



KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • AGRONOMY

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CORN

WATCH FOR SOUTHWESTERN CORN BORER LODGING by Ric Bessin

Southwestern corn borer larvae are beginning their march southward, to the bottom of the plant, that is. During September the larvae exit the plant and move to the base where they bore into the stalk an inch or so above the soil line. From there they tunnel downward into the crown. They will also girdle the stalk one to two inches above the soil line. This is the most serious damage caused by this insect, as wind or rain can then cause the plant to fall over.

Corn producers should identify fields that have southwestern corn borer problems and harvest those fields as soon as practical. The longer the corn stays in the field, the more lodging that can occur. Typically, it will be the later planted fields (after May 1) that have the greatest potential for southwestern corn borer lodging. High numbers of southwestern corn borer moths have been recorded in the Green River area throughout 1999.

SORGHUM

SORGHUM WEBWORM AND CORN EARWORM IN GRAIN SORGHUM by Doug Johnson

Traditionally, the end of August and beginning of September brings grain sorghum (milo) producers problems with the sorghum webworm (SWW). This pest will most often be a problem in late planted crops. Grain sorghum fields that are already reaching maturity will be at little risk.

You need to watch fields from bloom through hard dough. While SWW can be found at any time after bloom, it is usually those fields that are of late maturity, for example fields in soft dough in September where you should look first.

Sorghum webworm is smaller than fall armyworm and corn earworm. SWW will only reach about 1/2" in length, are green and "bristly". The other two worms will reach 1-1/4" in length are variable in color, and are without noticeable hairs. All three of these pests may be found in mixed populations but SWW will last much later into the season.

Webworms are head feeders. They feed only on developing grain, often consuming only a portion of each kernel. Small white fecal droppings, combined with partially consumed kernels, give the head a “trashy” appearance. Look into the middle of this mess for the worm.

Control should be considered when the population reaches an average two sorghum webworms per head. Chemical control is relatively easy to obtain for this pest. The real economics is in deciding whether or not a spray is needed.

Just a quick warning about corn earworm. Sorghum fields may be at higher risk this year because of drought effects on corn and soybeans. As these crops begin to decline unusually early, moths of corn earworm may be looking for an alternate host on which to lay their eggs. Moth flights of corn earworm monitored at the Princeton and Lexington experiment stations have not been unusually large this year but they have been steady. The only real way to know if there is a threat is to scout your fields.

Corn earworm is also a head feeder on grain sorghum and the threshold is also two worms per head. In a mixed population two worms of either species meets the control trigger.

WHEAT

PREPLANT DECISIONS GREATLY IMPACT FUTURE DISEASE RISK FOR WHEAT by Don Hershman

Many Kentucky wheat producers have their total disease management program in place once the seed is in the ground. By that time, numerous decisions have been made, either specifically or by default, including: crop rotation, tillage/seedbed preparation, variety and seed quality, seed treatment, planting date, method, and seeding rate; and fall fertility. Individually and collectively, these factors can play a very important role in future disease development and, thus, yield loss due to diseases.

Crop Rotation and Tillage: These production variables are linked when it comes to disease management in wheat. For example, in a field where wheat is sown following corn or soybean, tillage is inconsequential for most wheat pathogens.

That is, levels of most pathogens will be similar whether wheat is planted no-till or following conventional tillage. Fortunately, most wheat fields grown for grain in Kentucky are planted behind either corn or soybean. In contrast, when wheat is planted in consecutive years in a field, pathogens that either survive in crop residue or require more than a few months for populations to decline may be more severe the second time wheat is grown in a field. This is especially true where a field is planted no-till because of the high levels of wheat residue that will exist in that production system. Examples of common diseases where the causal organism survives in wheat straw are: take-all, speckled leaf blotch, leaf and glume blotch, and tan spot.

In rare instances, no-tillage may enhance seed and seedling disease problems simply due to the effect of surface residue on soil temperature and moisture. Overall, soil moisture levels will be increased when the soil surface is covered with a high percentage of residue of any previous crop or even weeds. In addition, surface residue tends to keep soil temperatures warmer in the fall and cooler in the spring compared to fields with low levels of surface residue (i.e., tilled fields). Examples of diseases that may be slightly worse in no-till include: seed and seedling diseases caused by *Pythium* or *Fusarium*, take-all disease, and soil-borne viruses.

Many producers fear that substantially more *Fusarium* head blight (FHB) will develop when wheat is planted no-till behind corn. Although the risk for *slightly* more FHB does exist with this system, there is no evidence that FHB will be noticeably more severe than in a conventionally tilled field, regardless of previous crop. Weather conditions just before, during, and for two weeks after flowering appear to play the dominant roles in determining the incidence and severity of FHB in a field and region.

Variety Selection: The disease resistance characteristics of the wheat varieties you plant will have a tremendous impact on the potential for certain important fungal and viral diseases to develop later. However, no one variety is resistant to all diseases for which resistance is available. Thus, it is important to plant more than one variety with different resistance characteristics to reduce the risk that any one disease will cause serious losses farm-wide. There are some diseases, such as take-all, for which no resistance is available. In those instances, which variety you plant will not

affect disease development. There are some disease situations where the potential for disease in an otherwise susceptible variety is impacted by some growth characteristic of that particular variety. For example, because FHB is weather dependent during crop flowering, planting a few varieties that may flower during slightly different periods may limit the extent of FHB on a farm due to escape from disease.

Seed Quality and Seed Fungicides: In all situations we recommend you plant only high quality seed if grain production is your goal. The use of a broad-spectrum seed treatment fungicide with this seed may protect stands from seed and seedling diseases should soil conditions become stressful due to adverse weather or planting method; however, seed treatment should be looked at in a risk-management context. That is, do not expect seed treatment fungicides to enhance stands and yields in most situations. But, depending on the risk level that one is willing to assume, some producers might be willing to spend the additional \$1.25 - 1.50 per bushel of seed to reduce the risk that disease might affect stand establishment.

If loose smut is a concern in any seed lot, we recommend you treat the seed with a smut-effective fungicide such as Raxil or Dividend. A small amount of loose smut in a seed production field can result in a serious epidemic and yield losses when that seed is planted the following year. This concern is especially valid where saved seed is planted! I am told that a lot of saved seed will be planted this fall; if you are not certain that your seed production field was mostly free of loose smut, it would behoove you to treat the seed with a smut-effective fungicide.

Planting Date: By avoiding early planting dates, you could significantly reduce the potential for certain diseases to develop. For example, if you delay planting wheat until after the Hessian fly-free date for your area, the risk that a serious barley yellow dwarf (BYD) problem will develop is greatly diminished. Similarly, avoiding early planting dates may limit the severity of take-all disease and the soil-borne viruses, such as wheat spindle streak mosaic.

Nitrogen Fertility and Seeding Rate: Excessive top growth in the fall, which is encouraged by high nitrogen fertility and/or excessive seeding rates, may enhance certain diseases and should be avoided. Leaf rust, for example, may develop to a

significant extent in the fall and this can increase the risk that the disease will successfully overwinter and cause serious losses the following spring. Excessive top growth in the fall also encourages aphid development and survival and this, in turn, can result in greater levels of BYD.

FRUIT CROPS

THREAD BLIGHT APPEARING IN EASTERN KENTUCKY

by John Hartman

Apple trees with dead, curled leaves clinging to interior branches are being observed in some locations in eastern Kentucky. A recent specimen in the Plant Disease Diagnostic Laboratory from Leslie County reminds us that this disease can be persistent despite a region-wide drought. At first glance, the disease resembles fire blight, but closer examination reveals blighted leaves in mid-branch with green leaves still growing on either side of the blighted area.

Positive diagnosis is made by observing signs of the fungus. The most obvious sign is the presence of the fungus on the twigs and branches as silvery-tan 1/16 inch wide rhizomorphs and white to tan 3/16 inch cushion-like sclerotia, which become hard and dark brown with age. When the disease is active on leaves, a sparse, white mycelial fan may be observed on partly-blighted leaves. This mycelium can often be traced back as fine threads to the leaf petiole and twigs. Abscised leaves may dangle from the branch, tied to twigs and leaves by this network of threads and mycelium.

Thread blight is caused by the fungus *Corticium stevensii*. It is a chronic problem on apples and other woody plants in moist, shaded areas in many eastern Kentucky Counties. In the past, we have seen the disease on cherries, roses, viburnums, and dogwoods growing in the landscape, as well as on apples. Affected trees normally have not been treated with fungicides. Commercial apple growers normally do not see this disease because apples are pruned to reduce foliage moisture and the fungus is sensitive to most preventive fungicide treatments. Once established, however, the disease may be difficult to eliminate because of the persistent sclerotia of the fungus.

VEGETABLES

APHID-BORNE VIRUS COMPLEX OF PUMPKIN

BY William Nesmith

Most fields of pumpkins growing in Kentucky are infected with viruses, and by mid-August, most plants in the field are showing symptoms. This is nothing new as we see this situation every year.

Based on laboratory tests conducted this year and since 1995, the virus most commonly involved is Watermelon Mosaic Virus (WMV), which was formerly called WMV-2. We also occasionally find cucumber mosaic virus, squash mosaic virus, and papaya ringspot virus (which was previously called WMV-1) in the mixture, but every field sampled has had WMV dominating. Although we find zucchini yellow mosaic virus in summer squash, we have not found it associated with pumpkins in Kentucky. The mix of viruses found in Kentucky is similar to that found in Ohio, based on a recent report from Ohio State University.

These viruses enter the field and are introduced into the plant by winged aphids in a non-persistent manner. Aphids vector all of them, except for squash mosaic virus which is seed-borne and vectored from diseased to healthy plants by cucumber beetles. Therefore, in our Diagnostic Laboratories, we usually report the disease as the aphid-borne virus complex rather than specifically identifying the individual viruses involved.

Transmission of these viruses by aphids occurs very quickly while the aphids are probing the leaf with its mouthparts to determine if they have found a host to their liking. Therefore, insecticides provide little control of the viruses because the transmission occurs before the insect picks up a lethal dose of insecticide. This is basically true for all non-persistent aphid-borne virus diseases, and is not peculiar to this crop.

We are fortunate that this group of viruses is being studied at Ohio State University (OSU). The findings relate well to our situation in Kentucky. Researchers at OSU have found that most of the aphids involved in transmission are coming from near the pumpkin field. The most common aphid species that land in pumpkin fields in Ohio are corn leaf aphid, artichoke aphid, green peach aphid,

turnip aphid, melon aphid, cowpea aphid, potato aphid, and sunflower aphid. They have tested several of these for their ability to transmit WMV to pumpkins. They found that green peach aphid and melon aphid are good vectors, artichoke aphid and potato aphid are weak vectors, and corn leaf aphid is unable to vector this virus. In Kentucky, we have also noticed that pumpkins growing adjacent to tobacco crops have earlier and more serious problems with this virus complex, so we suspect that the aphids from tobacco (tobacco aphids and green peach aphids) are involved as vectors.

With aphid-borne viruses transmitted in a nonpersistent manner, the reservoir for the viruses is usually near the field experiencing the problem. The OSU group has been researching this area as well and found several annual and perennial weeds hosting WMV, including shepherd's purse, Virginia pepperweed, field bindweed, dandelion, purple deadnettle, and goldenrod. Several of these weeds are common on Kentucky farms, so it is likely the same relationship exists in much of Kentucky.

We do not know how much impact these aphid-borne viruses are having on yield and quality of pumpkins, basically because we do not have resistant varieties with which to make a direct comparison. Clearly WMV causes strong symptoms on the foliage, including mosaic/mottle of various shades of green and yellow and distortion of the leaves. The fruits also show symptoms including: uneven coloration, light green circular rings, and even some distortion. The most severe symptoms on fruit usually appear on fruit set late in the season. At one time, we had assumed that WMV was reducing fruit set, but based on a small study conducted this year at the Quicksand Station, I have rejected that hypothesis for this season. At least in Howden pumpkins, both symptomatic and non-symptomatic pumpkins experienced reduced numbers of female flowers, with equal numbers of total flowers between infected and non-infected plants.

Several commercial seed companies are working on producing pumpkin cultivars resistant to WMV. Such may be available in a couple years.

LAWN AND TURF

HOW WILL THE DROUGHT AFFECT WHITE GRUBS?

By Mike Potter & Dan Potter

White grubs are usually the most important insect pests of lawn grasses in Kentucky. Turf is damaged when the grubs chew off the grass roots just below the soil surface. The root injury reduces the turf's ability to take up water and nutrients and withstand the stress of hot, dry weather. So what will be the impact of the drought on grub populations, and their ability to damage turf?

Soil moisture is the most critical factor determining the abundance of white grubs in turf. The adult stages of all white grub species (Japanese beetles, masked chafers, etc.) seek out moist turf in which to lay eggs. Consequently, lawns irrigated back in late June and July – when the egg-laden females were flying – normally would have a greater risk of developing grub problems later in the season. Soil moisture has a profound effect on egg survival. Eggs will shrivel and die if soil moisture drops below about 10%. The tiny, newly-hatched grubs also are unlikely to survive in very dry soils.

The drought of 1999 probably caused widespread mortality of eggs and young grubs in non-irrigated turf allowed to go dormant. *Therefore, it is doubtful that lawns which have "browned-out" will have a grub problem.* However, turf that was irrigated up until the time of the mandated watering restrictions could still be at risk and should be monitored for signs of grubs. This is especially important due to the current lack of soil moisture. Whereas irrigated turf often will tolerate 12 or more grubs per square foot before showing injury, the same turf may be damaged by half that number if the grass is additionally stressed by drought.

Unfortunately, if damaging grub populations are discovered, there may not be much that homeowners currently can do. All curative grub control products require post-treatment watering-in, to leach the insecticide residues into the root zone where the grubs are feeding. In light of the current watering restrictions, unless the treatment can be applied shortly before a drenching rain (½ to 1 inch), it will be ineffective. Likewise, until the watering restrictions are lifted, homeowners who have lawn service contracts should cancel scheduled treatments intended to control white

grubs.

Golf courses and turf areas that received preventive applications of imidacloprid (Merit, Grub-Ex) or halofenozide (Mach 2, Grub-B-Gon) back in May or June, should not have a significant grub problem. The same should be true of non-irrigated turf that has been allowed to go dormant.

For more information on white grubs, consult the new and recently revised publications ENT-10, *Controlling White Grubs In Turfgrass*, and Entfact-441, *Insecticides for Control of White Grubs in Kentucky Turfgrass*.

GRAY LEAF SPOT FUNGICIDE by Paul Vincelli

The Scotts Company has recently issued a revised label for Fungo 50 WSB and Fungo Flo, which both now include a national label for controlling gray leaf spot on golf courses (both products), as well as athletic fields, sod, and commercial lawns (Fungo 50 WSB only). As a reminder, in Kentucky, gray leaf spot caused by the fungus *Pyricularia grisea* is only a concern on perennial ryegrass.

The active ingredient in both products is *thiophanate methyl*, the very same systemic fungicide present in Cleary's 3336 and related products. Thiophanate methyl has been very effective against the disease in most tests, and along with Heritage fungicide, I consider it a top product for preventive use under high disease pressure. However, be aware that there is a significant risk of the development of resistance to thiophanate methyl by *P. grisea*, so limit the use of this product to no more than two applications per season--whether using a Fungo product or Cleary's product.

So far, overall disease pressure from gray leaf spot in Kentucky has been lighter than the worst epidemic years of the recent past. This is probably because of excessively high temperatures in late July and a sustained period of generally lower-than-normal dewpoints since mid-July. Currently, fairways in the Fayette County area cannot be watered at all, so superintendents are facing a tough time in the near future. There is some concern as to whether gray leaf spot infections will accelerate the death of perennial ryegrass as it goes into drought-induced dormancy. There is no research to address this point. However, superintendents who maintained a preventive spray program until the onset of complete restrictions on watering fairways,

certainly gave themselves the best chance of surviving any possible disease/drought interactions.

PESTICIDE NEWS & VIEWS

CAPTURE 2EC RECEIVES APPROVAL FOR SOME VEGETABLES

by Ric Bessin

Last week, FMC announced that the EPA has granted approval for use of Capture 2EC on some vegetables. Capture 2EC is a pyrethroid insecticide that has the active ingredient bifenthrin. Unlike many other pyrethroid insecticides, bifenthrin is also a miticide. In addition to uses on cotton, field corn, and popcorn, Capture 2EC can be used on eggplant, beans, peas, cabbage, broccoli, cauliflower, other cole crops, sweet corn, cucumbers, melons, squash, pumpkins, and watermelons.

The Capture 2 EC label bears the signal word "WARNING" and has restricted entry intervals (REI) of 24 hours to 18 days depending on the crop. Capture 2EC is a RESTRICTED USE insecticide. FMC has indicated that they are currently working with the EPA to significantly shorten many of the REIs. In many cases the preharvest (PHI) intervals of 1 to 7 days are shorter than the corresponding REIs.

Capture is effective against a wide variety of insect pests on these crops including aphids, stink bugs, many lepidopterous larvae, thrips, plant bugs, leaf beetles, Japanese beetle, and whiteflies. Higher labeled rates provide control of two-spotted spider mites.

EPA ANNOUNCES FQPA CANCELLATIONS

by Ric Bessin

Last Monday the EPA announced that it is eliminating the use of methyl parathion (PennCap-M) and placing greater restrictions on the use of Azinphos-methyl (Guthion) as a result of the Food Quality Protection Act. These changes do not take effect until next year, so growers are encouraged to use existing stocks before the new regulations are implemented. August 3, 1999 was the Congressional mandated date for the EPA to reevaluate 1/3 of the pesticide tolerances under the new law.

Keep in mind that the EPA has made it clear that the use of either of these products as permitted by existing regulations does NOT pose a health threat. Families are reminded that the long-term health benefits of a well balanced diet including a wide variety of fruits and vegetables greatly outweigh theoretical risks associated with pesticide residues. The majority of fruit and vegetables has no detectable pesticide residues!

To some extent, both of these insecticides are used in Kentucky. PennCap-M has been used on a limited basis on tomatoes, apples and peaches. There are readily available alternatives for this insecticide that are listed in ID-36 and ID-92. PennCap-M use will not be permitted next year.

Guthion is labeled on several fruit and vegetable crops and has been used more routinely on apples for control of a wide variety of pests. Use of Guthion has not been eliminated, rather it has been limited. The new regulations for Guthion are intended to protect the applicator /field worker as much as reduce the already low residues on the fruit. The most significant changes for Kentucky include:

- + Application by backpack sprayer or hand wand sprayers will be prohibited.
- + Preharvest interval on apples will be extended to 21 days.
- + Total amount of azinphos-methyl applied to apples and pears will be limited to 4.5 lbs of active ingredient per acre per year (3.375 lbs ai /a / year on peaches).
- + All non-tree crop Restricted Entry Intervals (REI) will be extended from 48 hours to 96 hours.

BAYTHROID 2 RECEIVES SUPPLEMENTAL LABEL FOR POTATO

by Ric Bessin

The EPA has granted a supplemental label for Baythroid 2 use on potato. It is label for control of leafhoppers, flea beetles, Colorado potato beetle, and European corn borer. There is a 12 hour reentry interval and 0 day to harvest restriction. Labels rates range from 0.8 to 2.8 fluid ounces per acre. This expands the vegetable usage portion of the Baythroid 2 label to include sweet corn, carrots, peppers, radishes, and tomatoes in addition to potatoes. Baythroid 2 is a RESTRICTED USE

pesticide and bears the signal word of 'Danger.'

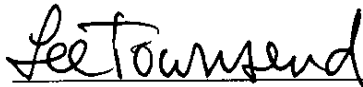
INSECT TRAP COUNTS
UKREC, Princeton, KY

August 13 - 20

| | |
|-------------------------------|-----|
| Fall Armyworm | 1 |
| European corn borer | 5 |
| Southwestern corn borer | 240 |
| Corn earworm | 15 |

August 20 - 27

| | |
|-------------------------------|-----|
| Fall armyworm | 1 |
| European corn borer | 2 |
| Southwestern corn borer | 710 |
| Corn earworm | 6 |



Lee Townsend, Extension Entomologist

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