



# Master Gardeners of Ontario Tip Sheet

## DIAGNOSTIC KEY FOR PESTS AND DISEASES OF ANNUALS AND PERENNIALS

SYMPTOMS	POSSIBLE CAUSES	CONTROLS/COMMENTS
Plant wilting	Various root rots, stem cankers: Borers, aphids, plant hoppers, root feeding insects: rule out abiotic causes (see abiotic problem key). Examine plants carefully for signs of boring activity such as frass and holes in the stem. Carefully dig up a specimen to observe root symptoms. Healthy plants can be replanted.	Remove diseased plants from the garden, cut out infested (rotten) portions of perennials and replant remaining healthy sections.
Leaves eaten or chewed	Caterpillars, leaf feeding beetles and weevils, grasshoppers, sawflies, slugs, earwigs	Caterpillars should be controlled when larvae are small and before damage is extensive. The biological insecticide Bt is effective on small caterpillars. Large caterpillars, sawflies and beetles can be handpicked. Treat only if necessary. Slugs may be controlled with diatomaceous earth, baits or by removing cover, such as excess mulch.
Leaf yellowing, foliage fades, yellows, browns or wilts	Aphids, spider mites, mealybugs, whiteflies, borers:  Stem galls, root rots, Verticillium wilt:examine lower leaf surfaces for presence of spider mites or whiteflies. Examine twigs and branches for scale covers or borer holes. Scrape base of stem near soil line to look for evidence of vascular browning.	Light insect infestations do not require control. Plants damaged by heavy insect or mite feeding can be injured by insecticidal sprays during hot, dry weather. Prune or cut back affected sections. Discard diseased plants and prunings, do not compost. .

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Leaf stippling	<p><b>Leafhoppers, plant bugs</b> (especially 4-lined): nymphs and adults feed on lush spring growth causing yellow stipples that may become necrotic black blotches. Stunting may occur.</p>	<p>Most plants will outgrow the damage later in the season. If necessary, replace heavily damaged annuals.</p>
Leaf spots and leaf blotches	<p><b>Various fungi, bacteria, foliar nematodes.</b></p> <p><b>Plant bugs e.g., four lined plant bug:</b> yellowish green, black stripes, 0.75 cm long. Nymphs are bright orange. Feeding causes perfectly circular spots.</p> <p><b>Harlequin bugs:</b> red and black, shield shaped. Feeding causes white and yellow blotches on leaves.</p>	<p>For all conditions here, remove spotted leaves. Improve air circulation to prevent leaf diseases. Plants can tolerate heavy plant bug feeding. Encourage beneficial insects.</p>
Blights	<p><b>Southern blight</b> (<i>Sclerotiumrolfii</i>), and <b>Rhizoctonia web blight:</b> foliage collapses and turns brown or black. Plants may be killed.</p>	<p>Improve soil drainage and air circulation. Pull mulch back away from stems. No cure for Southern blight.</p>
Leaf scorch	<p><b>Heavy spider mite, whitefly and thrips feeding:</b> symptoms can occur along leaf margins or between veins.</p>	<p>Plants damaged by heavy insect or mite feeding can be injured by insecticidal sprays during hot dry weather.</p>
Twisted and distorted plant growth	<p><b>Aphids:</b> small, soft-bodied insects on young growth, stems and leaves.</p> <p><b>Treehoppers:</b> common, small jumping insects, vary in shape. Some appear humpbacked or resemble thorns.</p> <p><b>Viruses:</b> foliage appears mottled green and yellow. Plants may be stunted.</p>	<p>Encourage beneficial insects, such as ladybird beetles and parasitic wasps. Reduce heavy infestations of aphids and treehoppers with a strong jet of water.</p> <p>There are no controls for viruses. Discard infected plants in garbage, do not compost.</p>
Leaf mottling	<p><b>Viruses:</b> foliage appears mottled green and yellow. Plants may be stunted.</p>	<p>Discard infected plants in garbage, do not compost.</p>
Light coloured tunnels or blotches (mines) in leaves	<p><b>Leafminers:</b> larvae feed between the upper and lower leaf surfaces.</p>	<p>Pick off and discard infested leaves.</p>

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<b>White powdery coating on leaves</b>	<b>Powdery mildew fungi:</b> grow on the leaf surface.	Prune or re-site plant to improve air circulation. Ensure good sanitation to avoid re-infection.
<b>Orange yellow spots on leaves and stems</b>	<b>Rust fungi:</b> cause orange coloured spots on leaves and stems.	Spray with copper-based fungicides if disease is severe.
<b>TIP:</b> It is often easier and cheaper to replace annuals and perennials than to go through a lot of trouble and expense to control a problem.		