EPRA International Journal of Agriculture and Rural Economic Research (ARER)- Peer-Reviewed Journal
Volume: 12 | Issue: 11 | November 2024 | Journal DOI: 10.36713/epra0813| Impact Factor SJIF(2024): 8.391| ISSN: 2321 - 7847

TYPES OF TOMATO DISEASES AND THEIR EFFECTS

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ABSTRACT----------
Any type of soil that drains properly can be used to grow tomatoes, and a rich supply of organic matter can increase yield and minimize production problems. Planting tomatoes and related vegetables on the same piece of land more than once every three years is not advised. Because it offers organic matter and prevents the growth of disease organisms that damage tomatoes, corn is a beneficial crop to grow in rotation with tomatoes. Rotating with non-susceptible plants for a minimum of three years will help manage the deadly disease known as southern bacterial wilt, which is caused by Ralstonia solanacearum. It is challenging to manage in plants grown in contaminated soil, though. Cultivate delicate solanaceous plants in a separate, freshly prepared garden space to prevent this, and then rinse them off.
KEYWORDS: *soil type, plant tomatoes, bacterial wilt, plants, tomato diseases, garden----------*

INTRODUCTION

Almost any soil type that drains reasonably well can be used to grow tomatoes (Solanum lycopersicum). A healthy supply of organic matter can lower production issues and boost yield. It is not advisable to plant tomatoes and similar vegetables like potatoes, eggplants, and peppers on the same plot of land more than once every three years. Any crop that comes before tomatoes or serves as a cover crop should ideally belong to the grass family. Corn is a great crop to grow in rotation with tomatoes since it provides a lot of organic matter and doesn't encourage the establishment of disease organisms that harm tomatoes. It is advised to utilize certified seeds and plants wherever feasible. Southern bacterial blight, sometimes known as bacterial wilt, is a dangerous illness brought on by Ralstonia solanacearum, formerly known as Pseudomonas solanacearum. Long-lasting in the soil, this bacterium enters the roots through wounds from cultivation, transplanting, insect feeding, and natural wounds where secondary roots grow.

Figure. 1 Bacterial wilt (Ralstonia solanacearum) causing a rapid wilting of tomato plants. (Zachary Boone Snipes)

High wetness and high temperatures promote the development of disease. Within the plant's water-conducting tissue, the bacteria proliferate quickly and fill it with slime. As a result, the plant quickly wilts while the leaves remain green. An infected stem will appear brown when cut crosswise, and there may be little drips of yellowish fluid visible.

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It is challenging to control bacterial wilt in plants cultivated in infected soil. Some control can be achieved by rotating with non-susceptible plants for at least three years, such as cabbage, beans, and maize. Avoid using cosmos, pepper, eggplant, potatoes, or sunflower in this rotation. All contaminated plant material should be removed and destroyed. Only certified disease-free plants should be planted. Although it is a rare variety, Kewalo has some resistance to bacterial wilt. There is no chemical control for this illness. Think about cultivating all sensitive solanaceous plants (such as Irish potatoes, tomatoes, peppers, and eggplants) in a different, freshly prepared garden area that is entirely distinct from the original garden.

Before using tiller tines and other instruments in the new garden location, make sure to completely rinse off any soil from the previous contaminated site.

Tests conducted recently have shown that a number of rootstocks for grafted tomatoes, peppers, and eggplants are very resistant to bacterial wilt. There might be grafted plants available.

Figure. 2 Early blight *(Alternaria linariae)* on tomato foliage.
(Joey Williamson)

The fungus Alternaria linariae, formerly known as A. solani, is the source of this illness, which initially manifests as tiny, brown lesions on the plants, primarily on the older foliage. The core of the sick area may show enlarged spots and concentric rings arranged in a bull's-eye pattern. It's possible for the tissue around the spots to turn yellow. A large portion of the foliage is killed if excessive temperatures and humidity occur at this season. Similar to lesions on leaves, those on stems can occasionally girdle the plant if they develop close to the soil line (collar rot). Lesions on the fruits grow to a significant extent and typically cover almost the whole fruit. On the fruit, there are also concentric circles. Fruit that is infected often falls.

The water mold pathogen Phytophthora infestans is the cause of late blight, a potentially dangerous tomato and potato disease. Particularly harmful is late blight in chilly, rainy conditions. All plant components are susceptible to this disease. Lesions on young leaves are tiny and show up as dark, wet patches. These leaf spots will grow rapidly, and a white mold will show up on the lower surface of the leaves along the edges of the afflicted area. Within 14 days following the onset of symptoms, the leaves and stems may completely defoliate (brown and shrivel). Large areas may be covered in glossy, black, or olive-colored lesions that appear on infected tomato fruits.

Leaf Spot for Septoria The fungus Septoria lycopersici is the cause of this damaging disease that affects tomato leaves, petioles, and stems (fruit is unaffected). After plants start to develop fruit, infection typically happens on the lower leaves close to the ground. On the elder leaves, there are many tiny, spherical dots with dark borders encircling a beige core. In the middle of the spots are tiny black dots that are spore-producing bodies. Leaves with severe spots become yellow, wither, and drop off the plant.

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Figure. 3 Septoria leaf spot (*Septoria lycopersici*) on tomato.
(*Joey Williamson*)

When temperatures are between 68 and 77° F, humidity is high, and plants are wet from rainfall or overhead irrigation, the fungus is at its most active. In addition to weakening the plant, defoliation makes the fruit smaller and lower quality and exposes it to sunburn (see below). Although the fungus is not soil-borne, it can hibernate on crop waste from past harvests, decomposing plants, and some tomato-related weeds.

Mold on Leaves Leaf mold is caused by the fungus Passalora fulva. Older leaves close to the earth, where there is little air movement and a lot of humidity, are where it is initially noticed. Pale green or yellowish dots on the upper leaf surface are the first signs, which grow larger and eventually develop a characteristic yellow.

A gray, velvety growth of the spores that the fungus produces covers the spots on the lower leaf surfaces when the air is damp. The spots clump together and the foliage dies when the infection is severe. The fungus sometimes targets fruits, flowers, and stems. The stem end of green and mature fruit may have a black, leathery rot.

The fungus lives in the soil and on crop waste. Tools, wind, and rain can all disperse spores. Contamination can occur in seeds. High temperatures and high relative humidity are necessary for the fungus to cause illness.

The field should be cleared of crop leftovers. Increasing air circulation through trimming and stakes aids in disease control. To improve air circulation, put tomato plants farther apart. When watering, do not moisten the leaves. Swap out tomatoes for other vegetables.

The Bacterial Spot Several Xanthomonas species mostly Xanthomonas perforans cause this illness, which affects green tomatoes but not red ones. Peppers are contaminated as well. During rainy seasons, the sickness is more common. Fruit and leaf spots, which cause defoliation, sunburned fruit, and decreased yields, are examples of plant damage. Numerous tiny, angular to irregular, water-soaked patches on the leaves and slightly elevated to scabby lesions on the fruits are the symptoms. There may be a yellow halo around the leaf dots. The centers often rip and dry out.

On volunteer tomato plants and diseased plant debris, the bacteria survive the winter. The development of disease is facilitated by wet weather. The majority of illness outbreaks can be linked to localized, intense rainstorms. Leaves become infected through their natural apertures. Fruits must become infected by insect punctures or other mechanical wounds.

Once in the field, bacterial spots are hard to eradicate. Bacteria from diseased to healthy plants can be transferred by any water movement from one leaf or plant to another, including splashing rains, overhead irrigation, and touching or handling wet plants.

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