

WILT

Wilts may result from excessive transpiration, drying out of soil, bacterial, fungal, or viral diseases. They differ from root rots because the vascular system is involved.

Most fungal wilts are caused by *Fusarium* or *Verticillium* species. Leaves become lighter green, then yellow, droopy and finally wilted. Symptoms may appear on only one side of the plant. The spores enter through roots, or wounds in plant tissue. They move into the vascular tissue and clog the vessels, reducing the plant's ability to replace transpired water. A cross-section of a stem will usually reveal a black or brown discolouration in the vascular tissue. Plants damaged by nematodes are often more susceptible to wilt. (See nematodes.)

Curtobacterium, *Pseudomonas*, *Erwinia*, and *Xanthomonas* bacteria produce enzymes that soften, weaken, and destroy plant cells that eventually collapse, and rupture. Bacterial ooze may be evident in cut stems. Like fungal wilt, these bacteria clog up the vascular tissue in the stems and cause similar wilting and yellowing/browning of foliage.

Life Cycle

Both bacterial and fungal diseases overwinter in soil and plant debris and may be spread in soil water, on farm equipment, infected plants, cuttings, and through insect vectors. Where possible, use pasteurized media and resistant varieties. Some pathogens favour warm conditions while others occur in a cool, moist environment.



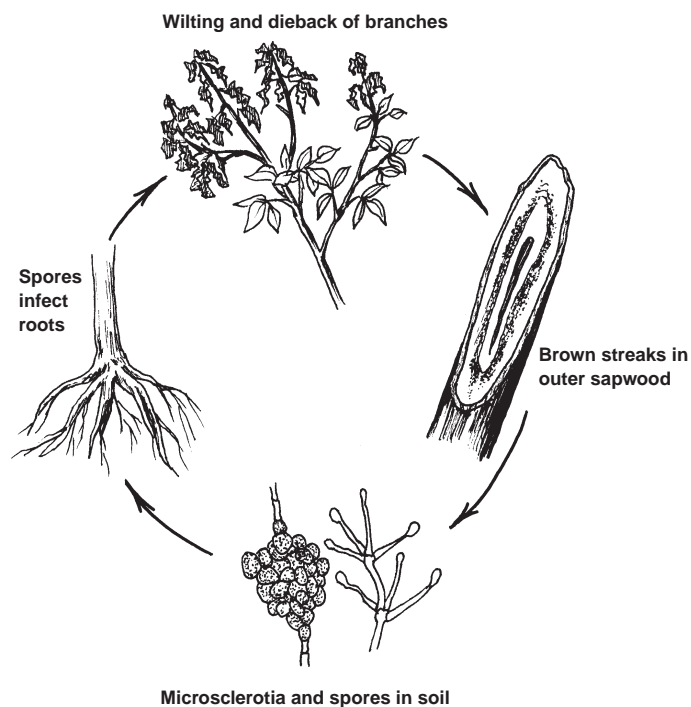
Fusarium Wilt of Aster

Alberta Environment Centre



Verticillium Wilt Symptoms on Acer

Verticillium dahliae Disease Cycle



Common Hosts of Wilt Diseases:

Fungal

<i>Acer</i>	<i>Pelargonium</i> (geranium)
<i>Browallia</i>	<i>Paeonia</i>
<i>Calceolaria</i>	<i>Prunus</i>
<i>Chrysanthemum</i>	<i>Rhododendron</i>
<i>Cyclamen</i>	<i>Rosa</i>
<i>Dahlia</i>	<i>Senecio</i> (cineraria)
<i>Dianthus</i>	<i>Tagetes</i>
<i>Freesia</i>	<i>Tulipa</i>
<i>Fuchsia</i>	Bacterial
<i>Gladiolus</i>	<i>Anthurium</i>
<i>Impatiens</i>	<i>Dianthus</i>
<i>Kalanchoe</i>	<i>Dahlia</i>
<i>Lathyrus</i>	<i>Hydrangea</i>
<i>Liatris</i>	<i>Impatiens</i>
<i>Lilium</i>	<i>Pelargonium</i> (geranium)
<i>Lobularia</i>	<i>Petunia</i>
<i>Narcissus</i>	<i>Verbena</i>
<i>Matthiola</i>	<i>Zinnia</i>



Verticillium of Acer

Acer - Verticillium

This soil-borne fungus causes yellowing, wilting and dying leaves and branches. Greenish-black streaks or bands that follow the grain can be found in the sapwood. Infection usually occurs through the roots but may also occur above ground through insect and pruning wounds. Avoid planting susceptible varieties, and prune and burn diseased material.



Verticillium Wilt Symptoms on Acer

Anthurium - Xanthomonas Wilt

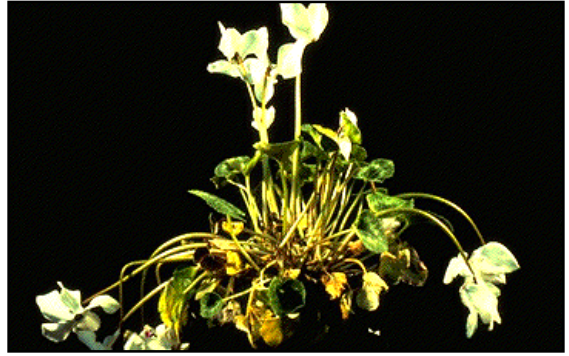
Causes small, water-soaked, translucent spots on leaf edges. Spots turn black, and become surrounded by bright yellow borders. May move into plant vascular system, causing death of older leaves, discoloration of tissues, and wilting. Overwinters in plant debris, and is transmitted by seed, soil, and water, entering through pores or wounds.



Anthurium with Xanthomonas

Cyclamen - Fusarium Wilt (*Fusarium oxysporum*)

Symptoms of this problem include stunting, wilting, yellowing, and leaf and stem death. It may start in one petiole and progress to other petioles. Spores are produced on dead tissue. Spores overwinter in the soil, infect through root tips, and remain in the soil for years.

Fusarium Wilt of *Cyclamen***Dianthus - Fusarium Wilt** (*Fusarium oxysporum* var. *dianthi*)

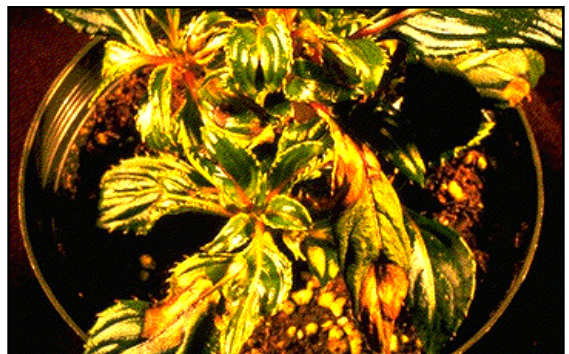
Seen as abnormal growth, stunting, browning, and wilting of young shoots. Leaves become yellowish with brown striping, and stems become softened. The fungus spreads through the soil, entering roots and stems through wounds. Overwinters on plant debris, producing spores throughout the growing season.

Fusarium Wilt of *Cyclamen***Impatiens - Bacterial Wilt** (*Pseudomonas solanacearum*)

Hosts become slightly stunted and gradually begin to wilt. Brown water-soaked streaks and spots appear, oozing dark bacterial slime. Cross-sections of stems show dark tissues. The bacteria overwinter in diseased plants or tissue, spreading through soil, water, seed or rhizomes.

*Dianthus* with Fusarium Wilt

J. Matteoni

*Pseudomonas* on New Guinea *Impatiens*