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CORN

DON'T SLOW DOWN IN COOL WEATHER: A CUTWORM UPDATE
By Ric Bessin

Corn has begun to emerge in some parts of the state and black cutworms are regularly caught now in pheromone traps. While previous KPN articles have discussed the merits of different black cutworm management strategies, this article focuses on scouting. This spring we have seen above normal temperatures, but they might not last. Regardless of the weather, corn producers need to watch for black cutworms. But if the temperature turn cooler, producers may need to increase their black cutworm monitoring efforts.

When growing conditions are good, cutworms and corn develop rapidly. This allows corn to grow out of the seedling stage rapidly. However, when temperatures hover in the mid to upper 40's, as they did last season, corn development is stopped but cutworms continue to feed slowly. Serious damage can occur under these conditions, even with moderate cutworm levels. The message to producers, scout for cutworms regularly, and pay attention to conditions that may influence cutworm damage.

FORAGES

MUSK THISTLE CONTROL IN PASTURES
By J. D. Green

One of the most troublesome weed problems in Kentucky pastures and hayfields is thistles. Thistle plants can interfere with livestock grazing and limit the amount of available forage. Musk thistle, also called nodding thistle, is the most common type of thistle plant found in Kentucky. It is found in a wide band of counties from Bowling Green to Northern Kentucky. The spring and early summer months is when thistles become a major problem for land owners and livestock producers who graze cattle or produce hay.

Musk thistle is considered a noxious weed because of its ability to reproduce rapidly and limit pasture production. It only reproduces by seed. Therefore, the major aspect of any control efforts is to prevent or limit seed production.
The primary growth period of the plant is generally in the spring through the early summer months.

However, most seed germinate in the fall and form a rosette which grows close to the ground, often growing unnoticed until the spring months. The leaf surface is waxy in appearance and contain spines along the leaf margins. Flower stalks develop in the spring followed by bright purple to reddish flowers, which bloom in late May to early June. The seed, which are produced for the next generation, develop soon after flowering and are easily carried by wind and spread to other areas as well.

The most important step in long-term control of musk thistle is to prevent flowering, and the production and spread of new seed. This can be accomplished by using various mechanical, biological, or chemical control methods.

For mechanical control efforts mowing, clipping pastures, or even hand-grubbing can be used. These control methods should be initiated before flowers begin to open. Some regrowth and production of flowers can occur after mowing, but seed production will be notably less than if a mechanical control method had not been used. Thistle plants mowed or removed by hand after flowers have bloomed contain enough energy reserves that these plants will still produce viable seed.

A reduction in musk thistle populations can also be obtained through biological control methods. Two different insects are known to inhibit thistle growth and development, the thistle-head weevil and the thistle rosette weevil. The thistle-head weevil can be found during the spring in many counties throughout central Kentucky. These insects feed on the maturing seed inside the developing flower head. The impact of the Thistle-Head Weevil will not eliminate all seed production, but can significantly reduce the amount of seed produced by individual plants in areas where the insect has become established.

Broadleaf herbicides labeled for use in pastures can be applied in grass pastures and non-cropland areas for control of musk thistle rosettes. However, for herbicides to be effective the timing of the application is critical. Best results can be obtained if herbicides are applied to plants that are in the early rosette stage of growth and actively growing. Therefore, the best times for herbicide application is in the early spring or fall. Application of herbicides in the spring should be made during March and April when thistle plants are actively growing. In the fall, apply herbicides in October or early November following new seed germination. When plants are in the rosette stage they are more susceptible to herbicide applications.

Herbicides which can be used in pastures include 2,4-D, Banvel, Crossbow, and Weedmaster. For spring herbicide applications apply when air temperatures are above 55º F for 2 to 3 days. Complete spray coverage of the plant is also important. When herbicides are applied after flower stalks elongate, control will be less effective and inconsistent. When using herbicides for control, consult the waiting period on the product label for livestock grazing restrictions following herbicide application. Avoid spraying near crops such as tobacco, vegetables, or ornamental plantings. Also, avoid spray drift by not spraying on windy days or days with high temperature and high humidity.

THISTLE HEAD WEEVIL SURVEY UPDATE
By Lee Townsend

Established populations of the thistle head weevil (*Rhinocyllus conicus*) were discovered in Fayette and Jessamine counties in 1988. Over the past 10 years, weevils have been collected and released at many new sites. These efforts along with natural spread, have extended the range of this beneficial weevil in Kentucky. Most recently, a cooperative program with the Animal Plant Health Inspection Service (APHIS) has allowed a great expansion of the survey and release effort.

We now have records of weevil establishment in the following counties- Anderson, Bath, Bourbon, Butler, Clark, Carroll, Christian, Estill, Fleming, Franklin, Gallatin, Hardin, Harrison, Hart, Henry, Jessamine, Lewis, Lincoln, Logan, Madison, Mercer, Montgomery, Nelson, Nicholas, Owen, Scott, Shelby, Simpson, Trimble, Warren, and Woodford.

SMALL GRAINS- Wheat

CONTROLLING WHEAT BEFORE NO-TILL CORN
By James R. Martin

The recent freeze damage to wheat has been severe enough in some cases where it is not feasible to salvage the crop. Although wheat is damaged, it is

not dead and will need to be controlled before planting no-till corn. The following burndown herbicide options may help in preparing for no-till corn plantings.

Gramoxone Extra: Wheat that is in the jointing stage is sometimes difficult to control with Gramoxone Extra. Adding atrazine will improve control of wheat, however, rainfall soon after application is needed to ensure root uptake of the triazine herbicide.

Since Gramoxone Extra is a "contact herbicide" good spray coverage will be essential to achieving optimum control of wheat. A minimum spray volume in the range of 15 to 20 GPA will probably offer better control than a spray volume of 10 to 15 GPA.

Gramoxone Extra at a rate of 2 pt/A applied with Atrazine at 1.5 to 2 lb ai/A has afforded effective control of wheat. Although similar results have occurred when Gramoxone was applied at 1.5 pt/A, the 2 pt/A rate is preferred for most cases. Gramoxone Extra tends to offer rapid control and degradation of wheat vegetation; consequently, Gramoxone Extra may be preferred over other burndown herbicides for early no-till corn plantings.

Roundup Ultra and Touchdown 5 are translocated herbicides and generally do not need the help of a triazine herbicide to control wheat that is in the jointing stage. Control with Roundup Ultra or Touchdown 5 tends to be slow and will require several days before wheat is dead. The unusually warm temperatures that has occurred recently should speed up the control from these herbicides.

Roundup Ultra and Touchdown 5 are translocated herbicides, consequently applicators may have some flexibility in using a less water/A compared with Gramoxone Extra. In many instances a volume of 10 to 15 GPA will probably be adequate for Roundup Ultra and Touchdown 5.

Much of the UK research with these herbicides has shown successful control of wheat when they are applied at rates ranging from 1 to 1.5 lb ai/A. Antagonism can sometimes occur when Roundup Ultra or Touchdown are tank mixed with other herbicides. Increasing the rate of the burndown herbicide usually helps overcome this antagonism.

Guidelines for specific rates of Roundup Ultra and Touchdown 5

	Wheat Height	
	6"	12"
Roundup Ultra *		
Alone	2 pt/A	2 pt/A
Tank mixed	2.5 pt/A	3 pt/A
Touchdown 5 *		
Alone	1.6 pt/A	1.75 pt/A
Tank mixed	2pt/A	2.4 pt/A

* Observe the herbicide label for directions on using ammonium sulfate as an additive. A nonionic surfactant my be included with Touchdown 5 but should not be included with Roundup Ultra.

A final word of caution would be to check for rotational crop restrictions for herbicides that were applied to wheat. For example, any fields treated with Harmony Extra should not be planted to rotational crops until 60 days after application.

APHIDS AND ARMYWORMS: AN UPDATE

By Douglas Johnson

I encourage all agents, consultants, dealers, farmers, etc. who are routinely scouting fields, to report new occurrences of wheat insects. I will place them in KPN for everyone's information. You may send E-mail to me at: djohnson@ca.uky.edu or leave a message on my phone 502/365-7541 x214.

Mr. Scott Jones of Wheat Tech, Inc. indicated that English grain aphids (EGA) are present in Fulton Co. I am not surprised at this and expect that we may have a big year for this insect. At this point, it is too late for EGA to be of any significance in vectoring Barley Yellow Dwarf Virus (BYDV). However, watch for population increases up as wheat heads begin to fill. An average of 50 or more aphids per head indicates that an insecticide treatment should be considered. Unlike the greenbug or the Russian wheat aphid, found on out west, EGA does not inject a toxin into the plant.

Now is a good time to learn the differences between the two important aphid species. You should be able to find both the English grain aphid and the Bird cherry-oat aphid (BCOA) on the grain. EGA populations will be on the increase and BCOA populations will be on the decrease.
English grain aphids are pale to apple green with long dark cornicles (those tail pipes out the back

end) and dark leg joints. Their antennae are nearly as long as the body. These aphids usually feed on the upper leaves and developing grain.

The bird cherry-oat aphid is deep green body with orange (or redish) patches surrounding, short cornicles. The antennae definitely shorter than the length of the body. These aphids usually are found on lower leaves, stems, and possibly underground. Remember this is biology, everything is subject to variation. Look at several individuals in a colony to determine the probable species.

Pheromone trap counts indicates that armyworm moths are in full flight. Although a bit early, it is just what we would expect for this season. Armyworms are named for their habit of moving from field to field in large groups. Larvae (caterpillars or worms) are greenish brown with a narrow stripe down the back and an orange stripe down each side. The head is yellow-brown and honeycombed with dark lines. Armyworm larvae have three pairs of jointed legs just behind the heads, four pairs of fleshy legs on their abdomens and one pair of fleshy legs at their anal ends. They are about 1-½ inches long when full grown.

Armyworms overwinter as larvae. In the spring they form pupal cases from which the adult "miller" moths will emerge and begin to lay eggs. Eggs will hatch into larvae. This cycle will produce about one generation each month during the summer, before the overwintering larvae are produced.

Armyworms are primarily leaf feeders. However, they will feed on awns, tender kernels and may clip off entire heads of grain. Populations generally reach economic level in late May and early June. Count the number of worms in a four square foot area. The treatment guideline is an average of 16 or more ½ to 3/4 inch worms per four square feet. If all worms are much larger than this, most of the potential damage has already been done and insecticides are of little value.

TOBACCO

CURRENT BLUE MOLD STATUS
By William Nesmith

Blue mold is now active in north Florida. Dr. Tom Kuchareck, Extension Plant Pathologist, University of Florida reported on March 31 that blue mold was active in flue-cured tobacco beds in Alachua County. On April 2, he reported activity in Columbia County. Data were not available as to the metalaxyl sensitivity of the fungus involved.

The above mentioned outbreaks do not directly involved transplants destined for the north. However, established blue mold in Florida's flue cured tobacco could expose transplants produced in the southeast to blue mold under certain weather events. Kentucky's tobacco industry is advised to consider that blue mold is now established in Florida in making decisions about plug-plants and transplants from the southeast.

On March 27, the North American Blue Mold Forecast System at N.C. State University posted a low-level risk of blue mold moving from southern Texas over Kentucky. It is very unlikely that the actual weather events that developed between March 27 and March 31 resulted in the introduction of blue mold from Texas to Kentucky. However, this should serve as a reminder of the potential for blue mold to move from the wild tobacco in Texas to Kentucky's tobacco with certain fast-moving storm systems. This a key reason regular protective fungicide sprays are recommended for use in ALL tobacco transplant production in Kentucky (greenhouses, float beds, and traditional seed beds). Growers should not be waiting for blue mold watches or warnings before starting fungicide sprays in transplant production systems. Transplants are too valuable to take such risks, furthermore, local sources of other tobacco seedling diseases are a constant threat.

FOLLOW-UP ON FINDING FERBAM
by William Nesmith

Following the short note in the last issued of KPN about difficulty finding Ferbam, I was informed by Tri-State Delta Chemical that they are also distributors for Ferbam Granuflo. They have offices in Lexington and Henderson and are the former Grower Services Company. Helena Chemical of

Springfield, Ky is also a local distributor, as identified in the earlier article.

Also, be aware that other formulations of ferbam may be marketed in Kentucky. However, only Ferbam Granuflo and Carbamate WDG have the 24-C label for use in float beds and greenhouses.

POSSIBLE NEW BACTERIAL LEAF SPOT DISEASE IN TOBACCO SEEDLINGS
by William Nesmith

A bacterial leaf spot disease has been identified in a lot of Tennessee 90 seedlings (lot RB906GIC7) by the Plant Disease Diagnostic Laboratory. The specific bacteria responsible for this disease have not been identified, but proof of pathogenicity has been completed with several bacteria isolated from the lesions. Therefore, more than one bacterial pathogen may be involved.

The disease was submitted to us as angular leaf spot, but it is different from the angular leaf spot commonly found in burley tobacco. The necrotic areas are more circular, plus the halo surrounding the necrotic lesions are very large compared to those normally associated with angular leaf spot; these symptoms are closer to that found with wildfire. Inoculations made into the wildfire resistant variety Burley 21 and wildfire susceptible variety Ky 9 did not yield results to rule out wildfire. Tn 90 is resistant to the common strain of wildfire.

Fortunately, a very high level of control of this disease was achieved with streptomycin. Streptomycin sprays can greatly reduce infections by both wildfire and angular leaf spot, but it must be applied regularly and with complete coverage to achieve control.

This disease may not be confined to Tn 90, but that is the only variety we have confirmed it in this year. Similar symptoms were observed in 1995 and 1996 in some field plantings in other varieties, but we were unable to complete pathogenicity tests on those samples. Growers should remain watchful for bacterial leaf spot diseases in transplants moving in the commercial industry. Get them identified, do not just assume you are dealing with angular leaf spot. As seed production and transplant production become more consolidated, a new bacterial leaf spot diseases that breaks host resistance and is resistant to streptomycin is a potential threat.

Please submit samples of bacterial diseases in transplants to the diagnostic labs so we can sort out these diseases and determine their severity.

SLUGS CAN BE EASY TO FIND IN GREENHOUSES BUT HARD TO CONTROL
By Lee Townsend

Slugs and snails are almost universal pests in greenhouses. Their soft, unsegmented bodies, exude a slimy, sticky, mucous-like substance that leaves characteristic shiny trails in their wake. They come from the soil or the surrounding area.

Slugs use their rasping mouthparts to feed on most any kind of plant. Immature tend to feed on surface tissue while larger individuals eat irregular holes in foliage. They usually feed at night and hide in moist, dark areas during the day. Slugs and snails may eat several times their own body weight each night so damage can be serious within a short time. Their damage is often blamed on cutworms or other insects but the slime trails are key clue in diagnosing the problem.

Although slugs are hidden during the day, they apparently are not repelled by light. Rising temperatures spur them to crawl down to their hiding places to rest and absorb water through their skin. As temperatures start to fall, slugs actively begin foraging, again. Slugs may be active during the day after a cooling shower as long as the temperatures decline or remain steady. Slugs are so sensitive to temperature that they can detect temperature changes as gradual as 2°F per hour! Slugs prefer temperatures in the low 60's but they can lay eggs and develop normally but more slowly when it is cooler. Development stops at 41°F. Slugs can survive slight freezing but they tend to hide in cold weather and are protected. Slugs try to avoid temperatures above 70°.

Slugs are sensitive to air currents. Gentle breezes cause them to turn toward the source and extend their antennae. As the breeze becomes stronger, the slugs turn away from the source, evidently to escape dehydration. Improved ventilation may force slug to move. Slugs can survive a short period of time in the water but they will drown after several hours.

Slug baits containing metaldehyde may be used for control. Best results are usually obtained if the baits are applied in the afternoon watering is delayed until the next day. Slugs feed intermittently so several applications of bait are necessary for control.

Metaldehyde baits may attract slugs from up to 3 feet away. The toxic effects of metaldehyde seem to be primarily due to dehydration as metaldehyde elicits excessive mucus production (mucus is 98 percent water and 2 per cent mucoproteins.) Thus in dry weather, metaldehyde is more effective. In wet weather, slugs sometimes can absorb enough moisture to compensate for the water lost in mucus production and therefore recover from the effects of metaldehyde. However, if slugs consume too much metaldehyde, they do not recover.

Control of slugs in the greenhouse consists primarily of placing baits in areas where the slugs will find them. The effectiveness of such baits is greatly increased by placing the bait under a board, pot, or flat. Slugs will not crawl across a barrier of copper metal or wooden surfaces treated with copper sulfate.

Good sanitation with the removal of extraneous vegetation and trash piles or other material which might offer food or shelter to these pests will aid in the effectiveness of the control program. *(Adapted in part from Florida Cooperative Extension Service information)*

LIVESTOCK

HORN FLIES MAY CONTRIBUTE TO MASTITIS INCIDENCE
By Lee Townsend

Horn flies are thought to be a common vector in the spread of mastitis-causing bacteria among beef and dairy animals. These blood-sucking flies may be involved in the development of teat end lesions, bacterial abscess, and mammary infection. Studies in Louisiana have shown marked reduction in levels of mastitis in herds using some form of fly control. Pasture fly control programs covered in previous issues of this newsletter have discussed some of the main options.

LAWN AND TURF

GROUND BEES MAY BE RESPONSIBLE FOR SOIL BURROWING
By Lee Townsend

Several bee species can be found nesting in home yards, activity is especially evident in the spring. Many are important pollinators. They tend to be about ½ " long and vary in color from solid black to having bright metallic markings. Most are solitary bees, each female makes its own burrows in the soil. Females dig and stock several burrows with pollen and eggs. Large numbers of solitary bees may build up at a site over time. This results in lots of pencil-diameter holes with loose soil around the entrance. Some nest together or share a main entry hole. Most often, they live in areas where the grass is sparse.

While ground-nesting bees are not generally aggressive, they can sting if stepped on or handled. If children are playing in the area, chances of stings may warrant control measures. When abundant in an area, these bees can create unsightly areas in the lawn. Carbaryl or Sevin, applied to burrowed areas according to label directions, can reduce infestations. Burrowing bees tend to look for relatively bare areas with loose or sandy soil. Overseeding bare areas, adequate fertilization, and watering will provide thick turf and may make areas less attractive to these bees.

SHADE TREES AND ORNAMENTALS

EASTERN TENT CATERPILLARS ACTIVE
By Ric Bessin

Eastern tent caterpillar egg masses have begun to hatch and tents are under construction. Now is a good time to monitor for eastern tent caterpillar on hosts such as wild cherry, apple, and crabapple. To a lesser extent, they are found on hawthorn, maple, cherry, peach, pear and plum as well.

Early control is important. Small, tents can be removed and destroyed by hand. Later in the spring, larger tents may be pruned out and destroyed or removed by winding the nest upon the end of a stick. Burning the tents out with a torch is not recommended since this can easily damage the tree. Young caterpillars can be killed by applying an

insecticide containing, *Bacillus thuringiensis* var *kurstaki*. Other insecticides for tent caterpillar control include carbaryl, methoxychlor, and malathion. Larvae within the tents are protected beneath the webbing and are more difficult to kill with an insecticide.

GENETIC CONTROL OF LANDSCAPE FLOWER DISEASES
by John Hartman

Kentucky gardeners will be planting various flowering plants into their gardens during the coming weeks. Diseases of flowers in the landscape sometimes result in disappointing performance. An acceptable level of plant disease control without the need for fungicides can be obtained through the use of disease resistant cultivars. The following reports of genetic control of landscape flower diseases were selected from recent issues of an annual publication, *Biological and Cultural Tests for Control of Plant Diseases*, published by the American Phytopathological Society.

Bee Balm (*Monarda didyma*), with its showy colors, is commonly grown in Kentucky gardens. The bane of bee balm in Kentucky is powdery mildew, caused by the fungus *Erysiphe cichoracearum*. Plant Pathologists in Vermont, in one to two years of observation, evaluated 17 cultivars for reaction to powdery mildew. Their findings (average % of leaf surface with powdery mildew) follow:
Less than 20% - Blue Stocking, Marshall's Delight, Violet Queen.
20 - 40% - Gardenview Scarlet, Kardinal, Mrs. Perry, Ohio Glow, Red Stocking, Stone's Throw Pink
40 - 60% - Mahogany, Prairie Night, Snow White.
60 - 80% - Adam, Cambridge Scarlet, Croftway Pink, Purple Crown, Souris.

Marigold (*Tagetes erecta*), is a staple of annual flower beds in Kentucky. During warm, wet summers, flower blight caused by the fungus *Choanephora cucurbitarum* can decimate the flowers and detract from their aesthetic value. A plant pathologist in Louisiana evaluated 21 marigold cultivars and found them all to be susceptible to flower blight, but that some were more susceptible than others. The results (percent flowers blighted) follow:
Susceptible; less than 40% - American Indian Orange, Papaya Crush, Pineapple Crush, Inca Orange, Cortez Yellow, Excel Primrose.
More susceptible; 40 - 50% - Inca Gold, Excel Yellow, Pumpkin Crush, Perfection Gold, Perfection Orange, Excel Orange, Perfection Yellow, Antiqua Gold, Marvel Orange.
Most susceptible; 50 - 62% - Discovery Orange, Antiqua Orange, Marvel Yellow, Antiqua Yellow, Inca Yellow, Marvel Gold.

Creeping and shrub roses (*Rosa* sp.), are sometimes grown in Kentucky landscapes because they have a reputation for disease tolerance, especially compared to the hybrid tea, floribunda, grandiflora, and miniature roses so commonly grown. In a limited test done in Alabama, six creeping and shrub roses were evaluated for black spot (*Diplocarpon rosae*) disease. The results follow.
Up to 10 - 15% defoliated - Baby Blanket, Ralph's Creeper
More than 50% defoliated - Magic Carpet, Jeeper's Creepers, Red Ribbons, Central Park.

Salvia (*Salvia splendens*) with their colorful upright flower spikes are grown in many Kentucky gardens. Plant pathologists in Louisiana evaluated 40 salvia cultivars for tolerance to petal spot disease caused by the fungus *Alternaria*. Fortunately, most are resistant, but the white flowered types tend to be highly susceptible. Their ratings of % petal spots follow:
No petal spot - Carabiniere Red; Covergirl; Empire Burgundy, Salmon, Lilac, Purple, Red; Firecracker Blue, Burgundy, Cherry, Lilac, Red, Rose; Hotline Red, Violet; Hot Stuff Red, Rose; Maestro; Primco Red; Rambo Scarlet; Red Hot Sally; Red Vista; Salsa Burgundy, Scarlet; Sizzler Burgundy, Purple.
Almost no petal spot - Salsa Bicolor; Sizzler Lavender.
Up to 10% - Hotline Salmon; Empire Light Salmon; Firecracker Orange, Salmon; Hot Stuff Salmon; Salsa Salmon; Salsa Salmon Bicolor.
Up to 25% - Hotline White.
Up to 75% - Empire white; Firecracker White.
Over 75% - Salsa White; Sizzler White.

Kentucky gardeners will want to choose disease resistant flower cultivars for a healthier and more carefree garden. Hopefully, the flowering plant industry will continue to develop annuals and perennials with genetic resistance to troublesome plant diseases.

HOUSEHOLD

IS YOUR HOME ATTRACTING TERMITES?
By Mike Potter

Homeowners can reduce the risk of termite attack by following these suggestions.

1. ***Eliminate wood contact with the ground.*** Earth-to-wood contact provides termites with easy access to food, moisture, and shelter, as well as direct, hidden entry into the structure. Wood siding, porch steps, latticework, door or window frames, posts and similar wood items should be at least six inches above ground level. Eliminating this contact may require regrading or pulling soil or mulch back from the foundation, or removing the bottom of siding, supporting steps or posts on a concrete base. Wood that has been pressure treated is not immune to termite attack; termites will enter pressure-treated wood through cut ends and cracks, and will also build tunnels over the surface.

2. ***Don't let moisture accumulate near the foundation.*** Termites are attracted to moisture and are more likely to "zero in" on a structure if the soil next to the foundation is consistently moist. Water should be diverted away from the foundation with properly functioning gutters, down spouts and splash blocks.

3. ***Reduce humidity in crawl spaces.*** Most building codes call for 1 square foot of vent opening per 150 square feet of crawlspace area. One vent should be within 3 feet of each exterior corner of the building. Shrubs, vines and other vegetation should not be allowed to grow over the vents. Moisture and humidity in the crawl space can further be reduced by installing 4-6 ml polyethylene sheeting over about 75 percent of the soil surface .

4. ***Never store wood or paper against the foundation or inside the crawl space.*** Firewood, lumber, cardboard boxes, newspapers, and other cellulose materials attract termites and provide a convenient source of food. Dead stumps and tree roots around and beneath the building should be removed, where practical, along with old form boards and grade stakes left in place after the building was constructed.

5. ***Use decorative wood chips and mulch sparingly, especially if you have other termite conducive conditions.*** Any cellulose-containing materials, including mulch, can attract termites. Termites are especially drawn by the moisture-holding properties of the mulch. Where mulch is used, it should never be allowed to contact wood siding or framing of doors or windows. Crushed stone or pea gravel, though often less cosmetically appealing, is less attractive to termites.

6. ***Consider having the structure treated by a professional pest control firm***. While the measures outlined above will make a house less attractive to termites, the best way to prevent infestation is to treat the soil around and beneath the building with a termiticide.

Preventively treating a home for termites is a reasonable investment, especially if the structure has no prior history of treatment. If the building was previously treated by a pest control firm, it's a good idea to maintain the service agreement by paying the annual renewal fee. Should termites re-infest the building (which can happen even if the initial treatment was performed correctly), the company will return and retreat the affected area at no additional charge.

DIAGNOSTIC LAB - HIGHLIGHTS

by Julie Beale and Paul Bachi

We have diagnosed a **bacterial leaf spot** on burley **tobacco**--causal bacterium (a) as yet unidentified (see article in this issue of KPN). We are also seeing tobacco float plants with stunted growth and poor development due to compaction and saturation; spiral root is also a common occurrence.

We have also diagnosed **black rot** (Xanthomonas) on very young greenhouse-grown **kale** seedlings; **brown spot** (Mycosphaerella) on **Austrian pine**; and **freeze injury** on a variety of plants, including **apple, plum and holly.**

Lee Townsend, Extension Entomologist