



Successful Gardening through Extension

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Dealing with Tomato Diseases

Summer is the time of year when the days are getting longer, hotter and more humid. One of the most flavorful treats of summer is the sun-warmed tomato. To help ensure success, I will be describing two of the seasons' most common diseases: Early blight and septoria leaf spot.

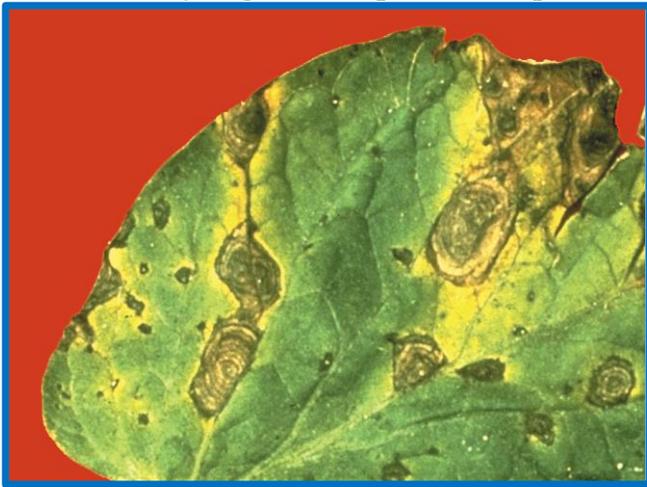


Figure 1. Early blight on tomato leaf. Photo by R. C. Lambe. VCE Publication 450-708

Early blight (Figure 1) is caused by the fungus *Alteraria solani* and is seen commonly throughout Virginia during summer. Tomatoes can be attacked by Early blight at all stages of development and throughout the growing season. The pathogen causes irregular, black to brown leaf spots on leaves that range in size up to a half-inch in diameter. Upon closer inspection of the leaf spots, concentric rings can be seen within the spot that resemble a target or bulls eye. The spots can merge to kill portions of the leaf and lead to the leaves falling off the plant. The spots appear initially on the lower leaves near the base of the plant. The spread of the disease can be rapid during humid, wet

weather, spreading from infected leaves to the luscious new growth. Dark, leathery lesions may also appear on the stem end of the fruit. The infected fruit can rot and eventually fall to the ground. The fungus can survive for up to a year in the soil and plant debris.

Septoria leaf spot (Figure 2) is caused by the fungus *Septoria lycopersici* and is characterized by circular spots that are spread randomly across the leaf surface with grey centers. Under humid conditions, the spots may have round black fruiting bodies when viewed with a hand lens. Lower leaves are affected first and the disease can rapidly spread up the plants resulting in the leaves becoming chlorotic (yellow) and drying out. The loss of leaves can result in lower fruit quality and yield.

The incidence of both diseases can be reduced by cleaning and destroying plant material at the end of the growing season. Crop rotation can also help; this is the practice of planting tomatoes

in a different area of the garden every other year. The garden from the previous year can be left fallow or planted with plants not in the tomato family like beans or squash. Removal of the lower leaves is also a good practice to control septoria leaf blight. Avoidance of overhead watering, watering in the early morning, and giving at least a spacing of 3 feet between plants will increase air circulation and help reduce humidity. Tomato cultivars resistant to Early blight have the letters (As) listed after the cultivar name. There are currently no cultivars resistant to septoria leaf spot. Chemical control options are available and can be found in the *2016 Pest Management Guide Home Grounds and Animals*, VCE Publication ENTO-69P.

For more information, please view the following articles or contact your local Extension Office:

- *2016 Pest Management Guide Home Grounds and Animals*, VCE Publication ENTO-69P. 2016. <http://pubs.ext.vt.edu/456/456-018/456-018-15-Home-grounds-and-animals.pdf>.
- Hansen, Mary Ann. *Early Blight of Tomatoes*. 2009. <http://pubs.ext.vt.edu/450/450-708/450-708.html>.
- Relf, Diane; A. McDaniel; R. Morse; J. Freeborn. *Tomatoes*, VCE Publication 426-418. https://pubs.ext.vt.edu/426/426-418/426-418_pdf.pdf.
- Straw, Allen. *Common Vegetable Diseases*. 2015. https://pubs.ext.vt.edu/426/426-363/426-363_pdf.pdf.
- Williamson, Joey. *Tomato Diseases & Disorders*, Clemson Cooperative Extension Publication HGIC 2217. <http://www.clemson.edu/extension/hgic/pests/pdf/hgic2217.pdf>.



Figure 2. Septoria leaf blight on tomato plant. Photo by Shawn Appling

Composting

Compost can be made from a variety of sources; including leaves, grass clippings, twigs, corn stalks, and kitchen waste such as vegetable and fruit peelings, coffee grounds, and crushed egg shells. Compost has many benefits in the garden. Including improved soil structure; reduced soil erosion; food for earthworms, soil insects, and microbes; improved nutrient retention in the soil; reduced leaching of fertilizers into the ground water and waterways; and helps reduce the amount of plant materials that are placed in landfills.

The compost pile can be simply placed on the ground or placed in a more permanent structure such as bins made from wood, concrete blocks, chicken wire, and many other materials. Some gardeners even build individual bins for each step in the composting process (Figure 3). Compost piles should be at least 3 feet by 3 feet by 3 feet to ensure sufficient heat for the



Figure 3. Example of individual bins. VCE Publication HORT-49P.

composting process. Locate your compost pile on a well-drained site and build your pile in layers. Tips for successful compost include:

- good aeration and drainage
- adding a nitrogen source such as organic fertilizer (blood meal or cottonseed meal), fresh manure, or kitchen waste
- moistening the pile as you add the dry layers
- once a month turning the pile, mixing thoroughly to ensure good decomposition

Following this recipe, should lead to a rich, black compost that can be used in flower and vegetable beds within four to five months.

For more information, view the following articles or contact your local Extension Office:

- Rishell, Ed. *Backyard Composting*, VCE Publication HORT-49P. 2013. <https://pubs.ext.vt.edu/HORT/HORT-49/HORT-49-PDF.pdf>
- Rishell, Ed. *Making Compost from Yard Waste*, VCE Publication 426-703. 2012. http://pubs.ext.vt.edu/426/426-703/426-703_pdf.pdf

Controlling Powdery Mildew on Ornamentals

Powdery mildew is caused by a number of different fungi belonging to the family, *Erysiphaceae*. Some powdery mildew fungi can infect a wide range of host plants but some are more specific infecting just a few select species.

Commonly infected plants in Virginia include crabapple, crape myrtle, dogwood, Japanese euonymus, lilac, photinia, and rose. Affected plant parts have a white, talcum powder appearance on new and old growth. Leaves, stems, and young shoots may also be dwarfed and curled. Powdery mildew is most commonly seen on warm, dry days that are followed by cool nights. As the temperature drops at night the humidity rises giving the spores the moisture required to germinate and infect the plant. Under the conditions described above, new lesions can form on infected leaves within three to five days.



Figure 4. Powdery Mildew on rose flower bud and leaves. Photo by R. C. Lambe, VCE Publication 450-603.

There are both cultural and chemical control options available to homeowners. Cultural control options include reducing humidity by pruning to increase air circulation and reducing shading of branches. The removal of all plant debris at the end of the growing season can help reduce the amount of powdery mildew fungi that can overwinter under susceptible plants. Cultivars that are resistant to powdery mildew can be found for a number of plant species. More information

can be found in the Alabama Cooperative Extension Publication ANR-407, *Controlling Powdery Mildew on Ornamentals*. Fungicides are also available that can be applied during periods of active plant growth that can provide effective control, please consult the *2016 Pest Management Guide Home Grounds and Animals*, VCE Publication ENTO-69P.

For more information, view the following articles or contact your local Extension Office:

- *2016 Pest Management Guide Home Grounds and Animals*. VCE Publication ENTO-69P. 2016. <http://pubs.ext.vt.edu/456/456-018/456-018-15-Home-grounds-and-animals.pdf>.
- Hagan, Austin; Jackie Mullins. *Controlling Powdery Mildew on Ornamentals*, Alabama Cooperative Extension Publication ANR-407. 2000. <http://www.aces.edu/pubs/docs/A/ANR-0407/ANR-0407.pdf>.
- Hansen, Mary Ann. *Powdery Mildew of Ornamental Plants*, VCE Publication 450-603. 2009. https://pubs.ext.vt.edu/450/450-603/450-603_pdf.pdf.

Exciting Plants: *Franklinia alatamaha*

Franklinia alatamaha, known by its common names Franklinia or Franklin tree, is a plant in the family *Theaceae*; this family includes the *Camellias*, *Gordonias*, and *Stewartias*. The Franklin tree has one of the most interesting back stories of any Native American plant. The story usually begins along the banks of the Altamaha river in Georgia, between the years 1765 to 1770 depending on



Figure 5. Flower of *Franklinia alatamaha*. Photo courtesy of Sandy Feather. Penn State Extension.

the account you are reading. During that time span, the plant explorers John and William Bartram found the Franklin tree growing wild along the river bank. They did not return to collect seeds until 1776; which they later planted at their farm in Philadelphia. Supposedly all plants found in gardens today are descended from those seedlings because no one has seen this beautiful tree in the wild since the early 19th century. Many experts believe that a cotton disease was responsible for the extinction of the species. The Franklin tree does have a reputation as a temperamental species because of its low transplant success rate but it is species that is worthy of specimen status. Dr. Michael Dirr describes this

sentiment very eloquently in his book *Manual of Woody Landscape Plants* mentioning the specimen status “if one is so fortunate to procure this species he/she should provide it a place of prominence in the garden” and the temperamental nature “somewhat akin to a fickle lover and may stay around and tease with its beauty, or simply leave... the garden that is”. The flowers are white and three inches in diameter (Figure 5); resembling the fall blooming *Camellia sasanqua* but are commonly seen in August and September in Virginia. The flowers are surrounded by five to six-inch-long shiny, dark green leaves; that are arranged alternately along the stem. In the fall the leaves are a brilliant red-orange color before falling to the ground. The bark is a smooth, grey brown with vertical fissures; that assume a slight fluted appearance with age. The tree is a small to medium sized plant that usually reaches 10 to 20 feet high and wide in a full to partial sun location. Definitely a tree that deserves more usage in the modern landscape.

For more information, please view the following articles or books

- Dirr, Michael. “*Franklinia alatamaha*.” *Manual of Woody Landscape Plants*. Champaign, Illinois: Stipes Publishing, 1998. 390-391. Print
- Feather, Sandy. *Tree of the Month - Franklinia or Franklin Tree (Franklinia alatamaha)*. Penn State Extension. 2012. <http://extension.psu.edu/plants/green-industry/news/2012/tree-of-the-month-franklinia-or-franklin-tree-franklinia-alatamaha>. Assessed 18 August 2016.
- Niemiera, Alex. *Franklinia*. VCE 3010-1485. 2010. https://pubs.ext.vt.edu/3010/3010-1485/3010-1485_pdf.pdf.

Events of Interest

- **Rapidan River Master Gardener Association with Virginia Cooperative Extension present “From Your Backyard to The Blue Ridge” on September 17th**: The Market at Grelen, Somerset, VA. For more information, please contact the Culpeper Extension Office at (540) 727-3435
- **Virginia Household Water Quality Program 2016 Drinking Water Clinic on September 6th, 28th, and November 2nd**: Greene, Madison, and Orange Counties. For more information, please contact the Madison County Extension Office at (540) 948-6881
- **Virginia Pesticide Disposal Program on October 10th**: Orange Madison Coop, 13323 James Madison Highway, Orange, VA 22903. For more information, please contact the Culpeper Extension Office at (540) 727-3435 or the Orange Extension Office at (540) 672-1361
- **Virginia Pesticide Disposal Program on October 12th**: CFC Farm and Home Center, 15172 Brandy Road, Culpeper, VA 22701. For more information, please contact the Culpeper Extension Office at (540) 727-3435



What does a Culpeper senior gardener do when we find it physically challenging to tend a large garden and they still want to grow some fresh vegetables?

They adopt a pot at the community garden located on the property of **CFC Farm and Home center, coordinated by FNP Adult Program assistant Brenda Watkevich**

The picture above is Gladys Williams Director of the Culpeper Senior Center enjoying the garden on a sunny July morning. Photo by Brenda Watkevich

Garden Vegetable Wrap

Ingredients:

- 2 carrots, shredded
- 1 tomato, diced
- 1 small green pepper, chopped
- 2 ounces cheddar cheese, low-fat, shredded
- 1 cup spinach leaves, whole, fresh, chopped
- 4 tortillas, whole wheat 96% fat free
- 2 ounces low calorie cream cheese

Equipment:

- Cutting Board
- Knife
- Toothpicks
- Number of Servings: 4
- Preparation Time: 15 minutes
- Total time: 15 minutes

Directions

1. Wash all vegetables. Use a grater to shred carrots into small pieces. Set aside.
2. Cut tomato in half down through the core. Use a paring knife to cut out the core. Place the tomato cut-side down on the cutting board and cut into 1/4 inch slices. Turn one quarter and cut the tomato again in the other direction to make a large dice. Set aside.
3. Slice off the top of the green pepper to remove the stem. Cut off the bottom and reserve the trimmed ends. Set the pepper up on one end and make one vertical cut to open the pepper. Remove the core, seeds, and membranes. Slice into 1/2 inch strips and then turn and cut into dice. Remove the stem from the top. Chop the useful ends you cut off.
4. Use a grater to shred cheese and set aside. Wash spinach, and remove stems. Set aside.
5. Spread cream cheese over each tortilla. Top with spinach, tomato, carrot and pepper. Top with cheese. Roll up tightly and secure with tooth pick. Can be microwaved or toasted.

For more recipes, please visit:
www.fcs.ext.vt.edu/recipes



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Nutrition Facts

| Serving Size: 1 wrap | |
|-------------------------------|-----------------------------|
| Servings: 4 | |
| Amount Per Serving | |
| Calories 229 | Calories from Fat 54 |
| | %Daily Value* |
| Total Fat 6g | 10% |
| Saturated Fat 3g | Value* |
| Cholesterol 11mg | 4% |
| Potassium 312mg | 9% |
| Sodium 587mg | 24% |
| Total Carbohydrate 35g | 12% |
| Dietary Fiber 4g | 17% |
| Protein 10g | 20% |
| Vitamin A 223% | Vitamin C 63% |
| Iron 11% | Calcium 12% |

*Percent Daily Values are based on a 2,000 calorie diet.

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The U.S. Department of Agriculture (USDA) is an equal opportunity provider and employer. This material is partially funded by USDA's Supplemental Nutrition Assistance Program - SNAP. The Supplemental Nutrition Assistance Program (SNAP) provides nutrition assistance to people with low income. It can help you buy nutritious foods for a better diet. To find out more, contact your county or city Department of Social Services or to locate your county office call toll-free: 1-800-552-3431 (M-F 8:15-5:00, except holidays). By calling your local DSS office, you can get other useful information about services. This material was partially funded by the Expanded Food Nutrition Education Program, USDA, NIFA.

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