



AVRDC - The World Vegetable Center

Fact Sheet

Pepper Diseases

Pepper Veinal Mottle Virus

Aphid-Transmitted Potyvirus



Found in many African countries; reported in India and Afghanistan

Symptoms

Leaves of infected plants show chlorotic vein banding, mottling, mosaic, and distortion with puckering. Infected plants may show stunting with reduced and distorted fruit set.

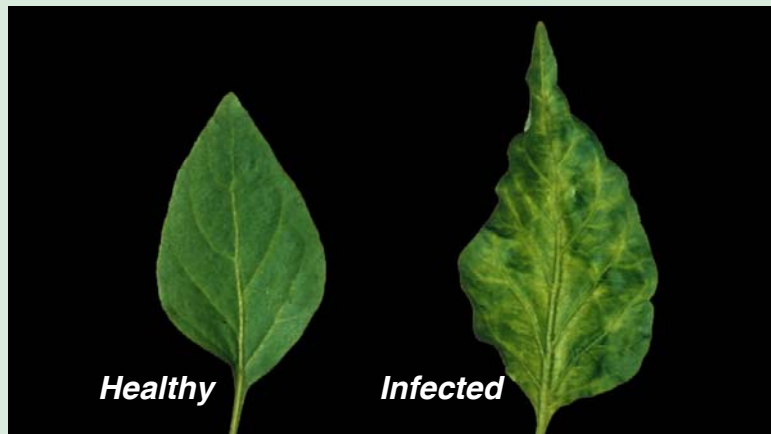
Conditions for Disease Development

Pepper veinal mottle virus (PVMV) is transmitted by several species of aphids. An aphid gets the virus by feeding on an infected plant for only a few seconds.

The aphid can then transmit the virus immediately the next time it bites into a plant, then losing the virus. The virus is generally retained by the aphid for no more than one hour. Winged aphids are the most likely to spread the virus to other pepper plants and are the most difficult to control.

Various weeds such as black nightshade (*Solanum nigrum*), jimsonweed (*Datura stramonium*) and cutleaf groundcherry (*Physalis angulata*) serve as hosts for the virus and transmission of the virus to peppers by winged aphids from infected weed hosts is likely early in the season.

How to Identify Pepper Veinal Mottle Virus



Yellowing along the main veins, followed by interveinal chlorosis; infected leaves may become distorted (right)

The virus is also transmitted mechanically and by grafting, but not by seed.

Control

Resistant material has been reported from several sources.

Grow transplants in a nethouse or cover seedbeds with a 32-mesh or finer mesh net to prevent introduction of aphids. Use yellow sticky traps to monitor and to reduce aphid populations.

Avoid touching or handling pepper plants prior to setting them in the field. Remove any diseased seedlings that show symptoms of the disease and place them in a refuse pile away from pepper production fields. Do not touch other seedlings while discarding them. Remove one or two plants adjacent to the plants showing symptoms. Use disposable gloves or wash hands well with soap if handling diseased plants. Avoid handling other solanaceous plants prior to handling pepper plants.

Disinfect tools, stakes, and equipment before moving from diseased areas to healthy areas. This can be done by: 1) soaking 10 minutes in a 1:10 dilution of a 5.25% sodium hypochlorite (household bleach); or 2) by washing in detergent at the concentrations recommended for washing clothes or dishes. Keep all solutions fresh. 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 PVMV-infected plants with hot water and a detergent.

Use of insecticides during the growing season is ineffective; however, control of aphids, particularly winged aphids, early in the season prior to planting the field, may be useful in reducing initial infection and spread. Spray weeds bordering the field with an aphicide prior to seeding or planting the field. This will prevent

the aphids from moving to other plants and infecting them when subsequent weed control is started. Destroy all annual weeds in the field, including those in ditch banks, hedge or fence-rows, and other locations.

Avoid planting peppers close to established tomato, tobacco, and pepper fields since these fields may harbor aphids. If possible, plant earlier to avoid high aphid populations that occur later in the season. Avoid possible sources of virus by removing volunteer pepper or tomato plants as soon as they appear in the field or nearby. Keep fields free of weeds.

Other control measures include scouting fields for the first occurrence of winged aphids in the pepper crop or nearby fields, or at a less effective stage, for the first occurrence of virus symptoms in pepper plants. Where feasible, infected plants should be pulled up and destroyed, but only after spraying them thoroughly with an insecticide to kill any insects they may be harboring. Reflective mulches may be used to repel aphids, thereby reducing the rate of spread of aphid-borne viruses.

Aphid populations, especially winged aphids, should be monitored early in the season. Apply mineral oil or other insecticide treatments when needed. The mineral oil sprays will reduce the frequency of transmission of the virus by the vector and thereby delay development of the disease in the pepper crop. Also, the use of yellow water-troughs, which attract aphids away from the crop and kill them by drowning is effective in reducing aphid numbers and incidence of virus infection.

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