AVRDC - The World Vegetable Center
Fact Sheet

Tomato Diseases

Tobacco Etch Virus (TEV)

Found primarily in the Western Hemisphere

Symptoms

Leaves may show mild mottling, crinkling, distortion, reduction in size, and pronounced downward curling. Plants infected early have shortened internodes and can be severely stunted; fruits from such plants are mottled and do not reach full size. All stages of plant growth may be affected.

Tomato, pepper, tobacco, and various solanaceous weeds are the main plants affected. Symptoms may be confused with other viruses such as potato virus Y (PVY) or tomato mosaic virus (ToMV). Because several varieties carry partial resistance to ToMV and none have been bred for resistance to either TEV or PVY, plants with general mottling suggest TEV or PVY infection. TEV symptoms are usually more severe than those of PVY, which usually consist of only faint mottling and slight distortion of leaves.

How to Identify Tobacco Etch Virus

Leaves show mottling, crinkling, distortion and downward curling. Plants infected when young have shortened internodes and are severely stunted.

Conditions for Disease Development

The green peach aphid (*Myzus persicae*) and several other aphid species transmit the virus. The aphids acquire the virus by feeding on an infected plant for less than a minute and can transmit it as quickly also. The aphids will retain the virus for periods of 1 day or longer if the aphids do not feed after acquiring the virus. The virus is also readily transmitted mechanically and by grafting, but not by seeds.

Control

Use a screenhouse with 32-mesh or greater to keep out aphids while growing transplants. There are no TEV-resistant tomato varieties.

Minimize plant handling during the growing season to reduce the amount of virus spread mechanically. Remove nearby volunteer plants and solanaceous weeds from production fields, nearby ditch banks, hedges, fencerows or other locations. Avoid growing other solanaceous crops, especially pepper or tobacco nearby.

Cultural practices include the use of reflective mulches to reduce aphid visits to plants and thus delay virus spread. This results in reduced virus incidence and increased yields.

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Plant early to avoid high aphid populations that occur later in the season. Late plantings should be set as far as possible from fields used to produce early tomatoes and peppers, which can act as sources of viruses and aphids for subsequent crops.

Monitor aphid populations early in the season and apply insecticide treatments when needed since aphids readily transmit the virus. Use mineral oil sprays to interfere with aphid transmission of the virus.

Scout fields for the first occurrence of virus symptoms. If affected plants are found, spray them with an insecticide first to prevent aphids from migrating to nearby healthy plants. Remove the affected plants and place in a plastic bag. Do not touch other plants nearby with hands, tools or clothing to prevent mechanical transmission of the virus.

Disinfect tools, stakes, and equipment before moving from diseased areas to healthy areas. This can be done by (1) heating or steaming at 150 °C for 30 minutes; (2) soaking 10 minutes in 1% formaldehyde or a 1:10 dilution of a 5.25% sodium hypochlorite [household bleach], do not rinse; or (3) by washing in detergent at the concentrations recommended for washing clothes or dishes. Keep all solutions fresh.

Alternatively, tools should be washed thoroughly, dipped for 30 minutes in 3% (w/v) trisodium phosphate (TSP) solution, and not rinsed before use. Hands should be washed and scrubbed well with 3% TSP, then rinsed thoroughly with water. Alternatively, hands and tools may be washed with soap or milk.

Work in diseased areas last after working in unaffected parts of a field. Wash clothing that comes into contact with TEV-infected plants with hot water and a detergent.

For more information on the production of tomato and other vegetables, go to <www.avrdc.org>.

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