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Brett Wolff, Editor
Christy Cassady, Editor/Designer

Clean up high tunnels now to reduce veggie disease next year

*By Emily Pfeufer, Extension Plant Pathologist,
and Kim Leonberger, Extension Associate*

Numerous important diseases of vegetables can overwinter more effectively in protected environments like greenhouses and high tunnels, as compared to field environments. These include foliar diseases like leaf mold, gray mold and powdery mildews. In addition, soilborne diseases, like root knot nematode and vascular wilts, can also persist easily in greenhouse soils.

Foliar Disease Cleanup Tips

Fungal diseases

To reduce pressure from foliar fungal diseases in greenhouses, remove all debris from this cropping season soon after harvests are complete. This includes leaves, stems, root systems and any fallen produce. Some growers have adopted the use of landscape fabric as mulch in both cropping areas and walkways because debris can quickly be swept out of the greenhouse during the season. Crop debris should be disposed of at least 500 feet from any future cropping site, or alternatively, could be burned or thrown in the trash.

Bacterial diseases

If the crop has had a foliar bacterial disease, such as bacterial spot (Figure 1), speck, or canker on tomato, destroy or sanitize trellis materials well to reduce pathogen carryover. Wooden stakes do not

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Coming up

Nov. 1 - Organic Marketing for All, 9 a.m.-noon EDT, Bourbon County Extension Office, Paris, KY. [Click here](#) for details.

Nov. 2 - Year-round High Tunnel Production, 1-4 p.m. CDT, at Magney Legacy Ridge Farm, Princeton, KY. For details, [click here](#).

Nov. 3 - Crop Planning Workshop, 1 to 5 p.m. EDT, at Hindman Settlement School, 71 Center Street, Hindman, KY 41811. [Click here](#) for more information.

Nov. 6 - Field to Consumer: Food Safety and Quality, 1-4 p.m. EST, at the University of Kentucky Organic Farming Unit, Lexington. To register, [click here](#).

Nov. 8 - KY Produce Grower-Buyer MeetUp, KSU Farm, Frankfort, KY. See **Page 4** for details.



efficiently sanitize, so those should be replaced from any section of the crop that was affected (also true for some viral diseases). Metal trellis materials can be sanitized in 10% household bleach (1 part bleach to 9 parts water). Greenhouse posts and beams should also be sanitized with 10% bleach or greenhouse sanitization products. Whenever metal materials are cleaned with bleach, follow soon after with a fresh water rinse to prevent corrosion.



Figure 1: Symptoms of bacterial spot on tomato. (Photo by Kenny Seebold, UK)



Figure 2: Sclerotia may vary in appearance. These structures are tan-to-reddish brown spherical structures for southern blight of tomato (left). The sclerotia of timber rot are irregular-to-cylindrical and black in appearance (right). (Photos by Kenny Seebold, UK)

Stem and Soilborne Disease Cleanup Tips

To reduce pressure from soil-associated diseases, plant roots should also be pulled up and exposed to dry air conditions, then carried out and burned or trashed. Avoid dropping materials as the debris is removed from the greenhouse. This is particularly helpful for growers with histories of root knot nematode, Fusarium wilt or Verticillium wilt. Resistance to each of these specific diseases is available in commercial production varieties, and is recommended every season after one of these diseases is diagnosed. If a soilborne issue has arisen this past season, consider replacing the mulch to avoid carrying over or spreading the causal pathogens.

For plantings that have had pressure from southern blight or timber rot, carefully pull plants and attempt to remove as many fungal sclerotia as possible from the cropping area. Sclerotia are overwintering bodies of the fungus that will serve as sources of disease during the next cropping cycle (Figure 2). Deeply tilling any remnants of plant debris after crop removal will further bury

disease-causing organisms.

If greenhouse space and vegetable market considerations permit, start planning your greenhouse rotations now. While rotation generally provides minor benefits for veggie foliar disease management, it can be extremely valuable to reducing or containing soilborne diseases in greenhouses. Rotate out of a susceptible crop in an affected area for at least two seasons; longer rotations are even more effective at reducing disease pressure.

Additional Resources

- IPM Scouting Guide for Common Problems of High Tunnel and Greenhouse Vegetable Crops in Kentucky ([ID-235](#))
- Managing Greenhouse & High Tunnel Environments to Reduce Plant Diseases ([PPFS-GH-01](#))
- Root-knot Nematode in Commercial & Residential Crops ([PPFS-GEN-10](#))
- Greenhouse Sanitation ([PPFS-GH-04](#))
- Bacterial Canker of Tomato ([PPFS-VG-06](#))
- Bacterial Spot of Pepper & Tomato ([PPFS-VG-17](#))
- Southern Blight ([PPFS-GEN-16](#))
- Vegetable Cultivars for Kentucky Gardens ([ID-133](#))

Updated CCD resources include herb marketing publication

Be sure to take a look at recently updated resources on the Center for Crop Diversification (CCD) website. You'll find updated crop profiles on [Ornamental Grasses](#) (CCD-CP-73) and [Winter Squash](#) (CCD-CP-126). You'll also find an updated

version of our marketing profile [Selected Internet Resources for Herb Marketing](#) (CCD-MP-24). Look for these and many other profiles, fact sheets, budgets, price reports and more on the CCD website at <http://www.uky.edu/ccd/>.

Fruit, orchard, vineyard sanitation

Cleaning up plantings today may keep disease away

By Kimberly Leonberger, Extension Associate, and
Nicole Ward Gauthier, Extension Plant Pathologist

Autumn has arrived in Kentucky, and it is time to focus on fruit, orchard and vineyard sanitation.



Figure 1: Cankers can provide an overwintering site for plant pathogens. (Photo: Nicole Ward Gauthier, UK)

Good sanitation practices can help reduce disease-causing pathogens. These organisms can survive for months or years on dead plant material or in soil, causing infections in subsequent years. Elimination of disease-causing organisms reduces the need for fungicides and can improve the effectiveness of disease management practices.

Following these sanitation practices both in autumn and throughout the growing season can reduce disease pressure in home and commercial fruit plantings.

Sanitation Practices

- Remove diseased plant tissues from infected plants
 - Prune cankers (Figure 1) by making cuts well below visible symptoms. Clean tools between each cut with a sanitizer, such as rubbing alcohol or household bleach.
 - Rake and remove fallen buds, flowers, fruit, twigs and leaves (Figure 2).
- Collect all fruit from trees, bushes and vines. Discard diseased fruit since it can serve as a source of inoculum in subsequent growing seasons (Figure 3).
- Above and below ground portions of severely infected trees, bushes and vines should be completely removed and destroyed.
- All discarded plant material should be burned,



Figure 2: Debris is a major source of infective propagules. Gather and discard fallen buds, flowers, fruit, twigs and leaves. (Photo: Kim Leonberger, UK)

buried or removed with yard waste. Do not compost diseased plant material.

- Remove weeds, including roots, which may serve as alternate hosts for pathogens.
- When treating infected plants with fungicides, remove infected tissues prior to application.

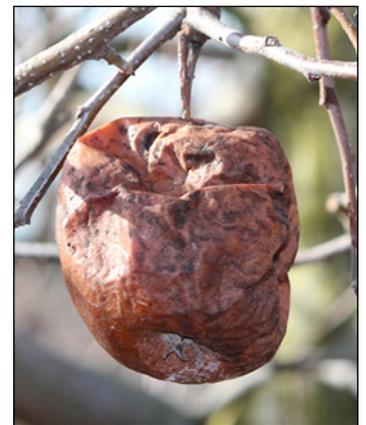


Figure 3: Diseased fruit, whether on the ground or attached to the tree, can serve as a source of inoculum during the current and future growing seasons. (Photo: Nicole Ward Gauthier, UK)

Additional Information

- Fruit, Orchard, and Vineyard Sanitation (PPFS-GEN-05), <http://plantpathology.ca.uky.edu/files/ppfs-gen-05.pdf>
- Plant Pathology Publications, <http://plantpathology.ca.uky.edu/extension/publications>

Event offers KY growers chance to meet variety of buyers

From the Kentucky Horticulture Council

Opportunities for selling Kentucky-grown produce are increasing, and finding the best buyer match is important for a profitable relationship. A produce Grower-Buyer MeetUp scheduled for November 8th in Frankfort will be the single largest event bringing together buyers and growers, and is co-hosted for the second year by the Kentucky Vegetable Growers Association, the Kentucky Department of Agriculture and the Kentucky Horticulture Council.

Produce buyers include chefs, retail and distribution representatives. At the first annual event last year, 34 buyers represented Kroger, Walmart, Houchens, AWG, Whole Foods, Good Foods Co-op, and other distributors who reach all levels of grocery outlets.

The event will be held at the Kentucky State University Harold R. Benson Research and Demonstration Farm, 1525 Mills Lane, Frankfort, KY 40601. Check-in begins at 8:30 a.m. This **FREE** event begins promptly at 9 a.m. with buyer introductions.

This year, you will have a chance to meet one-on-one in a “speed date” format to exchange contact information and match up products and

GROWER BUYER MEETUP

KSU Benson Research & Demonstration Farm
1525 Mills Lane
Frankfort, KY 40601
Check-in: 8:30am ET
You MUST Pre-Register

Thursday
11
08
18

Connecting Growers and Buyers of Horticultural Products

Presented by: Kentucky Horticulture Council, Kentucky Proud, KY Vegetable Growers Association

needs with key buyers. Face-to-face meetings with experts in food safety, organic production and marketing will also be offered. A farm tour will be available following the event. The agenda is available at <http://kyhortcouncil.org/wp-content/uploads/2018/10/GBM-Agenda.pdf>. Registration is required. To register, go to <https://www.eventbrite.com/e/ky-produce-grower-buyer-meet-up-tickets-50533080805>.

Apply to KY hemp program by Nov. 30

From the Kentucky Department of Agriculture

The Kentucky Department of Agriculture (KDA) has opened the application period for Kentuckians wishing to participate in the state’s industrial hemp research pilot program for the 2019 growing season.

In 2018, Kentucky’s farmers planted 6,700 acres of hemp, up from 3,200 acres in 2017. Applications may be downloaded from the KDA website at kyagr.com/hemp.

Grower applications must be postmarked or received by November 30th, 2018, at 4:30 p.m. EST. Processor/Handler applications are preferred by November 30th, 2018, with a final deadline of June 3rd, 2019.

KY Small Farm Conference set for Nov. 13-15 in Frankfort

The Kentucky Small, Limited Resource, Minority Farmers Conference will be held November 13th through 15th at Kentucky State University, the KSU Harold R. Benson Research and Demonstration Farm, and the Capital Plaza Hotel in Frankfort.

The conference will be held in conjunction with KSU’s Third Thursday Thing on November 15th. The topic for the Third Thursday program will be AgrAbility and Nutrition and Fitness for the Active Farmer.

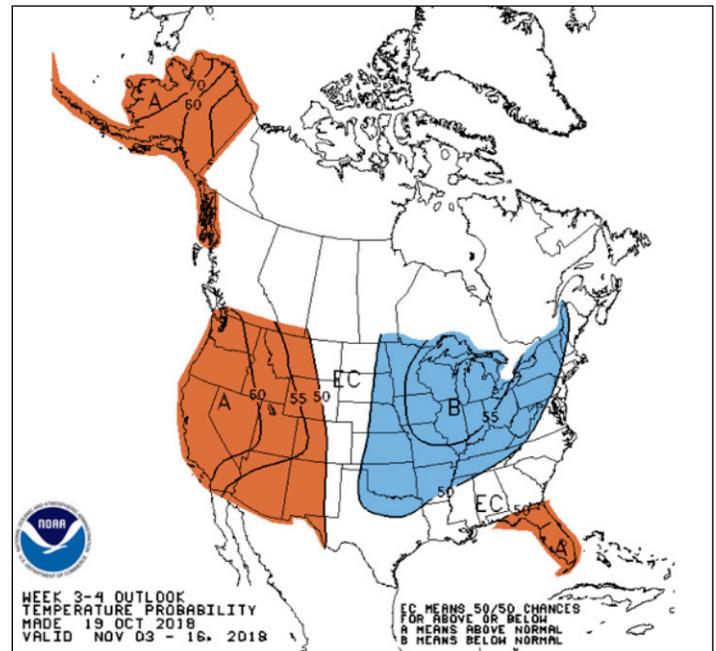
For more information and to register for the conference, contact Shelley Spiggle at 502-597-6325 or shelley.spiggle@kysu.edu.

Cooler and wetter than average start to November

By Joshua Knight, Senior Extension Associate, Horticulture

Fall weather is definitely here. Though October started with temperatures still reaching the upper 80s during the day, the last half of the month has been colder than average with high winds bringing freeze warnings across the central part of the Commonwealth. This trend of cooler than average temperatures is expected to remain at least through mid-November with a higher chance of above average precipitation for the first few weeks of November.

Looking ahead, as of mid-October the National Weather Service's Climate Prediction Center predicted an El Niño pattern forming over the next few months and continuing through the winter of 2018-2019. This would result in cool, wet weather to our south and milder, drier weather to our north and west as well as a reduced likelihood of a polar vortex moving into the region in late winter. Regardless of these long-range forecasts that are subject to change, overwintering strategies for



perennial plants should be implemented and the continuous monitoring of high tunnel temperatures during the coming weeks will be critical. This is especially true on cold, clear days with lots of sun.

KCARD offering grant workshops in November and December

From the Kentucky Center for Agriculture and Rural Development (KCARD)

KCARD's Agribusiness Grant Facilitation Program will be hosting five grant workshops this season. The workshops will cover a broad range of funding opportunities for farmers, agribusinesses and non-profits that support agriculture in Kentucky.

Each workshop will offer speakers who work directly with national and state funding programs. The workshops will cover programs offered by USDA Rural Development, KDA, Governor's Office of Agricultural Policy, Kentucky State University, University of Kentucky, and more.

Franklin County, Nov. 7, 8:30 a.m.-3:30 p.m.
KY State University Research Farm
1525 Mills Lane, Frankfort, KY 40601
[Register Here!](#)

Logan County, Dec. 5, 2018, 8:30 a.m.-3:30 p.m.
Logan County Cooperative Extension Office
255 John Paul Road, Russellville, KY 42276
[Register Here!](#)

Kenton County, Dec. 11, 2018, 4:30 p.m.-8:30 p.m.
Kenton County Cooperative Extension Office
10990 Marshall Rd, Covington, KY 41015
[Register Here!](#)

Rowan County, Dec. 12, 4:30 p.m.-8:30 p.m.
Morehead St. University Farm, Livestock Arena Classroom
25 MSU Farm Drive, Morehead, KY 40351
[Register Here!](#)

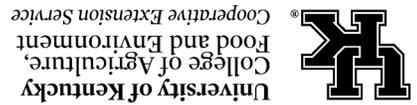
Knox County, Dec. 18, 4:30 p.m.-8:30 p.m.
Knox County Cooperative Extension Office
215 Treuhaff Boulevard, Suite 7, Barbourville, KY 40906
[Register Here!](#)

Thanks for reading!

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Christy Cassady

Christy Cassady, Extension Specialist



University of Kentucky
College of Agriculture,
Food and Environment,
Cooperative Extension Service

Department of Horticulture
N-318 Agricultural Science Center
Lexington, KY, 40546-0091