Kentucky Nursery LISTSERV Bulletin

University of Kentucky Nursery Crops Team

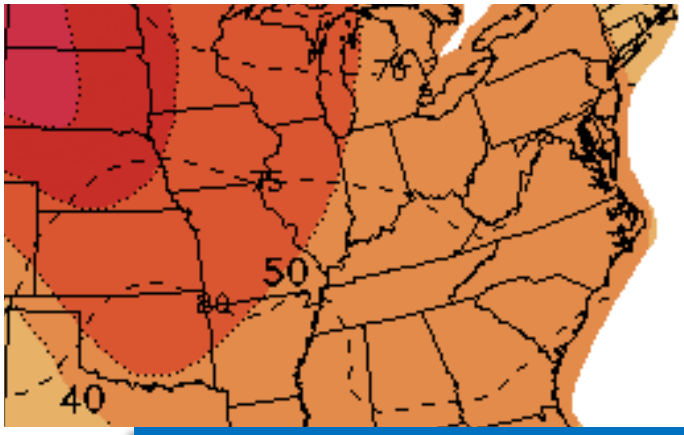
End of June 2017

Summer Is Here

The cooler weather we enjoyed in late June has come to a close with average temperatures over the month predicted to be higher than normal. Interestingly, the cooler weather we experienced in June was due to an effect of the heat wave in the western U.S disrupting the jet stream. You can read more about the phenomenon here.

Typically the warmest day of the year falls in July, though a few scattered locations along the Ohio River and Tennessee border will have their warmest day in the first week of August.

See **UKAg Weather's Long Range Outlooks** for a variety of forecasts of temperature and precipitation probabilities.



Temp Probability, July 5—July 9, 2017
Image: NOAA Climate.gov, June 29, 2017

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Joshua Knight, Managing Editor

Japanese Beetles in the Urban Landscape

Excerpted from ENTFACT-451

The Japanese beetle is probably the most devastating pest of urban landscape plants in the eastern United States. Japanese beetles were first found in this country in 1916, after being accidentally introduced into New Jersey. Until that time, this insect was known to occur only in Japan where it is not a major pest.

The eastern US provided a favorable climate, large areas of turf and pasture grass for developing grubs, hundreds of species of plants on which adults could feed, and no effective natural enemies. The beetle thrived under these conditions and has steadily expanded its geographic range north to Ontario and Minnesota, west to Iowa, Missouri and Arkansas, and south to Georgia and Alabama.

The first Japanese beetles discovered in Kentucky were found on the southern outskirts of Louisville in 1937. Isolated infestations were treated with insecticides to delay spread of the beetle. During the 1950s and 1960s, beetle populations increased dramatically and spread in Kentucky and surrounding states. Today, the Japanese beetle infests all of the counties in Kentucky.

Control

From a management standpoint, it is important to recognize that both the adults and grubs can cause damage. Moreover, since Japanese beetle adults are capable of flying in from other areas, controlling one life stage will not preclude potential problems with the other. Options for protecting trees, shrubs, and flowers from adult Japanese beetles are presented below. Control of the grub stage requires properly timed applications of a soil insecticide to infested turf. Diagnosis and control of white grubs in turf is discussed in a companion publication, Kentucky Cooperative Extension Service publications ENT-10, "Controlling White Grubs" and Entfact 441, "Insecticides for Controlling of White Grub in Kentucky Turfgrass."

Many insecticides are labeled for use against adult Japanese beetles. Examples include pyrethroid products such as cyfluthrin, bifenthrin, deltamethrin, lambda cyhalothrin, esfenvalerate, and permethrin. Carbaryl (Sevin and other brand names) too is effective. The pyrethroid products generally provide 2-3 weeks protection of plant foliage while carbaryl affords 1-2 weeks protection.

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CAUTION! Pesticide recommendations in this publication are registered for use in Kentucky, USA ONLY! The use of some products may not be legal in your state or country. Please check with your local county agent or regulatory official before using any pesticide mentioned in this publication.

Of course, **ALWAYS READ AND FOLLOW LABEL DIRECTIONS FOR SAFE USE OF ANY PESTICIDE!**

Dogwood Anthracnose Spotted

Kimberly Leonberger, Extension Associate, Plant Pathology
Nicole Ward Gauthier, Extension Professor, Plant Pathology

Anthracnose of dogwood is a common problem in Kentucky. Symptoms on landscape and forest dogwood often first appear during wet periods in late spring. If left unmanaged, the pathogen spreads, eventually resulting in plant death. Selection of resistant varieties and maintenance of tree health are critical for disease prevention.

Figure 1. Dogwoods affected by anthracnose develop leaves with medium-to-large spots with purple borders or scorched tan blotches.

Photo: John Hartman, University of Kentucky

Dogwood Anthracnose Facts

- Leaves may develop medium-to-large spots with purple boarders or scorched tan blotches that enlarge to kill the entire leaf (Figure 1). Infected petioles and branches exhibit dieback, typically beginning on lower branches (Figure 2). Cankers with a dark brown discoloration under the bark may develop limbs. The development of trunk sprouts increases.
- Other landscape trees can develop diseases also called anthracnose; however, these result from different fungal pathogens and symptoms vary depending on the type of tree.
- Disease is favored by cool, moist periods. Infection may occur throughout the growing season, as long as conditions are conducive.
- Caused by the fungus *Discula destructiva.*
- The pathogen survives winter in infected plant tissues, such as leaf debris and cankers.

Figure 2. Infected petioles and branches exhibit dieback, typically beginning on lower branches.

Photo: Robert L. Anderson, USDA Forest Service, bugwood.org

Management Options

- Select disease resistant cultivars, such as Oriental dogwood or cultivars developed from the 'Appalachian' cultivar series.
- Inspect all trees prior to purchase and installation for symptoms.
- Do not transplant forest dogwood into landscapes.

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Management Options continued...

- Prune trees to allow for increased air movement and leaf drying.
- Select good planting sites that allow for adequate sunlight.
- Maintain plant health with proper nutrition, irrigation, and the addition of mulch.
- Avoid injuries to trees.
- Prune all dead, dying, or diseased branches from trees.
- Fungicides may be applied preventatively. Contact a county Extension agent for more information on fungicide use.

Additional Information

- Dogwood Anthracnose (PPFS-OR-W-06)

  http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-W-6.pdf

- Landscape Sanitation (PPFS-GEN-04)

  http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-GEN-04.pdf

- Flowering Dogwood (ID-67)

  http://www2.ca.uky.edu/agcomm/pubs/id/id67/id67.pdf

- Considerations for Diagnosis of Ornamentals in the Landscape (PPFS-GEN-15)

  http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-GEN-15.pdf

- Woody Plant Disease Management Guide for Nurseries and Landscapes (ID-88)

  http://www2.ca.uky.edu/agcomm/pubs/id/id88/id88.pdf

Don’t Get Burned by Fire Blight, Disease Management Begins Now

Kimberly Leonberger, Extension Associate, Plant Pathology
Nicole Ward Gauthier, Extension Professor, Plant Pathology

Fire blight is the most important disease of apple and pear in Kentucky. Symptoms are often not observed until late spring or early summer; however, initial infections occur at bloom. The pathogen survives winter in dead, dying, and diseased wood and in cankers. Removal of these pathogen sources can reduce spread of fire blight and should be completed in late winter while the pathogen is dormant.

Figure 1. Apple flower clusters infected with fire blight.

Photo: Nicole Ward Gauthier, University of Kentucky

Fire Blight Facts

- Early symptoms include wilt of flower cluster and blossom death (Figure 1). Disease spreads to shoots or branches where tips wilt and rapidly die (blight) to form a characteristic ‘shepherd’s crook’ (Figure 2). Dark brown, sunken cankers (stem lesions) develop and expand to girdle branches, resulting in branch death (Figure 3).
- Potential hosts include apples, pears, and several landscape woody ornamentals in the rose family.
- Primary infection occurs at bloom and may continue through petal fall or until shoot elongation ends.
- Rainy conditions, periods of high humidity, and temperatures between 65-70°F favor disease development.
- Caused by the bacteria *Erwinia amylovora*.
- Bacterial cells overwinter in dead, dying, and diseased wood.

Figure 2. Rapid shoot death from fire blight may result in a ‘shepherd’s crook’ appearance.

Photo: Nicole Ward Gauthier, University of Kentucky

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Management Options

- Select varieties that are tolerant or resistant to fire blight.
- Maintain plant health with proper nutrition and irrigation practices.
- Prune to increase air flow through the plant canopy.
- Remove infected plant tissues during winter when plants and pathogens are dormant. Do not prune when trees are wet. Burn, bury, or otherwise dispose of diseased material.
- Bactericides should be applied preventatively. Once infection occurs, sprays are not effective. Homeowners can apply copper during dormancy to reduce overwintering inoculum. Additional bactericides available for commercial growers are presented in the *Midwest Fruit Pest Management Guide* (ID-232). Always follow label directions when utilizing bactericides.
- Fire blight risk throughout the season can be determined by disease development models. Visit the UK Ag Weather Center site for additional information (http://weather.uky.edu/php/fire_blight.php)

Figure 3. Dark brown, shrunken cankers develop and expand to girdle branches.

Photo: Nicole Ward Gauthier, University of Kentucky

Additional Information

- Fire Blight (PPFS-FR-T-12)
  http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-FR-T-12.pdf
- Fruit, Orchard, and Vineyard Sanitation (PPFS-GEN-05)
  http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-GEN-05.pdf
- Backyard Apple Disease Management Using Cultural Practices (with Low Spray, No Spray & Organic Options) (PPFS-FR-T-21)
  http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-FR-T-21.pdf
- Simplified Backyard Apple Spray Guides (PPFS-FR-T-18)
  http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-FR-T-18.pdf
- Disease and Insect Control Programs for Homegrown Fruit in Kentucky including Organic Alternatives (ID-21)
  http://www2.ca.uky.edu/agc/pubs/id/id21/id21.pdf

Commercial Midwest Fruit Pest Management Guide (ID232)
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/ID-232.pdf

Biochar as a component of soilless substrate

Zenaida Viloria, Extension Associate, Nursery Crops
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Soilless substrates are commonly used in container horticulture. In greenhouse production, the addition of amendments is essential to improve the physical and chemical properties of soilless substrates. Vermiculite, perlite, pine bark and peat moss are common components of soilless substrate, however the substitution of the latter for other organic sources is of great interest owing to environmental concerns and costs. In fact, interest in biochar as a peatmoss substitute has increased in the last decade.

Biochar is a charcoal-like product resulting from burning biomass through a pyrolysis procedure. Pyrolysis is a procedure to slowly burn biomass material at 250 -800^{o} C in an oxygen limited environment. Agricultural by products and waste, forest residues, and urban green can be utilized as feedstocks. Biochar is manufactured for soil amendment purposes, whereas charcoal is a fuel.

Biochar is carbon-rich, porous, and light weight material, with high cation exchange capacity and low bulk density. It is recalcitrant, it takes hundreds of years to decompose, which makes the substrate more stable. In addition, this organic matter lacks of weed seeds and any plant pathogen inoculum due to incinerating conditions during pyrolysis. Feedstock sources and combustion technique conditions determine in large extend the final biochar properties.

Biochar amended substrates gain high water holding capacity, aeration, and soil fertility. The values of pH usually increase, as well as the rhizosphere microbial communities. The improvement of these physical, chemical and biological substrate properties promotes higher yield and plant growth, enhanced disease and drought tolerances. Biochar is ecofriendly, it not only sequesters carbon from atmosphere but also reduces water use and nutrient leach. It also removes organic and metal contaminants.

Biochar has been studied worldwide as a component of soilless substrate for vegetables ornamental shrubs and trees. Some inconsistent results have been reported that might be related with the biomass sources, pyrolysis techniques, biochar proportions, crops and types of substrate. It is likely that more research is needed to fine-tune the use of biochar supplement for soilless substrates. It is important to highlight that the market offers a large brand-name variety of biochars either pure or mix for horticulture use. Following label directions is recommended for better results.

Additional information

Ramlow, M., CMH Keske and MF Cotrufo. Biochar in Colorado.
http://extension.colostate.edu/docs/pubs/crops/00509.pdf

Mylavarapu, R., V. Nair and k. Morgan. An introduction to biochars and their uses in agriculture
http://edis.ifas.ufl.edu/pdffiles/SS/SS58500.pdf

The University of Kentucky's **Nursery Crop Extension Research Team** is based out of two locations across the bluegrass to better serve our producers.

The **University of Kentucky Research and Education Center (UKREC)** in **Princeton** serves western Kentucky producers while our facilities and personnel on main campus in **Lexington** serve central and eastern Kentucky producers.

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