

Kentucky Nursery LISTSERV Bulletin

University of Kentucky Nursery Crops Team

End of July 2017

Summer Halfway Over

Average temperatures are expected to be cooler than normal for the first part of August, while the month overall is likely to be warmer than normal.

Precipitation chances are higher than average for the month of August, especially in the later parts of the month.

The three month outlook shows consistently higher than average temperatures through October.

See [UKAg Weather's Long Range Outlooks](#) for a variety of forecasts of temperature and precipitation probabilities.

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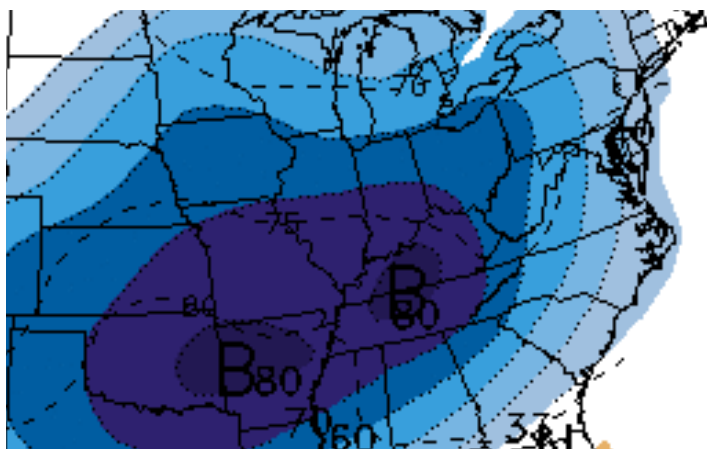
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Temp Probability, Aug 5—Aug 9, 2017
Image: NOAA Climate.gov, July 30, 2017

- **Apple Scab Picking on Kentucky Apple and Crabapple**
- **What To Do With Our Used Plant Pots?**

Apple Scab Picking on Kentucky Apple and Crabapple Trees

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

Apple scab is the most consistently serious disease of homegrown apple and flowering crabapple in Kentucky. The most noticeable losses on apple result from reduced fruit quality and from premature drop of infected fruit. Scab also causes a general weakening of the host when leaves are shed prematurely. Summer defoliation of flowering crabapple due to scab invariably results in fewer flowers the next spring. Resistant cultivars and fungicides are available; however, sanitation is a critical step in prevention and management.



Figure 1. Scab lesions initially have indefinite, feathery margins.

Photo: Kim Leonberger University of Kentucky

Apple Scab Facts

- Leaf symptoms begin as olive-green to brown spots (lesions) with indefinite, feathery margins (Figure 1) on upper and/or lower surfaces. As disease progresses, lesions become more distinct, develop a greenish-black, velvety growth, and then thicken, and bulge upward (Figure 2).
- Infected fruit develop symptoms similar to those on leaves. Older lesions turn dark brown to black, develop a corky ("scabby") appearance, and frequently become cracked as fruit enlarge (Figure 3). If infections occur on young fruit, uneven growth near "scabs" may cause fruit to be deformed.
- Heavily infected leaves and fruit may drop prematurely.
- Hosts include apple, crabapple, hawthorn, and mountain ash.
- Primary infection occurs during periods of continuous leaf wetness from bud break until 2 to 4 weeks after petal fall.
- Subsequent infections result from a second spore type (conidia) that are produced in lesions throughout the remainder of the season.



Figure 2. Older foliar lesions become more distinct, develop a greenish-black, velvety growth, and then thicken and bulge up.

Photo: Kim Leonberger, University of Kentucky

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Apple Scab Facts continued...

- Caused by the fungus *Venturia inaequalis*.
- The apple scab fungus overwinters in fallen leaves.

Management Options

- Select varieties that are tolerant or resistant to apple scab.
- Prune trees to improve air circulation.
- Maintain plant health with proper nutrition and irrigation practices.
- Destroy fallen leaves and fruit by burning or burying. Commercial orchards can mow or apply nitrogen to aid in breakdown of leaf tissues.
- Apple scab 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/cgi-bin/kyc_AS_predict.pl)
- Homeowners may apply fungicides containing copper, mancozeb, sulfur, or captan. Preventative application should begin at green tip (typically late March) and continue until 2 to 4 weeks after petal fall. Fungicides can also be used to treat infections after they occur (Note that fungicides are less effective when used in this manner). For additional information on homeowner management of apple scab using fungicides please see *Backyard Apple Disease & Pest Management Using Cultural Practices (with Low Spray, No Spray & Organic Options)* ([PPFS-FR-T-21](#)).
- Commercial growers should refer to *Midwest Fruit Pest Management Guide* ([ID-232](#)) for recommended fungicides.



Figure 3. Older fruit lesions turn dark brown to black, develop a corky ("scabby") appearance and frequently become cracked as fruit enlarge.

Photo: Kim Leonberger University of Kentucky

Additional Information

- Apple Scab ([PPFS-FR-T-13](#))
- Fruit, Orchard, and Vineyard Sanitation (PPFS-GEN-05)
- Backyard Apple Disease Management Using Cultural Practices (with Low Spray, No Spray & Organic Options) ([PPFS-FR-T-21](#))
- Simplified Backyard Apple Spray Guides ([PPFS-FR-T-18](#))
- Disease and Insect Control Programs for Homegrown Fruit in Kentucky including Organic Alternatives ([ID-21](#))
- Commercial Midwest Fruit Pest Management Guide ([ID-232](#))

What do we do with our used plant pots?

Zenaida Vilorio, Extension Associate, Nursery Crops
Win Dunwell, Extension Professor, Horticulture

It is likely we currently have large piles of plastic plant pots, flats and trays somewhere in our houses, nurseries, garden centers and landscape businesses after spring and summer planting. We can reuse, recycle, or send them to landfills, the latter being the most common fate. Some plastic containers are incinerated with garbage, emitting highly toxic compounds such as hydrogen chloride, dioxins and heavy metals, which are very dangerous to human health and environment and not recommended. Plastic containers are made of resins from petroleum and natural gas, which make the product recalcitrant and non-biodegradable. It takes a very long time (100-1000 years) for them to degrade. However, there are some petroleum-based plastics manufactured from polylactic acid that are biodegradable.

The estimated quantity of plastic containers used in ornamental plant production for 2013 reached 1.66 billion pounds, most of this plastic is landfilled. This plastic waste impacts negatively horticulture sustainability and increases waste management costs. Developing bioplastic containers or biocontainers made from renewable biomass feedstock has been one of the targets to improve the horticulture sustainability worldwide (see additional information). Some of these containers are already in the market. Nonetheless, it is necessary to evaluate durability, water loss and water use efficiency as well as biodegradation and transportation efficiency and pollutant residues. Methane and carbon dioxide are released when bioplastic degrade, therefore pollution residues are still a concern. No doubt, biocontainers, slowly but surely, are replacing plastic containers in the green industry, however there are still issues that must be solved for the nursery crop industry totally replaces the plastic container. For the foreseeable future, plastic containers are a very important component of the green industry.

To contribute to nursery crop industry sustainability, plastic containers must be recycled and reused. Resin type (Figure 1) determines the recycling process. The HDPE # 2, LDPE # 4 , PP #5 and PS #6 resins are commonly used in greenhouse and nursery industries. Unfortunately, recycling centers do not take all types of plastic, so where should we take the pots when most of the recycling centers take plastic #1 and #2? Some big-box stores have recycling programs for plant pots, trays and tags. Likewise, some garden centers and nursery growers receive used pots, and then forward them to recycling centers. The authors do not know of other nurseries and garden centers in Kentucky accept returned plant containers other than their own sales; you should ask your local supplier. There are businesses dedicated to recycle plastic used in horticulture (click following links), with pickup service to growers across the USA.

1	2	3	4	5	6	7
PETE	HDPE	PVC	LDPE	PP	PS	OTHER
Polyethylene Terephthalate	High-Density Polyethylene	Polyvinyl Chloride	Low-Density Polyethylene	Polypropylene	Polystyrene	Other
	Blow-molded containers (1-65 gallon), irrigation pipes, pesticide and herbicide containers			Decorative containers, injection-molded flats, plug trays, hanging baskets	Seedling containers, leading plant packs and flats, plug tray, square and trays, transport trays	

Figure 1. Resin types, recycling codes and common plant containers manufactured with HDPE, PP, and PS.

<http://havalandplastics.com/about-2/recycling/>

<http://www.eastjordanplastics.com/recycling-program>

<http://www.landmarkplastic.com/RecyclingProgram>

<http://www.plasticsmarkets.org/plastics/index.html>

<http://www.plasticsrecycling.org/markets/buyers-and-sellers>

Nevertheless, pots must be cleaned from plant and substrate debris and sorted per recycling code. They should be stacked, palletized and stored in a clean place until pickup. When possible recycle rather than send your used plastic containers to the landfills, let's make our industry more sustainable.

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Additional Information

- AG Container Recycling Council (ACRC) 2015 Fact Sheet <http://www.acrecycle.org/userfiles/files/Fact%20Sheet%20About%20the%20ACRC%202015.pdf>
- Cypher, Q. and A. Fulcher, Beyond plastic pots. <https://extension.tennessee.edu/publications/Documents/W337-A.pdf>
- Knox, G.W. and M. Chappell. 2014. Alternatives to petroleum-based containers for nursery industry. <http://edis.ifas.ufl.edu/pdffiles/EP/EP45400.pdf>
- Nambuthiri S., R. Schnelle, A. Fulcher, R. Geneve, A. Koeser, S. Verlinden and R. Conneway. 2013. Alternative containers for a sustainable greenhouse and nursery crop production. University of kentucky, Cooperative Extension Service. Hort Fact-6000. <http://www.uky.edu/hort/sites/www.uky.edu.hort/files/documents/alternativecontainers.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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