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TOBACCO

NEW FUNGICIDE FOR PYTHIUM CONTROL IN TOBACCO FLOAT BEDS

By William Nesmith

On April 24, the Division of Pesticides, Kentucky Department of Agriculture approved the Special Local Needs (SLN) registration of Terrazole 35 W for use in tobacco-transplant-float systems in Kentucky for controlling Pythium root rot. This registration will expire on April 24, 2001. The approval letter mandated that the SLN label must be with each product displayed in Kentucky. I will send a working copy of the approved label to each County Extension Office in Kentucky once I have received it. Dealers must obtain their copies from Uniroyal Chemical Company. Kentucky's label is significantly different from that used in some neighboring states, so be careful. Kentucky's label authorizes the following:

* Use only in float systems being used for tobacco transplant production located outdoors or within a greenhouse.
* Use is PROHIBITED in all other tobacco transplant production systems.
* The use rate is Terrazole 35 W at two ounces (2 oz) per 100 gallons of float water, added directly to the float water.
* The chemical MUST be distributed uniformly within the float water to avoid illegal residues, serious crop injury, and for effective control.
* The only approved method of application is addition to the float water. Drenching and over-head watering applications are PROHIBITED due to phytotoxicity.
* Only two applications are permitted - the first two to three weeks after seeding and the second only if symptoms of Pythium disease reoccur, but no later than eight weeks after seeding.
* Both preventive and curative treatment's are authorized, but I strongly recommend preventive use of this product.
* Some crop injury (phytotoxicity) should be expected from use as labeled and the grower/user must accept those risks. (Just remember, however, that Pythium causes very serious "phyto" - stunting and death!)
* Because this treatment is actually a form of CHEMIGATION, special instructions are involved with handling of the contaminated water, but those instructions are consistent with what is already required for other products labeled for this use site, such as Orthene.

The labeling of Terrazole 35W in the float systems should be a valuable disease control tool for Kentucky's tobacco industry. Pythium root rot is a limiting factor to successful use of the float system in Kentucky. Widespread transplant loss has been averted mainly through the off-label use of Ridomil and related fungicides. My lab has devoted considerable efforts over the last nine years to learning how to use Terrazole effectively while minimizing the phytotoxicity problems. None of this work was supported by chemical manufacturers. Instead, it was supported by the Kentucky Agricultural Experiment Station, Kentucky Cooperative Extension Service, and the Council for Burley Tobacco.

Although we identified Terrazole's high efficacy against Pythium early on, the key research finding came from my colleagues working in the Plant Pathology Department at North Carolina State University. They discovered it was highly effective at low levels when added directly to the float water. We had focused our efforts on drenching and soil amendments, such as those used in the ornamental industry. By reducing the rates, "phyto" could be reduced to acceptable levels.

The data submitted to support the labeling in Kentucky are found below in the table.
County Extension Agents were notified last week that

effective educational efforts would be needed with this labeling. The following points should be included in those efforts:

1. Terrazole is a very effective tool in the control of Pythium.
2. Terrazole 35 is the only legal chemical available for Pythium control in the float systems.
3. Terrazole is superior to Ridomil (and related fungicides such as Ridomil Gold, Subdue, and Ultra Flourish) in Pythium control.
4. Mefenoxam-resistant strains of Pythium and black shank are already present - driven by the illegal use of Ridomil and related fungicides in the float systems. Kentucky's agriculture could be harmed seriously, should fungicide-resistant black shank become widely prevalent.
5. Terrazole will cause some phytotoxicity, even when used at the labeled rate, but that phyto should be acceptable. Don't forget that Pythium is also very phytotoxic.
6. Failure to use Terrazole as labeled (attend to mixing and application details!) will result in very severe, unacceptable phytotoxicity.
7. Terrazole WILL NOT BE LABELED for food crops because of residue concerns! Please do not use this product in the production of food crops.
8. Let's get the illegal stuff out of the tobacco system. Increased enforcement activities (state and federal) may result from getting this product labeled, because part of the claim of merit was that it will reduce the widespread illegal use of pesticides in float beds.
9. Follow the disposal instructions to avoid health and safety concerns associated with humans, pets, and livestock.

EFFECT OF ADDING TERRAZOLE 35W FUNGICIDE TO THE FLOAT WATER ON TRANSPLANT DEVELOPMENT, PYTHIUM CONTROL AND CROP YIELD OF BURLEY TOBACCO - KY 14.

W. Nesmith & S. Dutton, University of Kentucky

Pathogen-free System

Rate (oz / 100 gal)[1]	Growth Index 7-days post trt.[2]	Phyto[3] 7-days	Phyto[3] 14-days	% Transplantable 5 wks	% Transplantable 7 wks
0	5.0 a	0.0 c	0.0 d	85.9 a	96.9 a
2	3.75 b	1.0 b	0.8 cd	6.3 b	95.3 a
4	3.25 bc	1.25 ab	1.6 c	0.0 b	15.6 b
8	2.75 c	1.25 ab	3.0 b	0.0 b	0.0 c
16	1.75 d	1.5 a	5.0 a	0.0 b	0.0 c

Pythium-Inoculated System

Rate (oz / 100 gal)[1]	Rootlengh (cm)	Pythium Root Rot[4]	% In-Field Survival[5]	4-Plant Cured Yield (g)[6]
0	8.75 a	9.0 a	0 b	0 c
2	4.75 b	0.03 b	100 a	612
4	4.0 bc	0.0 b	100 a	572 ab
8	2.0 cd	0.0 b	100 a	580 ab
16	0.0 d	0.0 b	100 a	546 b

[1] Rate of Terrazole 35W in oz product / 100 gallons of float water. The fungicide was not added until the plants were 4 weeks old and all subsequent refills of the float bays were made with solution containing the fungicide rate indicated.
[2] Growth Index 0-5 where 0 is dead, 1 no improvement, to 5 = ideal. Trt. = treatment.
[3] Phytotoxicity Index: Rated 7- and 14-days post treatment, where 0 = normal plant 5 = severe mottling, vein clearing and some necrosis.
[4] Pythium root rot: 0 = no disease to 9 = death of all obvious roots within float water and plug ball.
[5] Transplanted to the field in mid-June as normal, but a drought season.
[6] Acceptable leaf yield from 4 plants after a normal harvest and cure for burley. All transplant and field production protocols were as normal for burley tobacco in Central Kentucky.

CORN

CUTWORM TRAP CATCHES UP, BUT ...
by Ric Bessin

Over the last few weeks black cutworm moth trap captures have been increasing in Princeton. In addition, cool weather has dominated much of the state over the last few weeks. Corn that is up is growing slowly, what does this mean for growers? Most should recognize that there is a potential for serious cutworm damage. Growers are advised to monitor their corn for cutworm activity, as long as the corn is vulnerable to cutworm damage (less than knee height).

Cool weather can contribute to increased cutworm damage because cutworms are active at temperatures below which the plants can grow. Wet, cloudy weather also allows cutworms to continue to feed during the day, when they otherwise should be hiding under debris or in tunnels in the soil. Growers that have planted Bt-corn may still experience cutworm losses. Of the Bt-corn technologies, only StarLink has suppressed cutworm damage in trials at UK. Even preventive cutworm treatments may not provide satisfactory control in years with high cutworm numbers and weather that promotes cutworm damage.

I strongly recommend that growers have their fields scouted at least twice a week while the corn is less than 12 to 18 inches tall, and use rescue treatments as necessary. A list of the recommended cutworm insecticides is listed in ENT-16. Currently, we are using 3% cut plants and 2 or more live cutworms 1 inch or smaller as a rough guideline for treatment. High or low stand counts can be used to adjust this economic threshold. The important message is not to leave cutworm management to the fortunes of nature.

Keep in mind that cutworms are usually present in the field before planting. They prefer to feed on several winter annual weeds. Preparing the field at least two weeks before planting will reduce the risk of damaging levels of cutworms.

When scouting for cutworms, many growers note the numbers of flea beetles on the small seedlings. This is a severe year for flea beetles. Flea beetles damage plants in two ways, they scar the young leaves and they can transmit Stewart's Wilt. Most corn hybrids are not susceptible to this disease, but you should check with your seed supplier.

Direct damage to seedlings by flea beetles can appear severe, but this rarely causes any yield loss. Most corn hybrids outgrow flea beetle damage without yield loss. Corn seedlings usually recover from flea beetle damage, so control is not recommended unless some plants are killed or taking on a whitish cast and growing conditions are

poor. Fields with a history of Stewart's Wilt or fields with Stewart's Wilt susceptible hybrids should be scouted carefully.

EARLY-SEASON WEED MANAGEMENT TIPS FOR CORN AND SOYBEAN PRODUCERS
by J. D. Green

One of the critical inputs in crop production is adequate weed control. Therefore, herbicides are used in corn and soybean production to maintain economical weed control throughout the growing season. Highlighted below are some important aspects to consider when implementing our weed management programs.

1) **Choosing the right herbicide or herbicide combination**. The most effective herbicide product(s) to use will depend on the type of weeds present. Knowing the field history of past weed problems will enable crop producers to pick herbicide products that will be the most effective for both the common and most troublesome weeds that are present in each field. For no-till fields it is important to choose a "burndown" herbicide option that will adequately control the vegetation that is present at the time of corn or soybean planting.

2) **Application rate.** The application rate for each herbicide depends on the soil characteristics, the type of weeds present, the tank mixture, and/or the stage of crop growth. In addition, the spray volume (or gallons per acre) may need to be altered depending on the herbicide products to be applied.

3) **Timing of the herbicide application**. With the wide array of herbicides available crop producers can choose either between weed control programs that rely more on a soil-applied or mostly a postemergence method of application, or a combination of both. In general, soil-applied herbicides must be applied before weeds emerge; whereas, optimum control with postemergence herbicides are obtained when applied to weeds that are small and actively growing. Applying herbicide treatments at the right time is just as important as picking the right herbicide or combination of herbicide products to use.

4) **Use of herbicide tolerant crops as weed management tools**. When planting crops that are genetically tolerant to use of specific herbicides it is extremely important to mark fields and keep good records of where these crops are planted. A misapplied herbicide to a non-tolerant field can result in severe crop damage or even a total crop loss.

5) **Environmental conditions**. Weeds that are stressed due to hot/dry weather can be harder to kill. Also, crops under stress have a greater potential for herbicide injury. Other extremes in environmental conditions, such as wet field conditions can prevent applications from being made on a timely basis. Expected rainfall soon after application can wash the herbicide off the plant; thus, reducing the effectiveness of some postemergence products. The rain-free period suggested for many products range from 1 to 8 hours, depending on the herbicide.

6) **Drift and nearby susceptible plants.** As a general rule, avoid herbicide applications when wind speed exceeds 10 MPH or air temperatures are above 85 F. Under these conditions the potential risk of herbicide injury to nearby susceptible plants is greatly increased due to volatility and/or drift from certain herbicides.

7) **Sprayer cleanup.** Immediately following a herbicide application the spray equipment should be thoroughly rinsed and cleaned. This includes flushing the tank, hoses, screens, and nozzles with clean water. In some cases running a cleaning solution, such as household ammonia, through the system is needed. Many of the herbicide labels discuss proper sprayer cleanup after use of a product. Sprayer cleanup is critically important when applying a herbicide on one crop and using the same equipment to treat another crop.

In summary, herbicide applications are an effective and economical tool for combating weed problems. However, it is important to select the right herbicide products for the problem weeds in each field, as well as, making the application at the right time. Finally, be aware of environmental conditions before and after the herbicide application, including the potential for off-site spray drift.

WHEAT

WHEAT STREAK MOSAIC EPIDEMIC
by Don Hershman and Doug Johnson

Last week we started to receive samples and phone calls which suggested that wheat streak mosaic had reared its ugly head again in Kentucky. The last and only recorded epidemic of this virus disease in KY was in 1988. Current information indicates that the greatest incidence of wheat streak mosaic is across the southern portion of the state, extending from east of Bowling Green all the way to Fulton County. However, the full extent of the epidemic has yet to be determined. It is likely that additional counties will report the disease as crop development continues.

Wheat streak mosaic virus is transmitted by the wheat curl mite. This association and why we believe that wheat streak is a problem this spring will be addressed later in this article.

Symptoms: Severely diseased plants are fairly distinctive. They will be severely stunted; leaves will be small and will have a "spiked" appearance. Lower leaves and tillers may turn brown and die. Plants may have a flaccid look about them and may look like they are having difficulty standing. Leaves will show extensive yellow streaking, especially from the middle of leaves towards the tips. The typical discontinuous yellow streaks in leaves may be so extensive that leaves will have a yellow, "bleached out"appearance. Some leaves will have a mosaic symptom.

Severe symptoms, such as described above, indicate that infection occurred in the fall or early winter. The prognosis for severely disease plants is not very good and 75% or greater yield loss can be expected. Fields have large percentages of severely diseased plants are candidates for destruction and replanting to alternate crops. In some cases, only portions of fields may severely diseased. In those instances, it may only be necessary to destroy a portion of those fields.
Although, currently, many fields do have a high percentage of severely diseased plants, many other fields are just now beginning to show yellowing and streaking, but are not stunted. If symptom expression occurs early, such as prior to flag leaf emergence, then expect those plants to deteriorate rapidly. However, if plants are in the boot stage or beyond when symptoms begin to be expressed, then expect only moderate to light yield effects. In fact, based on information provided to us by Kansas State University Extension Plant Pathologist, Dr. Bob Bowden, most plants which show late symptoms will have reduced test weight, but that is about it. These fields are certainly NOT candidates for destruction, but they may also not be good

candidates for adding additional inputs, such as foliar fungicides or insecticides. Basically, the impact of late-appearing wheat streak mosaic symptoms depends upon the incidence of diseased plants in a field. Obviously, the greater the number of diseased plants, the more impact there will be on crop test weight and, thus, profitability.

So now to the key questions. Why is wheat streak severe this year? Could it have been prevented? What can be done to reduce future occurrence? To answer these questions we need to look at how the pathogen, wheat streak mosaic virus, gets into wheat.

Certainly we would like to have a clear idea of why we have this problem After all, it has been 12 years since a wheat streak mosaic epidemic has occurred in Kentucky. So, lets see if we can construct a usable model to provide an explication for this event.

A complete life history of the mite is given in Entfact:117 - *Wheat Streak Mosaic Virus and the Wheat Curl Mite*. It is available from your county agent or from the Entomology Web site at: http://www.uky.edu/Agriculture/Entomology/enthp.htm

When you reach the site select "ENTFACTS' then "FIELD CROPS" and look for Entfact-117. Also see Sloderbeck, P.E. 1995. Wheat curl mite. Entomology Wheat Insects (L. D.) at http://www.oznet.ksu.edu/library/entml1/wheatcur.pdf

- The mite is only about 1/100 of an inch long
- Epidemics are always associated with a "Green bridge".
- This mite MUST have green tissue to live on. It can survive only a few days off the host.
- Typically, the mite moves by being wind blown.
- Wheat is by far most important host for the mite but it can survive on other plants that grow in KY
- There is no known effective pesticidal control for this mite.

What is different about this growing season? We probably have the mite, the virus, and alternate hosts here every year but we rarely have an epidemic.

On Tuesday April 18, 2000, Dr. Hershman and I met with several county extension agents, producers, consultants, farm store managers and technical representatives. These "meetings" took place in infected fields in and around Logan and Warren Counties. We were able to view the severity and distribution of affected fields, and perhaps more importantly gather background information from people involved in local wheat production. While we are not able to solve the problem, we do think that between all of us we can now explain what has happened.

Wheat is the ideal host. The mite can live on some other grasses but it does not do well. Since we do not ordinarily have the problem, our wild hosts are not sufficient to provide an epidemic. In looking at the literature and talking with people from Kansas, they always see the problem when wheat from a previous cropping season is allowed to live continually through to the next wheat season. This can happen in several ways. Wheat from shattered heads at harvest will germinate in the field and then may grow continuously tho the next planting. Wheat may live continuously in abandoned fields and of course from spillage along roads etc. The point is whether in or near production fields, in problem areas wheat is growing throughout the time between crop, allowing the mites and virus to survive, move about and increase in number. This is the green bridge.

However, our production system is quite different from those out west. We usually have several months (during the summer) between wheat harvest and planting when wheat is generally not present. So how do we get this Green Bridge? And what was particular to the1999-2000 season? The answer to this question became very apparent by talking with the local individuals. Because of the drought stress of the summer of 1999, the soybean crop (especially double crop) did very poorly. As a result producers were unwilling to provide the additional weed control that normally would have controlled volunteer wheat and other grasses in the soybean crop. As a result, the area currently suffering from Wheat Streak Mosaic had quite a lot of volunteer wheat. Hence our green bridge! This is most likely the core of the problem. However, the long warm fall and very mild winter certainly allowed the mites to remain active for much of the growing season.

Once everyone was aware of how the mite/virus movement and survival controlled the disease epidemic cycle, it was easy to find examples of where the green bridge had occurred. This does not explain every individual case, but it certainly does explain the core reasons for why we are seeing this epidemic in this year, in this area.

One of the more difficult questions is why do we find fields that are very evenly infested and do not appear to be near areas of volunteer wheat? My best explanation for that is to use scattered rain storms as a model. Once these mites get into the air they may simply "rain" down on an area. This movement would probably be of longer distance, provide a rather even dispersal on a local level, and be a matter of chance as to where they might settle out. You might get rained on and you might not.

So what is to be done? It appears that this pest is very difficult to detect and it cannot be controlled with insecticides. The only real remedy is to stop the formation of the green bridge. If we return to normal production practices this problem may take care of itself. If however, it appears that fields are going to be abandoned or if other cropping practices evolve that allow volunteer wheat to prosper, we will have to do something to control the volunteer wheat. This will have to be an area wide effort. Just doing the right thing on your own farm will not be enough. Everyone needs to understand that wheat growing during the off season is a threat to commercial production.

Without the cooperation of a large number of individuals working in wheat production, we probably would not have been able to sort out this puzzle. We thank all those people that were willing to participate. We also need further help. Dr. Hershman and I developed a small survey tool to collect data on this mite / disease outbreak. We ask that you take note of any field in your area that has Wheat Streak Mosaic and try to find out as much as you can about the field. In this newsletter is a survey form. Please complete and return one for each field. We need to gather as much information as possible about the extent of the problem and its contributory causes. This could be very helpful and important to the wheat growing community.

FRUIT CROPS

BLACKBERRY ORANGE RUST ALERT
by John Hartman

Orange rust is now visible on new shoot growth in blackberry plantings in Kentucky. Although the disease will be very obvious on fully expanded leaves in the coming months, identifying the disease now is important to efforts at eradication of infected plants before healthy plants nearby become contaminated.

Depending on the region, there are two different, but

almost identical, fungi that cause orange rust disease. These two fungi, *Arthuriomyces peckianus* and *Gymnoconia nitens*, cause orange rust, the most important of several rusts of blackberry. Infected plants can be easily identified shortly after growth appears in spring when newly formed shoots appear weak and spindly. The new expanding leaves on such canes are stunted or misshapen and pale green to yellowish. We are currently seeing that the leaf edges have a bronze color. The lower leaf surfaces of these infected shoots bear tiny orange pustules, visible with a hand lens. In a few weeks, the lower surface of infected fully expanded leaves will be covered with highly visible waxy, bright orange blister-like pustules. Spores from these pustules, when blown to nearby healthy plants, will initiate new infections. Diseased blackberries become infected systemically, even below ground, and will bear little or no fruit.

It is important to remove and destroy plants with infected canes now. If growers wait a few weeks, they run the risk of contaminating their healthy plants and having even more orange rust next year. Orange rust is also widespread on wild blackberries and black raspberries in Kentucky, so it is important to not only remove infected plants from the blackberry planting but also remove similar plants from wild areas nearby. Fungicides with proven effectiveness against this disease have not been found. Thus, timely eradication of diseased plants is essential.

PEACH LEAF CURL IS VISIBLE
by John Hartman

Symptoms of peach leaf curl, caused by the fungus *Taphrina deformans* are appearing now on peaches and nectarines in Kentucky. Infected leaves are distorted, thickened, and curled; they will eventually turn brown and drop off the tree. Heavy infections will result in reduction in yield.

A single fungicide spray applied in the fall after leaves drop, or in the early spring, while trees are still dormant, will control peach leaf curl. It is too late to apply fungicides now. For suggested fungicides to use, see the appropriate U.K. Cooperative Extension publications, Commercial Tree Fruit Spray Guide (ID-92) or Disease and Insect Control Programs for Homegrown Fruit in Kentucky (ID-21).

LAWN AND TURF

UPDATE ON BIOJECT SYSTEM FOR BIOLOGICAL CONTROL OF DOLLAR SPOT
by Paul Vincelli

The BioJect was developed by Eco Soil Systems of San Diego, CA, as a way to grow a fresh culture of a biocontrol agent daily and distribute it to a golf course through the irrigation water. Typically, a BioJect unit is located in the pumphouse and consists of a tank for growing the biocontrol agent, inoculum and media storage, control units and a pump for injecting the biocontrol agent into the irrigation line. It is an automated unit which is designed to grow a 25-gallon culture daily, inject it into the irrigation water, then clean and sterilize itself in preparation for the next day's growth cycle. A fresh culture of several bacteria, including one called *Pseudomonas aureofaciens* 'TX-1', is grown in the fermentation vat, and is metered out onto the turf sometime at night through the irrigation system. *P. aureofaciens* 'TX-1' produces an antifungal antibiotic called *phenazine 1-carboxylic acid* (PCA), which is thought to be the active ingredient in this biocontrol system. The cost to lease the system is approximately $17,000 per year.

There was a lot of excitement when the Bioject system first came out several years ago, because superintendents are always interested in effective ways to reduce pesticide use. Since its release, however, questions about the efficacy of disease control have arisen repeatedly.

I recently heard presentations by Dr. Mike Boehm of The Ohio State University and Dr. Zac Reicher of Purdue University, who have each conducted substantial research projects on this biocontrol system. By my understanding of the talks, the results reported by both researchers were congruent, and both continue to raise questions in my mind about the general efficacy of TX-1 as delivered through the Bioject system for dollar spot control.

Dr. Mike Boehm was kind enough to share the text of a recently published Extension article authored by the team of researchers who conducted the OSU work. Below are the conclusions presented by the authors. The full text of the article can be seen at http://www.ca.uky.edu/agcollege/plantpathology/PPAExten/Bioject.htm.

"Summary and Conclusions

- "TX-1 is not a stand-alone dollar spot control or replacement for proper fungicide use. Although TX-1 could reduce the severity of dollar spot compared to no treatment, its suppression of dollar spot was limited. Fungicides provided complete or near-complete control.
- "Under conditions of high disease pressure and poor potential grass recovery, TX-1 was not an effective dollar spot management tool. At both Double Eagle and the OSU research plots, when dollar spot severity on the controls reached very high levels (70 - 80% of the turf area diseased), TX-1 treatments failed to suppress dollar spot as well as when pressure was mild.
- "TX-1 was more effective on turf treated with 4 lbs N / 1000 ft^2 than with 1 or 2 lbs N / 1000 ft^2. Fertility requirements should be considered when deciding whether to use TX-1.
- "TX-1 and the BioJect should be tools to consider when designing a dollar spot management program, but not the only management used. Each superintendent will need to weigh the possible benefits of TX-1 and the BioJect against cost, expected disease suppression and acceptable disease thresholds before deciding whether or not to make it a part of an integrated turf health management program."

In addition to the points listed above, the OSU work and that of others I have seen suggests the following:

1. populations of TX-1 may not be high enough after dilution of the 25-gallon fermentation culture into 30-80,000 gallons of irrigation water to provide acceptable disease control.
2. the current irrigation systems of some golf courses may be inadequate for uniform delivery of a biocontrol throughout all fairways on the course.

SHADE TREES AND ORNAMENTALS

ORNAMENTAL PEST ALERT
by Mike Potter

Heat unit accumulations are triggering the emergence and appearance of several key horticultural pests. If control is warranted, the time for action is now when pest life stages are most vulnerable. These timely recommendations have been made possible by the phenological management schedule developed by the UK Horticultural Entomology

Research Lab. A copy of the table can be found in the new extension publication ENT-66, *Timing Control Actions for Landscape Insect Pests.*

Honeylocust plant bug - Eggs have hatched and the young nymphs are feeding on the expanding leaves of honeylocust. Feeding by the small, pale green insects causes distortion, stunting and discoloration of the foliage. Leaf damage persists throughout the season. Nymphs transform into adults by mid-May, and lay eggs in woody tissues. Winter is passed in the egg stage.

Damage from honeylocust plant bug rarely endangers tree health, but can be a concern in terms of cosmetics. Early activity is often overlooked and infestations are not recognized until symptoms appear. By then, control efforts are no longer effective. Nurseries who want to avoid cosmetic damage should examine expanding leaflets for the small, green nymphs and treat while the insects are still active. Insecticidal soap, 2% horticultural oil, or conventional insecticides, e.g., Sevin, Tempo, Talstar, Scimitar are effective. Check the foliage 7 to 10 days after the first treatment to determine whether or not another application is needed. There is only one generation each year.

Hawthorn Lace Bug - Egg hatch has begun and nymphs are feeding on the undersides of hawthorn leaves. Lace bugs suck plant sap and cell contents, producing yellowish stippling on the upper leaf surface. In addition, dark, shiny spots of excrement are excreted on the leaf undersurface. The injury, in addition to being unsightly, can reduce plant vigor. Lace bugs may have two or more generations each year, each requiring about 30 days. Insecticides such as Orthene, malathion, Dursban, and synthetic pyrethroids (e.g., Tempo, Talstar, Scimitar) may be used for control. Thorough coverage of leaf under sides is important.

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, malathion, and a variety of other conventional insecticides.

Lilac borer/Lesser peachtree borer- Adults of both species are, or soon, will be laying eggs on the bark of susceptible plants. 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) are registered for borer control. The trunk and major limbs of susceptible trees should be sprayed to runoff as specified on the label.

WEBS IN TREES IN THE SPRINGTIME
by Monte P. Johnson

This spring, you may have noticed several trees that have webbing in the branches. These are made by the eastern tent caterpillar, a native insect that is most noticeable during the springtime because of the webbing that the caterpillars create, typically in the crotches of trees or where larger branches fork. Fully grown caterpillars are around two inches long and are generally black with a white stripe down the back and a series of bright blue spots between yellow lines that run the length of the body.

The eastern tent caterpillar prefers to feed on wild cherry, apple and crabapple, but will occasionally feed on other woody plants such as ash, barberry, beech, birch, blackgum, rose, willow, witch-hazel, maple, oak, poplar, cherry, peach and plum. Large numbers of larvae on a tree can result in several unsightly tents and cause severe defoliation. In 4 to 6 weeks, fully-grown caterpillars leave the food plants and search for a place to spin white cocoons- including tree trunks, fence posts, or other cracks or crevices to provide some protection.

DIAGNOSTIC LAB-HIGHLIGHTS
by Julie Beale and Paul Bachi

We are seeing a variety of disease problems in the Diagnostic labs lately. On wheat we are seeing more of the wheat streak mosaic virus (mentioned last week); also barley yellow dwarf virus on oat and leaf streak (Cercosporidium) on orchardgrass. On tobacco, we are seeing Pythium root rot and beginning to see a few cases of target spot.

Recent rainy weather has favored development of several fungal foliar diseases including apple scab and peach leaf curl. We have also seen anthracnose on liriope; Coniothyrium leaf spot on yucca; black root rot on lavendar and Japanese holly; bacterial spot on English ivy; Fusarium wilt on cucumber; and crown rot (Erwinia) on rhubarb.

INSECT TRAP COUNTS

UKREC, Princeton, KY - April 14-21

Black cutworm 27
True armyworm 93

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.

Wheat Streak Mosaic / Wheat Curl Mite 2000 Incidence Survey

Please complete this form for EACH field you are reporting.

LOCATION

County:_____ State (if not KY):_____

CROP

Variety:_____ Planting Date:_____ Tillage:_____ Previous Crop:_____

Would you consider the previous crop (as listed above) to be : Please circle
very good, good, average, poor, very poor, abandoned

Was there volunteer wheat within the field prior to 1999 wheat planting? Yes No

In the crop immediately before your wheat (in the same field), did you skip any herbicide treatments that you would have applied in a normal year? Yes No

If yes, please describe what you would have done_____

_____

_____

Were there soybean fields next to or near (less than 1/4 mile) the current wheat field? Yes No

If yes, Would you consider the soybean crop to be : Please circle
very good, good, average, poor, very poor, abandoned

Was there any volunteer wheat left untreated in these fields? Yes No

In these nearby soybean fields, would you say that there were herbicide treatments skipped that would have been applied in a normal year? Yes No

If yes, please describe what you think would have done_____

_____

_____

SYMPTOMS

When did you first notice symptoms? Date:_____ Crop Stage:_____

Can you relate any increase or decrease in symptoms across a field to any particular direction?
For example - symptoms go from better to worse: east to west, north to south, northwest to southeast Other:_____

Are symptoms: (please circle)
even across the field, worse near the edges, worse in the middle

FERTILITY - Please list date and amount of Nitrogen fertility

Date:_____Amount (N)_____
Date:_____Amount (N)_____
Date:_____Amount (N)_____

PESTICIDES - Please list insecticide and herbicides applied to this field.

Insecticides		Herbicides	
Product	When applied	Product	When applied
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Did you have an unusually large amount of one of the following grass weeds near the field in the summer and fall of 1999? **If yes please circle**: Proso millet, sorghum, jointed goatgrass, Japanese chess, cheat, Downey chess, sand bug, smooth crabgrass, W. wheatgrass.

Will you keep or destroy this field? (Please circle) Keep Destroy

We may need to follow up on some of this information. If you are willing to help us, please provide the following contact information.

Name_____

Address:_____

City:_____ State:_____ Zip:_____

Telephone:_____ FAX:_____ E-mail_____

Please fold so the return address is on the outside, stamp and mail. Thanks for your help!

UK-REC
P.O. Box 469
Princeton, KY 42445-0469

Place
Stamp
Here

Wheat Streak Survey
c/o Ms. Marilyn Hooks
UK-REC

P.O. Box 469
Princeton, KY 42445-0469