

Tips for Healthy Tomatoes

by Megan Gregory, Community Gardening Coordinator

Tomatoes (and other crops) can get many disease and insect problems. Fortunately, there are a few basic principles that gardeners can apply to prevent or reduce disease and insect damage:

- ✓ **Promote healthy, vigorous crops**, which resist disease and insect damage. Choose disease-resistant varieties, practice good soil management and balanced fertilization based on soil tests, and plant at ideal times of year for each crop.
- ✓ **Reduce the amount of 'inoculum' (disease organisms) in the garden.** This can be accomplished with crop rotation, eradicating weeds and volunteer tomato plants, and removing and destroying infected foliage and plants.
- ✓ **Keep the leaves clean and dry.** This minimizes disease, since many bacterial and fungal diseases thrive on moist foliage. To keep leaves clean and dry: space plants adequately, water at the base of your plants, prune and trellis to promote airflow through the foliage, and use mulch to prevent soil-splash.



Tomatoes trellised with a stake-and-weave system, with straw mulch to prevent soil-splash on foliage.

This table provides more detail on practices that promote healthy tomatoes (and other crops):

Recommended Cultural Practices	Purpose & Resources for Further Information
<i>Before planting</i>	
Crop rotation planning: Allow 2-3 years between plantings of Solanaceous crops (tomatoes, peppers, eggplants, potatoes) in the same bed.	<ul style="list-style-type: none"> • Reduces disease inoculum by allowing diseases that survive on plant debris in the soil to die out (<i>e.g., early blight, Septoria leaf spot, bacterial spot, southern blight</i>). • Resource: <i>A Piedmont Garden Calendar</i> (includes plant family groupings and example rotation plans): https://tinyurl.com/GardenPlanningNC
Choose disease-resistant varieties.	<ul style="list-style-type: none"> • Delays disease onset and reduces disease severity. • Resource: <i>Disease-Resistant Vegetable Varieties:</i> https://tinyurl.com/ResistantVarietiesNC
Eradicate 'volunteer' tomato plants and weeds from garden beds and surrounding areas. Keep grass mowed.	<ul style="list-style-type: none"> • Reduces disease inoculum, because 'volunteer' plants and weeds can harbor disease, or insects that spread disease (<i>e.g., aphids, thrips, & whiteflies that spread viruses</i>).

Recommended Cultural Practices	Purpose & Resources for Further Information
<i>Before planting, Continued</i>	
<p>Good soil preparation: Test your soil each year. If needed, adjust pH to 6.2 – 6.7. Fertilize according to soil test recommendations. Add organic matter with cover crops and leaf composts.</p>	<ul style="list-style-type: none"> • Maintaining proper pH ensures that plants can take up nutrients from soil, helping prevent blossom end-rot. • Resources: See <i>Building Healthy Soil</i> (http://tinyurl.com/FCGHealthySoil) for information on soil testing, fertilizers, and cover cropping.
<i>At planting</i>	
<p>Adequate plant spacing:</p> <ul style="list-style-type: none"> • 2 ft between plants if staking/ trellising. • 3 ft between plants if using cages. 	<ul style="list-style-type: none"> • Reduces disease by ensuring space for airflow around and between plants, which dries the leaves. • Minimizes disease spread between plants.
<p>Ideal planting dates: Plant tomatoes when soil temperatures are at least 60° F and daytime temperatures are 70-80°F.</p>	<ul style="list-style-type: none"> • Crops grow vigorously and resist diseases and pests. • Minimizes damping-off disease (<i>The causal agents, Pythium and Rhizoctonia fungi, are more active in cool soils.</i>)
<i>After planting</i>	
<p>Water regularly, deeply, and at the base of plants – do NOT wet the leaves! Use drip irrigation or a watering-wand.</p>	<ul style="list-style-type: none"> • Prevents disease by keeping leaves dry. • Prevents blossom end-rot by ensuring that the plant can take up nutrients in a steady supply of water.
<p>Apply a mulch of cover crop shoots or straw 2-3" deep.</p>	<ul style="list-style-type: none"> • Prevents soil from being splashed onto foliage and fruits and spreading soil-borne diseases. • Conserves moisture and ensures that plants can take up nutrients in water, preventing blossom end-rot.
<p>Prune and trellis:</p> <ul style="list-style-type: none"> • If staking/ trellising, 2 main stems. • If caging, 3-4 main stems. 	<ul style="list-style-type: none"> • Reduces disease by keeping foliage & fruits clean and opening space for airflow, which dries the leaves. • Resources: <i>Trellising and Pruning Tomatoes.</i> https://tinyurl.com/FCG-TrellisTomatoes; <i>DIY Tomato Cages.</i> https://tinyurl.com/DIY-TomatoCages
<p>Prune diseased foliage and pull out severely infected plants. Dispose of diseased plant material (do not compost).</p>	<ul style="list-style-type: none"> • Reduces disease inoculum that could otherwise spread and infect other plants.

Further Resources: Check on the tomato publications from Clemson University (<https://hgic.clemson.edu/>)!

1323: Tomato (general) • #2217: Diseases & Disorders • #2218: Insect Pests

Beating Blossom End-Rot

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Have you ever had black spots rot the bottom of your tomatoes – just when they were getting big and ready to ripen? This is blossom end rot, and it can occur in tomato, pepper, eggplant, squash, and watermelon. It's caused by calcium deficiency in the developing fruit, but this doesn't necessarily mean that your soil doesn't have enough calcium. **In most cases, blossom end rot occurs because the plant can't take up calcium due to dry conditions and irregular watering** (remember, plants take up nutrients dissolved in water!), **or a low soil pH** (which can 'tie up' nutrients). Here are some tips to prevent blossom end rot:



Tomatoes with blossom end rot.
 Photo: B. Kennedy, U of KY,
 Bugwood.org. CC-BY 3.0

- **Keep your soil at a pH of 6.5 – 6.8.** Get a soil test each fall, and incorporate lime if it is recommended to bring up the soil pH by Spring. The Soil Test Interpretation Worksheet (available at <https://tinyurl.com/FCGHealthySoil>) can help you determine how much lime to apply, if needed.
- **Water regularly (about three times per week) and deeply to maintain soil moisture 6-8 inches down.** Fruiting crops will need at least 1.5 inches of water per week during the hottest months.
- **To conserve water in your soil, apply a 3" layer of straw mulch around your plants, and work to increase soil organic matter contents** with cover-cropping and plant-based composts.
- **Avoid ammonium-based fertilizers** (e.g., ammonium nitrate) **or excessive potassium or magnesium fertilizers.** These can 'compete' with calcium for uptake by the plant.
- **If your soil is lacking calcium, you can incorporate gypsum (calcium sulfate) at rates of 1-2 lbs per 100 square feet.**

If you do see blossom end rot, remove these fruits. The rotted area may allow disease-causing bacteria or fungus to enter the plant. If you correct the conditions that caused the problem (e.g., by watering regularly), new fruits should develop properly.

For more information on blossom end rot (and just about anything else that could be wrong with your tomatoes), see "Tomato Diseases and Disorders" from Clemson University (<https://hgic.clemson.edu/> and search for publication #2217).