



KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • AGRONOMY

On line at - <http://www.uky.edu/Agriculture/kpn/kpnhome.htm>

Number 851

June 14, 1999

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TOBACCO

BLACK SHANK—A BIG THREAT THIS YEAR

By William Nesmith

Black shank is a leading cause of damage to both burley and dark tobaccos in Kentucky, with annual losses ranging from 1 to 5% depending on the season. Overall, it is becoming worse because of spread to new farms, use of conducive production practices, use of varieties with lower levels of resistance to black shank, and especially due to decline in crop rotation. However, losses would be devastating if controls were not available and being used, because black shank is now present in most tobacco producing communities of the commonwealth.

Since controls are available, why is there still a problem? The bottom line is that no single control option is adequate for black shank. This pathogen is just too strong and each control options has certain weaknesses. Instead, several controls options must be integrated together into a black shank management plan for each particular field. It is particularly important to understand that once a site is infested with the black shank fungus, the pathogen cannot be eliminated. Therefore, management at problem sites rests with putting

together a plan and to judiciously carry it out each and every year.

Black shank is a warm-weather disease and it has been very active recently due to a protracted period of summer-like weather. In communities that historically experience black shank, the County Extension Agents are reporting strong and early activity, plus significant new activity is also being reported from eastern Kentucky where the disease is basically new. Most reports indicate the disease is developing mainly in a scattered pattern of distribution about the field rather than the large hot-spots associated with the low wet areas of the field.

Why the early and increased activity? It is early because of the high temperatures - black shank is favored by warm soils and stressed plants. The situation would have been much worse had there also been more areas with larger rains that resulted in standing water in the field. If wetter conditions prevail soon, such that fields become saturated on at least two occasions about 48-72 hrs apart, a major epidemic of black shank is likely, especially if hot and dry conditions return.

Last week one senior agent put it this way: "I have never seen so much black shank so early in a 20-year career. In every case I have visited the grower has dropped the ball on control, usually in a cost-

cutting effort, so chemical controls went first. Now they want to know how to rescue the situation. "

Below is a review of the black shank control systems.

ROTATION should be the foundation of the black shank management plan. Inadequate crop rotation is a major reason that black shank continues to increase in importance in Kentucky. This is a key practice in reducing the population of the black shank fungus between crops. Rotation starves the black shank fungus, allowing the pathogen's population to decline. Any crop other than tobacco grown on the site will reduce the population, but not eliminate the fungus. The longer out of tobacco the lower the population of the fungus. However, crops growing in high soil pH (such as alfalfa) allow only very slow reduction in the fungus population. Also, with corn, the race 1 strain of the fungus declines slowly.

Rotation to grass sods usually results in the fastest decline, based on a number of tests conducted by the University of Kentucky over many decades. A long term rotation - no less than 3 years and preferably 5 years or more - is the best way to reduce the initial fungus population in any particular field. The longer the rotation, the smaller the black shank fungus population in later crops. However, even short term rotations help control black shank and very long-term rotation may not completely free the soil of the pathogen. Short rotations are especially useful if black shank resistant varieties plus Ridomil are also used.

RESISTANT VARIETIES are an important tool in black shank control, but growers are expecting too much from the varieties. No available variety is immune to black shank. Instead, the varieties possess various levels of resistance to the disease, ranging from very susceptible to medium resistance. The level of resistance may vary by race of the pathogen, also. The fungus actually increases on the roots of all tobacco varieties - including resistant varieties, so varieties alone will not control black shank.

The variety needs to be matched to black shank potential of the site! For example, if a variety with medium resistance is placed on a site with high potential for black shank under high soil pH, the grower should expect losses approaching 50-60% of the yield potential, assuming no other control measures are included.

CHEMICAL CONTROLS alone will not adequately control black shank, but they are a valuable aid in controlling black shank when coupled with other practices. Two types of chemicals are available, preplant soil fumigation and soil-applied fungicides.

Few growers in Kentucky use the preplant soil fumigants, but they are a valuable tool in the management of black shank and other soilborne diseases. Best results have occurred in Kentucky tests on sites with serious problems with black shank when the fumigant, Chloropicrin, has been applied as a broadcast treatment, rather than in-row. However, resistant varieties and soil fungicides are still needed.

The main soil fungicides available are Ridomil 2E and, more recently, Ridomil Gold 4E. These fungicides are not a cure-all for black shank. They should be coupled with a resistant variety for satisfactory results but some benefit can be achieved from using them with susceptible varieties under low disease pressure. When these fungicides were being used for blue mold control, some control of black shank was also occurring. Many growers learned this the hard way when they dropped use of these fungicides once resistant strains of blue mold arrive.

Ridomil Gold and Ridomil 2E are labeled for use in the soil as preplant and cultivation applications. It is important that these fungicides be in the root zone if you expect control of black shank. Foliar applications will not control black shank. Ridomil 2E can be applied to the soil preplant or preplant plus layby. Labeled uses include preplant application, at 2 to 6 qt/acre; or, as a combination of preplant and cultivation applications: 2 qts preplant, 2 qts at first cultivation, and 2 qts at final cultivation. Which option is best depends on the level of disease pressure that develops and when it develops during the growing season, plus the susceptibility of the variety used. Obviously, the higher the disease pressure the higher the rate required. The rates of Ridomil Gold are 25% or 1/4th those of Ridomil 2E.

Labels for both products allow split application: 2 qt preplant plus 1 qt layby for Ridomil 2E. In most cases, correctly timed, split applications have given better control than preplant only. Rescue applications are not specifically labeled but neither are they specifically prohibited for black shank control. Growers should not rely on rescue options for control, because the results are very erratic and

seasonally dependent. Sometimes rescue applications result in marked improvement in plant appearance even when significant yield response does not occur. Usually, rescue treatments on susceptible varieties does not improve yield sufficiently to pay for the chemical application, based on a large number of on-farm tests about the commonwealth. However, there have been studies where marked benefit have been received, mainly in seasons when it was dry early and wet late. Rescue treatments made on resistant varieties have been more successful, but are still inferior to preventative use.

The new fungicide Ultra Flourish 2E is also labeled for all the applications that Ridomil Gold would be labeled (the rate would be 50% or one-half that for Ridomil 2E or 2X that used for Ridomil Gold. *Yes this is correct, because these are different chemicals.* Currently, it is not recommended in Kentucky, because of inadequate data. It is currently under test at several locations under a range of black shank pressures in direct comparisons with Ridomil Gold.

DRAINAGE is an important part of black shank control. This is a waterborne fungus. Many fields could be helped by taking steps to improve drainage such that standing water is not present. Also, be very careful with excessive irrigation in blank shank fields. Hot spots often develop around guns and line couplings.

SANITATION should be implemented regardless of whether one is on a farm with black shank or farming one without the disease. Many conceptually sound rotational plans fail in the execution phase because the sites become recontaminated because of poor sanitation. The aim of good sanitation is to avoid introducing black shank on farms without it and to reduce moving it about the farms where it already exists.

The black shank fungus can be moved on infested plants, in contaminated water or contaminated soil. As a result there are hundreds of ways it could be spread. How many ways can you spread it own your farm?

The following are just a few questions that may help you decide:

- What did you do with tobacco stalks and barn trash?
- Did the pathogen come free-of-charge with the

transplants?

- Could the irrigation and transplant water be contaminated?
- Is the equipment being used on your crop and farm contaminated?

SOIL pH - Black shank loves high soil pH! Evidence indicates that the fungus declines faster in acid soils, so crops that maintain high soil pH have less value in the rotation.

OTHER DISEASES must be controlled, because plants stressed by any means usually are more susceptible to black shank.

CORN

GRAY LEAF SPOT POTENTIAL IS LOW SO FAR

By Paul Vincelli

Corn planting statewide progressed rather rapidly because of dry weather this spring. On average corn was planted two weeks ahead of normal across the state. Previous research at UK has shown that a delay in planting increases disease pressure from gray leaf spot. Late-planted crops develop the disease later on the calendar. However, in terms of crop development, gray leaf spot actually develops more quickly in a late-planted crop. Thus, assuming similar weather patterns, if one compares the level of gray leaf spot at a common growth stage (say, milk stage), one can expect more gray leaf spot damage in a late-planted crop than one planted earlier. Thus, the early sowing of this year's corn crop will reduce the overall potential for gray leaf spot.

The frontal system that is sweeping over the state as of this writing (Monday morning, June 15) is providing some much-needed rain to many areas. However, the below-normal rainfall in May and June in most areas has also reduced the gray leaf spot potential. I made some lesion counts in two fields at the V9-V10 stage the Russellville area and could hardly find a single lesion of gray leaf spot. They will come, we can be certain. In fact, I expect that all of the plants I inspected already were infected to some degree. The gray leaf spot fungus doesn't need wet leaves in order to infect. Spores can germinate, grow on leaf surfaces, and infect leaves during a series of periods of high relative humidity. And it commonly takes between two to three weeks for gray leaf spot infections to actually result in necrotic spots on the leaves. Undoubtedly,

gray leaf spot lesions are present in many fields, and these will start showing up soon. Nevertheless, lesion levels appear to be very low, at least in the fields I've examined.

Thus, these two factors—early planting and very low levels of disease as of last week—should work in favor of producers to keep gray leaf spot pressure low at this time.

SOYBEANS

WATCH THOSE YOUNG SOYBEANS FOR BEAN LEAF BEETLES AND GRASSHOPPERS.

By Doug Johnson

Young soybeans, especially those that have not yet reached the first trifoliate stage, are subject to damage from two common insect pests. On top of that, we are now in a slight to moderate drought, depending upon where you farm. This means that the plants will be 'sitting' instead of growing rapidly while at least the grasshoppers will have increased survival.

Unlike corn and other grass crops where the growing point is under ground for a long time, soybeans have their growing point above ground almost from emergence. Additionally, soybean is especially dependent upon food reserves stored in the cotyledons (seed leaves). Both bean leaf beetle (BLB) and grasshoppers attack these important plant parts.

Bean leaf beetles damage plants from emergence through the first trifoliate then again during pod fill. (In fact they are in the field all season long, but during the vegetative growth stages soybeans are putting on too much foliage for the beetle to be dangerous.) BLBs are about 1/8" to 1/4" long. The body is slightly convex and the beetle is longer than wide. Color is variable, ranging from light brown to dark red, spots and or stripes may be present or absent. However, all beetles will have a black triangle pointing backward behind the head. BLBs feed on cotyledons, leaves and pods. Leaf feeding consists of very distinctive almost circular holes. Feeding on cotyledons and pods usually appears as scooped-out holes in the surface. If the cotyledons are completely consumed the plants will die.

When scouting look for areas of stand reduction or heavily damaged cotyledons. If stand is reduced on

average 30% or when feeding on leaves if the defoliation level reaches 30% then treatment is warranted. A more precise scouting method and economic threshold calculation can be found in IPM-3, KY ICM Manual for Field Crops 'Soybean'.

Grasshoppers are usually not a problem this early in the season. However, as June progresses more and more hoppers will be present. Additionally, the drought conditions will favor grasshopper survival and not favor soybean growth. The greatest danger from grasshoppers will be to young soybean plants. Grasshoppers will feed on all plant parts and if the cotyledons or unifoliate leaves are consumed the plants will be killed or set back a great deal. Large populations can easily damage a late planted field. Beans no-tilled into pastures or areas of weedy grasses are in particular danger. Generally a good soaking rain will help this condition, by favoring soybean growth and a disease that kills grasshoppers.

Scouting for grasshopper damage is usually done by estimating either stand loss for very young plants (threshold 30%) or defoliation. Tables for defoliation levels that indicate a need for control can be found in ENT-13, Insecticide Recommendations for Soybean, and IPM-3, KY ICM Manual for Field Crops.

TOUCHDOWN HERBICIDE ADDS FLEXIBILITY FOR USE IN ROUNDUP READY SOYBEAN SYSTEMS

By J. D. Green and J. R. Martin

The EPA has granted a federal label for use of Touchdown 5 as an in-crop postemergence herbicide for use on Roundup Ready Soybean. Touchdown is a systemic, non-selective herbicide marketed by Zeneca. It contains sulfosate which has similar activity to herbicide products that contain glyphosate such as Roundup Ultra. Therefore, weeds must be actively growing at time of application.

Touchdown can be applied at 1.2 to 3.2 pt/A between cracking and full flower stage of soybean plants. For best results on larger annual weeds and perennials apply a minimum of Touchdown 5 at 1.6 pt/A (i.e. roughly equal to Roundup Ultra at 2 pt/A). Touchdown may also be applied as a preharvest treatment to mature soybeans when pods have lost their color. Since 1996, Touchdown has been registered for use as a "burndown" herbicide in no-till corn and soybean.

Although not required, Ammonium Sulfate (AMS) may be added to the spray solution to improve control of certain annual and perennial weeds. Use dry ammonium sulfate at 1 to 2% by weight (8.5 to 17 lb per 100 gallons of water) or an equivalent rate of a liquid formulation.

WHEAT

POSSIBLE CAUSES OF WHITE HEADS IN WHEAT

By Don Hershman and Doug Johnson

Depending upon one's experience and expectations, it is very easy to make an inaccurate field diagnosis of the cause(s) of the white head symptom in wheat

fields. For example, I was recently touring some wheat plots in Logan County with some visiting scientists. As we casually looked at plots we got to one that had quite a few white heads in it. The visiting scientists commented about all the "head scab" that the plot was showing. I acknowledged their comment, and then we moved to the next plot. However, when I looked back at the previous plot, something didn't look quite right. When I took a closer look, I realized we were actually seeing a low level of take-all disease and not head scab. We were all sufficiently embarrassed when I made the take-all discovery since we had all been so completely fooled. In any event, below is a table describing the various causes of the white head symptom in wheat. Most of this information was originally obtained from a newsletter article written by Dr. Bob Bowden, an Extension Plant Pathologist with Kansas State University. Thanks Bob.

Cause	Stems and leaves remain green?	All tillers on a plant affected?	Field pattern?	Other symptoms?
Cut eyespot	No	No	Random	Lower girdling base of stems; lodging
Take-all	Initially, yes; later no	Yes	Patchy	Roots and stem bases black; heads mostly without grain
Drowning	No	Yes	Patchy	Most evident in low areas
Drought	No	Yes	Patchy	Plants very stunted; usually in compacted areas
Wheat jointworm/ Wheat stem maggot	Yes	No	Random	Heads pull out easily; stems cut
Hail	Yes	No	Random	Heads/stems broken
Frost injury	Yes	No	Random	Florets in head do not develop properly
Head scab	Yes	No	Random	Complete and partial whitening of heads common; grain shriveled and often with chalky or salmon in color

SHADE TREES AND ORNAMENTALS

JAPANESE BEETLES ARE HERE

By Mike Potter

Japanese beetles were spotted in a few counties last week, indicating that the adult flight period has

begun. Infestations in Kentucky have been less severe in recent years, but it is difficult to predict how serious a problem the beetles will be this year. Detailed information on this pest can be found in the recently revised publication, *ENT-5, Japanese Beetles in the Urban Landscape*. Options for protecting landscape plants are as follows:

What Works

Plant Selection- The best way to avoid perennial battles with adult Japanese beetles is to select plant material that is less preferred. Publication *ENT-5* lists species and cultivars of trees and shrubs that are more, and less likely, to be attacked by beetles.

Hand Picking and Exclusion- Removing beetles by hand may suffice for smaller plants and when beetle numbers are relatively low. The presence of beetles on a plant attracts more beetles. Thus, by not allowing Japanese beetles to accumulate, plants will be less attractive to other beetles. One of the easiest ways to remove beetles from small plants is to shake them off early in the morning when the insects are sluggish. The beetles may be killed by shaking them into a bucket of soapy water. Highly valued plants such as roses can be protected by covering them with cheesecloth or other fine netting during the peak of beetle activity.

Insecticides- Various insecticides including Sevin, Scimitar, Tempo, Talstar, Dursban, malathion, and Orthene are labeled for control of adult Japanese beetles. Sevin is very effective and is the product of choice for most homeowners. Foliage and flowers should be thoroughly treated. The application may need to be repeated at 7-10 day intervals to prevent reinfestation during the adult flight period, or after heavy rains. Follow label directions and avoid spraying under windy conditions. Insecticidal soaps will control beetles that are hit by the spray, but they provide no residual protection. Botanical insecticides such as neem or pyrethrum are not very effective.

What Doesn't Work

Japanese beetle traps continue to be sold in many garden centers. These traps catch large numbers of beetles, but do not reduce damage to plants. Research conducted by UK's Horticultural Entomology Lab showed that traps attract many more beetles than are actually caught. Consequently, susceptible plants along the flight path of the beetles and in the vicinity of traps are likely to suffer more severe damage than if no traps were used at all. If clients wish to experiment with traps, they should be placed far away from plants they are hoping to protect.

LAWN AND TURF

WHITE GRUB ALERT???

By Mike and Dan Potter

Some lawn care companies have been advertising that grub problems are going to be severe this year, due to the mild winter, and to the current lack of rainfall and associated turf stress. More disturbing is that the prediction is being attributed (incorrectly) to the UK Entomology Department, as a means of selling preventive grub treatments to homeowners. In fact, we are aware of no way to predict at this time of summer whether any given year will be a bad one for white grubs. Moreover, since grub infestations tend to be localized and sporadic, only a small percentage (generally < 5%) of Kentucky lawns require treatment, even in "bad" years for grubs.

Nonetheless, it's a good time to review some potentially conducive factors and early indicators of white grubs, and the two approaches for managing them with insecticides.

Indicators of Infestation

White grubs and their resultant damage are not usually evident until August or September. Although sampling the turf is the only way to confirm that a problem truly exists, certain factors may indicate an increased risk of infestation later in the season. If your turf has a history of serious grub problems, there is a greater chance that adult beetles will return and re-infest the same areas. Sites with large numbers of adult beetles in June and July are more likely to have grubs in late summer. Early warning signs include swarms of brown, ½-inch long masked chafer beetles skimming over the turf at dusk, or green June beetles buzz-bombing the turf by day in search of mates and egg-laying sites. Masked chafer and May beetle adults are also attracted to porch and street lights at night. Heavy infestations of adult Japanese beetles feeding in the area might also foretell subsequent problems with grubs of that species.

Rainfall and soil moisture are critical factors affecting the extent of grub damage during a season. Frequent irrigation in June and July may attract egg-laying female beetles to the turf, especially if surrounding areas are dry. High soil moisture also increases egg survival. If lawns are irrigated during June and July, be especially alert for signs of grubs later in the summer. Conversely,

adequate soil moisture in August and September (when grubs are actively feeding) can help to hide root injury. Irrigated turf can sometimes tolerate 20 or more grubs per square foot before showing signs of injury.

Treatment Strategies

Two different strategies are available for controlling white grubs with insecticides: **curative** and **preventive**. Each approach has its own merits and limitations.

Preventive Approach -With preventive control, the insecticide is applied as insurance, *before* a potential grub problem develops. Consequently, they are most suited for high-risk sites with a history of grub problems, or where heavy beetle activity is noted.

Preventive control requires the use of insecticides with long residual activity in soil. Both Merit® (sold to homeowners in retail outlets as GrubX®) and Mach 2® have sufficient soil persistence to be applied any time from mid-May to mid-July and still control young grubs hatching from eggs in late July or early August. (The optimum treatment period for these products is mid-June to mid-July.)

Preventive treatments afford greater flexibility in application timing, and are easier to schedule and implement than are curative treatments. They often afford greater peace of mind to golf superintendents and lawn service companies because potential damage is avoided or minimized. The main drawback of preventive grub control is that the decision to treat must be made before knowing the extent of infestation. Grub outbreaks tend to be localized and sporadic, and only a small percentage of lawns require treatment in a given year. Thus, preventive control often results in areas being treated unnecessarily. Good record keeping and observation will help in pinpointing grub-prone areas, which are the most logical candidates for preventive applications.

Curative Approach - With curative control, treatment is applied in late summer – typically August or September – after the eggs have hatched and grubs are present. This is an effective strategy when damaging grub populations are known to be present. Ideally, the decision to treat is based on site inspection and sampling, or past history of infestation. Since white grub infestations tend to be localized, the entire lawn often will not need to be treated. Grub “hot spots,” which can be confirmed by sampling, are most likely to be full sun, south or

west-facing slopes, lawns seeded with Kentucky bluegrass, lawns that were heavily irrigated during June and July, and turf areas that were damaged by grubs in previous years.

Proper timing of curative grub treatments can be tricky, however. Insecticides applied too early may degrade before the eggs have hatched, whereas if the product is applied late, the grubs will be harder to kill and severe damage to turf may have already occurred. Presently, granular Dylox is the fastest-acting, most effective insecticide for curative grub control. Diazinon is also an option for homeowners. Although widely sold, products containing chlorpyrifos (e.g., Dursban) are not very effective against grubs. There is little benefit in applying any of these rather short-lived, curative-type products for white grubs in June or July.

For a complete list of insecticides available for curative and preventive grub control, see the new Entfact-441, *Insecticides for control of white grubs in Kentucky turfgrass*.

RUST ON KENTUCKY BLUEGRASS

By Paul Vincelli

For weeks now, patches or areas of many Kentucky bluegrass lawns have exhibited rust disease. Leaves of infected plants exhibit small (1/16 inch or less) pustules of orange-brown spore masses that erupt and break through the leaf surface. These pustules tend to be concentrated towards the top half of the leaf blade. Infected leaves initially are green but progress to yellow and tan.

The disease is most common in swards with a low level of nitrogen. Lawns with adequate nitrogen usually outgrow the disease. Remember that fall is the best time to apply most or all of the fertilizer, so don't try to correct the problem now with fertilizer. Applying fungicides now will do little to affect the health of the sward, since the disease has run its course for now. Watch these swards in the autumn, since the disease may pick up again then. Fertilizing after the heat of the summer is the best option for dealing with this disease. Preventive use of products containing propiconazole or triadimefon would be the best choice among fungicides, if that option appears desirable.

BROWN PATCH ON TALL FESCUE

By Paul Vincelli

Brown patch was active on a number of cool-season grasses last week. This disease is one of the principal limitations to maintaining high-quality tall fescue lawns. Brown patch causes leaf spotting, leaf blighting, and even death of tall fescue tillers.

The leaf spots of brown patch in tall fescue are very characteristic: irregular spots that are olive-green when fresh or tan when dried, and which are surrounded by a thin brown border. These lesions can be readily distinguished from stresses due to other causes, which often cause a yellowing and die back beginning at leaf tip. When making a field diagnosis, be sure to check dead leaves for evidence of old brown patch lesions which may have led to the death of the leaves. The thin brown border will still show the outline on an old lesion even though the entire leaf may have been killed.

High nitrogen fertility in spring and summer can enhance disease activity, as can irrigating in the evening instead of the morning hours. Mowing height can also influence brown patch. At high mowing heights (three inches), expect more leaf blighting. At very low mowing heights (3/4 to one inch), expect more tiller death from root and crown infections by the brown patch fungus. Thus, a mowing height of 2 1/2 inches represents a good balance for most situations.

For most lawns, I do not recommend fungicides for brown patch control. An exception sometimes exists in lawns which were newly seeded this spring, or even last fall. Such lawns sometimes suffer serious turf loss if high disease pressure develops. This is especially true if the lawn was

seeded with too much seed, resulting in a very high tiller density. One of the most effective products for brown patch control is chlorothalonil, the active ingredient in Daconil and several other products. Unfortunately, since this is a contact fungicide, it must be sprayed at 10-14 day intervals in order to be effective under high disease pressure, which is more frequent than many turf managers and homeowners would like. A number of other fungicide choices are labeled for the home lawn, but many of these are not as effective.

More information on brown patch control is available in the UK Extension publication *Brown Patch in Kentucky Lawns*, ID-112, available from county Extension offices.

INSECT TRAP COUNTS

UKREC, Princeton, KY, June 4 - 11

European corn borer	1
Black cutworm	1
True armyworm	3
Southwestern corn borer	123
Corn earworm	9

Lexington, June 7-13

Black cutworm	—
European corn borer	3
Fall armyworm	3
Corn earworm	3
Diamondback moth	17
Cabbage looper	1
Beet armyworm	16
Squash vine borer	—

Lee Townsend, Extension Entomologist