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BOTRYTIS BLIGHT OF BLUEBERRY

Botrytis blight is one of most common diseases at all growing stages of blueberry, which causes blossom blight, twig blight, and fruit rot. The disease can result in severe economic losses in fields, particularly in extended periods of rain and high humidity conditions. The disease can also cause post-harvest losses of blueberries during transportation and storage.

SYMPTOMS AND DIAGNOSTICS

In the spring, Botrytis blight first attacks flowers at blooming. The initial symptom appears as water-soaked spots on petals following by browning of the entire flower (Figure 1). Infections may move through the blossom to the entire floral structure. Infected blossoms tend to stick on longer to the calyx. The disease also can move from flower clusters at the tip into the succulent stem at the base, which can cause twig blight or diebacks and kill all flowers above the infection site (Figure 2). On green fruit, symptoms appear a brown water-soaked discoloration near the calyx end of the fruit. Infected berries may rot and drop from the cluster when they are ripening. Infected berries may not show any visible symptoms in the garden or field until post-harvest when it becomes favorable for disease development. Woody stems are less susceptible to the disease. Under a high relative humidity condition, grayish fungal spores develop on diseased tissues including flowers, fruits, and stems, which give the tissues a dense gray fuzzy appearance.

DISEASE DEVELOPMENT

The pathogen of Botrytis blight of blueberry, *Botrytis cinerea*, has a wide host range that includes over 500 plant species in vegetables, fruits, and herbaceous ornamentals. Dormant

Figure 1. Browning and discoloration of blossoms and calyx (arrows).

Figure 2. Tip diebacks and twig blight.

mycelia of the fungus survive in dead twigs on the plant and in plant debris on the ground. Resting structures (sclerotia) of the fungus are resistant to unfavorable environment conditions and persist in the soil for a long period without host plant tissues. In the spring, the pathogen form spores on overwintered inoculum sources and attack faded flower petals and senescent plant tissues. During the season, the fungus produces a danse gray spore mess on infected tissues. Fungal spores are dispersed by air currents or water splash and cause new infections in fields. Spore germination and infections require at least 6 hours of continuous wetness on the surface of plant tissues or high relative humidity (>90%). The optimum temperature range for spore germination and infection is 65-75 °F. So, periods of rainy cool weather and extended periods of high relative humidity conditions are favorable for the disease development. Frequent overhead irrigation and poor air circulation can prolong leaf wetness and relative humidity conditions, which favor fungal sporulation, spore germination, and infection. Frost damage and other physical injuries on tender new growth make it more valuable to the disease. Dead tissues on bushes may offer opportunities for the fungal colonization and spore production during the season.

MANAGEMENT

Cultural practice: Prune and remove dead twigs and branches to reduce inoculum sources. Improve air circulation by using adequate spacing, annual pruning, and weed control. Avoid wetting foliage by using drip irrigation instead of overhead irrigation. Improve plant vigor by adjusting soil pH in the range of 4.5-5.5 and avoiding excessive nitrogen fertilization. Frequently and timely harvest ripened fruits to prevent fruit rot in fields.

Fungicide application: Fungicide treatments are preventative to protect healthy tissues from the disease. If Botrytis blight is detected on flowers and wet weather is forecast, a fungicide spray program may be required from pre-bloom through the end of bloom. Fungicide applications need to be repeated at label-recommended intervals. If weather conditions are conducive to infection when berries are ripening, a preharvest application may be needed later in the season to prevent post-harvest berry rot and losses. Fungicides that are registered for Botrytis blight include captan, iprodione, fenhexamid, boscalid, and thiophanate-methyl. Organic options include Serenade (*Bacillus subtilis* strain QST 713). Fungicide resistance to site-specific fungicides is a real concern with this pathogen. These fungicides should not be applied consecutively or be alternated with other fungicides from different FRAC groups to avoid fungicide resistance development in the fungal population.

January 2023