



Pest e-alerts



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Tomato Disease Update

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Tomato diseases are rearing their ugly heads as fruit are set and some rainfall and a lot of humid weather has returned. After visiting some market farms last week and putting another string on plants in my garden, this is what I saw:

Bacterial spot and speck

These diseases are very similar in that they cause defoliation of plants from the bottom up and cause fruit spotting. They are difficult to separate in the field as their symptoms are very similar and may occur together. They are also difficult to separate from Septoria leaf spot, a fungal disease. Symptoms begin as dark, mostly circular, greasy appearing, water-soaked spots on lower leaves (Fig. 1). Spots rarely exceed about 1/8 inch in diameter. Leaf spots caused by bacterial spot and speck are smaller than early blight, another fungal disease and lack the concentric rings associated with early blight. Spots may or may not be surrounded by a yellow halo, which is more typical of bacterial speck. When spots become numerous, leaves may develop varying levels of yellowing, shrivel, and die. The diseases progresses from the bottom of the plant upward. Fruit spots caused by bacterial spot and speck are different and their symptoms are useful for differentiating the two diseases. Fruit spots caused by bacterial speck are generally pin head size (Fig. 2) while fruit spots caused by bacterial spot are larger, reaching up to ¼ inch in diameter and a scabby appearance (Fig. 3). In my observations, fruit spots generally occur infrequently in our climate and the most damage from these diseases are from the plant defoliation which reduces plant productivity and longevity.

Bacterial spot and speck are common where crop rotation is limited by space constraints. This is a common problem in residential gardens and small market farms. Generally 3-year rotations away from tomatoes and peppers are necessary to impact levels of the diseases. Other practices are management of infested crop residue and control of volunteer tomatoes because the disease is seed borne.

Ultimately because there are no resistant varieties, spray programs with copper- based fungicides are required to minimize bacterial spot and speck. In situations where there is uncertainty in whether tomato diseases are fungal or bacterial, it is best to apply a tank mixture of a copper and chlorothalonil (e.g. Bravo, Daconil, or Ortho Garden Disease Control). Consult the OSU Extension Agent's Handbook (Circular E-832) for more information and a listing of registered home and commercial formulations of copper and chlorothalonil.



Figure 1: Foliar symptoms of bacterial spot and/or speck on tomato foliage.



Figure 2: Bacterial spot on tomato fruit



Figure 3: Bacterial speck on tomato fruit.

Bacterial canker

Bacterial canker is typically a problem in commercial field and greenhouse tomato production. It's a very destructive disease because it can kill entire plants. Symptoms initially appear as a foliar leaf scorch beginning at the leaf edges. The leading edges of the scorch appear pale green in color (Fig. 4). Petioles of affected leaves develop small blister-like cankers from which the disease gets its name (Fig. 5). Fruit on affected plants develop white "bird's eye spots" which are highly characteristic of the disease (Fig. 6). Control of bacterial canker should focus on excluding the pathogen from tomato operations and sanitation measure to limit its carryover from year to year. The pathogen survives on crop residue, tomato stakes, transplant containers, and greenhouse surfaces. It is important to eliminate its carryover from year to year. Bleach solutions (10%) are effective in cleaning up canker infestations on stakes and surfaces.



Figure 4: Bacterial canker on tomato foliage.



Figure 6: Fruit spots caused by bacterial canker.



Figure 5: Blisters or cankers on petioles caused by bacterial canker.

Tomato Spotted Wilt Virus

Tomato Spotted Wilt Virus (TSWV) has been a sporadic problem on peanuts and tomatoes in Oklahoma for many years. It has never reach severe levels here compared to south Texas or the Southeastern U.S. We've had a tomato sample test positive for this disease in the Plant Disease and Insect Diagnostic laboratory this year and I have an infected plant in my garden. This is not a major outbreak by any means but keep an eye out for it. Symptoms on tomatoes appear as bronzing or stippling on the upper leaves and petioles (Fig. 7). Occasionally ring spots are visible in the leaves. Symptoms appear on individual branches or entire plants. Eventually terminal shoots of affected plants turn yellow or brown and eventually wilt and die (Fig. 8). TSWV is spread by thrips feeding on infected plants as juveniles. The thrips become infective when they molt into adults. Current research indicates that thrips transmit the virus in the late fall and winter to weedy hosts which then serve as local sources of the virus for thrips the following spring. Planting tomato varieties with resistance to the disease in the best management strategy. It's probably best to cull out infected plants soon after symptoms appear so that they don't serve as sources of the virus for thrips.



Figure 7: Bronzing of tomato foliage caused by tomato spotted wilt virus.



Figure 8: Wilt and death of tomato foliage caused tomato spotted wilt virus

Disease and Insect Diagnostic Laboratory

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