

ALTERNARIA DISEASES OF ORNAMENTALS

A. R. Chase¹

Although *Alternaria* diseases are quite common on many ornamental crops, grown for the landscape and cut flowers, they are not extensively researched. Table 1. lists some of the flowering plants known to be attacked by *Alternaria* spp. The most common species of *Alternaria* found is *A. alternata* (found on vinca, dahlia, gerber daisy, hibiscus and geranium). In most other cases, the species of *Alternaria* has not been identified.

Spores of *Alternaria* spp. are dark brown to black and appear in felty black masses on leaf and petal spots on some plants. They generally move by water splashing or air movement. In some plants, such as zinnia, the infection originates in contaminated seed. Spread of *Alternaria* diseases from one type of flower to another can occur so control measures must focus on all susceptible plants.

Specific diseases

Alternaria leaf spot of *Coreopsis* spp. is characterized by small spots which are initially water-soaked. These spots turn reddish-brown, may reach 1/8 inch in diameter and are roughly circular. Spots generally do not merge but mixed infections with other fungi such as *Rhizoctonia* are common.

Alternaria alternata (*A. tenuis*) causes a leaf spot on **geranium** that is characterized by small (less than 1/8 inch wide) spots which are initially water-soaked. These spots turn reddish-brown, may reach 1/4 inch in diameter and are roughly circular with a yellow border. Spots generally do not merge. On *Petunia*, the disease is characterized by small spots which are initially water-soaked. These spots turn reddish-brown or black, may reach 1/8 inch in diameter and are roughly circular. Their centers are frequently tan to white. Spots can merge and in severe infections readily cause blighting, especially in the landscape.

Alternaria leaf spot of *Impatiens* is characterized by small (less than 1 mm in diameter) spots which are initially water-soaked. These spots turn reddish-brown with tan centers, may reach 1/8 inch in diameter and are round. Spots frequently merge to affect most parts of the leaf. Tests in fungicide control have shown excellent control with chlorothalonil (Daconil), mancozeb compounds, iprodione (Chipco 26019) and fludioxinil (Medallion).

Alternaria dianthi and *A. dianthicola* each cause diseases on **carnation and pinks** that are typified by gray brown leaf and petal spots with purple margins. Black spore masses in spots. Discard infected plants and all crop debris. Spores move by contaminated plants and by air movement. Free water is needed for 10 hours before infection can take place. Using benomyl causes more severe disease. Experiments have shown that chlorothalonil works well in controlling this disease.

Alternaria leaf spot of *Salvia* spp. (usually found on blue salvia) is characterized by small water-soaked areas. These spots turn reddish-brown or black, may reach 1/8 inch in diameter and are roughly circular. Spots generally do not merge but severe infections readily cause leaf drop, especially in the landscape. This disease sometimes appears similar to rust unless until leaf undersides are examined to reveal the dark brown rust pustules.

On **vinca**, small black leaf spots appear anywhere on the leaf, sometimes on petioles and stems and occasionally on flower petals. Spots range from pinpoint to about 1/8 inch wide. In severe infections, flowers become infected and die prematurely. This disease was first found in Florida but has been reported in other states recently. Vinca cultivars differ in resistance to Alternaria leaf spot. Highly susceptible cultivars were 'Cooler Grape', 'Cooler Peppermint', 'Cooler Blush', 'Tropicana Pink' and 'Little Blanche'. 'Tropicana Rose', 'Tropicana Bright Eye', 'Tropicana Blush' and 'Parasol' had consistently lower levels of Alternaria leaf spot than the others.

Table 1. Flowers affected by Alternaria leaf spot

Plant (common name)	Comments
<i>Calendula</i>	reddish-purple spots on leaves
<i>Catharanthus</i> (vinca)	flowers and leaves have spots, cultivars show varying levels Of Resistance, leaf drop occurs in severe infections
<i>Dianthus</i> (carnation)	Helminthosporium leaf spot can be confused with this, occurs on pinks
<i>Euphorbia pulcherrima</i> (poinsettia)	stem spots occur as well as leaf spots
<i>Eustoma</i> (lisianthus)	damping-off
<i>Impatiens</i>	similar to Impatiens Necrotic Spot Virus and Pseudomonas leaf spot
<i>Matthiola</i> (stock)	confused with anthracnose
<i>Pelargonium</i> (geranium)	small, tan circular spots form on landscape plants
<i>Petunia x hybrida</i>	not common
<i>Platycodon</i> (balloon flower)	large, tan spots with yellow borders
<i>Melampodium</i>	large, black spots
<i>Salvia</i> (especially <i>S. farinacea</i>)	leaf drop occurs in severe cases
<i>Tagetes</i> (marigold)	white spots form with purple margins
<i>Zinnia elegans</i>	can be see-borne and often in mixed infections with <i>Xanthomonas</i> (also seed-borne)

Control methods

Other fungi that cause similar spots include *Bipolaris*, *Corynespora*, *Drechslera*, *Helminthosporium*, *Stemphylium*, and *Ulocladium*. The diseases caused by these fungi can usually be controlled with the same fungicides and methods that control Alternaria leaf spot.

Although impractical in the landscape, elimination of water on leaves can control *Alternaria* leaf spot. Always use pathogen-free plants when available. Early diagnosis of a problem is also critical since choosing appropriate control measures depends upon an accurate diagnosis. Several studies on benomyl and the closely related thiophanate methyl compounds have shown that if they are used on *Alternaria* leaf and flower spots the disease can actually be made more severe. This class of fungicides does not control *Alternaria* (or any closely related fungus) and should not be used for this purpose.

Fungicides which are known to control some *Alternaria* diseases include mancozeb (Dithane T & O and Protect T & O), iprodione (Chipco 26019), chlorothalonil (Daconil 2787), copper pentahydrate (Phyton 27) and other copper compounds. As always, be sure to check labels for legal uses in your state and follow directions carefully to avoid phytotoxicity and potential failure of the products.