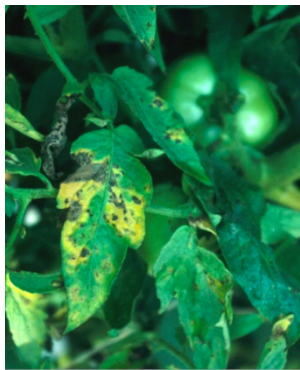


Controlling Bacterial Spot on Tomato and Pepper

Growers have frequently had problems with bacterial spot on tomato and pepper in recent years in the Southeast. Several different species and strains of bacteria are involved. Some bacteria attack both tomato and pepper, while others specialize on one crop or the other.



Most damage is caused to leaves. Many small, dark spots appear first on older leaves at the base of the plant. Spaces in between spots may turn yellow. Spots quickly spread to blight and kill leaves. Dead leaves usually stay hanging on tomato plants, but pepper

plants usually drop severely diseased leaves.

Leaf spots often can be seen on both the top and the bottom of leaves.



Green fruit on tomato and pepper may be spotted or scabbed. Once tomato fruit begin to turn red and the acid content increases, fruit can no longer be infected.



Bacteria may be found on seed, on transplants, and on crop debris from previous diseased crops. Bacteria are spread from plant to plant by wind, rain, and humans. When blowing sand grains injure leaves, the bacteria have an easy entry point.

To control bacterial spot on tomato and pepper, growers must use an integrated approach. That means spraying—by itself—will not work well. Use the following five cultural practices along with sprays.

1. **Crop rotation**

Rotate fields out of tomato and pepper for 12 months before planting either crop again. This “rest” period allows the crop debris that carries bacteria to decay, which kills the pathogen.

2. **Clean-up (sanitation)**

- Promptly destroy crops after the last harvest to stop bacteria from multiplying in and on plants left in abandoned fields.
- Destroy spring crops before transplanting a fall crop on the same farm, so bacteria do not spread from one crop to the next.
- Do not replant into plastic or organic mulch used for a previous crop. Enough crop debris is left on or in the mulch to carry over the bacteria from crop to crop.

3. **Spacing**

The longer leaves are wet, the greater the risk of bacterial spot. Leaves dry faster after dew or rain when there is more space between rows and extra space between plants in rows. This helps reduce the severity of bacterial spot.

- Space rows 8 to 12 feet apart for tomato and 8 feet apart for pepper.
- Leave a minimum of 24 inches between tomato plants and 18 inches between pepper plants.

4. Handling plants

Most growers know that it is easy to spread bacteria when workers handle or harvest wet plants. Sucker, stake, and tie plants after plants are dry.

5. Varieties

- All tomato varieties are susceptible to bacterial spot.
- Although many pepper varieties—such as the X3R series— have some resistance to bacterial spot, new races of the bacterium attack varieties that were resistant in the past. The only pepper variety that has complete resistance (as of June 2012) is Seminis PS 09942815 (with X10R™), [www.seminis.com/global/us/products/Pages/SweetPepperPS09942815\(withX10R™\).aspx](http://www.seminis.com/global/us/products/Pages/SweetPepperPS09942815(withX10R™).aspx). It is resistant to all 10 races currently known.

Spraying

Four spray programs are given in Table 1. These spray programs reduced severity of bacterial spot on tomato in two studies done by the University of Florida over several years. Spray programs did not work as well on pepper in trials at the University of Georgia.

No products have curative activity; all spray programs must be started before bacterial spot

symptoms can be seen. Sprays should begin 2 weeks after transplanting in the spring and 1 week after transplanting in the fall. Sprays must be made on a weekly schedule. Growers should use copper at the highest labeled rate.

On tomato and pepper, Actigard has a 14-day Pre-Harvest Interval (PHI), mancozeb has a 7-day PHI, and Tanos has a 3-day PHI. To make scheduling harvests easier, use Tanos + copper weekly after harvesting starts.

Organic control

Organic growers should follow the cultural recommendations given above with the following note. Certified organic growers are required to use certified organic seed unless certified seed is not available for a specific variety. In this case, certified organic growers may use non-treated seed with permission from the certifier.

Serenade plus copper is an approved organic treatment, as long as the certifier allows preventative treatments with copper and an organic-approved formulation of fixed copper is used. Several different copper products are approved by OMRI (Organic Materials Review Institute).

Table 1. Four spray programs demonstrated to reduce bacterial spot on tomato.

Spray Program	Week 1	Week 2	Estimated Season Total Cost (12 sprays)
Copper ^a + mancozeb	Copper ^a + mancozeb (2 lb)	Copper + mancozeb (2 lb)	\$276
Actigard ^b alternated with copper + mancozeb	Actigard (0.4 oz)	Copper + mancozeb (2 lb)	\$204
Tanos + copper alternated with copper + mancozeb	Tanos (8 oz) + copper	Copper + mancozeb (2 lb)	\$330
Serenade + copper	Serenade (3 qt) + copper	Serenade (3 qt) + copper	\$456

^a See copper labels for rates. Use the highest labeled rate in all spray programs.

^b Do not spray Actigard on bell pepper; this is not a registered use. Actigard is registered on chili pepper.

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