



KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • AGRONOMY

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TOBACCO

CURRENT BLUE MOLD STATUS

By William Nesmith

The blue mold situation remains about the same as indicated in last week's report. A blue mold warning exists statewide in Kentucky, southern/southeastern Indiana and southern Ohio. The drier weather late last week helped slow new infections, but cool nights have favored lesion expansion, systemic development, and sporulation. A major escalation in symptoms was evident on July 21-24 following the very favorable conditions for sporulation and infection 5-7 days earlier. But the level of new activity was well below what we had anticipated, in part, because the crop has not been growing well due to limited root development. Target spot and angular leaf spot acted as a biological control in some areas by destroying a large number of lesions under development. New sporulation was also limited greatly due to heat in many areas, especially in western and southern KY, until July 24-27, when cooler weather developed. Sporulation was very strong in many areas of central, northern, and eastern KY on the morning of July 25. New infections should have occurred late last week, so expect new lesions around July 29-30.

The level of blue mold activity remains highly variable from farm to farm and county to county in KY. So far, losses have not been large on most farms, except where high levels of systemic blue mold have developed, usually resulting from setting infected transplants.

Growers are urged to keep foliar fungicide programs in place through topping stage, especially on crops of lush tobacco located in shade or foggy areas. Acrobat MZ is the most effective chemical available. Quadris is not labeled and has not proven to be as effective as Acrobat MZ in blue mold control tests conducted in KY and NC. It is equally effective at stopping new infections, but new sporulation continues.

For all those that believe in bleach and Quadris, here are some very recent data: tobacco set on June 23 was experiencing serious blue mold on July 22 (about 20% leaf surface with newly developing lesions). No control programs had been put in place, very typical of most farms in KY. On the afternoon of July 23, 4 fungicide treatments were made and evaluated daily since. They included the following:

- * 4 gallons of bleach/80 gallons/A.
- * Quadris 2.08 EC at 8 oz/80 gallons/A.
- * Acrobat MZ at 2.0 lbs/80 gallons/A.

* Unsprayed check

Coverage was judged to have been moderate to good, based on sensitive papers placed in the plot canopy. I rated sporulation and new lesion development on the mornings of July 24, 25, 26, and 27. New lesions continued to develop in all plots, which was expected because new infections would have been developing at the time of the fungicide applications. Strong and new sporulation continued from all treatments, except those treated with Acrobat MZ, which showed very little new sporulation except for a few lesions near the base of the leaf. I will give you follow-up data next week.

BLACK SHANK: THE PREDICTED EPIDEMIC HAPPENED!

By William Nesmith

Black shank has already caused significant damage to this year's burley and dark tobacco crops. It is too early to make meaningful loss estimates because the level of disease activity continues to increase. Several County Extension Agents have indicated that too few growers took the opportunity to minimize losses by making cultivation and layby treatments of Ridomil Gold. Several senior agents reported that they had made little progress, despite aggressive educational efforts, in getting growers to accept their advice in this recommendation. Most crops are now too far along to make the supplemental applications without creating serious residues in the cured leaf. With the stresses of late summer and maturity, the losses from black shank should continue to increase.

Recall that the control program for black shank centers around the 4 R's:

* Real Good Sanitation;

** Rotation to non-host allowing the pH to drop during the rotation, or use preplant soil fumigation with chloropicrin;

*** Resistant varieties should be planted on all sites with a previous history of black shank unless rotated away for more than 3 years and an excellent sanitation program is involved;

*** Ridomil Gold should be used preplant plus layby on sites with a history of black shank or in over-flow ground. Preplant, plus cultivation, plus layby applications of Ridomil Gold should be used where strong disease potential exists.

Finally, growers need to accept that blue mold control and black shank control are not one and the

same. These are two very different diseases requiring different approaches to control. Ridomil Gold is not effective against current strains of blue mold, but it remains a most valuable tool in black shank control when applied properly and coupled with other sound production practices. Accept this as fact and move on. Stop dealing with the past; react to what is happening now and plan for the future!

BEEES, WASPS PUT STING IN TOPPING **By Lee Townsend**

Bees, wasps, and many flies are all over aphid-infested tobacco at this time of the year. They are feeding on the sweet "honeydew" or waste excreted by aphids. The wasps and bees will sting readily, especially if grabbed when plants are being topped. An insecticide application of Orthene / Acephate or Golden Leaf Tobacco Spray may reduce numbers temporarily. However, these insects are moving in and out of tobacco fields all of the time so replacements are always showing up. Keep in mind that the restricted entry interval (REI) for these products is 24 hours.

First aid for bee and wasp stings consists of applying ice packs and / or pain relievers to minimize the pain and washing the wound to reduce the chance of secondary infection. In more severe, localized reactions, rest and elevation of the injured arm or leg may be needed.

Normal reactions to a small number of stings affect only the area right around the site. Redness, itching, swelling, pain, and appearance of some sort of welt within 2 to 3 minutes are common. Many of the symptoms are gone in about 2 hrs. Large local reactions are painful and may affect an area of about 2" in diameter. These are at the site of the sting. These usually are most intense after about 48 hrs but may last as long as a week.

Systemic reactions include the reactions listed above coupled with symptoms and pain in other parts of the body. A constricted feeling in the chest, difficulty in breathing, and intestinal distress can develop. This requires immediate transport to a hospital.

SMALL GRAINS - GRAIN SORGHUM

WATCH FOR HEAD FEEDERS IN SORGHUM

By Doug Johnson

If you have grain sorghum fields now in the head filling stage, you should have your eyes open for fall armyworm (FAW) and corn earworm (CEW). Both of these insects will feed on sorghum grain heads and often occur in mixed populations. Late-planted fields are especially at risk.

FAW often shows up in the boot stage and begins to feed on the leaves. The caterpillars are light tan to green to black with yellow hair lines down the back. Each side will have a darker stripe above a waxy yellow stripe splotched with red. This stripe may appear pink to the naked eye. The head is generally black and the front of the head has an inverted 'Y' shaped white mark. There are three pair of true legs just behind the head, four pair of fleshy legs near the center of the body and one pair of fleshy legs near the rear end.

CEW generally do not feed on foliage and usually do not appear until heads are filling. Larval color varies from light green to black with a lighter stripes running the length of the body. When larval development is complete, the earworms will be about 1 ½ inch long. There are three pair of true legs just behind the head, four pair of fleshy legs near the center of the body and one pair of fleshy legs near the rear end. These insects are often confused with FAW but do not have the distinctive white 'Y' on the head.

To determine if you have a problem, examine at least five locations in each field. At each location examine twenty heads for the presence of worms. If you find an average of two or more of either of these insects per head an insecticide application is warranted. The threat of these insects will continue until the grain is past hard dough stage.

LAWN AND TURF

GRUB CONTROL OPTIONS CHANGE IN EARLY AUGUST

By Lee Townsend and Dan Potter

A June 8, 1998 article (KPN 816) discussed preventive application of Mach 2 and Merit or

GrubEx for white grub control. Merit and GrubEx will control only small grubs, from egg hatch until the larvae are about 1/4" long. Thus, they must be applied preventively, anytime from mid-May until late July. After about August 1, most annual white grubs (Japanese beetle and masked chafers) are beyond the optimal size range for these products. Mach 2 can be applied preventively, as above, or used for curative control of mid-sized to large grubs. It is somewhat more effective against smaller grubs than those that are full-sized.

Homeowners faced with a "rescue situation" may use Diazinon 5 G, Dylox 6.2 G, or Oftanol, applied from about August 15 through late September. As with all insecticides, larger grubs are harder to kill. Dursban is commonly available and marketed for home lawn grub control but is not particularly effective.

Golf courses and sod farms, unable to use diazinon, can apply Dylox 6.2 G, Oftanol, Sevin, or Turcam for rescue treatments. See ENT-10 for more information on grub control.

WHAT WAS THAT BIG ORANGE, YELLOW & BLACK THING???

By Mike Potter

Cicada killers are now flying, prompting frantic calls from some homeowners. Despite their menacing appearance (up to 2 inches long with rusty red head/thorax, amber-yellow wings, and black and yellow striped abdomen), the wasps seldom sting unless handled or otherwise molested.

Cicada killers do not live in communal nests like hornets or yellowjackets. They overwinter as larvae within cocoons, deep in the soil, emerging as adults from late-June through July. The females feed, mate, and excavate burrows in the ground about ½ inch in diameter, ending in a series of brood chambers. Excess soil is pushed out of the burrow, leaving a small, U-shaped mound of dirt at the entrance. Each female excavates numerous burrows and provisions them with adult cicadas which she ambushes, paralyzes with her venom, and stuffs into individual brood chambers. She then lays an egg on top, backs out, and seals the cell behind her. The egg hatches within a few days and the hungry larva devours the offering, eventually transforming into a pupa the following spring.

Management - Cicada killers seldom sting and the

females normally do not defend their burrows. The males, while incapable of stinging, sometimes dive-bomb passers-by, or hover about one's head or body. Insecticide treatment may be warranted where the soil burrows become unsightly. Individual burrows can be effectively dusted or sprayed with most yard insecticides, including Sevin, Dursban, diazinon or permethrin. Large numbers of nests may need to be treated with a broadcast application to the surface of the turf.

GENERAL CROPS

BACTERIAL LEAF SPOT DISEASES INCREASED RAPIDLY

By William Nesmith and John Hartman

Bacterial leaf spot diseases have become very active recently following the wet, driving rains of mid summer. Most plant species growing in Kentucky are under attack to some degree by the bacterial leaf spots common to that plant in this region. Therefore, row crops, tobacco, vegetables, ornamental, and trees have all experienced sharp increases in bacterial disease activity, with serious losses occurring in some cases. How could this happen?

When bacterial spot diseases are not active the bacterial pathogens survive in seed, in low-level infections of live tissues of this or related hosts, as epiphytes on plant surfaces, or in crop debris. Each bacterial species remains associated with its particular crop host, because most have very narrow host ranges confined usually to one plant family or related families, e.g. the bacterial leaf spot pathogen of cucurbits on cucurbits, the angular leaf spot bacterium of tobacco on tobacco and weedy plants, the bacterial leaf spot organism of zinnia associated with zinnia and related composites, and so on.

Serious disease activity usually does not occur until high populations of the bacteria exist and they are introduced into the plant tissue via injury or through natural openings. During wet weather, the bacteria became established on and in the leaves, probably becoming epiphytic on the wet leaves. With abundant food and favorable moisture and temperatures the bacterial population increase rapidly, a million-fold increase within a days time. Because they multiply by fission, they double their population with each reproduction. Rains

accompanied by high winds drive the bacteria into the stomata where infections occur. Infections also occur around the leaf margins where entry is gained through hydathodes, commonly resulting in v-shaped lesions on the leaf margins are common. Any other points of previous injury to the leaf could also served as infection courts, such as air pollution injury, insect damage or fungal infections.

First symptoms of bacterial leaf spot diseases are usually either water-soaked lesions on the leaves or yellowed areas that rapidly become water soaked. The lesions expand rapidly, usually until they are limited by leaf veins, resulting in an angular shape. However, in some cases, the lesions are very circular with bright halos where toxins diffuse in advance of the expanding colony. The water soaked areas in time die, with the dead tissue ranging in color from white, tan, brown to black. Often these dead areas fall out soon after death leaving shot-holes and tattered leaves. During periods of moist weather, bacterial ooze forms on the wet surfaces of the lesions, and as this dries a shine is left. This ooze can serve to infect other leaves or, more seriously, the developing flowers, fruits and stems.

Bacterial diseases of plants are some of the most difficult to control, in part, because few chemical tools are available. Rescue efforts are seldom of much value, unless major weather changes also occur. Furthermore, many of the cultural practices in use in modern agriculture encourage bacterial disease development. These include high plant populations, high rates of fertilization, seed production in tropical areas, and saving seed from diseased gardens or crop fields. Copper-containing fungicides/bactericides (fixed coppers, cupric hydroxide or Bordeaux mixture) are effective preventives if regularly applied prior to and during the wet periods to keep populations of the bacteria at low levels. Many crops are sensitive to copper, however, especially during hot and humid weather. The antibiotic streptomycin is labeled on some crops for certain stages of growth to control bacterial diseases. But its use on edible crops in the field is highly restricted because of residue concerns related to reducing antibiotic resistance to human diseases caused by bacteria. Although there are many antibiotics available that might help reduce bacterial diseases in plants, their use in gardening and agricultural situations is strictly prohibited in an effort to minimize development of resistance to these antibiotics by human bacterial pathogens through foodstuffs and applicator exposure.

AIR POLLUTION INJURY IS OCCURRING ON MANY PLANTS IN FIELDS, GARDENS, AND FORESTS

By John Hartman and William Nesmith

Symptoms of air pollution injury are occurring on a number of plant species throughout Kentucky following a few days of hazy, hot weather in mid-July and also in late June. The hot, hazy weather that we frequently experience in Kentucky is favorable for development of elevated ozone levels. Although air stagnation alerts were not officially declared, plant symptoms tell us that levels of oxidant air pollutants such as ozone were sufficiently high to cause injury at least twice in the past month. Main damage has been observed on some crops, tobacco and cucurbits, especially in shady areas of the plantings.

Air pollutants enter leaves through the stomata and cause injury to the cells surrounding the intercellular spaces. Symptoms vary with the species, but flecking (white, tan, or reddish), stippling, or mottling of the upper leaf surface of broadleaved plants and chlorotic banding or tip browning of needles are common symptoms of ozone injury. The lesions may darken with age or develop a scald as a result of very high concentrations of the chemical. This scald is characterized by a collapse of the epidermal tissues, leaving paper-thin dead areas on the leaf. Where injury is extensive, the lesions coalesce and broad areas of leaf tissue are killed. Leaves expanding at the time of exposure are more sensitive than fully mature leaves, thus injury is greater in developing crops than in more mature crops. This feature makes it possible to identify "episodes" of air pollution injury because leaves older or younger than the injured leaves are often healthy.

When fossil fuels are burned by automobile engines and in power generation, photochemical reactions with the effluents result in production of oxidant air pollutants. Additional ozone can also be generated during electrical storms and their frequency this past month may have contributed to the problem. In some cases, air stagnation is thought to promote deposition of toxic particulate pollutants such as sulfur dioxide on leaf surfaces. Some of these particulates are soluble and may form acids when dissolved in dew which forms on the leaf. These toxic solutions sometimes cause dead spots or streaks on the leaf surface. For the most part, however, the injury we are observing seems to be

related to exposure to ozone, an oxidant, and possibly to peroxyacetyl nitrate (PAN) or other oxidant air pollutants.

Different plants can express the injury in different ways. Burley tobacco leaves show weather fleck symptoms in response to ozone, for example. Pumpkins, cantaloup and other cucurbit vine crops may show general scalding, while white pine needles may have dead tips. In some cases, oxidant air pollution injury symptoms can be mistaken for those of other diseases; timing of occurrence and tissues affected may help in diagnosis. Burley tobacco, petunia, alfalfa, red clover, white pine, yellow poplar, sycamore, grapes, several cucurbits, and lima bean are considered highly susceptible to ozone. Cultivars and individuals within a species vary in their susceptibility to the disease.

The major way to control air pollution injury to plants is through having clean air. There are no chemicals that can be applied "after the fact" to stop the damage, although some fungicides like mancozeb have been shown to reduce ozone injury. On crops where mancozeb is labeled, growers may benefit by having used the fungicide. For example, where the fungicide Acrobat MZ, which contains mancozeb, was used to control tobacco blue mold, air pollution injury is not as severe. Plants weakened by air pollution are generally more susceptible to infections by secondary invading microbes. For example, the recent epidemic of bacterial leaf spots is in part associated with the air pollution damage.

VEGETABLES

SQUASH INSECT PESTS

By Ric Bessin

The **squash vine borer** is a key pest of winter squash, gourds and pumpkins in Kentucky. Unfortunately, it is usually noticed only after it has done its damage. Symptoms appear in mid-summer when a long runner or an entire plant wilts suddenly. Infested vines usually die beyond the point of attack. Sawdust-like frass near the base of the plant is the best evidence of squash vine borer activity. Careful examination will uncover yellow-brown excrement pushed out through holes in the side of the stem at the point of wilting. If the stem is split open, one to several borers are usually present. The caterpillars reach a length of 1 inch and has a brown head and a cream-colored body. Winter squash, particularly 'Hubbard', are most

susceptible to damage while 'Butternut' is somewhat resistant.

The adult squash vine borer is a stout dark gray moth with 'hairy' red hind legs, opaque front wings, and clear hind wings with dark veins. Unlike most moths, they fly about the plants during the daytime, appearing more like a paper wasp than a moth.

This insect overwinters as a full grown larva or a pupa one to two inches below the soil surface. If it has not already done so, the larva pupates in the spring. Adult moths begin to emerge about the time the plants begin to run, and moth flight continues through mid August.

The small brown eggs, laid individually on leaf stalks and vines, hatch in seven to 10 days. The newly hatched larva immediately borers into the stem. A larva feeds for 14 to 30 days before exiting the stem to pupate in the soil. There are 1 to 2 generations per year in Kentucky.

The key to squash vine borer management is controlling the borers before they enter the stem. Once inside the vine, insecticidal control is ineffective. Poor timing of sprays is the usual cause of inadequate control. Monitor plants weekly from mid-June through August for initial signs of the borer's frass at entrance holes in the stems. Very early signs of larval feeding indicate that other eggs will be hatching soon. Use two insecticide applications 7 days apart to control newly hatching larvae and continue to monitor for additional activity. Sprays need to penetrate the canopy to cover the vines to be effective.

Home gardeners may have some success with deworming the vines. At the first signs of the sawdust-like frass, vines are slit lengthwise near where the damage is found and the borers removed. The stems should be immediately covered with earth. Sanitation is also important. After harvest is complete, vines should be removed from the garden and composted to prevent the remaining borers from completing larval development. Burying a few nodes along each vine will encourage rooting at these nodes. This will lessen the impact if squash vine borers girdle the base of the vine.

The **squash bug** is another common pest. While all of the cucurbit crops can be attacked, it shows a preference for squashes and pumpkins. This insect can be very difficult to control when populations

are allowed to build. Squash bugs damage plants by removing sap and causing leaves to wilt and collapse. Young plants and infested leaves on older plants may be killed.

Only the unmated adult bugs overwinter in Kentucky. Adult squash bugs begin to fly into fields and gardens about the time the plants begin to run. They remove plant sap with their piercing-sucking mouthparts. Soon after beginning to feed, they start laying eggs, primarily on the undersides in the angle between veins. The bronze eggs are football-shaped and lie on their sides in groups of 12 or more. Eggs hatch in one to two weeks. Initially the larvae are dark red with a light green abdomen. Older nymphs are light gray in color with black legs. Young nymphs are gregarious and feed together in groups. Nymphs require five to six weeks to mature into adults. Squash bugs spend most of their time around the base and stems of the plants and on the undersides of leaves.

Timing is the key to successful squash bug control. Insecticide sprays should target adults and small nymphs early in the season when the plants are small. It is much more difficult to control large numbers of older nymphs and adults later in the season when the plant canopy is dense. Treat with a recommended insecticide (See ID-36, Commercial Vegetable Crops Recommendations) if overwintering adults are causing seedlings to wilt. Monitor for squash bug egg masses from prebloom through early flowering. Treat when egg mass numbers exceed an average of one per plant. However, eggs are not controlled by insecticides, so time insecticide applications to control young nymphs. Small nymphs are much easier to control with insecticides than larger nymphs or adults.

HOUSEHOLD

RIDDING YOUR HOME OF FLEAS

By Mike Potter

Warm, moist conditions have prompted a growing number of flea calls, in recent weeks, from pet owners. It will likely get worse as we enter the 'dog-days' of summer. Ridding a home of fleas can be a frustrating and costly endeavor. For control to be successful the home, pet, and oftentimes, the yard must be treated. The specific manner in which these treatments are performed will greatly influence the results.

Treatment of Pet

Adult fleas, the biting stage, spend most of their time on the animal, not in the carpet. All of the eggs are laid (up to 50 per day) on the pet, but the eggs soon fall off the animal into carpeting, beneath furniture cushions, and wherever else the pet rests, sleeps or spends most of its time. This is why treatment of the pet in conjunction with the pet's environment is an essential step in ridding a home of fleas. Untreated pets will continue to be bothered by fleas and be a perpetual source of re-infestation. They may also transport fleas in from outdoors, eventually overcoming the effectiveness of the insecticide applied inside the home.

An enormous array of on-animal flea products are available through veterinarians, pet stores and retail outlets. Many provide only short-term relief against the biting adult stage (a few hours to a few days), although two veterinarian-supplied products, Advantage(R) and Frontline(R), control adult fleas on pets for 1 to 3 months. Other products contain an insect growth regulator (IGR), which prevent eggs from hatching as they are laid on the pet. Examples include Program(R), administered orally and dispensed by veterinarians, and methoprene or pyriproxyfen-containing collars (Ovitrol(R), Fleatrol(R), Relieve(R)), sprays (Raid Flea Killer Plus(R)), and spot-ons (Bio Spot(TM)). The ideal time/way to use these products is before you have a serious flea infestation (See Kentucky Pest News, 5/4/98; *Take Action Now for a Flea Free Summer*).

Pet owners should always read the product label. Certain products can be used only on dogs, and some list specific treatment procedures for puppies and kittens. Do not treat pets with the same products used to treat carpeting or the yard.

Treatment of Premises

Having your pet "dipped" or treated will not, in itself, eliminate fleas in an infested home. If the pet spends time indoors, the interior of the home will need to be treated. Before treatment, the pet owner should:

1. Remove all toys, clothing, and stored items from floors, under beds, and in closets. This step is essential so that all areas will be accessible for treatment.
2. Remove pet food and water dishes, cover fish tanks, and disconnect their aerators.
3. Wash, dry-clean or destroy all pet bedding.
4. Vacuum -- vacuuming removes many of the eggs, larvae and pupae developing within the home.

Vacuuming also stimulates pre-adult fleas to emerge sooner from their insecticide-resistant cocoons, thus hastening their contact with insecticide residues in the carpet. By raising the nap of the carpet, vacuuming improves insecticide penetration down to the base of the carpet fibers where the developing fleas live. Vacuum thoroughly before and (repeatedly) after treatment, especially in rooms or areas where pets rest or sleep. Don't forget to vacuum along edges of rooms and beneath furniture, cushions, beds, and throw rugs. After vacuuming, seal the vacuum bag in a garbage bag and discard it in an outdoor trash container.

Insecticide Application - Once fleas become established in a home, insecticides are almost always needed to control them. Always read and follow label directions on the insecticide container. Other than the person performing the application, people and pets should be out of the house during treatment. People and pets should also remain off treated surfaces until the spray has dried. This may take several hours, depending on carpet type, ventilation and method of application. Aerosol-type products normally dry faster than those dispensed as liquids. Opening windows and running the fan or air conditioner after treatment will enhance drying and minimize odor.

Many different products are available for home treatment. The most effective ones contain both an adulticide (e.g., permethrin), effective against the biting adult stage -- and one of the insect growth regulating agents (methoprene or pyriproxyfen) mentioned earlier. Applied to carpeting, these ingredients provide long-term suppression of developing eggs and larvae. **Pet owners will need to carefully read the "active ingredients" panel on the product label to determine if these ingredients are present.** Examples include Raid Flea Killer Plus(R), Siphotrol Plus(R), Bio Flea Halt(TM), and Fleatrol(R). Most homeowners will find aerosol formulations easier to apply than liquids. Moreover, aerosol products which can be dispensed by hand and thus directed under and behind beds, furniture, etc. tend to be more effective than "foggers" or "bug bombs" which are indiscriminately set off in the center of a room.

It is essential that the application be thorough and include all likely areas of flea development. Carpets, throw rugs, under and behind beds and furniture, and (beneath) cushions on which pets sleep should all be treated. Pay particular attention to areas where pets spend time or sleep, as these will be the areas where most flea eggs, larvae and pupae will be concentrated. For example, if the family cat

sleeps within a closet, or hides under the bed, these areas must be treated or the problem will continue. Hardwood and tile floors generally do not require treatment, but should be thoroughly vacuumed.

Expect to see some fleas for 2 weeks or longer following treatment. Provided all infested areas were initially treated, these "survivors" are probably newly emerged adults which have not yet succumbed to the insecticide. Instead of retreating the premises immediately, continue to vacuum. As noted earlier, vacuuming stimulates the insecticide-resistant pupae to hatch, bringing the newly emerged adults into contact with the insecticide sooner. Flea traps, such as those utilizing a light and glue board to attract and capture adult fleas, can be helpful but will not eliminate a flea infestation unless used in combination with other methods. If adult fleas continue to be seen beyond 2-4 weeks, retreatment of the premises (and pet) may be necessary.

Treatment of Yard

Most flea problems in Kentucky can be eliminated by treating the pet and the interior of the home. In cases where pets spend most of their time outdoors, it may also be necessary to treat the yard. One way to determine if the yard is infested is to walk around the property wearing white athletic socks, pulled to the knee. If large numbers of fleas are present, they will be seen against the white background of the socks.

Outdoor flea treatment should focus on areas where pets rest, sleep and run, such as doghouse and kennel areas, under decks, along fences and next to the foundation. It is seldom necessary to treat the entire yard or open areas exposed to full sun. Insecticide formulations containing chlorpyrifos (Dursban) or permethrin are somewhat effective for outdoor flea treatment. These can be applied with a hose-end or pump-up sprayer. Long term suppression of fleas infesting outdoor areas can be enhanced with light-stable liquid formulations of the IGR pyriproxyfen.

Fleas can be successfully controlled by diligently following the steps outlined above. Homeowners who lack the time to control fleas themselves, or who are uncomfortable applying pesticides may wish to enlist the services of a professional pest control firm

PLANT DIAGNOSTIC HIGH-LIGHTS by Julie Beale and Paul Bachi

Gray leaf spot and **Stewart's wilt** were diagnosed in **corn** last week, as well as several cases of **zinc deficiency and chemical injury**. On **soybean**, **chemical injury** from herbicides has also been common. Also on **soybean**, we have seen **sudden death syndrome** and **Phytophthora root and stem rot**. In western Kentucky, Paul has seen two cases of slime molds growing on soybean stems--a testament to the unusually wet weather.

Another episode of **high ozone levels** has damaged **tobacco** foliage; **angular leaf spot, blue mold, and target spot** are active and resulting in considerable damage to foliage in some areas. We are seeing more cases of **Fusarium wilt** lately, often in combination with **root knot nematode**. **Black shank** and **soreshin** continue to take a toll.

Ozone is also causing needle browning on **white pines**; other problems such as **white pine decline and root problems** also result in tip browning of white pine needles. Other ornamental problems have included more **anthracnose, powdery mildew and Septoria leaf spot on dogwood; Pseudonectria canker on boxwood; Marssonina leaf spot on birch; bacterial spot on ivy; Rhizoctonia root/stem rot on snapdragon**. On **turf**, we are seeing numerous cases of **brown patch, as well as summer patch and anthracnose**.

On fruits, **brown rot** is very common and damaging on **peaches** this year and **cherry leaf spot** (Coccomyces) is beginning to occur frequently. Again in western Ky., slime molds were found in unusual places--on strawberry crowns and petioles. Vegetable diseases have included **buckeye rot and bacterial canker of tomato; Rhizoctonia root/stem rot on bean and pepper; Isariopsis leaf spot on bean; bacterial wilt on cucumber; and southern stem blight on pepper**.

INSECT TRAP COUNTS

July 17 - 24, Princeton

Southwestern Corn Borer	80
European Corn Borer	3
Corn Earworm	54
Fall Armyworm	15

Lee Townsend, Extension Entomologist