Pests susceptible to control-based on degree day forecasts

- 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 period
- 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)

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Sudden Oak Death Survey

Sampling has begun in Kentucky as part of the national Sudden Oak Death (SOD) survey. Our office, along with the USDA and the Kentucky Division of Forestry will be collecting these samples.

The goals of this survey are to determine if SOD has spread outside of California, to determine if any infected nursery stock has been shipped from California into Kentucky and to ascertain if any new plants are hosts.

Our plans are to survey approximately 125 nursery businesses throughout the Commonwealth that have received nursery stock from California (this includes several of the mass merchandisers). Any leaves with symptoms similar to SOD will be brought to the Plant Pathology Diagnostic Laboratory where they will be tested for SOD.

Any positive samples will be verified by a USDA lab in Maryland.
Insect Borers of Trees & Shrubs
Dan Potter & Mike Potter, Dept. of Entomology, University of Kentucky

Wood-boring insects are among the most destructive pests of ornamental trees and shrubs. Borers are the larvae, or immature stage, of certain moths and beetles. They tunnel and feed under the bark in living wood, destroying water- and sap-conducting tissues. This causes girdling, branch dieback, structural weakness, and decline and eventual death of susceptible plants. Infestation sites also provide entry points for plant pathogens. Clearwing and flatheaded borers are the two main types that attack woody ornamentals. These groups differ somewhat in their habits and host preferences, but similar management tactics are used for both. The keys to controlling these pests are to keep plants healthy and, if necessary, to treat during those brief times of the year when the insects are vulnerable to insecticides.

Infestation and Damage
Borers rarely infest healthy plants growing in their natural environments. However, when trees or shrubs are transplanted into the landscape, stresses such as drought, soil compaction, sun scald, or injuries can weaken them and make them more susceptible to attack. Research has shown that the adults may locate suitable egg-laying sites by responding to volatile chemicals that emanate from stressed trees.

Adult borers emerge from infested trees in the spring or summer. After mating, the females fly to a suitable host and lay eggs on the bark, often in crevices or around wounds. Hatching occurs about 10 days to 2 weeks later, and the young larvae quickly tunnel beneath the bark where they feed and grow. Once inside the tree, borer larvae are no longer vulnerable to insecticide sprays and are seldom detected until serious damage has been done.

Several species of clearwing and flatheaded borers can infest landscape plants. While some are attracted to a wide range of hosts, most attack only particular kinds of trees and shrubs. In order for treatment to be effective, it is important to know when the adults of each species are active and which plants are vulnerable.

**Clearwing Borers**
Adult clearwing borers are delicate, day-flying moths that resemble small wasps. The moths feed only on nectar or not at all, so they do not cause damage. The larvae are whitish, hairless caterpillars with a brown head. There are a number of different species, but the most damaging clearwing borers are associated with dogwood, lilac, ash, oak, rhododendron, and ornamental Prunus species, including flowering peach, plums, and cherries.

**Detection**
Early signs of clearwing borer infestation are off-color foliage, wilting of terminal shoots, and crown dieback. Infestation sites often are marked by cankers, calluses, or cracked bark. Large limbs may die or become so weakened that they are easily broken in the wind. Established trees may persist in poor condition and be reinfested year after year.

Clearwing borers expel coarse, brown frass (sawdust-like fecal material) from cracks in the bark. In some hosts, especially Prunus species, the frass may be mixed with oozing sap or gum. When the adult moths emerge, they leave behind an empty, tan-colored shell (the pupal skin) that protrudes from the bark. Feeding holes left by woodpeckers or other birds may indicate that a tree is infested with borers.

**Insecticides**
Either chlorpyrifos (Dursban) or lindane (e.g., Lindane Borer Spray, Lindane 20%) will provide good preventive control of clearwing borers on woody ornamentals. Read and follow all label directions. The trunk and main scaffold limbs should be sprayed to runoff, but the foliage need not be sprayed. Systemic insecticides, applied either as injections or as soil treatments, generally have not given reliable borer control.

**Application Timing**
Because the insecticides currently registered for borer control have limited residual toxicity, spray timing is crucial. The spray residue must be on the bark during the brief period between egg hatch and the borers’ entry into the tree. This assures that the newly hatched larvae receive a lethal dose as they crawl over or tunnel into the treated bark. Table 1 includes a list of approximate spray treatment dates based on several years of monitoring borer flight periods in Kentucky. In any given year, these target dates may vary by days or weeks, depending on spring temperatures (i.e., earlier treatment dates in warmer years, later in cooler years). Since both plant and insect development are temperature-dependent, the bloom times of other plants in the landscape often are more accurate scheduling tools for spraying than calendar dates. These so-called “indicator plants” (which are listed in Table 1 under particular borer species) can further aid in scheduling insecticide applications.

Synthetic sex attractants are also available for monitoring the appearance of important clearwing species. These chemicals mimic the scent or pheromone produced by the virgin female moth when she is ready to mate. Male moths detect the airborne scent from a considerable distance, and they follow the chemical trail upwind to its source. Sticky traps baited with these synthetic pheromones reveal when adult borers are in flight, which allows fine-tuning of spray schedules. Trapping does not increase risk of infestation because only males are attracted. Commercial trap kits come with several cardboard traps,
instructions, enough bait to last a season, and picture keys for distinguishing the various captured borers. Some borers respond to particular baits, so when ordering traps, specify the borer or tree species that concerns you. [Pheromone traps are available from: Gempler's, P.O. Box 270, 211 Blue Mounds Road, Mt. Horeb, WI 53572 (1-800-382-8473); Great Lakes IPM, 10220 Church Road NE, Vestaburg, MI 48891 (517-268-5693).]

Hang the trap in a convenient tree or shrub in early spring, and check it weekly until flight begins. Apply your spray 10 to 14 days after the first males are caught, which will coincide with the beginning of the larval hatching period. This provides a protective residue that intercepts the young borers before they can tunnel through the bark. Apply a second spray if males are still being captured after 6 weeks.

Types of Clearwing Borers

The **dogwood borer**, *Synanthedon scitula*, prefers flowering dogwood (*Cornus florida*) as its host. Infestations in young trees usually occur in the main trunk, often around lawn mower injuries. Infestations in older trees are likely to be higher up in limb crotches or main limbs and associated with pruning scars, cankers, or cracked bark. Dogwood trees planted in the sun are more susceptible than trees in the shade. Symptoms include dieback of branches and coarse, sawdust-like frass expelled from cracks in the bark. This insect species is widely distributed wherever dogwoods are cultivated. Optimal spray timing based on calendar date is about late May to early June; spray timing based on indicator plants is about a month after flowering dogwood comes into full bloom, or about 1 week after first bloom of Washington hawthorn (*Crataegus phaenopyrum*), little-leaf linden (*Tilia cordata*), or northern catalpa (*Catalpa speciosa*).

The **lilac borer**, *Podosesia syringae*, is a severe pest of lilac, ash, and privat throughout the United States east of the Rockies. Most infestations occur from the root crown up to about 3 feet. This species begins to fly in late April or May. A single spray, applied about a week after common lilac (*Syringa vulgaris*), flowering dogwood (*Cornus florida*), or Sargent crab apple (*Malus sargentii*) is in full bloom will protect susceptible plants from infestation.

The **banded ash borer**, *Podosesia aureocincta*, attacks only ash, especially green ash (*Fraxinus pennsylvanica*), from ground level up to 9 feet or more. The adults resemble lilac borers and may be monitored with the same pheromone lures, but they are active in August and September—well after the lilac borers' flight is finished. Banded ash borer can be controlled with a single spray in late August. To prevent infestation by lilac borers, ash trees may need to be sprayed in spring as well.

The **peachtree borer**, *Synanthedon exitiosa*, and the lesser peachtree borer, *Synanthedon pictipes*, are pests of peach, plum, cherry, and other *Prunus* species, including both fruit and ornamental varieties. Peachtree borer larvae attack mainly young trees, feeding under the bark from the root crown to about 2 feet above ground level.

The **lesser peachtree borer** prefers older trees, infesting the upper trunk and main branches, often around wounds, cankers, or other damaged areas. It is less likely than the peachtree borer to be a primary pest. Infestation sites are marked by accumulations of coarse, brown frass mixed with sap and gum. Because these borers have long flight periods, two sprays are necessary to prevent infestation. Apply the first spray for the lesser peachtree borer about 2 weeks after first bloom of Kousa dogwood (*Cornus kousa*) or Winter King hawthorn (*Crataegus virdis*), or 1 week after full bloom of doublefile viburnum (*Viburnum plicatum* var. *tomentosum*). For the peachtree borer, apply the first spray about 2 weeks after first bloom of southern magnolia (*Magnolia grandiflora*) or a week after full bloom of little-leaf linden (*Tilia cordata*) or oakleaf hydrangea (*Hydrangea quercifolia*). For either borer species, follow up with a second spray about 6 weeks after the first application.

**Rhododendron borer**, *Synanthedon rhododendri*, attacks rhododendrons and, occasionally, mountain laurel and flowering azaleas. Spray timing is the same as for the dogwood borer.

**Flatheaded Borers**

Flatheaded borers are so named because their first body segment, behind the head, is flattened laterally. The adults are fast-moving, flattened, metallic-colored beetles with short antennae. The whitish, legless larvae make winding tunnels beneath the bark, destroying phloem and cambium and girdling the trunk or branches. The tunnels may be visible externally as spiral ridges or cankers on the limbs or trunks. Unlike clearwing borers, which expel frass from cracks in the bark, flatheaded borers pack their fine, sawdust-like frass in their tunnels.

Detection and Control

When the adults emerge, they leave characteristic D-shaped holes. Such holes are a sure sign that a tree has been infested. With some species (such as the flatheaded appletrieve borer), the bark becomes cracked or cankered at the site of attack.

Adult flatheaded borers emerge in spring or summer, then mate and lay eggs on the bark of their preferred host trees. However, unlike young clearwing borers, newly hatched flatheaded borers do not crawl over the bark in search of entry points. Instead, they chew directly through the bottom of the egg shell into the tree. Therefore, sprays for flatheaded borers should be applied so that a residue is on the bark when the eggs are being laid. Insecticides mentioned for clearwing borers also are effective.
for flatheaded borers. Pheromone traps are not available for flatheaded borers. However, approximate spray dates and indicator plants can be used for spray timing (see Table 1).

Types of Flatheaded Borers

The **bronze birch borer**, *Agrilus anxius*, is a severe pest of white or paper birch, especially cultivated or stressed trees. Early symptoms include sparse foliage and chlorotic leaves in the upper crown, followed by twig and branch dieback from the top down. With successive years of attack, the tree becomes top down. With successive years of attack, the tree becomes progressively weaker until it is killed.

Dead or dying limbs will have numerous D-shaped adult exit holes, each about the size of a BB shot. Adult bronze birch borers are slender, olive-bronze beetles about ¾-inch long. In Kentucky, adults begin emerging and laying eggs in mid-May. Native white-barked birches (e.g., *Betula papyrifera*, *B. populifolia*) are somewhat less susceptible than European white birch (*B. pendula*) and other exotic birches.

To prevent infestation, spray susceptible birches twice at 3-week intervals, beginning about the time of first bloom of Washington hawthorn (*Crataegus phaenopyrum*), little-leaf linden (*Tilia cordata*), tree lilac (*Syringa reticulata*), or northern catalpa (*Catalpa speciosa*). River birch, *Betula nigra*, is not susceptible to this pest.

The **flatheaded appletree borer**, *Chrysobothris femorata*, is a severe pest of landscape trees, especially flowering crab apples, hawthorns, and red maples. This borer may attack almost any hardwood tree that has been stressed by defoliation, sun scald, drought, soil compaction, or mechanical injury. Young trees are especially vulnerable for the first two years after transplanting.

The full-grown borers are about an inch long, legless, and yellow-white. A single borer can girdle and kill a small tree. The adult beetle is flattened, about ¼-inch long, bronze-colored above, and brassy underneath. It leaves a large, 3/16-inch, D-shaped hole when it emerges from the tree. The adults emerge and begin to lay eggs in late May or early June in Kentucky.

The first spray should be applied on susceptible crab apples, hawthorns, and red maples about the time of first bloom of southern magnolia (*Magnolia grandiflora*) or full bloom of Washington hawthorn, northern catalpa, tree lilac, or oakleaf hydrangea (*Hydrangea quercifolia*). A second spray, 3 weeks after the first one, provides extended protection.

**Preventive Management**

As mentioned earlier, borers are much more likely to infest plants which are stressed. Management practices designed to promote overall plant health will also help to minimize problems with borers.

- Avoid planting native understory species such as dogwoods and rhododendrons in full sun.
- Plant hardy, well-adapted cultivars for your region.
- Maintain tree vigor through proper planting, balanced fertilization, and adequate irrigation during drought periods.
- Transplanted trees need extra water until they become established.
- Control other insect and disease-producing pests that contribute to tree stress.
- Use lawn mower guards or place mulch around trees to prevent bark injuries. Wounds inflicted by lawn mowers or string trimmers are attractive to egg-laying adult borers.
- Avoid pruning just before or during borer flight periods.
- Consider tree wraps carefully because they may actually encourage borer attacks by delaying proper hardening of the bark.
- Time preventive sprays properly during the first two growing seasons after planting because newly planted or stressed trees are especially vulnerable to borers.
- Detect and treat borer problems early. Remove badly infested trees that serve as reservoirs of infestation.
- Inspect susceptible tree species regularly for the telltale symptoms, and apply insecticides only during those periods when borers are vulnerable.

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**Large Green Beetles—Caterpillar Hunters**

Lee Townsend, Extension Entomologist, University of Kentucky

Samples containing one to several specimens of strikingly colored caterpillar hunter beetles have recently been sent in from several counties. The beetles are 1 to 1- 3/8 inches long with a purple/blue sheen on the sides of the head and thorax. The wing covers are metallic green with red margins, and have fine grooves running from front to back.

In some places they are accumulating in large numbers - 100 or more! These beetles have large jaws on the front of the head and could pinch the skin if handled but are not dangerous. As the name implies, they feed on a variety of caterpillars and are probably abundant as a result of high caterpillar populations in many of Kentucky’s forests over the past few years.

Caterpillar hunters are fierce predators, often climbing trees in search of food. This member of the ground beetle family prefers cool, damp places to live, and so is often found on the ground under rocks, logs, leaves, bark, decomposing wood and other debris. The life cycle of the caterpillar hunter (egg, larva, pupa, adult) usually takes a year. Adults may live up to two or three years.
Entomosporium Leaf Spot on Red Tip
Ronald Jones & Mike Benson, Plant Pathologists, North Carolina State University

General Information
Leaf spot, caused by the fungus *Entomosporium maculatum*, is a widespread and destructive disease of red tip (*Photinia fraseri*), loquat (*Eriobotrya japonica*), India hawthorn (*Rhaphiolepis indica*), some pear cultivars (*Pyrus* sp.) and several other members of the rose family. This disease is most damaging to plants in the landscape and nurseries during periods of cool, wet weather and when active growth is occurring.

Symptoms
Tiny, circular, bright red spots on both the upper and lower surfaces of young expanding leaves are the first symptoms of Entomosporium leaf spot. Numerous small spots may coalesce into large maroon blotches on heavily diseased leaves. Leaf spots on mature leaves have ash brown to light gray centers with a distinctive deep red to maroon border. Tiny black specks, spore producing bodies of the fungus, can often be observed in the center of each leaf spot. Spots similar to those on the leaves can develop on leaf petioles and tender stem growth during prolonged periods of cool, wet weather.

Low levels of leaf spot usually cause little more than cosmetic damage but maintain a source of spores for future infections. Severe infections, however, often result in early and heavy leaf drop. Heavy leaf drop severely reduces the landscape value of red tip and can cause plant death. Some cultivars of India hawthorn are as severely affected as red tip.

Disease Cycle
Spots on the leaves and young shoots are important in the survival of the Entomosporium leaf spot fungus. Fallen, diseased leaves are less important sources of the fungus. Masses of spores are released during periods of wet weather from the fungal spore producing structures in the center of the spots from late winter through much of the year except during the hot periods of summer. These spores are spread to healthy foliage by a combination of splashing water and wind. New leaf spot symptoms appear within 10-14 days after a wet infection period.

Control
For the landscape, purchase plants showing no leaf spot symptoms. Isolated healthy plants or hedges can often remain healthy as the spores are only splashed over short distances. Space plants to improve the air movement around the plants and promote rapid drying of leaf surfaces. If it is necessary to irrigate the plants, do not wet the foliage or irrigate in midday to reduce the period of time foliage remains wet. If possible, remove fallen diseased leaves. Do not water or fertilize plants any more than necessary to avoid promoting excess new growth. Also, reduce pruning during the summer which promotes continual new growth. Severely defoliated plants may need to be pruned heavily to have a small, easier to spray plant, to reduce the source of spores and improve air movement. It may be necessary to remove severely diseased plants that have also been damaged by cold injury and replace them with another plant species that is not susceptible to leaf spot.

Several fungicides may also be help in the management of leaf spot in the landscape.

This disease is very difficult to control after plants are severely infected. During extended cool, wet periods, protective sprays may be necessary. Where leaf spot is a problem, applications of one of the above fungicides should begin as new growth starts in the spring with additional sprays at 10 - 14 day intervals until mid-June. Make applications at 10 day intervals during cool, wet periods and at 14 day intervals during drier periods. Fungicide applications should not be necessary during hot, dry periods. It may also be helpful to make 3-4 applications from mid-October to late November if wet weather prevails.

Fungicides Recommended for Entomosporium Leaf Spot Control

<table>
<thead>
<tr>
<th>Fungicide</th>
<th>Rate per gallon</th>
<th>Rate per 100 gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banner</td>
<td>1 tsp.</td>
<td>12-20 fl. oz.</td>
</tr>
<tr>
<td>Daconil 2787 75W*</td>
<td>1 1/2 tbs.</td>
<td>1 1/2 lb.</td>
</tr>
<tr>
<td>Daconil 2787 4.1F</td>
<td>2/3 tbs.</td>
<td>2 pt.</td>
</tr>
<tr>
<td>Chlorothalonil*</td>
<td>see label</td>
<td>see label</td>
</tr>
<tr>
<td>Fore 80W</td>
<td>3/4 tbs.</td>
<td>1 1/2 lb.</td>
</tr>
<tr>
<td>Bayeleton 25W**</td>
<td>2 tsp.</td>
<td>1/2 - 1.0 lb.</td>
</tr>
<tr>
<td>Funginex EC*</td>
<td>see label</td>
<td>see label</td>
</tr>
</tbody>
</table>

* Available in small packages
**Repeated applications may cause some injury
Root & Stem Rots of Flowering Annuals in Landscape Beds
John Hartman, Extension Plant Pathologist, University of Kentucky

Annals and herbaceous perennials transplanted into flower beds add color to many Kentucky landscapes. Unfortunately, when these plants fail to make good growth or die in the landscape, time and money are wasted and the anticipation of colorful splendor is lost. Last summer, some beds of petunias, impatiens, vinca, geranium, begonia, and many other bedding plants died out due to one or more root and stem rot diseases. Most parts of Kentucky had excess rainfall in late spring and early summer last year, just after flower beds were established, thus contributing to loss of plants in the beds. Root and stem rot pathogens, including Rhizoctonia, Thielaviopsis, Phytophthora, and Pythium were often involved, but sometimes abiotic influences made the disease problems worse. Although root rot fungi can be carried from the greenhouse to the landscape, some already living in the bed soil can attack healthy transplants.

Root rots and their effects. Root rot is a general or localized root decay, whether from infectious or non-infectious causes or from natural aging. Root rot begins when cortical cells (outer tissue of the root cylinder) become non-functional or die. As cell death continues, the root becomes discolored brown to black and appears decayed. The cortical cells readily slough off from the rest of the root, the central vascular cylinder (stele). Root branching and growth is curtailed, because dead root tips generate no new roots. In some cases, the root rotting pathogens continue to invade crown and stem tissues, causing crown rots. Significant root rot can occur on some landscape plants without obvious symptoms on the plant's above-ground portion. When an environmental stress is imposed on such plants, they may quickly die from the infection not previously noticed.

Rhizoctonia root and stem rot. Warm, humid weather and warm soils favor this disease which causes affected plants to turn yellow, wilt, and die in the landscape. Plant roots and crowns are infected and decayed by the fungus Rhizoctonia solani, a common soil-inhabiting pathogen. There is little that can be done for infected and decayed petunias or other plants. Before planting, be sure that organic matter in the bed is completely decomposed. If a particular bed had problems last year, try a different species of flower to transplant this year.

Black root rot. Many annual plants are susceptible to black root rot, caused by the fungus Thielaviopsis basicala. This disease has been appearing on bedding plant specimens in the Plant Disease Diagnostic Laboratory more frequently in recent years, especially in spring, and often again in fall. This soilborne fungus attacks many bedding plants including begonia, dianthus, gaillardia, geranium, pansy, petunia, phlox, primula, snapdragon, sweet pea, verbena, viola and many other plants. Roots of diseased plants may have black lesions or blackened root tips. Symptoms in the top of the plant may not appear until the plant is placed under stress and then plants may show yellowing, stunting, dead areas on the leaves, and occasionally wilting or death. Plants provided with excellent growing conditions (temperature, water, drainage, fertility), may show reduced or delayed symptoms. The fungus survives for many years in flower beds due to production of highly resistant chlamydospores.

Phytophthora root rot. This disease is favored by wet soils because the fungus has a swimming stage that aids in dissemination of the disease and because roots submerged in water often attract the fungus and are unable to ward off its advances. Some annual flowers or their cultivars are susceptible while others are tolerant, so expect to see some plants die while others survive under the same conditions. Phytophthora root rot often progresses to the lower stems and there it can girdle and kill the plants. Avoid over-watering annual beds. Soil temperature may have an effect on disease, for example Phytophthora parasitica, prefers warm soils, (in the range of 77°F).

Pythium root rot. This disease is also caused by water mold fungi. One of them, Pythium ultimum, is favored by cool soil temperatures (below 68°F), and by high soil soluble salts such as excess fertilization or leftover winter de-icing salts. Although extra water application will aid in leaching out salts, it must be done in advance of planting, because excess water also favors Pythium diseases. Diseased roots develop brown cortical tissues and the resulting root dysfunction causes stunting and chlorosis of the foliage. Most annual flowers are susceptible to Pythium root rot, especially if they have been exposed to environmental insults such as excess soluble salts.

Abiotic causes of root rot. Root rot may also occur when roots are injured by non-infectious factors such as flooding, drought, freezing, excess heat, excess fertilizer and soluble salts, and toxic chemicals in the soil. When roots are injured, non-pathogenic fungi and bacteria often
Daylily Leaf Streak

John Hartman, Extension Plant Pathologist, University of Kentucky

Daylilies (Hemerocallis spp.), grown widely in Kentucky, are often considered problem-free perennials. Many growers, while searching for daylily rust, a new disease introduced into Kentucky a few years ago, noticed another disease causing widespread and serious leaf necrosis. The cause of the problem is daylily leaf streak, a fungal disease of daylily foliage that has been around for many years. New infections are beginning now and will continue throughout the summer.

**Symptoms.** Leaf streak disease causes elongate brown streaks and yellowing of leaves. The disease begins with water-soaked (dark green) spots along the leaf midvein. The spots turn reddish-brown and can be mistaken for rust. Spots enlarge and coalesce, forming dead streaks along the length of the leaf. Severely infected leaves turn yellow and often become infected by secondary fungi Alternaria and Fusarium and may eventually die. Within the daylily clump, the inner and lower leaves are more seriously affected because conditions there are moist. The fungus eventually produces black seed-like structures, sclerotia, on dying older leaves. These structures survive winter, allowing the fungus to begin new infections in spring.

**Cause and biology.** Leaf streak is caused by the fungus *Aureobasidium microstictum*. The fungus survives winter in infected plant material. In the spring, spores are released during wet periods and are splashed by rain to nearby leaves, where they initiate new infections. Infections continue throughout the summer months during warm, wet weather. Spores are spread from infected leaves to healthy leaves by splashing water and the mechanical rubbing of two leaves. Injuries from insect pests or from frost damage may precede infection. Other fungi such as Collecephalus and Colletotrichum also cause leaf streak and leaf blight symptoms.

**Disease management.** *Aureobasidium* leaf streak can usually be managed through cultural practices. The fungus is favored by leaf wetness so practices which reduce foliar moisture will be helpful.

- Divide daylilies as needed to prevent the planting from becoming overcrowded.
- Replace or leach out contaminated soil, if necessary (e.g., soils with a prior history of severe black root rot or with excess de-icing salts or other toxic contaminants).
- Use only disease and pathogen-free plants.
- Rotate crops in planting beds in the flower garden.
- Where black root rot or Phytophthora root rot have been involved, use tolerant or resistant plants, if possible.

- Water daylilies at the base of the plant to prevent water splashing.
- Avoid working with daylilies while they are wet.
- If leaf streak develops, remove infected leaves to slow the spread of the disease.
- At the end of the growing season, cut back and remove infected foliage to prevent fungal spores from surviving winter in plant debris.
- Susceptibility varies among daylily cultivars, but none are known to be resistant.
- If the disease is serious and the cultural practices listed above fail to control the disease, fungicides containing thiophanate-methyl, myclobutanil, or daconil are thought to be effective against leaf streak. However, before applying check to be sure the formulation of fungicide is labeled for foliar diseases of daylilies or for ornamentals in general.

- Remove and destroy diseased plants as they appear in flower beds.
- Avoid unnecessary stresses in growing the plants.

Although there are many chemicals that are effective in producing healthy bedding plants in the greenhouse, chemical drenches in outdoor beds are mostly ineffective and impractical.

At the end of the growing season, remove and destroy all plants for purposes of sanitation.
Caterpillar Outbreak
Lee Townsend, Extension Entomologist, University of Kentucky

Forest tent caterpillars and several other caterpillar species are causing extensive defoliation in Trimble county and along the Ohio River from Madison, IN to Warsaw, KY.

Several caterpillar species were feeding extensively on oaks and other hardwoods last week at sites in Menifee and Bath counties, according to Dr. Lynne Rieske-Kinney UK forest entomologist. These included the linden looper, oak besma, and halfwing and one of the green fruitworm caterpillar complex.

Most of the species encountered have only one generation each year and are near the end of their feeding period. The extensive defoliation seen at some sites will contribute to the stress that many trees already are under as a result of previous droughts.

Looper caterpillars are easily recognized by the reduced number of fleshy legs along the abdomen that causes them to move in a "looping" fashion as they crawl. Their shape and body color causes them to resemble twigs. Linden loopers are exceptions because of the lemon yellow stripe that runs along the sides of the body. The green fruitworm is a plump, light green caterpillar with light speckles over the body.

The web site below provides very good color pictures of caterpillars found in eastern forests along with some biology information. www.npwrc.usgs.gov/resource/2000/cateast/families.htm

Degree Day Totals through May 26, 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

Degree Day Totals through May 27, 2003
Bardstown—796
Bowling Green—921
Covington—666
Henderson—837
Huntington WV—774
Lexington—744
London—788
Louisville—788
Mayfield—828
Paducah—904
Princeton—919
Quicksand—865
Somerset—889