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NebFact

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Bacterial Blight on Geranium

by Loren J. Giesler, Extension Plant Pathologist
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Geraniums are a popular bedding plant and an important greenhouse crop that can be devastated by bacterial blight. The focus of this Nebfact is to help producers diagnose suspected bacterial blight problems and appropriately manage the situation.

Cause and Hosts

Bacterial blight - the most destructive disease of geraniums - is also referred to as bacterial stem rot, bacterial wilt or bacterial leaf spot. It is caused by the bacterium *Xanthomonas campestris pv. pelargonii.* Cultivars of the zonal geraniums (*Pelargonium hortorum and P. peltatum*) are susceptible while Martha Washington or Regal geranium (*P. domesticum*) are not susceptible. The pathogen is not known to be seed transmitted.

Symptoms and Infection

Geranium plants can become infected with the bacterium in one of several ways. Most often infection occurs when cuttings are harvested from infected stock plants or in the propagation process by splashing water contaminated by infected foliage. Disease symptoms are highly variable and may depend on the method of inoculation. For example, cuttings may rot during propagation if contamination occurred during cutting. Cuttings will fail to root or root slowly and often rot from the base upward. Leaves usually wilt and turn yellow or brown. Stem rot may be delayed due to low temperatures and may not develop for at least a month. Leaves may become yellow and wilt prior to the actual stem rot.

Symptoms of bacterial blight will vary significantly with cultivar and species, as well as with the source of infection. When splashing water caused the inoculation, small water-soaked spots will develop on the leaves. Spots will be brown, slightly sunken, and approximately 1/16 to 1/8 inch in diameter. From the initial infection site on the leaves, bacteria may spread through the vascular system resulting in systemic infection. When plants are systemically infected, leaf wilt and plant death occur. Leaves can have a wedge-shaped necrotic area which is confined between leaf veins. Roots will appear healthy in those plants unlike plants infected with either *Pythium* or *Verticillium.* Infected ivy geraniums do not exhibit the same type of symptoms as zonal geraniums. Ivy geraniums may show symptoms similar to nutrient

deficiency or mite damage. Leaves become necrotic with or without wedge-shaped sections. A laboratory analysis is critical for an accurate diagnosis. If you suspect a bacterial blight problem, contact the:

Plant and Pest Diagnostic Clinic
448 Plant Sciences
P.O. Box 830722
Lincoln, NE 68583-0722
Phone: (402) 472-2559

Conditions Favoring Bacterial Blight

Symptom development is temperature-dependent and is favored by temperatures of 70-80oF. Warm temperatures enhance symptom development whereas temperatures below 70oF and above 90oF suppress symptoms. The pathogen is spread by contaminated cutting knives, overhead water application and employees' hands. White flies and other insects also can spread the bacterium in the greenhouse. The most common method of inoculation comes from contaminated stock plants from which cuttings are taken. Surfaces directly in contact with the cutting or production of geraniums should be thoroughly sanitized prior to propagation or planting.

Management

This particular bacterium does not survive in soil; however, it will persist in decaying geranium tissue. Since chemical control is unavailable, sanitation is the only management practice to prevent the occurrence and spread of the disease. Geranium growers should discard diseased plants as soon as they are observed and avoid hanging ivy geranium baskets above other geranium crops. Also, when possible, grow seed geraniums in a separate house from cutting geraniums and avoid crowding plants on greenhouse benches.

There is a product that reportedly "marks" geraniums infected with the bacterial blight organism. The product company suggests a yellowing effect will occur when used on infected geraniums, making it easier to identify and test them. This detection method has some limitations, however, in that it may not work under all greenhouse conditions. The product appears to work when temperatures are in the 80s and plants are smaller and actively growing. Do not be confused by false positives or negatives with this product and carefully consider whether it has a use in your set of growing conditions.

Information Resources

For more information on bacterial blight on geranium consult the following:

- White, J. W., Geraniums IV. 1993. Ball Publishing.
- Lindgren, D.T. and Watkins, J.E. 1989. Geranium Culture. G74-190. University of Nebraska Cooperative Extension.

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