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BOTRYTIS BLIGHT OF HERBACEOUS ORNAMENTALS

Botrytis blight, also called gray mold, is a very destructive disease of a wide range of herbaceous annual and perennial plants, such as African violet, begonia, chrysanthemum, cyclamen, dahlia, geranium, lily, peony, poinsettia, rose, tulip, and zinnia in gardens and greenhouses. The disease can develop on most aboveground parts of a plant and cause leaf and blossom blight, stem canker, crown rot, and damping-off. Botrytis blight can also cause economic losses during shipment of potted plants and cut flowers.

SYMPTOMS AND DIAGNOSTICS

Botrytis is considered a 'weak' pathogen that primarily attacks tender, weakened, wounded, or dead tissues. Symptoms of blossom blight begin as irregular, tannish, water-soaked spots on petals that cause whole flower blight (Figure 1). On leaves, symptoms start as small water-soaked spots that enlarge and coalesce, so infected leaves appear blighted (Figures 1 and 2). When stems are infected, black, sunken and elongated lesions can develop (Figure 3). Further development of lesions can weaken and girdle the stems and lead to stunting of the plants and wilting of the foliage above cankers (Figure 4). Botrytis blight can also cause damping-off of seedlings (Figure 5). The symptoms on seedling were tan-to-brown, water-soaked rot of stems near the soil line and wilting or

Figure 1. Brown lesions and blight on tulip leaves and flower petals (arrows).

Figure 2. Brown lesions on zinnia leaves (arrows).

Figure 4. Stunting and wilting due to the girdling stem (arrow) on a poinsettia plant (right) compared to a healthy plant (left).

Figure 5. Symptoms of damping off on a diseased seedling with reddish browning of a leaf petiole and the base of the leaf (arrow).

Figure 6. Black sclerotia (arrow) on a blighted tulip bulb.

collapse of upper parts of the plants. Gray fuzzy mold on infected plant tissues is a characteristic sign to identify Botrytis blight (Figures 1, 3 and 5). On bulbs, outer bulb scales may also be infected and show yellow to brown sunken lesions. Small, shiny black fungal resting structures (sclerotia) may be visible on the surface of infected bulb tissues (Figure 6).

DISEASE DEVELOPMENT

Botrytis blight is commonly caused by the fungus *Botrytis cinerea,* although there are several other *Botrytis* species that cause blights of herbaceous annual and perennial ornamentals; one example is tulip fire, caused by *B. tulipae*. Botrytis blight fungi can persist in greenhouses year-round on living or dead plants and survive as sclerotia in infected plant tissues and soil for several years. Movement of contaminated soil or diseased plant materials can spread the disease. Fungal spores produced in a fuzzy, grayish mass are readily liberated and dispersed by wind and air movement. In periods of high relative humidity (90 to 100%) or when there is free moisture on plant surfaces, spores germinate and penetrate plants through wounded or weakened tissues, such as cutting stubs, tip-scorched leaves, withering petals, weakened

stems, and dying leaves. Infections can recur throughout the season. The optimal condition for the fungal infection is cool temperatures (66-74°F) and high relative humidity. Epidemics of Botrytis blight are favored by rainy and drizzly weather conditions.

MANAGEMENT

Cultural practices: Plant healthy and pathogen-free plants, liners, and bulbs. Keep adequate spaces between plants to improve air circulation and maintain low humidity between plants. Water plants in the morning and avoid overhead irrigation when possible. Cut off faded or blighted flowers. Remove heavily infected plants from greenhouses or gardens.

Fungicide application: The fungicides registered for managing Botrytis blight in Connecticut include iprodione, thiophanate-methyl, fenhexamid, fludioxonil, chlorothalonil, and a premix of cyprodinil and fludioxonil. For organic gardens and greenhouses, the options include neem oil, copper products, *Bacillus subtilis* (Serenade), and *B. pumilus* (Sonata). Since most of these products are used to prevent diseases, early application and thorough coverage are critical for effective control. Rotate fungicides with different FRAC codes to help delay resistance in the pathogen. The pesticide label will contain information on dosage rates, application intervals, and safety precautions.

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