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TOBACCO

HOLLOW STALK AND BACTERIAL HOLLOW STALK IN TOBACCO

By William Nesmith

Tobacco growers should expect increased hollow stalk and bacterial soft rot because of the increased wet and humid conditions being experienced. Hollow stalk mainly occurs as a slimy, stinking rot of the stalk pith and leaf midribs. This disease is very sporadic in occurrence from season to season and farm to farm. It can cause extensive losses during wet seasons, both in the field and during harvesting and housing. It is caused by the bacterium, Erwinia carotovora subsp. carotovora, a natural inhabitant of all soils and hosted by most weeds. In wet weather, this bacterium usually also becomes established as a saprophyte on tobacco plants and some systemic development occurs in rapidly growing tobacco that is under excessive nitrogen fertilization. Although highly effective controls are not available, some cultural steps will help reduce losses from this disease.

Appreciate this principle: The pathogen requires a wet wound to become established. Consequently, where possible, avoiding wounding of the foliage and stems in wet seasons becomes important. Wounds that were acceptable in a dry season like last year can lead to serious losses in wet seasons. Since wounding is required in topping operations, it should be done in a way that the wound site dries and heals quickly. Consider the following points:

- Taking steps to reduce the amount of wounding that occurs during topping is more important in wet than dry seasons.
- Top at the recommended stages of growth, rather than waiting until the plants are fully flowering, reduces wounding.
- Plants with fully expanded flower heads require special attention, because breaking out such tops usually leaves a wound that will hold water. Tops of plants in full flower should be removed with a knife, with the cut made on an angle sloping toward the sunny side of the plant to aid drying. Knives used for this should be disinfested often by dipping them in either 10% bleach or 70% alcohol.
- Carefully remove any suckers that might be present at topping. Those left on the plant and killed by sucker control chemicals become ideal sites for hollow stalk to begin in wet seasons. When this happens, the rot often takes on a “candy-striping effect”, as the bacteria run down the stalk from the rotting sucker and pool in the leaf/stem intersections.
- Topping and suckering during damp or cloudy weather increases hollow stalk activity. Yes, I know that is when most people like to top tobacco, but just because our culture does it, that does not mean

that is the best time to do it!

- Workers rubbing soil on their hands to remove excess gum increases the spread of the hollow stalk pathogen.
- If plants with hollow stalk are encountered during topping, they should not be touched by those doing the topping, to reduce the chances of spread.
- Fields under excessive nitrogen fertilization are especially prone to hollow stalk, because the wounds do not heal, so extra care is needed in handling such sites.
- Excessive rates of sucker control chemicals can damage leaves and greatly increase hollow stalk. This is often evident near the ends of rows where ground speeds are lower and higher rates are applied.
- Do not house plants with hollow stalk. Yes, you will need to train the tobacco cutters to leave them standing and provide some type of incentive for them to do this, because the standard incentive to them supports cutting the plant.
- Harvesting immature tobacco can lead to increased bacterial soft rot in the curing barns. Be especially careful not to get these in the upper rails of tobacco where the slimy rotting leaves can drip and fall into lower rails of tobacco.

ALFALFA

BLISTER BEETLES IN KENTUCKY ALFALFA

Blister beetles have been relatively common on flowers of various plants according to the samples we have received over the past few weeks. Blister beetles have long (3/4" to 1-1/4"), narrow bodies, broad heads, and antennae that are about 1/3 the length of the entire body. The front wings are soft and flexible in contrast to the hard front wings of most beetles. The black blister beetle (jet black) and the margined blister beetle (black with thin gray stripe around wing covers) have been the most common species.

The adults feed on leaves in the tops of a plant but are especially attracted to flowers. They gather in groups, so large numbers can occur in concentrated clusters in a field. These beetles are mid to late summer insects, active in mid-July and early August which translates to the third or fourth cutting.

Female blister beetles lay clusters of eggs in the soil in late summer. The small, active larvae that hatch from these eggs crawl over the soil surface entering cracks in search for grasshopper egg pods which are deposited in the soil. After finding the eggmass, blister beetle larvae become immobile and spend the rest of their developmental time as legless grubs. The following summer they transform into the pupal stage and soon emerge in the adult stage. This is why blister beetle numbers increase dramatically following high grasshopper populations.

Blister beetles contain cantharadin, a chemical that is very toxic to horses. Blister beetles have not been a significant problem in Kentucky alfalfa. Last year's drought resulted in large grasshopper populations and the potential for larger than the normal number of blister beetles this summer. The best way to deal with blister beetles is through management practices that will keep fields from being attractive.

The major step is to cut on a schedule that keeps alfalfa and weeds from producing the flowers that attract beetles and keep them in the field. Cut before an advanced bloom stage. This means hay with high quality and protein content and keeps attraction of beetles low. Practice good weed management to keep other flowering plants to a minimum. Other practices are necessary if flowers and beetles are abundant. The worst thing that can be done is to crimp or crush hay if beetles are present. Crushed beetles remain in the hay and can poison animals. DO NOT use a hay conditioner when harvesting blister beetle infested alfalfa.

Fields with flowered plants can be checked for blister beetles before harvest by using a sweep net as you would to sample for potato leafhoppers. This is not foolproof because large numbers of beetles can be concentrated in very small areas of a field. Collection of 100 sweeps for the field, as would be done for leafhoppers, is not sufficient to be confident that the beetles are not present unless flowering is limited to small areas.

Sickle bar mowers and some of the more modern circular or rotary mowers lay the hay down but do not crush it. Blister beetles have a behavioral characteristic that may be used against them. When plants are disturbed, blister beetles play "possum" and fall to the ground. As the hay dries and cures, the beetles will leave to seek food and moisture.

A fact sheet on these insects is available at www.uky.edu/Agriculture/Entomology/entfacts/fldcrops/ef102.htm

CORN

EVALUATE CORN FOR BORERS
by Ric Bessin

Now is the time to begin evaluating corn fields for

late-season European and southwestern corn borer activity. This has been a moderate year for both corn borer species but many fields have escaped economic losses because of the early planting dates. These late season larvae feed primarily in the ear zone of the plant and below, but may be found in leaf axils over the entire plant. Leaf axils, leaf sheaths, and ear shanks should be examined for live larvae or signs of damage. Ear shank tunneling or stalk tunneling below the ear may lead to increased harvest losses this fall. Severity of the infestations will vary from field to field on a farm, so fields should be scouted individually. **Identification of heavily-infested fields and their early harvest (where possible) may be an effective strategy to reduce harvest losses** due to broken or lodged plants and ear drop.

Special attention should be given to late planted fields in the western portion of the state near the Ohio River, as southwestern corn borer continues to be a serious problem. In September, southwestern corn borer larvae that will overwinter travel to the base of the stalk, make a chamber in the stalk below ground, then girdle the base of the stalk. For this reason, fields that are heavily infested with southwestern corn borer should be identified and harvested as early as appropriate.

SORGHUM

VIRUS EPIDEMICS IN SWEET SORGHUM
by Paul Vincelli

Several samples of sweet sorghum have been diagnosed with MDMV (maize dwarf mosaic virus). Severities ranged from 30-95% of plants affected. Symptoms on affected plants included: stunting; yellowing of the young leaves, with a faint mosaic when leaves are inspected closely; and reddish streaks on the leaves (especially when nighttime low temperatures are 61 F or less. MDMV overwinters in rhizomes of johnsongrass, and is spread by aphids. Given the severity of the problem we've seen, some of these fields will likely suffer major losses in harvestable "molasses".

There are two management practices for this disease:
1. Use varieties that have shown some resistance under Kentucky conditions. Dr. Morris Bitzer from the UK Agronomy Department has evaluated MDMV reactions of sweet sorghum varieties under field conditions and has found that varieties such are Sugar Drip, Orange, Simon, Umbrella, and Justice are susceptible to highly susceptible. In contrast, Dale, Della, Theis, and M81E show very little damage from the disease under field conditions. Topper 76-6 provided an intermediate reaction in his test. Use varieties that exhibit field resistance in areas where the disease is a risk.

2. Control populations of rhizome johnsongrass in and around the production field.

LAWN & TURF

GRAY LEAF SPOT DETECTED ON PERENNIAL RYEGRASS
by Paul Vincelli

Gray leaf spot was detected from samples of perennial ryegrass collected last week from courses in Lexington and Florence. At the site in Lexington, the area where the disease was active was an untreated portion of the fairway where we have a research trial, although the superintendent had initiated a preventive spray program on all 18 fairways. No more than 1-2% of the turf was blighted last week, but it indicates that an epidemic is possible, given disease-favorable weather. The disease was also detected at low to moderate levels in untreated rough areas. The Florence site was an untreated rough, and damage was moderate. Golf course superintendents should have a preventive fungicide program in place at this time. See the 1 May 00 issue of *Kentucky Pest News* for more information on fungicidal control of this disease, available on the web at www.ca.uky.edu/agcollege/plantpathology/PPAExten/kpnindex.htm.

DISEASE CONTROL FOR RENOVATION AND OVERSEEDING
by Paul Vincelli

In Kentucky, our ideal time to renovate turfs is mid-August through September. Renovation practices often provide ideal conditions for activity by *Pythium* in turf. These organisms can cause pre-emergence and postemergence damping off in all seeded grasses. They can also cause cottony blight in perennial ryegrass and creeping bentgrass when daytime highs and lows are at least 90 F and 70 F, respectively, for several days.

There are several reasons why renovation or overseeding can favor *Pythium* activity. The hot weather that can sometimes occur during the renovation window can favor *Pythium* infections. The irrigation needed by new seedlings provides the high soil moisture and foliar humidity that favor *Pythium*. Application of nitrogen to new seedings can also

increase susceptibility to infection.

Thus, consider using seed pre-treated with metalaxyl or mefanoxam fungicide, especially on seedings made before Labor Day. These systemic fungicides will provide 7-14 days of control of sensitive *Pythium* infections. For Kentucky bluegrass, tall fescue, and fine fescues, the seed treatment should be all that is needed. This is usually true for perennial ryegrass, as well, although a sustained period of hot, wet weather after the seed treatment has worn off may require broadcast treatment or at least spot-treatment with a fungicide.

For creeping bentgrass, which is often not treated with fungicide, treat the soil at seeding or shortly thereafter with a systemic like mefanoxam (Subdue 2X WSP or granular formulations) or propamocarb (Banol), and repeat at least once if the seeding was made in August.

SHADE TREES & ORNAMENTALS

WOODY LANDSCAPE PLANT DISEASES BEING SEEN NOW
by John Hartman

Recent Plant Health Care Workshop and Plant Disease Diagnostic Laboratory observations reveal that several diseases of woody plants are becoming important in the landscape this summer.

Bacterial leaf scorch. Leaves of infected pin oaks in Lexington and Louisville are now showing marginal browning characteristic of this disease. From a distance, look for leaf browning, usually in the topmost branches of the tree. Some of these leaves are beginning to fall now, so that under the tree, one can closely examine scorched leaves. Infected leaves will be brown at the tips and along the leaf margins while the leaf base and tissues nearest the veins remain green. Sometimes, a faint red or yellow line can be seen at the margin between green and dead leaf tissues. In neighborhoods where bacterial leaf scorch infections have been present for many years, numerous trees now stand dead or nearly dead. The relatively recent demise of these trees can be attributed to the drought last year.

Dogwood powdery mildew. Now is a good time to observe the variability in susceptibility of dogwoods in the landscape. Some trees are still pretty green, while others have most of their leaves turning yellow, often with dead patches in the leaf blades. On most affected leaves, the visible white powdery growth typical of powdery mildew is not present. But with the aid of a hand lens, the fungus can be seen on these leaves as very fine mycelial threads crisscrossing the affected leaf surface. On the newest growth of some trees, however, no hand lens is needed because the fungus is very visible, causing new leaves to be narrow, distorted, and covered with white fungal mycelium and spores. There are many good fungicides for powdery mildew management, but applications should have begun two months ago.

Root and butt rots. Fruiting bodies (conks) of several root and butt rot fungi are proliferating at the bases of infected trees. The *Ganoderma* fungus can be found at the base of declining honey locust trees, firmly attached to the lower trunk and to buttress roots. Similarly, pin oaks are being observed with practically dinner plate-sized *Ganoderma* fruiting bodies growing from the base. The fungus *Laetiporus sulfureus* (*Polyporus sulfureus*) similarly can be seen to infect buttress roots of landscape trees. Trees infected with root and butt rot fungi may become hazardous if the roots are weakened enough to cause trees to fall or to be uprooted.

Yellowwood anthracnose. Anthracnose has been observed on yellowwood in Louisville, Versailles, and in Cincinnati. Anthracnose causes browning and tissue death along the main vein of the leaf and at the leaf tip. This is a relatively uncommon disease, and may be caused by a species of *Discula*.

Verticillium wilt. Verticillium wilt causes leaf browning and dieback on many trees and shrubs in the landscape, especially maples, tulip poplar, catalpa, and redbud. Don't confuse dead branches caused by Botryosphaeria canker on redbud with Verticillium wilt, because the redbud cankers are easily seen at the base of the dead branch. Cut into the wood of affected trees to observe the dark brown to black staining of the xylem tissues of the trunk and branches, which are indicators of Verticillium wilt. Recent findings of Verticillium wilt of Magnolia and smoke tree should serve to remind us that the host range of this fungal wilt is very large.

Ash yellows. Symptoms of ash yellows are appearing with greater frequency in the Lexington area this year. Affected trees have several dead branches and are declining. Chlorotic witches brooms are conspicuous on the trunk and along many of the main limbs. White ash is frequently attacked, but blue ash may also be involved. Ash yellows is caused by a phytoplasma.

BRIGHT AND / OR HAIRY CATERPILLARS

by Lee Townsend

Orange-striped oakworms are black caterpillars with eight narrow yellow stripes that run the length of the body. There are a pair of long, curved "horns" behind the head. Small larvae feed in groups and skeletonize the leaves, older larvae eat all of the leaf except the main veins. They usually destroy all of the leaves on a branch before moving to a new feeding site. They can be found from August through October. Infestations usually start in the top of the tree and the larvae move down as they feed and destroy foliage.

Yellow-necked caterpillars have black heads and dark bodies with four yellow stripes running the length of the body. A yellow band around the segment behind the head gives these larvae their common name. They feed on oaks, apple and a variety of trees and shrubs.

The hickory tussock moth is a hairy white and black caterpillar that prefers hickory and walnut but will feed on many other shrubs and trees. They are common from July through September.

Sprays of B-t (Bacillus thuringiensis - Dipel, etc.) will control these caterpillars. B-t works as a stomach poison so treated leaves must be eaten. Direct spraying of the caterpillars with Bt-based insecticicdes will not kill them.

DON'T GET STUNG BY THESE CATERPILLARS
by Ric Bessin

Most people know that bees, wasps, hornets and some ants can sting to defend themselves or their nests. Only a few people realize, usually from first hand experience, that handling or brushing against some caterpillars can produce some painful results, also. Recognizing the few stinging caterpillar species may prevent unpleasant encounters. Common stinging caterpillars in the early fall include the saddleback caterpillar and the stinging rose caterpillar.

Saddleback caterpillar is brown in front and rear, green in the middle with a purple spot in the center of the green saddle. There are prominent horns on the front and rear. Stings by this insect can cause severe irritation. Saddlebacks are typically found on deciduous trees such as basswood, chestnut, cherry, oak, and plum, but occasionally they can be found on corn.

The stinging rose caterpillar is a yellow to red spiny caterpillar with black and blue stripes down the middle of its back and less distinct red, blue and black stripes along the side of the body. There are prominent spiny yellow horns on the front, rear and center of the body. They can be found feeding on bushes and low tree branches of redbud, oak, hickory, bayberry, wild cherry and sycamore.

Most encounters with stinging caterpillars result from accidently brushing against leaves on which they are feeding. The chances of running into these insects are relatively low, but occasionally one species may be very abundant. Also the more time spent in wooded areas, the greater the opportunity for contact. Most of these caterpillars are distinctly marked or brightly colored.

This allows you to see and avoid them. If you find one on yourself, don't brush it off or slap it with a bare hand. Use a stick or other object to remove it carefully. Hollow spines may break off in clothing or gloves.

For more information on stinging caterpillar, see ENTFACT- 003, Stinging Caterpillars.

GIANT CATERPILLARS ACTIVE NOW
By Lee Townsend and Ric Bessin

Several large caterpillars can be seen in late summer. Often they are caught as the crawl across lawns in search of a pupation site. The common ones being sent in to us now are the cecropia caterpillar and the hickory horned devil. Both are spectacular, neither is harmful.

The cecropia moth caterpillar takes most of the summer to mature and is up to four inches long when fully developed. They are bluish green and there is a pair of yellow projections along the back on each body segment. The first three pairs are yellow balls with black spines. Cecropia caterpillars feed mainly on cherry, plum, apple, elderberry, box elder, maple, birch and willow, but will also feed on linden, elm, sassafras and lilac.

In early fall the mature caterpillar spins a spindle-shaped cocoon which is about three inches long. The cocoon is attached along its full length to a twig on the host tree. - Inside the cocoon the caterpillar changes to a pupa, the life stage in which it spends the winter.

The hickory horned devil is the largest of the silk moth caterpillars, commonly reaching five inches in length. The long barbed horns on the forward end of the body make the caterpillar look intimidating but it is entirely harmless to humans. These rotund

caterpillars feed on hickory, sumac, sweet gum, lilac, persimmon, ash and beech. They pupate in the soil.

Information on these and other impressive caterpillars is available in Entfact 008 Saturniid Moths. Color pictures of many can be seen on our web site at - www.uky.edu/Agriculture/Entomology/entfacts/misc/

DIAGNOSTIC LAB HIGHLIGHTS

By Julie Beale and Paul Bachi

Last week's samples in the Diagnostic lab included: Southern leaf blight and gray leaf spot on corn; maize dwarf mosaic virus on (sweet) sorghum; Rhizoctonia and Fusarium root rots on soybean; black shank, soreshin, Fusarium wilt, blue mold, frogeye leaf spot, tomato spotted wilt virus and the aphid borne virus complex on tobacco.

On fruits and vegetables, we have seen powdery mildew on gooseberry; brown rot on peach; fireblight on pear; necrotic leaf blotch, cedar-apple rust and spring frost injury (banding of fruits) on apple; bacterial wilt on cantaloupe and pumpkin, as well as Microdochium blight on pumpkin; rust on sweet corn (Puccinia) and bean (Uromyces); bacterial spot and speck, early blight, tomato spotted wilt virus and root knot nematode on tomato.

On ornamentals, we have seen bacterial blight on geranium and bacterial spot on begonia, epimedium and ivy; Pythium root rot on chrysanthemum; Rhizoctonia root rot on impatiens; rust on bluegrass and fescue; cedar-quince rust on hawthorn; scab on pyracantha; Phomopsis twig blight on juniper; anthracnose and powdery mildew on dogwood; Dutch elm disease (elm); ash yellows (ash); Verticillium wilt on smoketree; and crown gall on willow.

INSECT TRAP COUNTS

UKREC, Princeton, KY -July 28-August 4, 2000

Fall armyworm	3
European corn borer	0
Southwestern corn borer	482
Corn earworm	132

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.