

## ANTHRACNOSE OF STRAWBERRY

Anthracnose is a common disease that causes leaf spot, petiole and stolon cankers, crown rot, and fruit rot in commercial and residential strawberry plantings. The disease can be devastating and cause severe yield losses in fields under optimum conditions. Anthracnose of strawberry is considered a high-temperature-loving disease and called “southern disease”. So, the disease has been restricted to the southeastern United States. Over the past few years, crown rot, petiole canker, and stolon canker were occasionally observed in commercial strawberry fields in Connecticut, which posts a threat to strawberry production in the state with increase in temperatures from climate change. Infected fruit can result in reduced shelf-life and poor quality on the fresh market.

### SYMPTOMS AND DIAGNOSTICS

On petioles and stolons, the initial symptom appears dark-brown lesions that gradually



Figure 1. Brown spots and sunken lesions on petioles (arrows).

become black and sunken. When the lesion completely girdles the petiole or stolon, the leaf or entire daughter plant turns brown and dies (Figures 1 and 2). In wet and highly humid weather conditions, pale pink or whitish spore masses are noticeable on diseased tissues (Figure 2). Crown rot can result in stunting and wilting of above-ground parts of the plant followed by browning of leaves and the death of the entire plant. When infected crowns were cut, reddish brown to cinnamon-colored tissues can be observed in the crown (Figure 3), which is a characteristic symptom of crown rot. Strawberry leaves can be attacked by two anthracnose diseases, anthracnose leaf spot and irregular leaf spot. The symptom of anthracnose leaf spot appears as a small, round, brown spot that can develop up to one-tenth inch in diameter. But the irregular leaf spot lesions are larger and irregular-shaped,



Figure 2. A dark brown lesion on a stolon (white arrow) and whitish spore mass on petioles (red arrow).



Figure 3. Reddish-brown discoloration of crown tissues killed by anthracnose crown rot.

which often begin at the leaf margin and expand up to one-third inch inward. Symptoms of fruit rot include white to light-brown spots on ripening fruits, which enlarge and become dark-brown and sunken.

### DISEASE DEVELOPMENT

Anthracnose of strawberry is caused by several *Colletotrichum* species or their complex. The pathogens are not host-specific and have wide host ranges that include many fruit, vegetable, and weed species. The pathogens can overwinter in infected host plants and plant debris. In a new strawberry field, infected transplants are main sources of the inoculum. Infected plants may be asymptomatic until environmental conditions are favorable for the disease development, which allows the disease undetected in periods time. Under frequent rainfall and warm weather conditions, the pathogen produce abundant spores on diseased plant tissues. Fungal spores are dispersed in fields by splashing water from rain or overhead irrigation.

### MANAGEMENT

*Using disease-free planting materials:* Starting with disease-free planting materials that are purchased from reputable suppliers is

the best way to avoid introducing the disease to fields.

*Cultural practice:* Select fields with slight slopes to prevent rain-water collection and reduce relative humidity in the field. Adequately space plants for a good air circulation. Use straw mulch between rows to reduce water splash and disease spread. Use drip irrigation rather than overhead irrigation if possible. Control weeds to reduce inoculum sources and improve air circulation. Remove old, infected plant materials (leaves, stolons, and fruit) from the fields.

*Fungicide treatment:* If anthracnose is suspected in incoming planting materials, fungicide dips may reduce losses caused by crown rot. When the disease is detected in fields, foliar fungicide applications may prevent further spread of the disease and fruit rot, but not effective for crown rot. Fungicide resistance has been identified in many *Colletotrichum* species, especially to site-specific fungicides, such as azoxystrobin, praclorobin, and triloxystrobin. Fungicide programs in nurseries may affect fungicide resistance in the fungal population on strawberry transplants. Broad spectrum protectant fungicides, Captan and thiram, can be used as a part of the fungicide rotation program to prevent fungicide resistance development. Always read and follow all label directions before using any pesticides.

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