



KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • AGRONOMY

On line at - <http://www.uky.edu/Agriculture/kpn/kpnhome.htm>

Number 874

March 20, 2000

ANNOUNCEMENT JUST FOR APPLICATORS

- Pesticide spray drift
 - Twelve tips for applicators
- ### TOBACCO
- Fulfill insecticide for aphid control
 - Evaluation of Ridomil Gold and Ultra Flourish for black shank control

CORN

- Watch for flea beetles
- ### SHADE TREES & ORNAMENTALS
- Many landscape conifers are in trouble

FRUIT

- Danitol 2.4 EC receives apple label
- Pheromone traps for codling moth
-

PLANT DIAGNOSTIC LAB - Highlights

ANNOUNCEMENT

including weather conditions, topography, the crop or area being sprayed, application equipment and methods, and decisions by the applicator.

With this issue, Kentucky Pest News returns to weekly publication and distribution by First Class mail.

JUST FOR APPLICATORS

PESTICIDE SPRAY DRIFT - A CRITICAL ISSUE EVERY YEAR

By Lee Townsend

Spray drift is a potential problem almost every time a pesticide application is made. The following information, from the Environmental Protection Agency, provides a good review of something every applicator should know.

The EPA defines pesticide spray drift as *the physical movement of a pesticide through air at the time of application or soon thereafter, to any site other than that intended for application (off-target)*. Its definition does not include movement caused by erosion, migration, volatility, or contaminated soil particles that are windblown after application, unless specifically addressed on a pesticide product label with respect to drift control requirements.

How Does Spray Drift Occur? When pesticide solutions are applied by ground spray equipment or aircraft, droplets are produced by the nozzles of the equipment. Many of these droplets can be so small that they stay suspended in air and are carried by currents until they contact a surface or drop to the ground. A number of factors influence drift

How Does EPA View Off-Target Spray Drift?

When labels of pesticide products state that off-target drift is to be avoided or is prohibited, the policy is straightforward: **pesticide drift from the target site is to be prevented**. However, [the EPA] recognizes that some degree of drift of spray particles will occur from nearly all applications. The question becomes - were all reasonable measures to reduce drift followed?

Applicators must use all available practices designed to prevent drift. They must consider factors such as wind speed (greater than 10 mph), direction and other weather conditions (inversions), application equipment, the proximity of people and sensitive areas, and product label directions in making their decisions. Sprays should not be applied when conditions favor drift or when prohibited by the label requirements. EPA uses its discretion to pursue violations based on the unique facts and circumstances of each drift situation.

TWELVE TIPS FOR APPLICATORS

By Lee Townsend and Ken Franks, Jr.
Division of Pesticides, Ky Department of Agriculture

By following this check list, applicators can comply

with critical state and federal regulations concerning pesticide use and application.

1. Know your fields. Be aware of sensitive areas such as sinkholes, bodies of water, and slopes where runoff can occur and use buffer strips as appropriate.

2. Always read and follow label directions. You should read the label every time you get a new shipment of pesticides. Pay close attention to sections on Practical Treatment, Precautionary Statements, Directions for Use, Storage and Disposal, in addition to instructions for the crop you are treating.

Be aware of any label changes. Pesticide labels can change in the middle of a season. It is a violation of state and federal law to use a product in a manner that is inconsistent with its label. Have a copy handy as a reference.

3. Follow the Worker Protection Standards. Keep your central posting area up to date. Be sure personal protective equipment is repaired and clean. Have decontamination station equipment ready.

4. Check your spray equipment for wear and calibrate carefully. Check hoses and nozzles for wear, especially if you apply a lot of WP, DF, WDG, DF, or F formulations. These are abrasive and wear nozzles. Inspect pumps and pressure gauges.

5. Use a safe mixing and loading area. When possible, mixing and loading sites should be at the application site. Also, they should be at least 50 feet from wells, streams, etc. It is best to have a liquid tight mixing and loading pad.

6. Protect against backsiphoning. Keep the end of the filler hose above the spray solution in the tank. Backsiphoning can occur when the end of the hose falls below the level of the tank contents and there is a drop in pressure. Leave an air gap between the end of the hose and the spray mix level or use an approved anti-backsiphoning device.

7. Store pesticides in a safe place. Store pesticides in the original container with an intact label. Read the storage instructions on the product label. The storage area should be dry and ventilated, away from animal feeds, and secure. Pesticides must be stored at least 50 feet from any well unless they are in secondary containment.)

8. Keep accurate pesticide application records. This must be done for all Restricted Use pesticides but is a good idea for General Use products, too. Accurate records can assist an applicator in the event the product does not perform to expectations. Be aware of the record keeping requirements of the U.S.D.A., Worker Protection Standards, and the groundwater protection act.

9. Have an emergency response plan in case of a spill or exposure. Have the proper protective equipment to protect yourself. A shovel and absorbent material can be used to confine small to medium liquid spills. Call 911 to report the spill. Give the exact location, product involved and the approximate amount. Your decontamination kit should have soap, water, disposable towels and coveralls in case of an exposure

10. Dispose of pesticide containers properly. Remove the lid, triple rinse, and puncture liquid containers and use the Ky Department of Agriculture's pesticide container Rinse and Return Program. In the event the program is not available in your county, contact your local extension agent or the Department of Agriculture for the nearest collection point.

11. Don't spray when it is windy or rain expected. Drift can be a major and costly problem. Do not spray when the wind speed is 10 mph or more. Use low pressure, low boom placement, and large droplet size, as appropriate. Heavy rainfall can wash off applications during the first several hours. Check the product label for specific guidelines.

12. Use the proper protective equipment and good personal hygiene. Follow label requirements for protective clothing. Wash hands following any work with pesticides. Shower at the end of the day and wash work clothing separately from the rest of the family laundry.

TOBACCO

FULFILL WDG INSECTICIDE LABELED FOR APHID CONTROL ON TOBACCO By Lee Townsend

Fulfill (pymetrozine) 50% C WDG, a Novartis product, has a federal label for aphid control on tobacco. The signal word for this General Use insecticide is CAUTION.

Fulfill should be applied as a foliar spray when aphid first appear and before populations build to damaging levels. Thorough spray coverage is essential for best performance. The manufacturer recommends use of a nonionic surfactant or organosilicone-based surfactant. penetrating type spray adjuvant to obtain optimum coverage and aphid control. The active ingredient moves across the leaf surface and into plant tissue so it is rainfast as soon as the spray suspension has dried.

Fulfill works primarily by ingestion but has some contact activity. Affected aphids stop feeding soon

after exposure but may remain on the leaves for 2 to 4 days before they die. Two applications may be needed to control heavy aphid infestations. This product does not control caterpillars (budworms and hornworms).

The use rate for Fulfill on tobacco is 2.75 oz of product in a minimum of 20 gallons of water per acre. There is a 12 hour restricted entry interval and a 14 day post harvest interval. The rotational (plant back) restriction is 30 days for all crops.

EVALUATION OF RIDOMIL GOLD AND ULTRA FLOURISH FOR BLACK SHANK CONTROL IN BURLEY TOBACCO

By William Nesmith

Soil applications of the fungicide mefenoxam, formulated as Ridomil Gold EC, have been a valuable component in the control of black shank for several years. Late in 1998, another fungicide containing mefenoxam, Ultra Flourish EC, was labeled on tobacco. Although Ultra Flourish contains the same active ingredient as Ridomil Gold, I cautioned against its immediate adoption for the 1999 crop season, because it had not been evaluated in the field and formulation differences can markedly affect performance with an active ingredient. Also, data was not available with direct comparisons with Ridomil Gold.

As I promised last year, a priority of our 1999 field-testing program was to directly compare Ridomil Gold 4EC and Ultra Flourish 2EC, in side-by-side trials at equal rates of the active ingredient, and against various levels of black shank pressure. I made the applications and disease ratings in these evaluations, and County Extension Agents and the growers were involved with the yield portions of the studies.

Below are the results from one such study, a black shank test located in a Kentucky River Bottom in Perry County. This test was established using a Split Plot Design with four replications, using three fungicide regimes as the main plots, and six burley varieties as the subplots. The null hypothesis that Ultra Flourish and Ridomil Gold provide different levels of black shank control was rejected. Therefore, the main conclusion is that growers should expect that Ultra Flourish and Ridomil Gold will provide equal control of black shank when applied at the same rates and same timing. Similar results were obtained in all other tests conducted. Therefore, these two fungicides should be given equal consideration when making decisions about efficacy. However, when comparing these products, be sure to recognize that Ultra Flourish 2EC contains half the concentration of mefenoxam that is present in Ridomil Gold 4EC, which means twice the volume of Ultra Flourish must be used to achieve the same level of control. This point may not be clear from the advertisements. Currently, both products are labeled for identical uses on tobacco, but watch for "farmer-friendly" changes now that scientific studies are available also to support Ultra Flourish.

Main Plot Effects*

Black Shank Incidence (%)						
Fungicides***	Crop Value (\$)	Yield/A	6/30	8/04	8/25	
Ultra Flourish =1	\$3024	1615 a**	2.9 b	8.5 b	21.5b	
Ridomil Gold 2	\$2775	1482 a	1.0 b	5.8 b	19.2b	
Check =0	\$1863	995 b	8.3 a	30.4 a	56.8 a	

Subplots

Varieties	Crop Value (\$) Yield/A		Black Shank Incidence (%)		
			6/30	8/04	8/25
NC3	\$3156	1685 a	0.6 c	10.1 b	16.0 b
Tn 97	\$2837	1515 a	3.2 bc	9.0 b	18.7 b
Tn 90	\$2709	1447 a	1.9 c	7.0 b	22.3 b
Tn 86	\$2574	1375 a	1.9 c	7.5 b	28.0 b
14xL8	\$2434	1300 ab	9.4 a	28.7 a	51.2 a
Ky 14	\$1613	861 b	7.3 ab	27.1 a	68.7 a

Individual Treatment Combinations

Varieties	Fungicides	Crop		Black Shank Incidence (%)		
		Value (\$)	Yield/A	6/30	8/04	8/25
KY 14	0	615	328 d	16.1 ab	51.8 a	94.9 a

	1	1724	921 cd	5.8 bc	21.9 bc	52.1 bc
	2	2501	1336 abcd	0 c	7.7 bcd	29.1 cde
14xL8	0	648	346 cd	24.1 a	55.2 a	87.6 a
	1	3366	1798 ab	3.8 c	15.4 bcd	32.7 bcde
	2	3288	1756 ab	0 c	15.5 bcd	33.3 bcde
NC 3	0	2584	1380 abcd	0 c	26.4 b	30.1 bcde
	1	3884	2074 a	1.9 c	3.8 cd	11.7 e
	2	2999	1602 ab	0 c	0 d	6.1 e
TN 86	0	2015	1076 abcd	1.9 c	14.8 bcd	57.1 b
	1	3065	1637 ab	1.9 c	3.8 cd	7.7 e
	2	2643	1412 abcd	1.9 c	3.8 cd	19.2 dc
TN 90	0	2640	1410 abcd	1.9 c	15.2 bcd	39.8 bcd
	1	2851	1522 ab	1.9 c	3.8 cd	14.5 de
	2	2636	1408 abcd	1.9 c	1.9 cd	13.5 de
TN 97	0	2677	1430 abc	5.8 bc	19.2 bcd	31.0 bcde
	1	3255	1738 ab	1.9 c	1.9 d	11.4 d
	2	2579	1378 abcd	1.9 c	5.9 cd	13.8 de

* Significant effects were found in main plots, subplots, and the interactions at P=0.05.

** Valves within a column sharing a letter are not significantly different as determined by the Tukey's Test for Honest Significant Differences - P=0.05.

*** Fungicides were applied as follows: 0= Check received no fungicides, 1= Ultra Flourish 2 EC @ 1 QT/A preplant + 1st cultivation + layby; and 2= Ridomil Gold 4EC @ 1 PT/A preplant + 1st cultivation + layby.

CORN

WATCH FOR CORN FLEA BEETLES

By Ric Bessin

This spring we are likely to see high numbers of corn flea beetles. These pests are important on corn for two reasons. First they feed on young plants and when numbers are high and growing conditions poor, some plants may be killed. However, direct feeding by corn flea beetles rarely does much long-term damage. The other reason that they are important is that they can transmit Stewart's Wilt of corn. Many sweet corn hybrids and some field corn hybrids are susceptible to this disease. With the strong possibility of high number of flea beetles this spring, growers are advised not to use hybrids that are susceptible to Stewart's Wilt.

FRUIT

DANITOL 2.4 EC RECEIVES APPLE LABEL

By Ric Bessin

Last week Valent Corporation received approval from the EPA for expansion of the Danitol 2.4 EC label to include apple uses. Danitol 2.4 EC is a Restricted Use Pesticide (due to toxicity to fish and aquatic organisms) that bears the signal word of DANGER. With apples, it has a Restricted Entry Interval of 24 hours and a Pre-Harvest Interval of 14 days. There is a limit of a total of 42-2/3 fluid ounces that may be applied per acre per season. Use rates range from 10-2/3 to 21-1/3 fluid ounces per acre per application.

Danitol 2.4 EC is a pyrethroid insecticide with the active

ingredient of fenpropathrin. It is a broad spectrum insecticide/miticide that can be used from delayed dormant through late season. On its label it lists tarnished plant bug, rosy apple aphid, leafroller, whiteapple leafhopper, plum curculio, codling moth, Oriental fruit moth, Japanese beetle, potato leafhopper, European red mite, and twospotted spider mite. These are our most serious apple pests in Kentucky. The label also recommends that applicators rotate its usage with other products as part of an insect resistance management program.

However, Danitol is a pyrethroid insecticide. Experience with other pyrethroid insecticides used with apples, Ambush, Asana or Pounce, has shown that they are likely to cause mite outbreaks. These pyrethroids are highly toxic to mite predators and have a long residual activity. While I do not have predator toxicity information for Danitol, its effects on integrated mite management need to be resolved.

PHEROMONE TRAPS FOR CODLING MOTH

By Ric Bessin

Use of pheromone traps to monitor for the codling moth in apple orchards has reduced insecticide usage and improved timing and control of insecticides used against it. We are getting close to the time that these traps need to hung in the orchards. Generally, traps are hung at the pink stage of bud development in the southwestern quadrant of an apple tree. A minimum of two traps are needed per orchard. I like to hang traps as high as I can such that they are still convenient to check several times a week. Every month, pheromone lures need to be replaced. Codling moths can be distinguished from other

insects in the traps by their bronze wing tips.

Initial trap catches in the early spring are termed biofixes. This information will be used to predict when egg hatch will occur and to synchronize insecticide sprays. In commercial IPM orchards, inclusion of an insecticide in the cover sprays is recommended as long as pheromone trap catches exceed an average of five moths per trap per week.

The biofix for the codling moth is the starting date of the first sustained flight of male moths captured in pheromone traps. Generally, this is when the fifth moth has been captured in the trap. A few moths often emerge very early in the spring ahead of the rest. Using the fifth moth as the biofix better represents when the majority of the codling moths begin to emerge, usually just after petal fall. Codling moth traps need to be examined daily in order to know exactly when the biofix occurs. After the biofix has occurred, degree days are calculated on a daily basis and a running total is kept.

The codling moth has a 50°F threshold temperature. See the *Midwest Tree Fruit Pest Management Handbook* for an explanation of how to calculate degree days. When 250 degree days have been accumulated after biofix, then an insecticide spray is recommended. If codling moths are abundant (more than 10 per trap per week), then a second spray may be necessary 7 to 10 days later.

SHADE TREES AND ORNAMENTALS

MANY LANDSCAPE CONIFERS ARE IN TROUBLE

by John Hartman

In the Kentucky Pest News two weeks ago and again this week, it was noted that diseased pines and other conifers were beginning to appear as samples in the plant disease diagnostic laboratory. County Extension Agents and homeowners are reporting that established conifers are declining and dying in landscapes and along roadsides. In many cases, trees appeared normal in the fall, but are now turning brown. Reports include various arborvitaes, spruces, particularly Norway, Alberta, and Colorado blue spruce, as well a number of pines such as Scots, Austrian, Mugo, and eastern white pine. Many of the symptoms we are seeing now can be attributed directly or at least indirectly to last year's drought.

Symptoms being observed. Symptoms range from needles becoming off-colored to needles turning brown and dropping off. In most cases, the symptoms appear on the entire tree, whether it has been gradually fading since last fall, or is now suddenly affected. And with the warmer weather, needles are quickly turning brown. However, in some cases, especially some of the spruces, discoloration, browning and needle drop may occur only

on certain branches in a random pattern, usually in the lower part of the tree. Where individual branches are dying on spruces or on Austrian and Scots pines, it is likely that the fungi *Cytospora* or *Sphaeropsis* are active and causing branch cankers and tip blight. Both of these diseases are more prevalent on trees growing under stressful conditions such as drought.

Throughout Kentucky drought was severe for most of the growing season, becoming extreme in some areas in July, August, and September. In addition, most areas experienced above normal temperatures for many weeks of the summer. Although most trees will benefit from the recent rains this past weekend, many will continue to decline because the secondary problems set in motion last summer will continue to kill the trees.

Conifers are vulnerable to prolonged drought. Unlike deciduous trees which can greatly reduce transpiration in winter by dropping their leaves, conifers continue to transpire. During much of the fall and winter, conifers continue to lose significant moisture from their needles. With little soil moisture available and continued transpiration, physiological stress develops and recovery may not occur. As trees dehydrate, needles eventually turn brown and drop, and the tree dies. Although tree demise is being observed now, death may have occurred last fall with winter cold temperatures merely delaying the needle browning until spring warming.

A special note on Scots pines: Significant instances of Scots pine browning are also occurring due to pine wilt disease caused by the pine wilt nematode. Pine wilt can be seen along many of Kentucky's interstate highways. This disease is capable of killing pines by itself, but the drought has hastened the death of many infected trees. Drought-stressed trees are attractive breeding sites for the long-horned beetles which vector the nematode. Because the emerging beetles feed on and carry the nematode to healthy trees in spring, it would be best to remove and destroy dead and dying Scots pines now, before the beetles emerge to spread the disease.

DIAGNOSTIC LAB - HIGHLIGHTS

by Julie Beale

The majority of landscape samples in the Diagnostic laboratories continue to have drought-related stress symptoms--conifers such as spruce, pine and hemlock are submitted frequently to the labs. We have also diagnosed powdery mildew on wheat, as well as several nutritional problems on wheat; tomato mosaic virus on greenhouse tomato; bacterial spot on ivy; and black knot on plum.

Julie W. Beale Plant Disease
ostic Lab

Diagn


Lee Townsend, Extension Entomologist

