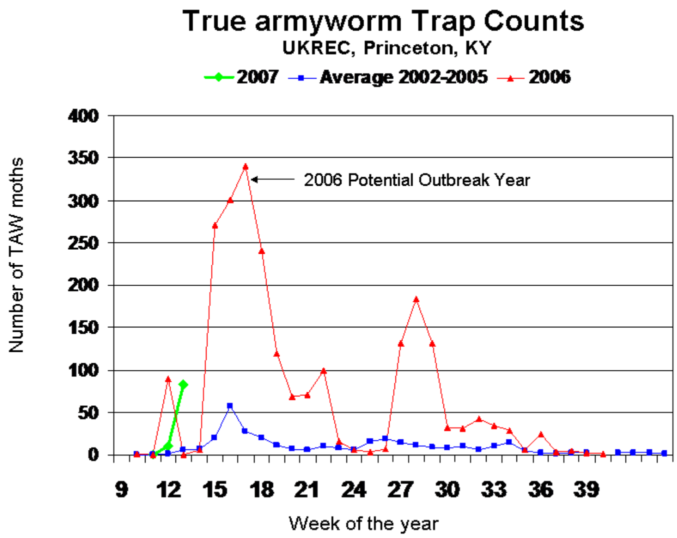
Princeton, KY

Black cutworm 20
True Armyworm 83
Corn earworm...4

Lexington, KY

Black cutworm 0
True Armyworm 55
Corn earworm...0

The following chart shows 2007 True armyworm trap counts in green as compared to 2006 and also the average for 2002 through 2005.



This season insect trap counts will be provided for locations in Kentucky and Tennessee.
View trap counts for past seasons and the entire 2007 season at –
http://www.uky.edu/Ag/IPMPrinceton/Counts/2006trapsfp.htm
View trap counts for Fulton County, Kentucky at -
http://ces.ca.uky.edu/fulton/anr/
For information on trap counts in southern Illinois visit the Hines Report at –
http://www.ipm.uiuc.edu/pubs/hines_report/comments.html
The Hines Report is posted weekly by Ron Hines, Senior Research Specialist, at the
University of Illinois Dixon Springs Agricultural Center.

Lee Townsend, Extension Entomologist

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.