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report on
PLANT
DISEASE

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RASPBERRY ANTHRACNOSE

Raspberry anthracnose, caused by the fungus *Elsinoe veneta,* is the most common and widespread disease of brambles. The disease is most destructive on black and purple raspberries. Although red raspberries, blackberries, dewberries, and loganberries are commonly affected, anthracnose is not usually as serious on these brambles. The disease infects the canes, leaves, fruit, and stems of berry clusters. Losses result from defoliation, a general stunting and decrease in cane vigor, a reduction in fruit yield and quality, and the death of the canes. Infected canes are more susceptible to winter injury and other diseases than healthy canes. If left uncontrolled for a year or more, the raspberry anthracnose can cause an almost total crop loss.

Figure 1. Anthracnose lesions on black raspberry primocane (courtesy B. Williamson).

SYMPTOMS

Canes. Small, roundish, slightly raised, purple lesions appear on young canes. These lesions enlarge up to about 3/8 inch (9 mm) in diameter and become oval shaped. The centers become somewhat sunken and pale buff to ash gray in color, with the margins somewhat raised and purple (Figure 1). If numerous, the lesions merge and cover large portions of the cane (Figure 2) giving a "graybark" appearance. As cane infections progress, lesions become sunken, cracked, and very rough. Infected canes dry out, weaken, and often die during the winter or break off during their fruiting year.

Figure 3. Anthracnose infecting a raspberry leaf.

Figure 2. Late season anthracnose on raspberry canes.

Fruit, Leaf, and Flower Stems. These plant parts develop small, elongated, gray lesions similar to those described on the canes. Fruiting stems girdled will curl and crack. Fruit produced on these stems is small, hard, dry, and seedy. In rainy weather, individual berry drupelets become rusty brown, scabby, and shrunken.

For further information concerning fruit disease problems, contact Mohammad Babadoost, Extension Specialist in Fruit and Vegetable Pathology, Department of Crop Sciences, University of Illinois at Urbana-Champaign. (Phone: 217/333-1523; email:babadoos@uiuc.edu)

Leaves. The anthracnose disease also appears on the upper leaf surface in early to midsummer and appears as irregular, yellowish white spots about 1/16 inch (1.5 mm) in diameter (Figure 3). The spots gradually enlarge, develop a reddish purple margin around a light gray center. The infected leaf tissue may drop out, producing a "shot-hole" effect (Figure 3). Severe leaf infection may cause premature defoliation.

DISEASE CYCLE

The fungus overwinters as mycelium, ascocarps, or acervuli within lesions on overwintering canes. In the early spring, the fungus produces two types of microscopic spores (conidia and ascospores) that are rain-splashed, blown, or carried by insects to young, actively growing cane and leaf tissues. The spores germinate in a film of moisture in 3 to 12 hours and infect young tissues; new spots appear about a week later. As the canes mature, they become hardened and more resistant to infection. Spores (conidia) are released and spread during late August and September rains. Numerous dark specks (pimplelike acervuli), often arranged in radiating patterns, develop within lesions. These lesions produce the conidia for infections the following spring, thus completing the disease cycle.

CONTROL

Raspberry anthracnose is not difficult to control if the outlined recommendations are followed.

1. Choose a sunny planting site with good soil and air drainage. Avoid shady areas. The more rapidly the canes and foliage dry following dew, rain, or overhead irrigation, the less chance there is for anthracnose to develop.

2. Start with planting stock that is certified, No. 1 grade, one year old, and virus-free. Always purchase plants from reputable nurseries. **Never** take plants from a friend or from an established bramble patch. When setting out new plants in the early spring, cut off the "handles" (old cane stubs) at ground level. New shoots will appear from the crown. At the same time, remove all dead and winter-injured canes from the planting site. Destroy these prunings **before** new shoots appear. Infections on these canes are the source of anthracnose infections on new plants. In addition, remove all wild or neglected raspberries and blackberries in the area.

3. To maintain plant vigor, fertilize raspberries as needed, but avoid using excessive amounts of fertilizer.

4. Keep the fruit-planting area free of weeds. Cultivate carefully to reduce root injury. Keep rows about 12 to 18 inches (30 to 45 cm) wide for better air circulation, penetration of sunlight, and good spray coverage.

5. Remove and destroy all infected and old fruited canes immediately after harvest. Prune close to the ground. Thin the new canes to about 6 for staked-hill plantings, or 4 to 6 inches (10 to 15 cm) apart for hedge rows. Thin out all weak, short, spindly, and injured canes.

6. Follow the raspberry spray schedule outlined in the “Illinois Commercial Small Fruit and Grape Spray Guide” (website: http://www.hort.purdue.edu/hort/ext/sfg/). Thorough coverage of all canes and foliage with each application is essential. If possible, apply the spray prior to rain. The spray material must be dry before the rain starts.

In the spring, spray when the buds show no more than 3/8 inches (1 cm) of green at the tips. Where anthracnose has been severe, spray again when the new canes are 6 to 8 inches(15 to 20 cm) tall; or just before the blossoms open on the fruiting canes; just after bloom as soon as the petals fall; and just after the fruit has been harvested and old canes removed. Consult the raspberry spray schedule for recommendations as to spray materials and rates recommended for controlling bramble diseases.

7. Keep raspberry plantings free of insects such as crown borers, stem girdlers, aphids, fruitworms, rose scale, sawflies, plant bugs, tree crickets, picnic and sap beetles, and mites. Follow the cultural and chemical control suggestions given in the "Midwest Small Fruit Pest Management Handbook" (Website: http://www.ag.ohio-state.edu/~ohioline/b861/index.html) and "Illinois Commercial Fruit and Grape Spray Guide." Also, more information is available in the "Compendium of Raspberry and Blackberry Diseases and Insects", published by the American Phytopathological Society, St. Paul, Minnesota.

Publications mentioned above are available from University of Illinois Ag Services, P345, 1917 South Wright St., Champaign, IL 61820 (1-800-345-6087).