Septoria Leaf Spot of Tomato

NC STATE EXTENSION

Vegetable Pathology Factsheets

Pathogen

Septoria leaf spot is caused by the fungus *Septoria lycopersici*. The disease is particularly destructive in seasons of moderate temperature and abundant rainfall, with the ability to reduce tomato yields dramatically.

Host Crops and Plants

This disease primarily affects tomato, although some solanaceous weeds like horsenettle (*Solanum carolinense* L.) are known to be hosts.

Host Parts Affected

Symptoms generally develop on the lower leaves first and then the disease progresses up the plant. Lesions also develop on stems, petioles, and calyx, although fruit are rarely affected.

Identification

Circular, tan to gray, lesions develop on the lower leaves and stems of the plant. Lesions are typically small (<1/8 in), but as lesions become more numerous the entire leaf may become blighted. The lesions generally have a dark-brown perimeter and a yellow halo may develop around the leaf lesions. Small dark spots may appear in the center of the lesion – these are pycnidia, the fruiting body of the fungus where spores are produced. On the underside of the leaves, spots may appear as a darker green color or “water-soaked.” As the disease progresses, traveling from older growth to younger growth, spots may coalesce and the leaves may become entirely blighted. The fruit is rarely infected by this fungus.

Look alike diseases: It can be difficult to distinguish among numerous fungal, foliar leaf spots on tomato. Keep in mind, multiple fungal diseases may be present on a plant making identification even more challenging. Lesions caused by the early blight *[https://content.ces.ncsu.edu/early-blight-of-tomato]*pathogen will be larger and darker brown than Septoria leaf spots and will have concentric rings. Gray leaf spot, caused by species of *Stemphylium*, will be very similar to Septoria leaf spots where they are small, circular, with a tan or light brown center, but the center part of the lesion tends

to crack open or fall out in gray leaf spot lesions. Most hybrid varieties have resistance to gray leaf spot, but many or most heirloom tomatoes do not have resistance, so it may be difficult to distinguish Septoria leaf spots from gray leaf spot on these varieties.

View this brief video *[https://www.youtube.com/watch?v=EueZRKL7uMA&t=4s]* to help you diagnose Septoria leaf spot of tomato!

Septoria leaf spot on tomato leaf.

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Septoria leaf spot on tomato leaf.

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Pycnidia and spores of Septoria lycopersici on tomato leaf.

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Early blight of tomato

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Gray leaf spot on tomato foliage

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Favorable Environmental Conditions for Disease

Areas with high humidity and warm temperatures are most susceptible to this disease. The fungus is known to overwinter on infected tomato debris and solanaceous weed hosts (such as horsenettle). Once an area has become infected, spores are generally spread by rain splash. Water is needed to spread the spores and even workers, equipment, or insects travelling through wet foliage infected with Septoria leaf spot can aid in the spreading of the disease.

General Disease Management

- Rotate away from tomato for 2 or more years
- Control presence of horsenettle and other weeds
- Remove crop debris from planting areas (particularly tomato crop debris)
- Reduce the amount of time plants are wet, when possible
- Stake plants to improve air circulation and drying of leaves
- Use mulches or plastic to reduce contact between leaves and soil
- Avoid working in fields when leaves are wet
- Scout plants often and remove infected plants
- Clean tools and equipment after leaving a field
- Use fungicides listed as effective against Septoria leaf spot

Disease Control for Conventional Growers

In addition to the cultural practices listed above, there are several products that are effective at controlling the disease. For the latest fungicide recommendations for Septoria leaf spot, consult the *Southeastern US Vegetable Crop Handbook [https://content.ces.ncsu.edu/southeastern-us-vegetable-crop-handbook.pdf]*.

Example products for control of Septoria leaf spot in tomato.

Active Ingredient	Example Product	PHI (days)	FRAC Group
azoxystrobin	Quadris	0	11
chlorothalonil	Bravo	0	M
chlorothalonil + cymoxanil	Ariston	3	M + 27
difenoconazole +cyprodinil	Inspire Super	0	3 + 9
penthiopyrad	Fontelis	0	7
famoxadone + cymoxanil	Tanos	3	11 + 27
fluopyram + trifloxystrobin	Luna Sensation	3	7 + 11
fluxapyroxad + pyraclostrobin	Priaxor	7	7 + 11
fixed copper	Kocide	0	M
mancozeb	Penncozeb	5	M
mancozeb + fixed copper	ManKocide	7	M + M
mancozeb + zoxamide	Gavel	5	M + 22
mandipropamid + difenoconazole	Revus Top	1	40 + 3
penthiopyrad	Fontelis	0	7
zinc dimethyldithiocarbamate	Ziram	7	M

Disease Control for Organic Growers

There are limited products available for controlling Septoria leaf spot on tomato. Organic fungicides have limited efficacy, so it is important to implement cultural practices before considering organic fungicides. Some formulations of copper are certified for organic use and may provide adequate control. Be sure to follow directions on the product label.

Active Ingredient	Example Product
fixed copper	(various)
potassium bicarbonate	Carb-O-Nator

Disease Control for Home Gardeners

Home gardeners should first implement the cultural management practices outlined above. Below are some additional practices for home owners.

- Use raised beds and rotate which bed has tomatoes from year to year
- Consider mulching the garden to prevent watersplash from soil to the lower leaves
- If symptoms of Septoria leaf spot appear on the lower leaves, removing affected leaves may reduce disease. But, avoid removing too many leaves.
- For gardens with a history of Septoria leaf spot, fungicides with active ingredients such as chlorothalonil, copper, or mancozeb will help reduce disease, but they must be applied before disease occurs as they can only provide preventative protection. They will not cure the plant.

Additional Resources

- The NC State University Plant Disease and Insect Clinic *[https://pdic.ces.ncsu.edu/]* provides diagnostics and control recommendations
- The Extension Plant Pathology portal *[http://plantpathology.ces.ncsu.edu/]* provides information on crop disease management
- The *Southeastern US Vegetable Crop Handbook [https://content.ces.ncsu.edu/southeastern-us-vegetable-crop-handbook.pdf]* provides information on vegetable disease management
- The USDA Fungus-Host Distributions Database *[https://nt.ars-grin.gov/fungaldatabases/fungushost/fungushost.cfm]* provides information about reported hosts for plant pathogenic fungi and oomycetes

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Publication date: Dec. 19, 2016
Reviewed/Revised: Sept. 22, 2021

This publication printed on: March 04, 2026
URL of this page *[http://content.ces.ncsu.edu/septoria-leaf-spot-of-tomato]*