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KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • WEED SCIENCE
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Number 1120 **March 26, 2007**

WATCH FOR:

VARIED CARPET beetles on windowsills; ARMYWORM flight begins in western counties; TERMITE SWARMER flight continues, early feeding by EASTERN TENT CATERPILLARS,

ARMYWORMS

ARMYWORM SEASON BEGINS AGAIN!
by Doug Johnson

Armyworm season has been ushered in once again, with the first capture of moths in the pheromone baited traps at Princeton. This year the UK-IPM program is running traps in Princeton and Lexington. We plan as well to have information from two trap sites in Tennessee. We hope this will provide us with a clear heads up if an outbreak population occurs.

Thus far,only two moths have been captured, both at Princeton. At this point there is nothing to be done, except watch the trap counts through the spring. Additionally, there is nothing particularly unusual about these captures. They occurred about the same time as last year but in much smaller numbers. The first capture in 07 was 2 moths on March 16, while the first capture in 06 was 89 moths on March 17. Remember that 2006 was an outbreak year, with a number of pastures and hay fields damaged, mostly in central Kentucky.

You will find all the pheromone trap counts each week in this news letter and on the UK-IPM web pages at: http://www.uky.edu/Ag/IPM/ipm.htm . Just look at the navigation bar on the left margin of the page and select Pheromone Trap Counts.

TOBACCO

KEEPING AHEAD OF PYTHIUM ROOT ROT IN FLOAT BEDS
by Kenny Seebold

Pythium root rot (PRR) is the most common and important disease that we encounter in the float system. By now, seeding trays for production of tobacco transplants is well underway. This week we'll take a closer look at PRR and the most practical options for its management.

The first symptoms of PRR tend to be yellowing and stunting of transplants in a well-defined area or areas of a float bay; however, damping-off can occur in severe cases. During the outbreak, seedlings wilt and root systems decay to some degree. Roots and sometimes lower stems of plants with PRR take on a darkened, necrotic appearance; roots may have a slimy appearance. Infected roots will eventually slough off and some re-growth may be observed; however, new roots likely will become infected.

Water temperatures greater than 72 °F favor development and spread of PRR in float systems. Several species of *Pythium*, a fungus-like organism, are known to cause root rots on tobacco seedlings. *Pythium* species (spp.) require water, a key feature of the float system, for reproduction and movement. Initial infections likely result from germination of resting structures (oospores) of *Pythium* spp.,

and production of zoosporangia. Swimming spores (zoospores) are liberated from zoosporangia, and find their way to tobacco roots. Zoospores encyst after encountering susceptible tissue and enter the root system to establish an infection. Many cycles of zoospore production and infection are possible after initial infections occur.

The most common ways for Pythium spp. to be introduced into float systems are contaminated water, infested soil, or recycled (and contaminated) Styrofoam trays. *Pythium* spp. are common in our soils and surface water and can be carried on shoes or implements. Tobacco roots will penetrate Styrofoam float trays. *Pythium* spp. can persist in root tissue, providing a source of inoculum when the trays are re-used.

Sanitation is an important part in the management of PRR in the float system (see the previous issue of Kentucky Pest News for specific recommendations). NEVER use pond or surface water to fill float beds as water from these sources is likely contaminated with *Pythium* and other plant pathogens such as *Phytophthora* or *Fusarium*. Make sure that shoes and tools are cleaned before bringing them into a transplant facility.

Terramaster 4EC is labeled for use in float systems and is very effective against PRR when used correctly. For preventive use, apply 0.7-1 fl oz of product per 100 gallons of float water beginning 2-3 weeks after seeding, or when roots first enter the water. A second treatment of 0.7-1 fl oz per 100 gallons of water can be made 3 weeks after the first, and a final application of 0.8 fl oz can be made two weeks after the second treatment (if needed). Do not apply Terramaster later than 8 weeks after seeding; make sure that the product is mixed thoroughly in float bays to minimize the risk of plant injury. "Rescue" applications of Terramaster (see label for rates) in systems with active PRR will halt further development of disease and symptomatic seedlings will likely recover. However, the higher rates of Terramaster used in rescue treatments increase the risk of plant injury AND recuperating plants may still harbor *Pythium* and increase their susceptibility to black shank and Fusarium wilt. For these reasons, preventive use of Terramaster is recommended over curative applications of the product. Before using Terramaster, or any pesticide, refer to the label for specific instructions and safety information. Quality tobacco transplants are one of the most important parts of a successful growing season. Through careful management it is possible to achieve excellent control of PRR, good transplant quality, and a healthy bottom line!

ALFALFA

INJUNCTION PLACED ON PLANTING ROUNDUP READY ALFALFA
by J. D. Green

A preliminary injunction has been placed on the sale and new plantings of Roundup Ready alfalfa seed. This action prohibits the planting of Roundup Ready alfalfa seed after March 30, 2007 until further notice. A court ordered preliminary injunction was placed on Roundup Ready alfalfa as part of a lawsuit currently pending in U.S. District Court for the Northern District of California. The case involves the procedural requirements in granting non-regulatory status to Roundup Ready alfalfa under the Plant Protection Act prior to its initial released for sale in the marketplace. Currently, the March 12 preliminary injunction order does allow the continued harvest, use, and sale of Roundup Ready alfalfa that has already been planted before the court order was issued. The availability of this technology for alfalfa producers is likely to depend on the outcome of these court proceedings.

FRUIT CROPS

PREVENT GRAPE ANTHRACNOSE NOW
by John Hartman

In some vineyards, grapes are just beginning to break dormancy, so grape growers will want to take steps now to prevent anthracnose disease. Grape anthracnose most commonly occurs on shoots and berries; however fruit stems, leaves, petioles and tendrils are also susceptible. Anthracnose reduces the quality and quantity of fruit and weakens the vine. Once the disease is established in a vineyard, it can be very destructive. Anthracnose of grape is caused by the fungus *Elsinoe ampelina*.

Symptoms. On young, succulent shoots, lesions first appear as numerous small, circular, reddish spots that enlarge, become sunken, and develop gray centers and round or angular edges. Slightly raised, dark reddish-brown to violet-black margins eventually surround the lesions. Lesions may coalesce, causing a blighting or killing of the shoot. Infected areas may crack, causing shoots to become brittle. Anthracnose lesions on shoots may be confused with hail injury; however, unlike hail damage, the anthracnose lesion edges are raised and black and generally distributed while hail damage generally appears on only one side of the shoot.

On leaf petioles and on the fruit pedicel and rachis, symptoms appear similar to that seen on the shoots. Leaf spots are circular with gray centers and dark margins and are often numerous. The necrotic center of the lesion often

drops out, creating a shot-hole appearance. Young leaves are more susceptible to infection than older leaves. When veins are affected, especially on young leaves, the lesions prevent normal development, resulting in malformation or complete drying or burning of the leaf. Lesions may cover the entire leaf blade or appear mainly along the veins.

On berries, small, reddish circular spots initially develop. The spots then enlarge to an average diameter of 1/4 inch and may become slightly sunken. The centers of the spots turn whitish gray and are surrounded by narrow reddish-brown to black margins. This symptom often resembles a bird's eye, and the disease has been called bird's eye rot. Lesions may extend into the pulp and cause the fruit to crack. Acervuli eventually develop in the lesions and a pinkish mass of conidia exudes from these structures during wet weather. Clusters are susceptible to infection from before flowering until veraison.

Disease history. The fungus overwinters in the vineyards as sclerotia (fungal survival structures) on infected shoots. In the spring, during prolonged wet periods, the sclerotia germinate to produce abundant spores (conidia) which are spread by splashing rain to new growing tissues. In early spring, when free moisture from rain or dew is present, conidia germinate and infect succulent tissue. Although conidia can infect over a wide range of temperatures (ranging from 36□F to 90□F), the higher the temperature, the faster disease develops. For example, disease symptoms take approximately 13 days to appear after infection occurs at 36□F and only four days after infection occurs at 90□F. Heavy rainfall and warm temperatures are ideal for disease development and spread. Once the disease is established, fruiting bodies called acervuli form on diseased areas. These acervuli produce conidia during periods of wet weather and the conidia are responsible for continued spread of the fungus and the disease throughout the growing season.

Disease management.

- Prune out and destroy (remove from the vineyard) diseased shoots, cluster stems, and berries during the dormant season. Sanitation is very important to reduce primary inoculum.
- Eliminate wild grapes near the vineyard so they don't serve as a reservoir for the disease. This may be difficult in wooded areas, but they should at least be removed from fence rows.
- Plant disease-tolerant cultivars. Vinifera and French Hybrid cultivars may be more susceptible than American grapes, such as Concord and Niagara.
- Open up the canopy by selecting training system, shoot positioning, and leaf removal practices that promote foliage drying and sunlight penetration.
- Apply a dormant application of Liquid Lime Sulfur in early spring, followed by applications of foliar fungicides during the growing season.

WHEAT

FOLIAR FUNGICIDES FOR WHEAT DISEASE CONTROL

by Don Hershman and Erick DeWolf*

**Extension Plant Pathologist, Kansas State University*

The North Central Regional Committee on Management of Small Grain Diseases has developed the following information on fungicide efficacy for control of certain foliar diseases of wheat for use by the grain production industry in the U. S. Efficacy ratings for each fungicide listed in the following table were determined by field testing the materials over multiple years and locations by the members of the committee. Efficacy is based on proper application timing to achieve optimum effectiveness of the fungicide as determined by labeled instructions and overall level of disease in the field at the time of application. Differences in efficacy among fungicide products were determined by direct comparisons among products in field tests and are based on a single application of the labeled rate as listed in the table. (See top of Page 4)

LIVESTOCK

WASPS FOR FLY CONTROL?

by Lee Townsend

Several companies sell fly control programs for livestock facilities that are based upon regular releases of tiny wasps that attack and kill fly pupae before the flies emerge. The recommended numbers of wasps (Fly Predators, Fly Eliminators, etc.) to be released is based upon the numbers and types of livestock present. Usually, the wasps are released at 3 to 4 week intervals, beginning before fly season starts and continuing through the summer. The goal is to keep wasp numbers high so that a very high percentage of the fly pupae present are attacked and killed. Since house flies are more prolific and have a shorter life cycle than the wasp, large numbers of wasps must be released during the summer to keep fly numbers suppressed. It is difficult to catch up once the flies get ahead.

Sanitation and weather will be the two most important factors in determining the success of any fly control program. A sound sanitation program is needed to minimize fly breeding sites. This includes manure management, as well as removing wet spilled feed, and eliminating wet areas as much as possible. Wasps must outnumber flies by a significant margin to keep them under control. Lots

Management of Small Grain Diseases (NCERA-184)

[1] Efficacy categories: NR=Not Recommended; F=Fair; G=Good; VG=Very Good; E=Excellent

Product	Fungicide(s)	Rate/A (fl. oz)	Powdery mildew	Stagonospora leaf/glume blotch	Septoria leaf blotch	Tan spot	Stripe rust	Leaf rust	Head scab
Headline 2.09 EC	**Pyraclostrobin 23.6%**	**6.0 to 9.0**	G[1]	VG	VG	E	E[2]	E	NR
PropiMax 3.6 EC	**Propiconazole 41.8%**	**4.0**	VG	VG	VG	VG	VG	VG	F
Quadris 2.08 SC	**Azoxystrobin 22.9%**	**6.2 to 10.8**	F(G)[3]	VG	VG	E	E[2]	E	NR
Quilt 200SC	**Azoxystrobin 7.0% Propiconazole 11.7%**	**14.0**	VG	VG	VG	VG	VG	VG	NR
Stratego 250 EC	**Propiconazole 11.4% Trifloxystrobin 11.4%**	**10.0**	G	VG	VG	VG	VG	G	NR
Tilt 3.6 EC	**Propiconazole 41.8%**	**4.0**	VG	VG	VG	VG	VG	VG	F
Folicur 3.6 EC[4]	**Tebuconazole 38.7%**	**4.0**	G	VG	VG	VG	E	E	G

[2] Efficacy may be significantly reduced if solo strobilurin products are applied after infection has occurred

[3] (G) indicates greater efficacy at higher application rates.

[4] Folicur does not have a federal label, but may have Section 18 emergency registration in some states

This information is provided only as a guide. It is the responsibility of the pesticide applicator by law to read and follow all current label directions. No endorsement is intended for products listed, nor is criticism meant for products not listed. Members of NCR-184 assume no liability resulting from the use of these products.

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of breeding sites will dilute the efforts of the wasps and probably result in unacceptable numbers of flies. Rainfall is one of the main weather impacts. Rain water keeps breeding sites wet and suitable for fly development, while hot, dry weather allows breeding sites to dry quickly and become unsuitable for maggots.

Several species of parasitic wasps are sold commercially, often in blends. In Kansas feedlot studies Muscidifurax zaraptor has been the predominant species collected from house fly pupae and is commonly sold because it is easy to rear. Spalangia nigroaenea also seems to be adapted for the Kansas feedlot environment and was found in both house fly and stable fly pupae. Spalangia endius and Nasonia vitripennis have been bought and released there but were seldom retrieved from fly pupae so they may not be adapted for those conditions.

Wasp releases may be an acceptable supplement for a fly control program when sanitation is very high and weather conditions are dry.

SHADE & FOREST TREES & ORNAMENTALS

FIRE BLIGHT ALERT
by John Hartman

Flowering pears and flowering crabapples are in bloom in many parts of Kentucky. Many of these trees suffered from fire blight last year, so there is likely to be plenty of bacterial inoculum available this year. Primary infections of fire blight most often occur during mild weather when the trees are blooming. During the latter part of last week and projecting through the rest of this week, average temperatures have been and will be in the 60's F, which provides good conditions for fire blight bacterial growth and infection. For infection to occur this week, all that is needed is rain or heavy dew to wash the bacteria into the nectaries at the base of the flowers and set off an epidemic of fire blight. In many areas, rain is forecast almost every day this week, thus fire blight is a very likely occurrence in these flowering trees this season.

Nursery producers of flowering pears and crabapples may wish to choose to make preventive applications of streptomycin to prevent fire blight from disfiguring their young nursery stock, especially if the young trees are in bloom. Streptomycin for landscape trees is not suggested because fire blight rarely kills established landscape pears and crabapples and the effects of the blight are usually masked by new growth produced later in the spring. In addition, because streptomycin may have uses in human medicine there is a need to minimize potential exposure of antibiotic-resistant plant pathogens to human pathogens.

USING MODELS AND MAPS TO ASSESS RISKS FOR RAMORUM BLIGHT AND SUDDEN OAK DEATH

by Patricia B. de Sá

Pest risk analysis (PRA) is the analysis of the risks associated with the introduction of a pest that may be a pathogen, insect, nematode, plant or other organism that is damaging to plants and not native. Some important goals of pest risk analysis are identification of a potential pest, pathways for its introduction, potential for establishment and spread, risks the pest represents to plants in agricultural and natural environments and potential impacts on these systems, and potential economic and social effects of the establishment of the pest. Risk management is a component of pest risk analysis that deals with phytosanitary measures that may be taken to manage the risks posed by the non-native or exotic pest.

The Plant Protection and Quarantine division of the U.S. Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS PPQ) works to "safeguard agriculture and natural resources from the risks associated with entry, establishment, or spread of animal and plant pests and noxious weeds." (http://cpshst.aphis.usda.gov/). One of the components of its mission is a risk analysis program for identification of pathways of pest introduction and for assessing the risk of introduction and establishment.

Risk models are used to aid in assessing the risk of introduction and establishment of exotic pathogens, and to generate maps that help in identifying areas at risk. Risk models are based on several factors important in pathogen introduction and establishment such as presence of a pathway of introduction (trade of plants or plant parts, waterways, animals carrying the pathogen), climate conditions favorable for infection, disease development and over-wintering of the pathogen, and presence of plants that are susceptible and may become diseased and later serve as a local source of the pathogen. Risk maps are useful in assessing the potential establishment of plant pathogens and in deciding what areas to survey.

Considering the presence of plants susceptible to *Phytophthora ramorum* and an environment suitable for development of the diseases it causes like Ramorum blight and sudden oak death, several risk models with maps depicting where the pathogen could become established have been generated by scientists across the country. USDA-APHIS compiled a summary of several risk maps and the Pacific Northwest coast and the central Appalachian mountain regions were consistently considered high risk areas for the establishment of *P. ramorum* (http://nature.berkeley.edu/comtf). On this summary the predicted distribution of *P. ramorum* correlates with areas where it is present in California and in Oregon. Updated risk models for the spread of *P. ramorum* across the country were presented at the Sudden Oak Death Science Symposium III, in Santa Rosa, CA in 2007. Previous risk models were based on climate factors, presence of over-story hosts and receipt of plants from *P. ramorum* positive nurseries. A new model including presence of under-story hosts, places two areas of Kentucky as high risk areas for disease development if *P. ramorum* becomes established, with risk of disease development equivalent to the Pacific Northwest areas where the pathogen is now present. In Kentucky, these areas at risk include the Appalachian Mountains of Southeast Kentucky and an area in northeastern Kentucky. Weather-based mapping of plant pathogens by researchers working with the North Carolina State University and APHIS Plant Pest Forecasting system (NAPPFAST) has also indicated that areas in the Eastern U.S., including Eastern Kentucky could be at great risk for establishment of *P. ramorum* if it is introduced

P. ramorum caused Ramorum blight is a nursery and forest problem that could have a major impact on Eastern U.S. forest systems if it becomes established in the region. It has not been found in forests outside of California and Oregon, but it has been found in nurseries in some states. It was not found in Kentucky in surveys performed in the last four years. It is very important to understand that even when plant pathogens are introduced into new areas, they can be eradicated and eliminated from the location of introduction before they become established. Note also that when a plant pathogen is known to pose a risk to the agriculture or environment of an area, the risk of introduction can be greatly reduced or eliminated by the use of best management practices at the site of production. These practices can remove the pathogen from the pathway of its movement and introduction and allow trade to continue. Best management practices at receiving sites also allow for early detection and eradication of in-

troduced pathogens.

HOUSEHOLD

CARPENTER BEES ARE FLYING
by Mike Potter

Large, black bees have begun hovering around eaves, decks, and wood siding of clients' homes and outbuildings. These are probably carpenter bees searching for mates and nesting sites. Carpenter bees cause cosmetic and structural damage to wood. They can also be intimidating and have the potential to inflict painful stings.

The Problem- Carpenter bees are similar in appearance to bumblebees, but have different nesting habits. Bumblebees generally nest in the ground, whereas carpenter bees tunnel into wood to lay their eggs. Bare, unpainted, weathered softwoods are preferred especially redwood, cedar, cypress and pine. Painted or pressure-treated wood is much less susceptible to attack. Common nesting sites include eaves, fascia boards, siding, wooden shake roofs, decks and outdoor furniture.

Carpenter bees overwinter as adults in old nest tunnels. After mating, the fertilized females excavate galleries in wood, laying their eggs within a series of small cells. The cells are provisioned with a ball of pollen on which the larvae feed, emerging as adults in late summer. The entrance hole and tunnels are perfectly round and about the diameter of your finger. Coarse sawdust, the color of fresh cut wood, is often seen beneath the entry hole, and burrowing sounds may be heard within the wood. Female carpenter bees may excavate new tunnels or enlarge and reuse old ones. Serious damage can result when the same piece of wood is worked year after year.

Males are often aggressive, hovering in front of people who are around the nests. The males are harmless, however, since they lack stingers. Female carpenter bees can inflict a painful sting, but seldom will unless handled or molested.

The Solution- The best time to control carpenter bees is before the tunnels are fully excavated. For homeowners, liquid sprays of Sevin or a pyrethroid (e.g., Bayer Advanced™ Home/Lawn & Garden Insect Killer, Spectracide® Triazicide/Bug Stop, Ortho® Home Defense System/Termite & Carpenter Ant Killer) can be applied directly into nest openings, or broadcast sprayed as a deterrent onto wood surfaces attracting large numbers of bees. The broadcast spray approach is often warranted when carpenter bees are riddling siding on a barn, wood shake roofs, decking or similar large expanses of wood. Broadcast treatment is best accomplished with a pump up or hose end sprayer, targeting wood surfaces that are most favored by the bees (fascia boards, joist ends of redwood decks, etc.). Residual effectiveness of such applications is only about 1-3 weeks, so the treatment may need to be repeated. Individual holes which are already present also can be treated with a wasp and hornet aerosol spray or insecticide dust (e.g., Sevin, DeltaDust), directed into the nest opening. Although carpenter bees are less aggressive than wasps, female bees provisioning their nests will sting. Consider treating at dusk or while wearing protective clothing.

Leave the holes open for a few days after treatment to allow the bees to contact and distribute the insecticide throughout the nest tunnel. Then plug the entrance hole with a piece of wooden dowel coated with carpenter's glue, wood putty, or other suitable sealant. This will protect against future bees using the old tunnels, as well as moisture intrusion and wood decay.

Carpenter bees normally will not tunnel into painted wood. Therefore a more permanent solution is to paint unfinished wood surfaces, especially those with a history of being attacked. Wood stains and preservatives are less reliable than painting, but may provide some degree of repellence versus bare wood. To further discourage nesting, garages and outbuildings should be kept closed when carpenter bees are actively searching for nesting sites. The annoying flying and nesting habit usually subsides by the end of May.

VARIED CARPET BEETLE COMMON "WINDOW AND COUNTERTOP" INSECT NOW
by Lee Townsend

Varied carpet beetles feed on a wide variety products including woolens, carpets, furs, hides, feathers, horns, bones, hair, silk, fish meal, rye or corn meal, red pepper, and cereals. They also feed on accumulations of dead insects in wall voids, fluorescent light fixtures, and attics. The adult is about 1/16 inch long and black with an irregular pattern of white, brown, and yellow scales on its wing covers. In older adults the scales that form this pattern wear off so the beetles appear solid brown or black. These beetles are attracted to light and often are found on windowsills during the spring.

The vacuum cleaner is one of the best weapons to use against this insect. Rooms should be cleaned often enough to prevent the accumulation of hair, lint and other carpet beetle fodder. This is especially important in households that have pets indoors. Close attention should be given to carpets (especially under furniture), rugs, draperies, upholstered furniture, closets (especially where woolens and furs are stored), heat radiators and registers and associated duct work, corners, cracks, baseboards and moldings, and other hard-to-reach areas. Open containers of dried foodstuff and pet food should be regularly inspected for signs of carpet beetles and discarded if contaminated. Crack and crevice treatments along baseboards with products labeled for indoor application against cockroaches and ants can be made after areas have been cleaned.

DIAGNOSTIC LAB-HIGHLIGHTS

by Julie Beale and Paul Bachi

Recent samples in the PDDL have included a number of broadleaf evergreens with winter injury (leaf burn and desiccation) from the bitter cold periods we experienced in February. Holly, magnolia and rhododendron are the most common plant species showing these symptoms. Once new growth begins to emerge, healthy leaves will hide the damaged foliage and the appearance of affected plants will improve, but until then, many homeowners may have concerns about their trees and shrubs. Aside from winter injury problems, we have seen samples of Phytophthora root rot on taxus; Volutella blight on pachysandra; black root rot (*Thielaviopsis*) on petunia; Botrytis blight on vinca; black knot on plum; and damping-off caused by Pythium and Rhizoctonia sp. on pepper transplants.

INSECT TRAP COUNTS

UKREC, Princeton KY

Kentucky – Tennessee

March 16-23, 2007

Jackson, TN
Black cutworm 0
True Armyworm 1

Milan, TN
Black cutworm 0
True Armyworm 0

Princeton, KY
Black cutworm 0
True Armyworm 10

Lexington, KY
Black cutworm 0
True Armyworm 0

View UKREC trap counts for 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/Insect%20Trap%20Counts.htm

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.

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.

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