

Pictorial Guide to Geranium Wilt Disorders

Dr. Brian E. Whipker, Department of Horticultural Science

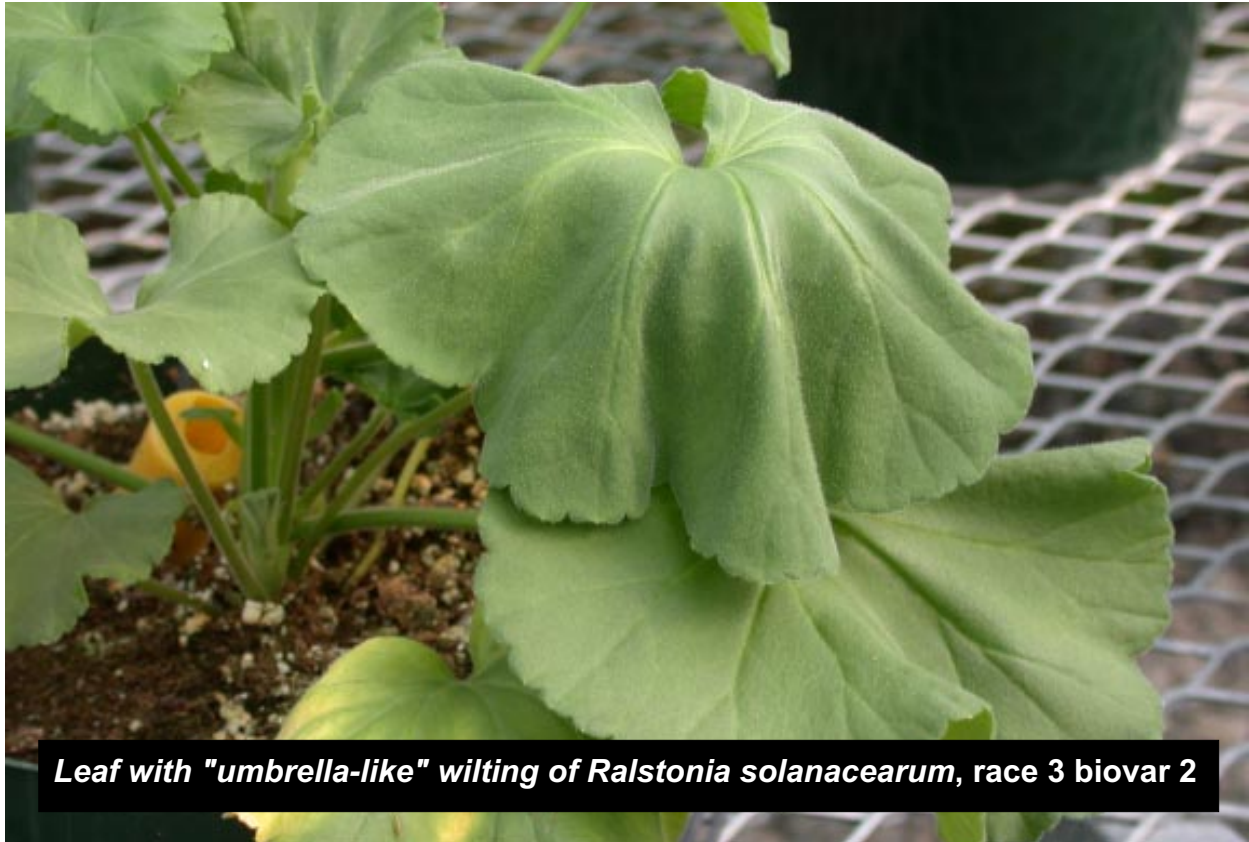
A number of disease and physiological disorders can cause wilting of geraniums. This guide is intended to be a pictorial reference to assist growers in distinguishing among the common disorders. Of course, if the problem is in doubt, submitting a plant sample to a disease diagnostic clinic will help determine the cause.

***Ralstonia solanacearum*, race 3 biovar 2**

Symptoms first appear as a wilting of the leaves. During warm, sunny days, the wilted leaves may take on an "umbrella-like" appearance. *Xanthomonas* (Bacterial Blight) also causes a similar umbrella-like leaf wilt. Leaf yellowing can occur and the leaves may have V-shaped yellow areas similar to symptoms of *Botrytis*. Roots will initially have a normal white appearance, which will help differentiate *Ralstonia* from *Pythium* or other root rots. As symptoms progress, lower leaf yellowing and necrosis develop

further up the plant. The plant ultimately dies. The disease is spread by movement of bacterium in irrigation water leachate and contaminated soil or by transmission of sap, which can occur with activities such as pinching. Suspect plants should be placed in plastic bags and removed from the greenhouse. NEVER compost the plant because the bacterium can survive for years in the soil. Submit a plant sample for diagnosis. If *Ralstonia* is confirmed, follow the USDA Action Plan for controlling the disease.







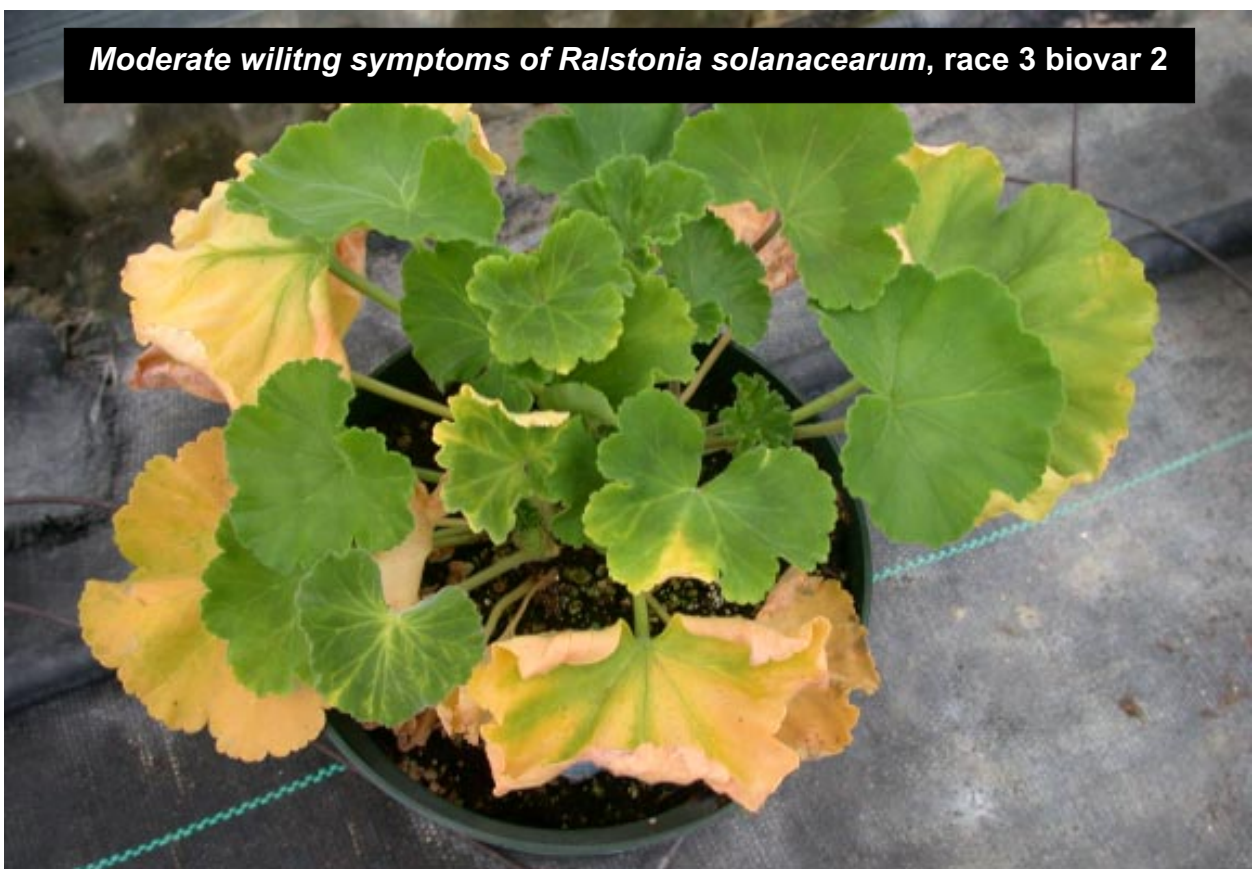


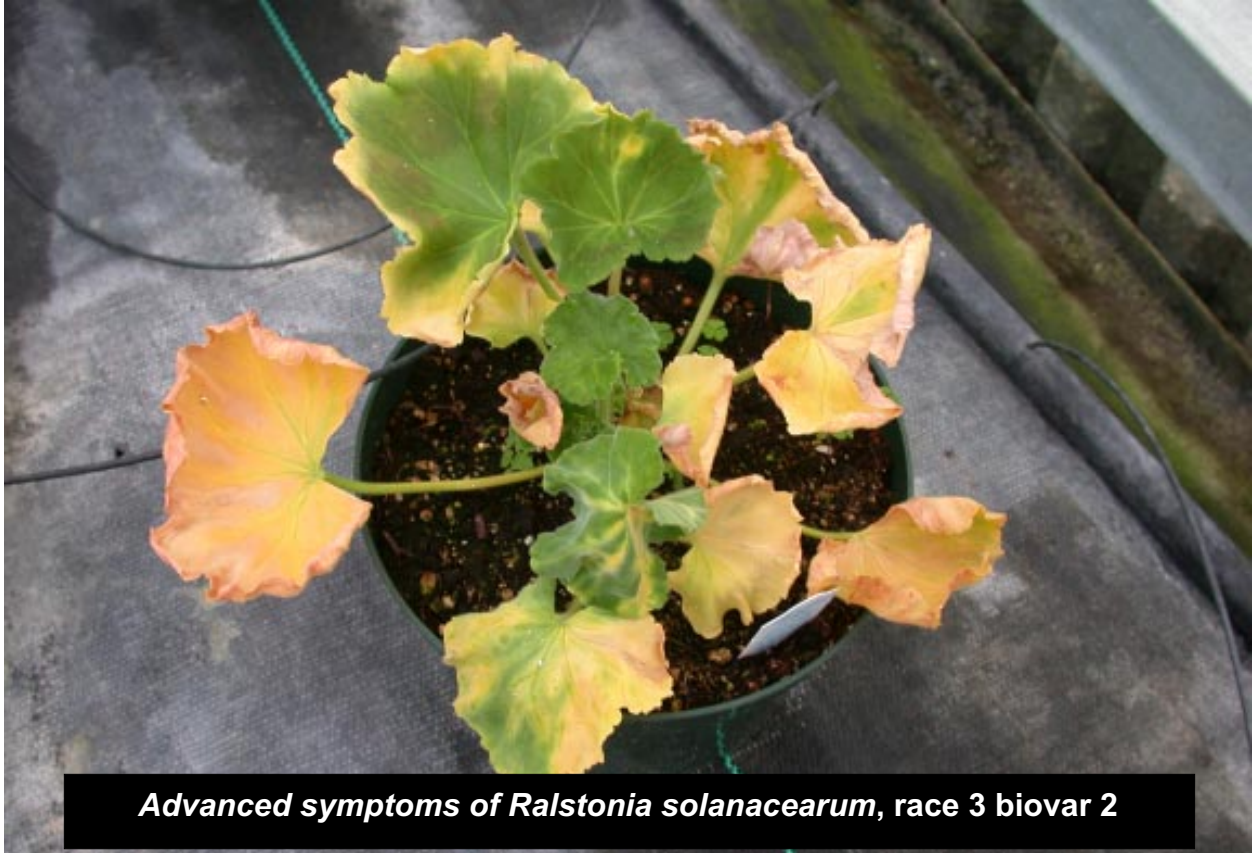
Initial wilting symptoms of Ralstonia solanacearum, race 3 biovar 2



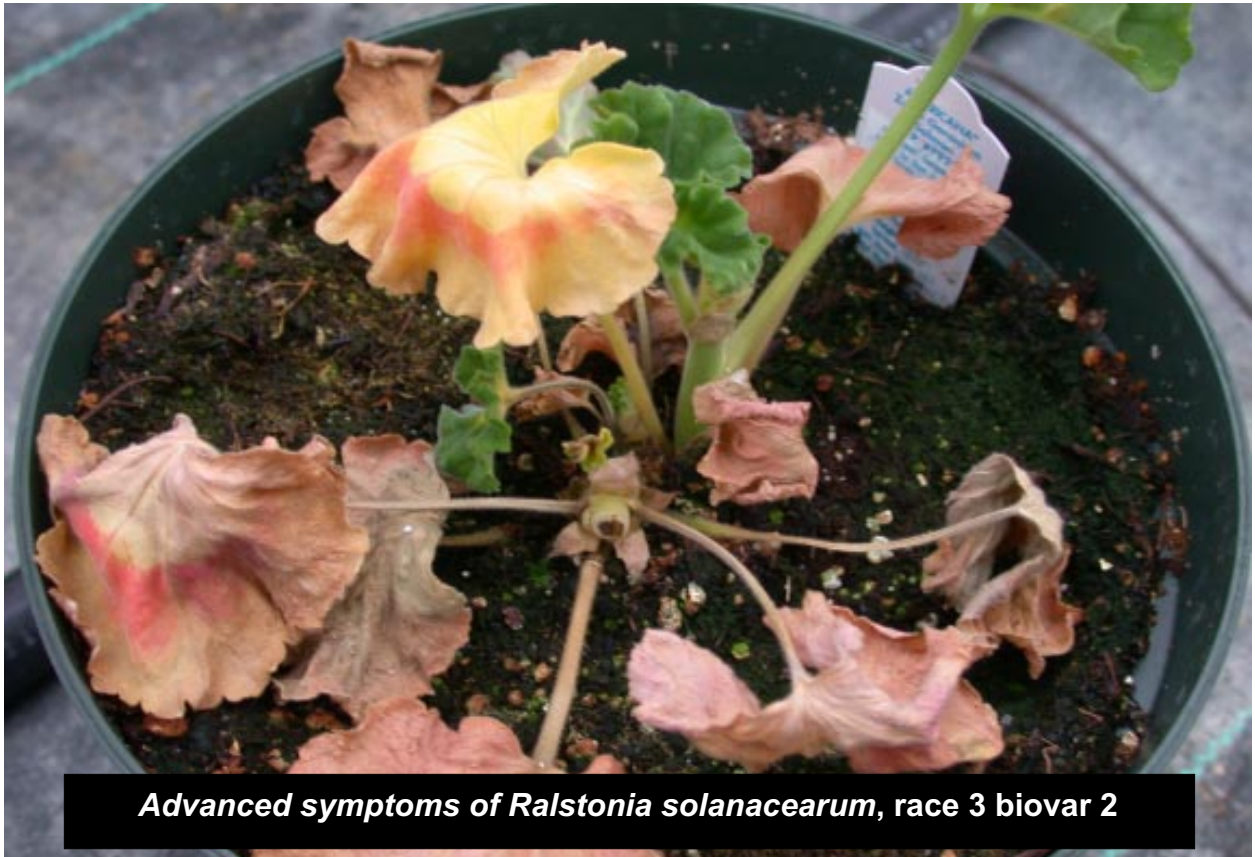
Moderate wilting symptoms of Ralstonia solanacearum, race 3 biovar 2







Advanced symptoms of Ralstonia solanacearum, race 3 biovar 2



Advanced symptoms of Ralstonia solanacearum, race 3 biovar 2

***Xanthomonas* (Bacterial Blight)**

Symptoms first appear as a wilting of the leaves, similar to *Ralstonia*. During warm, sunny days, the wilted leaves may take on an "umbrella-like" appearance. Leaf spots are also a common symptom. On the undersides of the leaves there will be a water-soaked spots. On the top of the leaf directly above the water-soaked lesion, a yellow spot will initially develop, which will then develop a necrotic spot

which is surrounded by a yellow halo. Roots will initially have a normal white appearance, which will help differentiate *Xanthomonas* from *Pythium* or other root rots. *Xanthomonas* is spread by splashing water. Leaf spot symptoms will continue to develop on other leaves if water splashing occurs. The plants will ultimately die.



Initial wilting symptoms of Xanthomonas



Advanced leaf spots of Xanthomonas



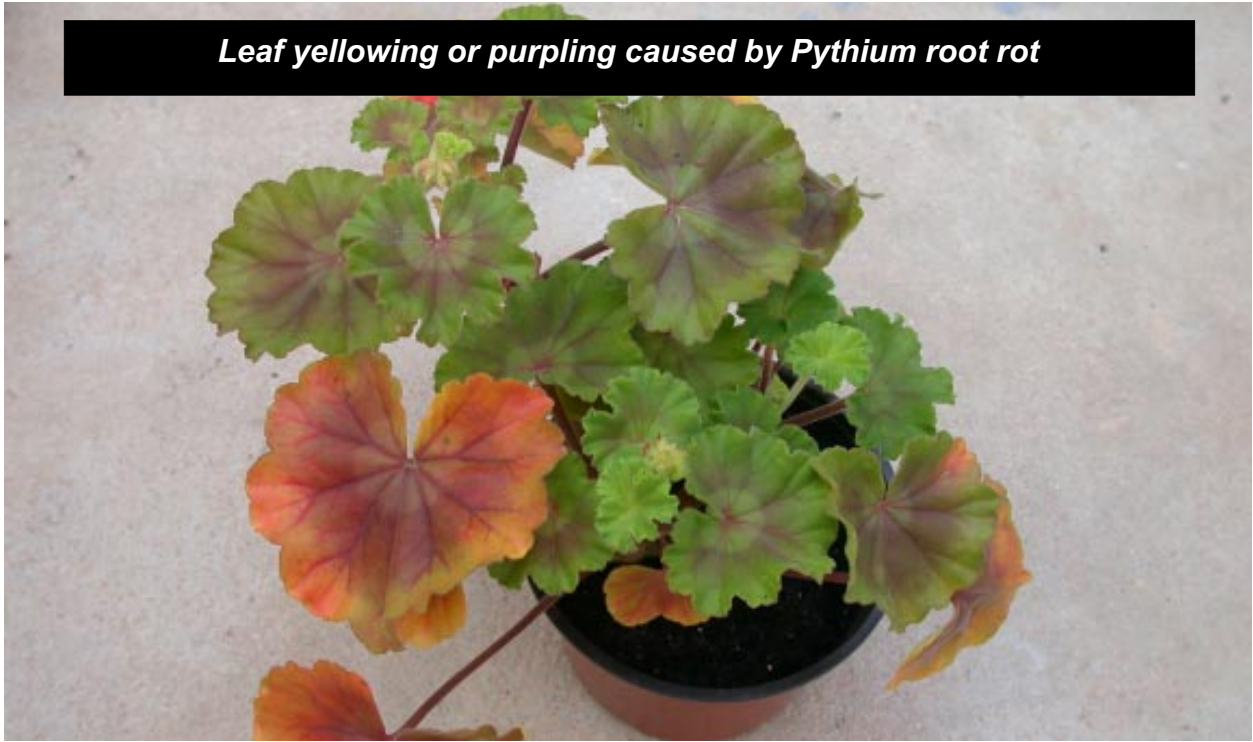
The progression of Xanthomonas leaf symptoms

Pythium Root Rot

Symptoms can appear as an overall yellowing or purpling of the lower leaves. Plants appear to be stunted and generally unthrifty. Inspection of the

roots reveal a grey to black discoloration instead of a normal white appearance.

Leaf yellowing or purpling caused by Pythium root rot



Discolored roots caused by Pythium root rot

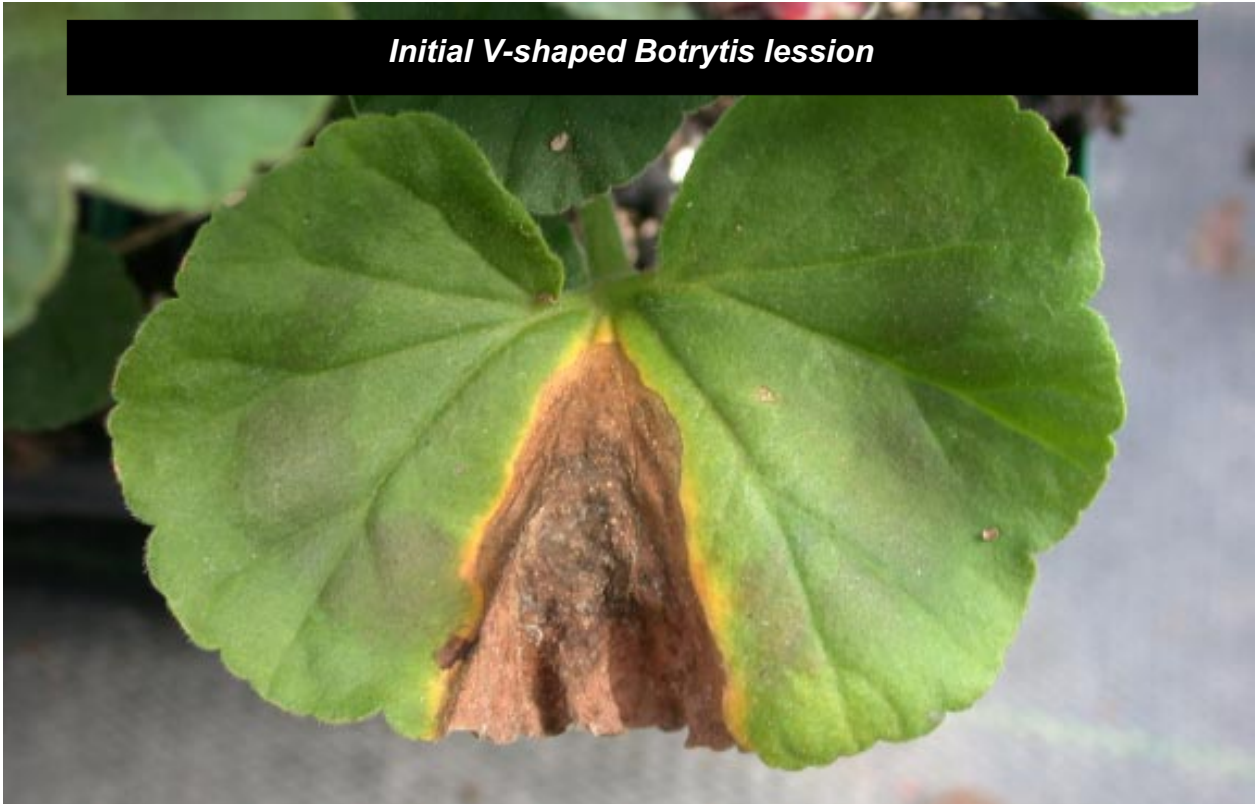


Botrytis

Symptoms first appear as a V-shaped yellow area on the leaves. The brown fuzzy fungal spores of Botrytis may also be present under periods of high humidity. There should not be any wilting of the leaves or the

plant, except if a stem canker has occurred. Plant death can follow if a canker has occurred near the soil line. Roots will appear healthy.

Initial V-shaped Botrytis lesion



Advanced symptoms of Botrytis, note the fuzzy spores





Water Stress

Symptoms can appear as an "umbrella-like" wilting of the leaves. The substrate will be dry. Under severe or chronic cases of water stress, the lower leaves will yellow and may turn necrotic. The roots should be

healthy unless the substrate electrical conductivity (EC) is also too high when the plant was allowed to wilt, which could then cause root death.

