UK Inspector Findings in Kentucky

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Pests susceptible to control-based on degree day forecasts ( )=Degree day ranges

- Bagworms (700-800)
- Birch leaf miner (500-1000)
- Bronze birch borer (500-1000)
- Euonymus scale several overlapping generations (500-2100)
- European elm scale (900-1200)
- European pine shoot moth (900-1000)
- Flat headed apple tree borer (500-1700)
- Fletcher scale (900-1200)
- Japanese beetle emergence (900-1200)
- Lecanium scale (900-1200)
- Lilac borer (900-1200)
- Taxus mealybug repeat applications necessary (700-2100)
- Peach tree borer (500-2100) 2-4 sprays during this periond
- Round headed apple tree borer (500-1700) 3 applications at 3 wk intervals
- San Jose scale (500-2900) repeat applications necessary
- Two spotted spider mite (900-2100)
- Wooly apple aphid (800-900)

Inside this issue:

Bacterial soft rot of iris tubers

Sycamore anthracnose

Calico scale

May beetle

Japanese beetles

Left—rose slugs feeding on the underside of rose leaves
Right—dieback of juniper shoot tips due to juniper tip blight (Cornell Univ.)

Calico Scale Alert

Mike Potter, Extension Entomologist, University of Kentucky

In recent years, calico scales have become rampant on several landscape plants, including honeylocust, hawthorn, hackberry, sweet gum, yellowwood, dogwood, flowering crabapple, and sugar and Norway maples. Infestations are so heavy in some cases that entire twigs and stems are covered by the scales and the trees are in decline.

Mature calico scales, *Eulecanium cerasorum*, are large, black and white globular-looking insects about the size of a pencil eraser. They have a soft, leathery body and when crushed ooze a gummy, wax-like fluid. The immobile, adult female is the life stage observed during the spring, attached to twigs and stems. Some people mistake them for ladybugs, which are roughly the same size. Like other scale insects, the calico scale feeds by sucking plant juices. Heavy infestations can cause premature leaf drop, branch dieback and, coupled with other stresses, eventual tree death. During April and May, females excrete copious amounts of honeydew that coats the leaves and

anything beneath infested trees with a sticky glaze. The honeydew and resultant black sooty mold are cosmetically unappealing and can stain patios and car finishes, and attract wasps and other nuisance pests.

The mature females are now dying. Underneath them are thousands of eggs which have begun hatching into crawlers. The crawler stage moves to the leaves where it sucks plant juices, returning to the bark in autumn, before leaf fall, to overwinter. Another reason to take action against the crawlers is that they can become wind borne, spreading the infestation to other trees nearby.

Management

It's too late to impact the mature females, which turn brown and die just before crawler hatch. However, the underlying eggs hatch around May 20, and the crawlers will be settling on the leaves. Crawler hatch begins, on average, at about 1475 accumulated degree days (calculated from January 1 using a base temperature of 40ºC). The yellowish, newly-hatched crawlers are tiny, but under close inspection their movement will be visible to the naked eye.

Insecticide applications, timed to coincide with emergence of young crawlers, will break the cycle of development and help alleviate further plant stress. Ideal treatment timing is when about 75% of the globular adult females have turned brown. The most effective insecticides for crawler control are synthetic pyrethroids such as TalstarOne, Tempo (= Bayer Advanced Lawn & Garden Multi Insect Killer), and Scimitar (= Spectracide Triazicide). Sevin also can be used. Thorough coverage of infested twigs, branches and adjoining leaves is important. The hatching period lasts several weeks so a second application 2 to 3 weeks after the first may provide more complete control. Horticultural oil, insecticidal soaps, and tree injections have not been very effective against this scale insect species.

Juniper Tip Blight Appearing Now

John Hartman, Extension Plant Pathologist, University of Kentucky

Twig and branch tip dieback is a common sight in many juniper plantings in Kentucky this spring. While other factors can cause these general symptoms, two fungal diseases are frequently responsible for the dieback. These fungi (*Phomopsis juniperovora* and *Kabatina juniperi*) attack several species of Juniperus, including red cedar, common juniper and creeping juniper. Arborvitae is also susceptible. In the spring, Kabatina twig blight is most noticeable.

Kabatina Twig Blight. Brown shoots scattered within the healthy green foliage are being seen now. The disease is especially noticeable in beds of creeping juniper. These shoots, green all winter, have only recently turned brown. In early spring, as junipers begin to green up, infected twigs from the previous season's growth begin to fade to a pale green and then turn brown in contrast to healthy green tissues nearby. Grayish lesions with numerous gray-black fruiting bodies appear at the bases of blighted shoots. Kabatina twig blight infections begin through a wound caused by insects or mechanical injury and are thought to begin the previous fall.

Disease Management: 1) Prune out and destroy infected twig tips. Pruning should be done when the foliage is dry in order to minimize fungal spread. 2) Use an approved insecticide to control insect pests. It is possible that insects, such as the juniper midge, create the wounds necessary for Kabatina infections. 3) Avoid planting highly susceptible cultivars. Instead, select varieties that are known to be tolerant to Kabatina.

Phomopsis Twig Blight. In late spring and in summer, as new shoots are developing, they can become infected with this pathogen during periods of moist weather. This disease begins as an infection of newly developing needles which then spreads to and kills stem tissues. As with Kabatina tip blight, a tan lesion with fungal fruiting bodies (pycnidia) develop after infection.

Disease Management: 1) Fungicides can be used in spring and summer to prevent infections of new growth. Applications of fungicides containing thiophanate-methyl, azoxystrobin, propiconazole, mancozeb, or fixed copper can protect twigs from infection. 2) Prune out and destroy infected twig tips when foliage is dry. 3) Avoid overhead irrigation, especially late in the evening.

Because these two diseases are so similar in appearance, the time of symptom development can be helpful in distinguishing between the two. Kabatina twig blight symptoms generally develop early in the spring before new growth begins. Phomopsis twig blight symptoms, on the other hand, are more likely to develop any time during the growing season. If twig blight symptoms are evident now on junipers that appeared healthy in the fall, Kabatina is likely responsible.

Most junipers are not immune to tip blight diseases. Kabatina tolerant juniper (that are not known to be susceptible to Phomopsis) cultivars across several species include: Aurea Gold Coast, Blue Mountain, Burkii, Cologreen, Emerald Sentinal, Expansa, Henryii, Hetzii, Hetzii glauca, Hibernica, Hornbrooki, Keteleeri, Manhattan Blue, Marcellus, Mas, McFarland, Mint Julep, Mountbatten, Nana, Perfecta, Prostrata glauca, Robusta Green, Saybrook Gold, Sargentii viridis, Sargentii glauca, Silver Globe, Sutherland, Variegata.

Phomopsis tolerant juniper (that are not known to be susceptible to Kabatina) cultivars across several species include Arcadia, Ashfordii, Aureo-Globosa, Aureo-spica, Buffalo, Calgary Carpet, Campbellii, Cinerascens, Depressa, Douglassii,

Expansa, Fargesii, Fastigiata, Femina, Globosa, Hetzii, Hibernica, Hillii, Iowa, Keteleeri, Knap Hill, Meyeri, Mint Julep, Mountbatten, Oblonga, Pendula, Pfitzeriana, Pfitzeriana aurea, Prostrata aurea, Pumila, Pyramidalis, Repanda, Reptans, Robusta Green, Sargentii, Sargentii glauca, Saxatilis, Saybrook Gold, Shoosmith, Silver King, Skandia, Suecia, Tripartita,

Avoid the cultivars Adpressa, Albospica, Alpina, Argentea, Bar Harbor, Blue Chip, Blue Haven, Blue Horizon, Blue Mat, Blue Pacific, Broadmoor, Columnaris, Emerald Sea, Emerson Creeper, Eximius, Horizontalis, Japonica, Pendula, Platinum, Plumosa Compacta, Prince of Wales, Procumbens, Sky Rocket, Spartan, Torulosa Hollywood, Variegata, Welchii, Wiltonii, and Wichita Blue.

Sycamore Anthracnose Is Appearing Statewide

John Hartman, Extension Plant Pathologist, University of Kentucky

Sycamore anthracnose. Anthracnose symptoms have become very noticeable on Sycamore in the past week. Out in the countryside, from a distance, it appears that all the leaves on internal and lower branches have suddenly turned brown. A closer look at infected green, expanding leaves reveals irregular dark, necrotic blotching centered along the leaf veins or leaf edges. These dark blotches may turn a tan color as the diseased areas of the leaves dry out. In the same trees, tips of young shoots with newly expanding leaves are wilting and dying because of twig or shoot infection. The nearly continuously wet and cool weather the last week of April very likely provided disease-favorable conditions for anthracnose infection. While symptoms developed, the warm, dry weather the first half of May provided at least a temporary halt to infections. With a resumption of rainy weather, the disease could continue to spread in the foliage. Symptoms on some trees are quite severe.

The incidence and severity of anthracnose diseases of landscape trees varies with the season. When we have cool springs with extended periods of wet weather, antracnose diseases are worse. At least for part of the spring, that kind of weather has occurred. As the weather dries and becomes warmer, sycamores normally put out new, healthy foliage by early summer. However, the legacy of crooked branches (because lateral shoots take over when terminals are killed by anthracnose) and multiple shoots arising from the base of a killed branch may be still visible many years later. Sycamore anthracnose is caused by the fungus *Apiognomonia veneta*, and the fungus attacks both sycamore and London plane.

Ash anthracnose. Brown blotches along leaflet edges can be seen now on new ash foliage. Many of these infected leaflets will begin to drop soon and carpet the walks and lawns nearby. Ash anthracnose is not normally a threat to ash tree survival, however, and the ash trees will simply put out a new set of leaves. The ash anthracnose fungus is a species of Discula.

Anthracnose management in landscape trees. When trees are forced to refoliate, carbohydrate reserves are depleted, so it is important to maintain good growing conditions for infected trees.

- Rake up and compost fallen leaves. Leaves can be a source of inoculum.
- Prune out and destroy dead twigs and branches, because for many of the anthracnose fungi, branches harbor fungal inoculum. Although it is difficult to prune large trees, small trees are at greater risk, so prune out dead twigs and branches from them.
- Avoid unnecessary wounding and avoid construction or other activities which could injure the roots or the branches.
- Provide mulch and water as needed. Mulch over the root system helps to retain soil moisture during dry periods. Apply water throughout the growing season, if necessary.
- Although most anthracnose diseases can be controlled using fungicides, the attempt is usually more costly than the benefit.

Overnight Defoliation of Oaks

Lee Townsend, Extension Entomologist, University of Kentucky

Oaks can be stripped of their leaves practically overnight by May beetles. Active soon, these beetles are approximately 1" long and cylindrical, color varies from brown to black.

The species which attack oak feed at night, stripping the foliage and leaving only veins. Consequently, the damage is present but there is no sign of the cause. The beetles leave the trees during the day and may be found under leaves or grass around the tree. Sevin is very effective against these insects. The feeding period lasts for several days but one treatment should be sufficient.

The larval stages are white grubs that feed on the roots of grasses. Large expanses of turf or pasture can produce thousands of these beetles. Fortunately, the beetles are around for only a short time and oaks will push out a new set of leaves.

Insecticides for Borer Control

Lee Townsend, Extension Entomoloigist, University of Kentucky

Shade trees and woody ornamentals under stress from previous defoliation, sun scald, drought, soil compaction, incompatible site selection, or mechanical injury are especially vulnerable to borer attack, as are young trees for the first two years after transplanting. Our common borers include the larvae of several species of moths (clearwing borers) and beetles (bark beetles, shothole borers, flatheaded and roundheaded borers). Most borer infestations are discovered when emergence holes are seen in dying branches or trunks or when larvae are found when removing damaged limbs. The adults are rarely seen.

While insecticide applications may help to reduce re-infestation by borers, it is unlikely that they will prevent death of heavily infested trees. Preventive sprays applied to the trunk and/or limbs provide a barrier to kill adults or larvae as they try to chew into the bark. In most cases, treatments will not kill borer larvae that are already present.

The cancellation of Lindane and removal of homeowner uses of Dursban (chlorpyrifos) has changed the options for borer control on trees and shrubs. Homeowners have two alternatives. The first is a trunk or limb spray with an insecticide containing the pyrethroid permethrin and having borer control instructions on the label. These conditions are met by Astro 3.2 EC and Green Light Borer Killer which are labeled for bark beetles, clear wing borers, flatheaded borers and roundheaded borers. There are several other shade tree and ornamental insecticide products for home use that contain permethrin but they are labeled for foliar pests and do not include borer control on the label.

The second homeowner option is Bayer Tree & Shrub Insect Control, which contains the active ingredient imidacloprid. This systemic insecticide is applied as a soil drench with the rate determined by trunk circumference. The label includes flatheaded and roundheaded borers but there are no specific directions on timing of the application.

Certified commercial applicators have a longer list of spray options - bifenthrin (Onyx Insecticide), carbaryl (Sevin 80 WSP or SL), chlorpyrifos (Dursban 50W), in addition to permethrin (Astro 3.2 EC). Several formulations of imidacloprid are labeled for control of flatheaded and roundheaded wood borers. Examples include Discus Nursery Insecticide (cyfluthrin + imidacloprid) and Marathon 60 WP, Marathon II, Merit 2F, and Merit 75 WP (imidacloprid).

Timing of borer control sprays is very important. Borer species that have very short, distinct flight times may be susceptible to a single insecticide application but several treatments may be necessary for species that are active over a period of several weeks. April 2004 Inspector Findings, ENT-43, Insect Borers of Trees and Shrubs, and Entfact 437, Borers That Attack Landscape Pines, give specific information on important pests.

Here are short profiles of our common borers:

Clearwing moth borers are day-flying moths that resemble wasps in appearance and behavior. Their larvae (cream-colored caterpillars with distinct heads and segmented thoracic legs) bore into wood and expel coarse brown frass from cracks in the bark. Examples include - ash borer, banded ash borer, dogwood borer, lesser peachtree borer, lilac borer, and oak borer.

Flatheaded borers are beetles with a blunt anterior ends that taper to pointed abdomens. Some species have a distinct metallic sheen. The legless larva is white to cream-colored with a distinct broad, flat area right behind the head. Exit holes through which adults leave trees have a distinct D shape. Examples include the flatheaded appletree borer and the bronze birch borer.

Roundheaded borer adults (longhorned beetles) have long, cylindrical bodies with antennae that often are longer than the body. The white to cream-colored legless larva is cylindrical and does not have a distinct expanded area at the anterior end. Most roundheaded borers develop in weak, dying, or felled trees, or dead limbs. Their exit holes are round.

Bark beetles or shothole borers include many species from a variety of families. The adults are small, usually dark brown to black beetles. The legless larva is C-shaped with a yellow to brown head. The small round exit holes of bark beetles may riddle infested trees.

Iris Diseases

John Hartman, Extension Plant Pathologist, University of Kentucky

Many Kentucky gardens feature iris plantings; these flowers are popular and well adapted. Frequent rains earlier this spring have favored several diseases. Leaf spot is just appearing and corm rot can be devastating to individual plants in some iris beds.

Iris leaf spots. The fungus *Mycosphaerella macrospora*, formerly known as *Didymellina macrospora*, causes the most prevalent leaf spot. On diseased leaves, oval spots with reddish-brown margins and gray centers appear anywhere on the leaf blade. Spots continue to appear and can become so numerous that leaves become blighted and die. In some years, iris beds are devastated by this fungus; the dead, tan and brown leaves remain upright making the disease a real eyesore in the garden. If the center of the gray spot is examined closely, dark fungal growth of *Heterosporium iridis*, the imperfect stage of the fungus, can be seen. Bacterial leaf spot caused by *Xanthomonas tardicrescens* shows

symptoms similar to those of the fungal leaf spot without the fungal growth in the center of the spot. Similar to the fungal leaf spot, bacterial spots may have a water-soaked appearance. This disease occurs less frequently in Kentucky, but can also cause blighting.

Rust disease results in rusty-red pustules appearing on either side of affected leaves. The fungus, *Puccinia iridis*, can cause considerable damage to several iris varieties. Iris rust is relatively uncommon in Kentucky.

To control leaf spot diseases, remove blighted leaves during the season, and remove and destroy all foliage in the fall. Fungicides containing chlorothalonil, mancozeb, myclobutanil, propiconazole, or triademefon can be used to protect iris from Didymellina leaf spot. Fungicides will not control bacterial leaf spot.

Iris rhizome and bulb disorders. Bacterial soft rot is a serious disease of the rhizome that can appear in newly planted as well as mature iris plantings. The pathogen, *Erwinia carotovora* causes a foul-smelling soft decay of the rhizome. The bacterium gains entrance into the plant through wounds in young leaves made by young larvae of the iris borer. Soft rot is prevented by planting healthy rhizomes and preventing iris borer infestations.

Botrytis convoluta and *Sclerotium rolfsii* are two fungi that can cause rhizome and crown rot diseases of iris. The former produces irregular black sclerotia in the decaying rhizome, while the latter produces small spherical sclerotia on the rotted leaf bases. Neither produces a foul-smelling decay. When affected rhizomes are found, they should be removed and destroyed.

Bulbous iris are subject to several bulb diseases and decays. Diseases such as black rot, ink spot, Fusarium basal rot, and blue mold cause decays of bulbous iris. Sort out and destroy diseased bulbs as they occur.

Early Season Rose Pests

Lee Townsend, Extension Entomologist, University of Kentucky

Rose aphids are common pests during the early part of the growing season. They feed on sap from tender shoots and buds so there are no dramatic holes to see. While a small number of aphids will cause very little damage, they have the potential for a population explosion that can be difficult to bring back under control. Very large numbers of rose aphids can kill buds or cause smaller flowers. Also, they produce large amounts of honeydew, which, in turn, can support the growth of sooty mold.

Rose aphids do best when it is cool and relatively humid; they disappear with the arrival of summer. Insecticidal soap or neem sprays can be used for control, as can applications of Orthene (Acephate) or malathion. Soil-applied systemic insecticides also are an option. These include products with either disulfoton or imidacloprid as active ingredients.

Whitish blotchy areas on rose leaves can be damage from rose-slug caterpillars. They are the larvae of a sawfly wasp. Feeding by small larvae goes only part way through the leaf so the injury resembles slug damage. Often, there are several roselugs per leaf, easily recognized by their yellow-orange head and yellow-green body. Insecticidal soap will kill the larvae by direct contact or they may be washed off with a strong spray of water. These insects are wasps,not true caterpillars so they are not controlled by *Bt*.

Leaf Spot & Melting Out

Paul Vincelli, Extension Plant Pathologist, University of Kentucky

Repeated periods of cool, rainy weather this spring are favorable for infections of Kentucky bluegrass by the fungus that causes leaf spot and melting out. Infections of the leaf blade and sheath appear as oval, purple or brown spots that may develop a light center as they expand. This damage is usually not significant and is usually only noticeable to those who get on their knees and inspect for it. However, in older or poorly adapted varieties, these infections can be followed by the melting out phase in summer, as the infections progress into the crown.

Melting out looks a lot like drought damage. The turf wilts and dries up over large areas. The difference is, since melting out is the result of infection, this symptom develops even if the soil has adequate moisture.

The best solution is to renovate the lawn with tall fescue or, if Kentucky bluegrass is preferred, a resistant variety of Kentucky bluegrass. Information on the best varieties for Kentucky can be found at the UK Turf Center web site at http://www.uky.edu/Agriculture/ukturf/.

Avoid high nitrogen fertility in the spring and reducing excessive thatch can also help. Although I would discourage the use of fungicides for this purpose, several fungicides are effective and can be found listed in the Extension publication, Chemical Control of Turfgrass Diseases, PPA-1", available online at www.ca.uky.edu/agc/pubs/ppa/ppa1/ppa1.pdf.

The next two pages are a follow-up to last month's article about resistance management grouping codes. These pages list the active ingredients for many insecticides & miticides and should help in deciding which chemicals to use in your rotation. This is taken from a Southern Region Integrated Pest Management Center bulletin

Forest Tent Caterpillar Active in Northern KY

Lee Townsend, Extension Entomologist,
University of Kentucky

About this time last year the forest tent caterpillar (FTC) struck along the Ohio River from Madison, IN to Warsaw, KY. The infestation is active now in parts of Boone Co., KY. The FTC is a "hairy" caterpillar that looks a lot like its close relative the eastern tent caterpillar (ETC). The FTC has a single row of footprint-shaped whitish spots down the center of the back; the ETC has a light stripe
along the center of its back. FTC feeds on a wide range of deciduous trees including maples, oaks and many other hardwoods. When abundant, these caterpillars will defoliate host trees and move to shrubs, fruits, and vegetables to finish feeding. Dispersal of FTC can cover houses and mature caterpillars move from trees to find pupation sites. There is one generation each year.

FTC outbreaks last for about 3 seasons and then decline but can linger for 5 to 7 years. Growth of defoliated trees may be reduced significantly (up to 90 percent) but trees rarely die unless other factors are acting as stressors. FTC does not spin the tents associated with ETC. Instead., the group together on silken mats which they lay down on trunks and branches. Development takes 5 to 6 weeks ending with pupation in crevices or wrapped in folded leaves.

Wandering caterpillars are difficult to control, even with direct spray of an insecticide. It may be possible to sweep up masses on patios or decks.

Degree Day Totals through May 27, 2005

Bardstown—688
Bowling Green—761
Covington—569
Henderson—755
Huntington WV—709
Lexington—631
London—683
Louisville—681
Mayfield—703
Paducah—836
Princeton—855
Quicksand—712
Somerset—677

Degree Day Totals through May 27, 2004

Bardstown—883
Bowling Green—975
Covington—746
Henderson—947
Huntington WV—938
Lexington—845
London—862
Louisville—908
Mayfield—910
Paducah—1034
Princeton—1054
Quicksand—896
Somerset—869

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