

Plant Pathology Fact Sheet

Strawberry Anthracnose

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Importance

Anthracnose can be a serious problem in Southern and Midwestern strawberry plantings. The disease may appear as a fruit or crown rot, both of which severely reduce plant stands and yields. Fruit rot, the most common form of anthracnose, appears as fruit begins to ripen in late spring. Crown rots, on the other hand, can develop in young plants soon after planting or when weather warms in spring.

Symptoms

FRUIT ROT

Anthracnose fruit rot can infect green fruit but is found most often on ripe fruit. Round, firm, sunken spots develop on ripening fruit (FIGURE 1). Spots may range from tan to dark brown. Under rainy or humid conditions, masses of fungal spores develop around the center of spots in a cream to salmon-colored slimy matrix (FIGURE 2). Spots often enlarge until the entire fruit is affected. Diseased fruit frequently become mummified.

CROWN ROT

The first visible symptoms of crown rot are sudden leaf wilting and plant death.



FIGURE 1. SUNKEN SPOTS ON FRUIT DUE TO ANTHRACNOSE.



FIGURE 2. MASSES OF FUNGAL SPORES DEVELOP IN DECAYED AREAS ON INFECTED FRUIT.

Crown infections are initiated by spores splashing or washing into central buds from leaves or petioles or by the fungus growing directly into crown tissue. When crowns of wilted plants are split lengthwise, reddish brown streaking/marbling is visible (FIGURE 3). Although strawberry crowns show discoloration regardless of the cause of death, the reddish marbling pattern is most characteristic of anthracnose. Anthracnose crown rot is active during warm weather

but becomes dormant during colder months. However, disease progression resumes when soil warms in spring.

PETIOLES AND STOLONS

Small, dark lesions (dead spots) can appear on stolons and petioles anytime during warm weather. Lesions gradually become black, dry, and sunken. When a lesion girdles a stolon, the unrooted daughter plant beyond the lesion dies. Similarly, a lesion on the petiole often results in death of the attached leaf. Anthracnose symptoms on petioles and stolons are often confused with diseases caused by *Rhizoctonia* and various other leaf spot fungi.



FIGURE 3. A STRAWBERRY CROWN WITH THE REDDISH-BROWN DISCOLORATION TYPICAL OF ANTHRACNOSE.

LEAF SPOT

Small, round, black to gray spots can appear on expanding leaflets even before petiole or stolon symptoms are noticed. Spores produced in these lesions can wash down into crowns and initiate crown rot.

Cause and Disease Development

Strawberry anthracnose is caused by at least two species of the fungus *Colletotrichum*. *Colletotrichum fragariae* is primarily a crown rotting fungus, and *C. acutatum* primarily rots fruit. These fungi can persist in infected plants as dormant spores or other fungal structures. During warm and rainy or humid weather, the fungi become active and rapidly initiate disease development.

Short distance disease spread can occur in the field via

- Rain splash
- Overhead irrigation water
- Movement of contaminated equipment

Long distance spread is accomplished by

- Movement of strawberry transplants from the nursery to the grower

Pest Management

- Purchase only disease-free transplants from a reputable nursery. Strawberry anthracnose is best controlled by keeping the disease out of strawberry fields and preventing fungi from becoming established.
- Carefully inspect all plants prior to planting to assure that there are no visible disease symptoms.
- Begin protectant fungicide programs with a pre-plant fungicide dip.
- Fruit rots can be managed with preventative fungicide applications from bloom through harvest.
- Crown rots should be managed using soil drench fungicides. Treat plants regularly until cool weather sets in. Resume fungicide applications at bloom and continue until harvest. Follow label instructions concerning pre-harvest intervals. Once anthracnose crown rot becomes established, plants cannot be cured.
- Maintain mulch (plastic or straw) to reduce water dispersal and disease spread.
- Remove infected berries, plant parts, and other plant debris, which can serve as a source of inoculum (spores).
- Rotate with a different plant type if infection was severe the previous season. Anthracnose pathogens can survive in soils for up to 9 months.
- New fields containing healthy transplants should be planted at least one hundred yards from diseased fields.

Additional Resources

- Disease and Insect Control Programs for Homegrown Fruit in Kentucky, Including Organic Alternatives, ID-21 (University of Kentucky)

<http://www.ca.uky.edu/agc/pubs/id/id21/id21.pdf>

- Effectiveness of Fungicides for Management of Strawberry Diseases, PPFS-FR-S-15

http://www.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-FR-S-15.pdf

- Midwest Commercial Small Fruit and Grape Spray Guide, ID-94 (University of Kentucky in cooperation with the Midwest Fruit Workers Group)

<http://www.hort.purdue.edu/hort/ext/sfg/>

- Midwest Small Fruit Pest Management Handbook, B-861 (University of Kentucky in cooperation with the Midwest Fruit Workers Group)

<http://ohioline.osu.edu/b861/index.html>

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Photos by John Hartman (fruit lesions, pg. 1 & crown rot, pg. 2) and Paul Bachi (spore masses, pg. 1), University of Kentucky