



KENTUCKY PEST NEWS

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TOBACCO

ACTIGARD - A NEW BLUE MOLD CONTROL TOOL

by William Nesmith

The plant activator Actigard 50 WP, marketed by Syngenta, was labeled late last season for blue mold control in tobacco. Actigard contains acibenzolar-S-methyl which has no significant direct activity against the target pathogens. Instead, the active ingredient gives control by inducing (triggering) a series of natural chemical reactions in the treated plant that activate the plant's own resistance mechanisms - called the SAR (systemic activated resistance). Consequently, disease control is normally not obtained until four or five days after the application is made and there may be other desirable and undesirable physiological changes that occur under certain conditions in the treated plant.

I have conducted a large number of laboratory and field trials with Actigard and the SAR mechanism on tobacco. Colleagues in other states have also evaluated Actigard. It is effective in activating this important disease control, and it can be a valuable

tool in blue mold control. However, it is not a panacea and it can have side-effects! I strongly urge growers to follow directions carefully, in order to achieve the desired disease control without causing crop damage. Application rate and timing are critical to achieving control while minimizing the phytotoxicity. The label clearly states these "do nots" and I urge growers to follow label warnings:

- * Do not apply it to stressed plants.
- * Do not apply it to seedlings, transplants, or small plants - wait until plants are 18" tall.
- * Do not apply it with foliar fertilizers or crop oils.
- * Do not overlap spray coverage during application.
- * Do not exceed the rate per each application, or the total rate for the season.

Actigard 50 WG is labeled on both burley and dark tobaccos as a foliar application in the field at the rate of 1/2 oz/acre, with a limit of two applications per season.. Application cannot begin until after the plants reach a height of 18" (stalk length from bud to the soil line). A second application can be made 10 days later. Earlier applications can cause significant phytotoxicity and yield reduction. Even with the recommended use pattern, Actigard often causes a yellowing of the leaf, that often declines or disappears, but may not, depending on a number

of other facts. This chemical has no rescue effects, so it must be applied in as a preventive.

It is important that blue mold be controlled with another fungicide (Acrobat MZ) until the plants are large enough to tolerate the Actigard. Keep in mind that the earlier blue mold attacks the plant the greater is the damage, so this is an important point. Furthermore, if the plants already have blue mold when the application of Actigard begins, the phytotoxicity can be severe, because blue mold has already triggered the SAR reaction. Under Kentucky conditions, we are often approaching 30 days post transplanting before plants are 18" tall, and large enough to tolerate the chemical. In general, we have found that control lasts for about 10-14 days post treatment, so additional fungicide sprays may be needed late in the season too, especially with the medium-late and late maturing varieties.

For those reading articles from flue cured tobacco, you could become confused. Realize that flue cured tobacco may be less sensitive to the phytotoxicity reaction than is burley.

The preharvest interval is 21 days and the re-entry interval is 12 hours. Actigard is compatible with most insecticides and fungicides used on tobacco at the labeled stages of growth. However, it cannot be mixed with foliar fertilizers or sucker controls due to phytotoxicity problems. I have experienced very serious crop injury in plots when it was applied with foliar fertilizer.

Thorough coverage (using the equipment and methods used for Acrobat MZ) improves control, but we have usually obtained good control with the spray nozzle arrangements used to deliver sucker controls in 20-30 gallons of water per acre. If the tobacco is under heavy fertilization and is in a highly conducive sites for blue mold, thorough coverage is recommended for maximum disease control.

I urge County Extension Agents to work closely with growers during the evaluation and adjustment period with this new disease control tool, especially demonstrating its phytotoxicity problems if applied incorrectly, and its high potential for disease control when used correctly. This would make an ideal topic for field days at the county level - focusing on how to use and not use this tool. Please contact me

for guidelines in setting up such educational demonstrations.

TOBACCO INSECT CONTROL OPTIONS **By Lee Townsend**

There are several options for managing tobacco insect problems in the 2001 crop. The tobacco insect season begins with the flea beetle, a common visitor in all fields. These small, brown insects can riddle newly set transplants and keep them from getting off to a good start. An average of 3 or more beetles per plant is the recommended treatment guideline, a level that is often exceeded during the first 3 to 5 weeks after plants are set in the field.

Preventive flea beetle control can be accomplished with a transplant water application of either Orthene (or other acephate products) or a transplant or float tray drench treatment with Admire. These insecticides provide excellent protection against flea beetles during the critical first few weeks of the field season. The Admire treatment (1 fl oz per 1,000 plants) should control aphids until topping time, the point at which these insects are no longer a threat to yield.

Tobacco aphids, budworms, and hornworms are the key pests during the remainder of the season. Preventive applications of Orthene or Admire will not have any effect on these insects. Regular field checks, use of treatment guidelines, and applications of a foliar spray are the backbone of tobacco insect management.

CORN

POSTEMERGENCE CONTROL OF ITALIAN RYEGRASS IN CORN

by James R. Martin

Options that help manage regrowth of Italian ryegrass plants following burndown herbicide applications in no-tillage corn include: Roundup UltraMAX, or a similar glyphosate formulation, applied only to Roundup Ready corn; Lightning applied only to Clearfield corn, Liberty applied only to Liberty Link corn, or Accent applied to regular or herbicide-resistant corn hybrids.

Last year's research on these options showed a benefit in delaying the postemergence application until sufficient regrowth of ryegrass has occurred

following the burndown herbicide treatment. Regardless of herbicide option, Italian ryegrass control ranged from 53 to 63 % for treatments applied at 1 week after planting and 66 to 80 % for treatments sprayed at 2 weeks after planting. Delaying postemergence applications until 4 or 6 weeks after corn planting resulted in 93 to 100% control of Italian ryegrass. It is important to note that in this particular study nitrogen fertilizer was sidedressed approximately 6 weeks after planting; consequently, regrowth of Italian ryegrass was relatively slow in recovering from the burndown application. It is likely that the rate of regrowth would have been faster had the nitrogen been applied at planting.

These postemergence options may also help in limit further increase or spread of this weed from seed produced from escaped plants. The amount of ryegrass that was re-infested with seed produced from plants that escaped postemergence herbicide treatments ranged from 1 to 58%. Re-infestation of Italian ryegrass was relatively low for Roundup and Liberty regardless of timing of application. Accent and Lightning treated plots also had low levels of re-infestation of Italian ryegrass when treatments were applied at 4 or 6 weeks after planting.

EARLY SEASON CORN INSECTS

by Ric Bessin

There have been several reports of cutworm and flea beetle activity. However, there have been several contradictory reports of the level of cutworm activity in the southwestern portion of the state. But, regardless of the level of activity in someone else's fields, you need to be monitoring your fields as soon as the corn emerges. During periods of fluctuating cold and warm weather, considerable damage by flea beetles and cutworms can occur to corn.

While the corn is small, it needs to be monitored for insect activity at least twice a week, but three times a week is better. A considerable amount of damage can occur over a short period of time, so regular monitoring is necessary. Planting date, seed treatments, field location, crop and weed residue, as well as other factors to the likelihood of insect problems in seedling corn, for this reason it is important to monitor your fields carefully. Waiting for your neighbor to spray or not to spray is a poor management plan.

SMOOTH PIGWEED RESISTANCE IN KENTUCKY

J. D. Green and Michael Marshall

In recent years herbicide resistance has become an important issue to consider when making weed management decisions. The first case of weed resistance in Kentucky reported in the 1980's was smooth pigweed to the triazine herbicides (i.e. Atrazine and Princep). Smooth pigweed resistance to ALS (Acetolactate Synthase inhibiting) herbicides such as Pursuit and Classic was confirmed in 1996. Several producers in 2000 reported lack of adequate smooth pigweed control in corn fields treated with both atrazine and an ALS-inhibiting corn herbicide. These ALS herbicides (Accent, Beacon, Exceed, and Spirit) are generally considered very effective for pigweed control.

Smooth pigweed seed was collected from five corn fields in Kentucky to evaluate whether or not these plants were resistant to either atrazine and the ALS type herbicides. In a greenhouse study plants from four of the five seed sources exhibited tolerance for Beacon and Classic up to 10 times the normal application rate. Whereas, three of the five smooth pigweed sources also showed resistance to atrazine equivalent to 10 lb ai/A. These results indicated that smooth pigweed in some crop fields appear to have developed both atrazine and ALS resistance.

Based on these results, corn producers experiencing poor pigweed control may need to reevaluate their herbicide programs. Atrazine and ALS-type herbicides may still be needed to control other weed species. However, herbicide products that have other modes of action will be required to effectively control the pigweed. Listed below are herbicides used in corn and soybean that have specific activity on the ALS enzyme which is the primary mode of action for these herbicides. These herbicide products should be avoided in fields with inadequate pigweed control.

Herbicides with similar ALS mode of activity —

CORN herbicides: Accent, Accent Gold, Basis Gold, Beacon, Broadstrike, Exceed, Hornet, Lightning, Permit, Python, and Spirit.

SOYBEAN herbicides: Canopy, Classic, FirstRate, FrontRow, Harmony GT, Pinnacle, Pursuit, Python, Raptor, Scepter, Squadron, and Synchrony STS.

FRUIT

CODLING MOTH ACTIVITY INCREASING by Ric Bessin

Codling moths have begun to show up in pheromone traps this spring. Now is the critical time to monitor for the moths in commercial orchards. Be sure that traps have fresh pheromone lure (less than one month old) and check traps daily until the biofix is reached. The biofix is the date when the fifth codling moth is trapped.

After the biofix has occurred, degree days are calculated on a daily basis and a running total is kept (see Predicting Insect Development Using Degree Days in ENTFACT-201). The codling moth has a 50 F threshold temperature. These degree day accumulations are summed until they reach 250. At 250 DD an insecticide is applied for control which coincides with egg hatch. If codling moth are abundant (more than 10 per trap per week), a second spray may be necessary 7 to 10 days later.

Codling moth trap catch records need to be maintained throughout the summer to monitor additional generations. However, after the initial biofix it is only necessary to examine the traps twice a week. A threshold of five moths per trap per week is used to determine if there are sufficient levels of moths to warrant an insecticide application.

LAWN & TURF

SPRING DEAD SPOT OF BERMUDAGRASS by Paul Vincelli

Cases of spring dead spot on bermudagrass are being observed in the region. Look for patches, usually 2 ft or less in size, of dead grass as the turf breaks dormancy. In Kentucky, the disease is caused by several species of *Ophiosphaerella* fungi present in the soil. These fungi infect the roots of bermudagrass as it goes into dormancy; they are active in a range of 50-75 F, with greatest activity at 60 F. These autumn infections predispose the plant to low-temperature death during winter. Since only small patches of grass are infected, dead patches appear in spring instead of the large areas normally associated with winter-kill from purely cold temperatures.

At this stage, recovery can be promoted through regular fertilization. The disease cannot be totally prevented on sites where the disease is active, although management practices can greatly reduce the severity of the disease. For starters, minimize late-summer nitrogen fertilization; make the last nitrogen application by mid-July, and allow the nitrogen to run out by early September. Raise mowing height before Labor Day to improve carbohydrate storage for autumn and winter. Minimizing thatch can also help. In fact, disruption of the turf can also help reduce disease pressure. A study by Ned Tisserat at Kansas State University showed that physical disruption of the turf through a combination of verticutting (1/4 inch deep) and aerifying performed twice yearly significantly reduced spring dead spot damage.

Maintain the soil pH around 5.2 to 5.3 (extracted in distilled water). Reducing pH will not eliminate the disease but it can significantly reduce disease pressure. The best way to accomplish this is to use ammonium-based fertilizers rather than urea or nitrate-based fertilizers; wash ammonium fertilizers off leaves if applied when temperatures will exceed 80°F. Use of ammonium-based fertilizers changes the pH just in the rhizosphere (the soil around the root), which is really the only place you need the pH change. Be aware that an ammonium-based fertility program often takes several years to show a benefit, so sticking with the program pays off. Another, more heavy-handed way to reduce soil pH is to apply flowers of sulfur to affected areas. Apply no more than 2 lb/1000 sq ft and then wait a couple of years to see if sufficient pH reduction has taken place. I encourage a "go-slow" approach with sulfur because in some soil types, heavy applications of sulfur can lead to slow spring green-up and temporary turf thinning, particularly in soils with little organic matter.

Maintain adequate potash fertility. On putting greens, avoid using topdressings with a pH above 6.0. Although several fungicides are available, fungicidal control of this disease has been very inconsistent in our research. I haven't seen enough consistent benefit that I would recommend them for any site other than bermudagrass greens. If using fungicides, apply in early September and water in prior to drying.

SHADE TREES & ORNAMENTALS

WINTER INJURY AND SPRING FROST INJURY TO WOODY PLANTS

by John Hartman

The winter of 2000-2001 was cold, though not extremely cold (minimum temperatures near zero degrees Fahrenheit in some locations). Nevertheless, significant cold injury to woody plants occurred in Kentucky. Then, last week, while spring flowering trees were in full bloom, spring frost, ranging from 25-31 degrees, caused additional injury. Most of us readily recognized the spring frost injury symptoms, because dead foliage and flowers appeared in the next day or two. Although plants were hurt by winter injury, the cause and effect relationship is less obvious. County Extension agents are seeing many problem trees and shrubs, as we are in the plant disease diagnostic laboratory, this spring. How can a cold, but not extremely cold, winter cause injury to plants?

Winter injury weather. The most likely cause of the winter injury came with the near-zero temperatures which began December 22, 2000. Autumn, with gradually falling temperatures, is a period when woody plants gradually harden-off to withstand the rigors of winter cold. Due to a relatively mild fall (temperatures sometimes in the 70's during November) plants did not become acclimated to cold weather. Thus, the cold December temperatures froze tissues that were not yet ready for cold.

What effect did the winter injury have on woody plants? Winter injury in Kentucky was geographically scattered and sporadic. We have observed xylem browning in apple twigs and twigs and branches of other woody plants. When xylem parenchyma tissues are injured and turn brown, the xylem fails to function and the affected branches suffer from water stress and the newly emerging leaves die. We have also observed symptoms of needle browning of a variety of conifers, including spruce, and pine. (Don't mistake winter roadside salt spray injury with winter injury to pines.) Some spruce buds simply failed to develop into new shoots following initial bud swell. Over-all the winter freeze damage has been pretty mild - but it is a significant problem to those tree owners whose trees are affected.

The spring frost. Much higher than normal

temperatures two weeks ago caused plants to lose dormancy rapidly. Thus, the heavy frost of last week injured very tender emerging tissues. Flower petals of crabapples turned brown. New growth of ash trees turned black within a few days. Numerous landscape trees and shrubs showed some damage to tender tissues, but many did not. It is not likely that the spring frost will affect long-term plant survival.

What can we expect? We should continue to see damage from the winter freeze. Look for dead twigs sticking out from green growth developing from buds on more dormant stems. In some cases, damage could involve an entire plant or selected branches. Branch death often appears to be random. In the case of conifers needles may turn brown and fall off green stems. Expect fungi such as *Botryosphaeria* to appear in cankers. *Botryosphaeria* cankers often occur in woody tissues that have been injured by cold. Cracking and peeling of bark from the trunk and major branches may still occur. Freezes can result in death of conductive tissues and cambium that had not hardened off. Failure of these layers of cells to thrive can result in the bark sloughing off over the coming weeks. If injured tissues are not repaired, the problem could worsen during hot, dry summer weather. As for spring frost-injured shoot tips - they will die back and, provided the tree or shrub has adequate energy reserves, new growth will emerge from latent buds on the twigs.

What can be done to help injured plants? Plants at greatest risk are those that have been under environmental or other forms of stress over the past few years. There is relatively little that can be done to revive plants suffering the extreme effects of the freezes. Plants which have not been grossly disfigured can be helped in the following ways:

- Provide adequate moisture through the dry periods regardless of the time of year.
- Now that live foliage is appearing, dead wood should be removed. This will improve the visual appearance of the plant as well as reduce the potential for future problems. Dead tissue can act as a good entrance site for insects and wood rotting organisms.
- Do not fertilize woody plants with high nitrogen fertilizers now. If fertilizer is needed it is best

applied in late fall after the plants have become dormant.

ORNAMENTAL PEST ALERT

by Mike Potter

Lilac borer/Lesser peachtree borer- Adults of both species are, or soon, will be laying eggs on the bark of susceptible plants. (Patti Savage, Woodford Co. Horticulture Agent, reported catching lilac borer adults in pheromone traps on 4/23) Principal hosts for lilac borer include lilac, ash and privet; for lesser peachtree borer, peach, plum, and flowering cherry. Wood borers are among the most destructive and difficult to control pests of landscape plants. The larvae tunnel and feed under the bark of trees and shrubs, destroying water and sap-conducting tissues. This causes a loss of vigor and overall weakening that can eventually kill the tree. Infestation sites also provide entry points for disease organisms. Symptoms include dieback, cankers or cracked bark, and accumulations of sawdust-like frass on the bark or at the base of the tree.

Controlling borers is difficult because there is only a narrow window of opportunity for treatment. Eggs are laid on the bark of preferred hosts, and within 1 to 2 weeks the young borer larvae emerge and quickly tunnel inward. Once inside the tree, the larvae are protected from insecticide sprays. Therefore the key to control is having a lethal residue of insecticide on the bark to intercept newly-hatched borers *before* they burrow into the tree. Lindane and chlorpyrifos (Dursban) continue to be the 'standards' for borer control. The trunk and major limbs of susceptible trees should be sprayed to runoff as specified on the label.

Holly Leafminer- Adult holly leafminers are beginning to fly and lay eggs in newly-expanding holly leaves. The small, pin prick feeding punctures and oviposition scars of the tiny adult flies do not harm the tree, but subsequent mining by the larvae is cosmetically unappealing. Control of the egg laying adults can be accomplished by applying insecticides such as Orthene, Dursban, Sevin or Talstar just as the newly expanding leaves are unfurling. Control of larvae already in the leaves (mid- to late May) can be attempted with one of the systemic materials, e.g., Cygon, Dimethoate, or Di-Syston. Blue holly is relatively resistant to leafminer injury.

Oystershell Scale - The vulnerable "crawler stage" of the oystershell scale has begun to hatch. Susceptible hosts include lilac, willow, maple, ash, apple, dogwood and others. Infested limbs and twigs are encrusted with 1/8-inch long curved scales that resemble miniature oystershells. Crawlers are susceptible to sprays of 2% horticultural oil, insecticidal soap, Tempo, Scimitar, malathion, and a variety of other conventional insecticides.

OAK GALLS BEGIN TO APPEAR

By Lee Townsend

Oaks are hosts to a variety of gall-making arthropods. Galls are irregular plant growths which are stimulated by the reaction between plant hormones and powerful growth regulating chemicals produced by some insects or mites. Galls may occur on leaves, bark, flowers, buds, acorns, or roots. Leaf and twig galls are most noticeable. The inhabitant gains its nutrients from the inner gall tissue. Galls also provide some protection from natural enemies and insecticide sprays. Important details of the life cycles of many gall-makers are not known so specific recommendations to time control measures most effectively are not available.

A sample of roly poly galls (also called succulent oak gall) arrived today. This distinctive gall is similar in size and appearance to hollow green grapes. Inside, in a small, loose "seed like" structure, is the larva of a tiny wasp. These galls seem to appear in place of leaves or reduce the size of infested leaves, but they do not affect tree health. There is no effective control.

EUROPEAN PINE SAWFLY

By Lee Townsend

European pine sawfly larvae have been found feeding on Mugho pine. They are gray-green caterpillar-like insects with black heads. There is an off-white stripe down the middle of the back and slightly lighter stripes on either side of the body. They larvae feed in clusters on Scots, Austrian, Mugho, and white pine. These larvae feed on old foliage and seldom kill trees but shoots may die or be deformed and losses in diameter growth and height may occur. They can feed on bark of new shoots. There is one generation of this insect each year.

Physical removal by shaking the larvae into a bucket of soapy water is an option in the landscape. Sawflies look like caterpillars but are the immature stages of a wasp. Thus, they are not susceptible to Bt insecticides. Insecticidal soap, Orthene, or Sevin are among the insecticides that can be used for control.

HOUSEHOLD

MANAGING CARPENTER BEES

by Mike Potter

Many clients having been calling about the large, black bees hovering around eaves, decks, and wood siding of their 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 quite intimidating and have the potential to inflict painful stings.

The Problem- Carpenter bees are similar in appearance to bumble bees, 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 tunnels are fully excavated. For homeowners, liquid sprays of Sevin, Dursban, or synthetic pyrethroids (e.g., Bayer Advanced™ Home/Lawn & Garden Insect Killer, Spectracide® Bug Stop, Ortho® Home Defense System) can be applied directly into nest openings, or sprayed as a deterrent onto wood surfaces attracting large numbers of bees. Residual effectiveness of such applications is only about 7-14 days, so the treatment may need to be repeated. Tunnels that have already been excavated can also be treated with an insecticide dust (e.g., Sevin, Drione), 'puffed' into the nest opening. Wasp and hornet aerosol sprays are also effective, and generally more convenient than dusts for treating individual galleries. Although carpenter bees are less aggressive than wasps, female bees provisioning their nests will sting. Treatment is best performed at night 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 galleries. 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 use of 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/nesting habit usually subsides by late May.

DIAGNOSTIC LAB HIGHLIGHTS

by Julie Beale and Paul Bachi

In the Diagnostic labs last week, we received samples of tobacco with cold injury, spiral root, Pythium root rot and Rhizoctonia damping-off. On greenhouse ornamentals and vegetables, we saw tuberous begonia with sunscald, geranium with Pythium root rot, New Guinea impatiens with impatiens necrotic spot virus, and tomato and pepper seedlings with Rhizoctonia damping off.

From the landscape, we saw samples of freeze injury on apple and yellow patch on bentgrass.

INSECT TRAP COUNTS

Princeton, April 13-20, 2001

Black Cutworm	3
True Armyworm	68

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.