

## Did You Know?

A garden needs one-inch of rain or water each week. Early morning is the best time to water. Evening watering is less desirable because plant leaves that remain wet through the night are more susceptible to fungus diseases. Mulch plants to reduce water losses and improve yields.

## Possible Causes of Sudden Wilt & Death in Tomatoes

Many gardeners have been puzzled by the sudden wilting and death of tomato plants. Possible causes of wilting include lack of water, vascular wilts, tomato spotted wilt virus, walnut toxicity, or stalk borers.

### Lack of Water

Tomato plants require approximately 1 inch of water per week. Plants may wilt badly when soils are dry, but will revive rapidly when they are watered. A thorough watering once a week during hot, dry weather should be sufficient. Apply water directly to the soil around the base of the plants with a garden or soaker hose. If an overhead sprinkler is used to water the tomatoes, water the plants in the morning to reduce foliar disease problems.

### Vascular Wilts

The initial symptoms of Verticillium and Fusarium wilts are wilting of the plant leaves during the heat of the day. Affected plants often recover in the evening or overnight. Gradually, however, the wilting becomes progressively worse and many plants eventually die. Verticillium and Fusarium wilts are caused by soil-borne fungi that invade tomato plants through injured roots. The fungi spread into the water-conducting tissue (xylem) in the stem and block the flow of water to the foliage. Foliage of affected plants turns yellow, then wilts and dies. A cut through the lower stem of a dead plant often reveals a brownish discoloration of the vascular tissue.

There is nothing that can be done for plants that have Verticillium or Fusarium wilts. Plants that die should be removed and destroyed. Crop rotation is of limited value as the vascular wilt fungi may survive in the soil for several years. The use of resistant varieties is the most practical way for home gardeners to prevent losses due to wilts. Resistant varieties may become infected but many plants survive and produce an acceptable crop. Resistant varieties are available in seed catalogs and at garden centers. The letters V and F following the variety name in seed catalogs or on seed packets denote varieties that are resistant to Verticillium and Fusarium wilts. Wilt resistant tomato varieties that perform well include Jetstar, Better Boy, Burpee VF, and Celebrity.

### Tomato Spotted Wilt Virus

Tomato spotted wilt virus (TSWV) can cause stunting, wilting, bronzing of foliage, and brown or green rings on fruit. A virus disease, TSWV can infect plants in the greenhouse or in the field. Infected plants cannot be cured and should be removed from the garden. No tomato varieties are resistant to tomato spotted wilt virus.

### Walnut Toxicity

Black walnut trees produce a toxic material (juglone) that can injure and kill solanaceous crops (tomatoes, potatoes, peppers and



eggplant) and other juglone-sensitive vegetables in the garden. Symptoms of walnut toxicity include stunted growth, yellowing and wilting of foliage, and death of susceptible plants. Juglone is present in all parts of the black walnut tree (fruits, leaves, branches and roots).

The sources of juglone in the soil include both living and decaying plant material. Rain droplets leach juglone from the buds, leaves, and twigs. The decomposition of leaves and other plant debris by soil microorganisms also releases juglone. Living roots exude juglone into the surrounding soil. Generally, the greatest concentration of juglone in the soil exists within the dripline of walnut trees.

Nothing can be done to save juglone-damaged tomato plants. Simply remove and destroy dead plants. Gardeners who have large walnut trees near their gardens should consider alternate sites. If alternate sites are unavailable, plant tomatoes and other susceptible plants 20 to 25 feet beyond the dripline of walnut trees to minimize walnut toxicity problems.

Corn, beans, onions, beets, and carrots are tolerant of juglone and can be planted closer to walnut trees provided the area receives sufficient sunlight. Walnut trees that are 75 to 100 feet from the garden shouldn't be a big threat to tomatoes and other juglone-sensitive vegetables.

### **Stalk Borer**

The stalk borer is an insect pest that attacks a wide variety of plants including tomatoes. The larva (caterpillar) bores into the stem and tunnels inside the stalk. (The entrance hole is small and often difficult to locate). Affected plants wilt and often die. However, stalk borer damaged plants that are given good care may survive.

The stalk borer is a purple and cream striped caterpillar with a solid purple band around its body 1/3 of the way back from its head. It is an early season pest that moves from tall grassy weeds and occasionally attacks tomatoes, potatoes, and peppers in the vegetable garden. An individual stalk borer may damage more than 1 tomato plant. The adult is an inconspicuous grayish brown moth.

Tomato plants that die should be pulled and destroyed. The destruction of the plants may also kill the stalk borer. Cutting or mowing tall weedy areas around vegetable gardens may also help control the pest. Stalk borers cannot be effectively controlled with insecticides.

Written by Don Janssen, Extension Educator

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## **June Pest - Mosquitoes**

Keith Jarvi, University of Nebraska Extension, tells us of a common summer pest, and adds a few insights of his own!

It's raining again and since "no good deed goes unpunished" or something like that, we know that with moisture comes standing water, and with standing water comes mosquitos. We can go on and on about mosquito species, life cycles, etc., but bottom line is most people want to know how to avoid having these pests ruining their camping, barbeque, and other summer outdoor pursuits. As usual, there is an outstanding compilation of mosquito resources available at <http://lancaster.unl.edu/pest/flies.shtml>. Just scroll down until you see Flies, Gnats, and Mosquitos. Here are some highlights...



Mosquitos need water to complete their life cycle so the best way to minimize problems is to eliminate as much standing water as possible. Anything that can hold water for over a week has

the potential to breed mosquitos. Old tires are especially good at catching and holding water, but some places you may not think of, like clogged rain gutters, water barrels, and old cans are also prime breeding sites. Take time to scout around your property to locate and get rid of these potential sites. If you have areas that you cannot drain, Bt (*Bacillus thuringiensis*) biscuits can be purchased at most local hardware stores. These slowly release a natural larvae-killing pesticide that is totally safe for pets, birds, and humans.



Unfortunately mosquitos can fly, so they can come into your area despite your best prevention effort. Wearing long pants, a long sleeved shirt, and a hat can reduce bites, but most people don't want to wear many clothes in the heat of summer. You can even get clothing impregnated (I like using big words) with insecticide from some outdoor clothing retailers. Most people opt to use repellants when going into mosquito-infested areas, and anything with DEET in it is hard to beat. Be aware that many products contain DEET, and it can be in many concentrations, up to 25% or even higher in some products. Higher concentration may cause problems for sensitive people and children. Some people and even some research suggest that Avon Skin-So-Soft helps repel mosquitos.

Many of our mosquito species like to bite during twilight hours, and rest in nearby vegetation during the hotter part of the day. You can spray bushes, hedges, and other mosquito resting areas during the day to knock down the numbers. Many products are available (Sevin and many pyrethroids are most common) and should be effective. Do not apply any of these products directly on your skin or clothing. Be careful and follow the label when using any pesticide.

While fun to use and sometimes highly entertaining, here are a few items that don't really help. Sonic devices do not repel any pests of any kind, but instead attract gullible customers who believe anything they see on television and social media.

Since female mosquitos (the only sex that bites since they need the blood for their eggs to develop) are honing in primarily on the carbon dioxide that you are exhaling, ultraviolet bug-zapping light traps will not reduce mosquito numbers, unless the skeets have bitten a particularly inebriated individual who accidentally crashes into the light. Ultraviolet lights, however, are entertaining as mini-fireworks occur when dozens of non-biting insects that are attracted to the light explode into little fragments. Holding your breath to eliminate the carbon dioxide will only work until you pass out.

I'm not sold on citronella candles and other incense-type products as I don't think you need to wander too far away from them for them to lose their influence, even if they might repel insects slightly - I think it's just the smoke. Remember that just because you see something on the internet, in chat rooms, or TV doesn't mean it works. Try them if you want.

### **What's wrong with my tree?**

This is the most common horticulture question Extension offices are receiving. While diseases and insects can be present in many cases the variety of symptoms we are seeing are due to environmental stress from last season. Browning or yellowing in evergreens, delayed growth in shade trees and shrubs (i.e. Spirea), stunted growth and plant death. Avoid fertilizing stressed plants with nitrogen (unless needed) and provide adequate moisture when needed without overwatering to encourage recovery.

## Proper Landscape Plant Maintenance

After plants are established in the landscape, maintenance needs can be minimized by following correct maintenance procedures on a timely basis. Following are some suggestions to reduce the time and amount of maintenance necessary in established landscapes.

### 1. Practice Preventive Maintenance

Be observant of your plants. Watch for disease and insect outbreaks regularly. Pests are much easier to control if they are affecting only a few leaves or one branch. By the time they spread to several plants or an entire shrub border, they will be more difficult to control.

### 2. Use the Right Tool

Power tools can make short work of many maintenance operations. However, make certain they are the right tools for the job. For example, weed whips or string trimmers quickly mow down weeds and grass around buildings and fences, but should be used with caution around trees. The force of the trimmer line can cause injury to the bark, leading to girdling, unless the tree is protected from direct contact with the trimmer.



### 3. Irrigate Various Plant Zones Separately

Some plants are better adapted to hot, dry conditions than others. If plants of similar growth requirements are grouped together in the landscape, they can be watered as a group. Use the appropriate type of irrigation system for the planting. Overhead sprinklers or pop-up heads on an underground irrigation system may be most appropriate for turf. For shrubs and flower beds, drip irrigation may be the most efficient system.

### 4. Fertilize in Moderation

Base your fertilization programs on soil test results. Recycle as many nutrients as possible on site by leaving clippings on the lawn and applying leaf mulch compost to planting beds. Over-fertilization leads to excessive growth that needs frequent pruning. Excessive fertilization may also force growth that will be more susceptible to insect and disease attack.

### 5. Prune When Appropriate

Take care of pruning needs when the problem first develops. Cut out weak, narrow crotches on branches, crossing branches or competing branches while they are still small in diameter. These problems will not correct themselves and the pruning job becomes more major with each season the task is delayed. Avoid planting trees and shrubs where they will outgrow their designated space without frequent pruning.

Several hours of planning and thought before planting can prevent maintenance headaches for years to come.

Source: Christopher Starbuck, University of Missouri

**A weed is a plant that has mastered every survival skill except for learning how to grow in rows.**

Doug Larson