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report on
PLANT
DISEASE

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SPUR BLIGHT AND CANE BLIGHT OF RASPBERRIES

Spur and cane blights are common, serious diseases of raspberries in Illinois, especially during wet seasons. These blights often occur together on red raspberries, weakening the canes and reducing yield.

SPUR BLIGHT

Spur blight is caused by the fungus *Didymella applanata* (the imperfect stage is an unnamed *Phoma* sp.). This disease is more common and serious on red raspberries and to a lesser extent on black and purple raspberries and loganberries. Blackberries and dewberries are highly resistant to this disease. Spur blight can cause yield losses in several ways. It can blight the fruit bearing spurs, cause premature leaf drop, and kill buds on the canes that later develop into fruit bearing side branches. In addition, berries produced on diseased canes may be dry, small, and seedy. Affected canes may be more vulnerable to winter injury than uninfected ones.

Figure 1. Red raspberry canes showing spur blight infections (dark areas).

Figure 2. Cane blight on black raspberry - note gray spore masses.

Symptoms

Chocolate brown, dark blue, or purplish spots with encircling bands form on the new canes and leaf petioles in the late spring or early summer, usually at a bud or leaf attachment (Figure 1). The infected areas, which vary from half an inch to several inches long, gradually enlarge until the cane is girdled. By late summer the bark in the cankered area dries up, and the canes may crack and split lengthwise. Speck-sized, black reproductive bodies (pycnidia) of the fungus develop in the dead bark. Later in the fall, the bark in these areas turns silvery gray, and numerous black pustules containing perithecia (another reproductive structure of the fungus) form on the lesion. Many buds on fruiting canes that were infected the previous year shrivel and die.

Further information concerning fruit diseases can be obtained by contacting Mohammad Babadoost, Extension Specialist in Plant Pathology, Fruit and Vegetable Diseases, Department of Crop Sciences, University of Illinois, Urbana-Champaign (217)333-1523; email: babadoos@uiuc.edu).

Surviving infected buds develop small, weak, lateral shoots with stunted yellow leaves that wither and die early in the season.

Leaves sometimes become infected and show brown, angular or wedge-shaped areas. The widest part of the wedge is toward the margin or tip of the leaflet. Spur blight spreads into the leaf petiole and into the cane at the point of attachment. Leaflets on diseased canes turn yellow and drop prematurely, sometimes leaving the petiole (leaf stem) attached to the cane.

Disease Cycle

The fungus survives on infected canes during winter. The following spring and summer, during wet and rainy periods, spores are released and carried by splashing rain and wind to nearby canes and leaves, where they germinate and penetrate plant tissue. Infections commonly occur where the leaf petiole is attached to the stem.

Large numbers of spores (conidia) ooze from pycnidia during warm, wet weather. These spores are washed and splashed to other canes, where new infection occurs through wounded or unwounded tissue.

CANE BLIGHT

Cane blight is caused by the fungus *Leptosphaeri coniothyrium* (the imperfect stage, *Coniothyrium fuckelii*). This disease, more common on black raspberries, also occurs on red and purple varieties but rarely attacks blackberries and dewberries. Cane blight can result in wilt and death of lateral shoots, a general weakening of the cane, and reduced yield.

Symptoms

Toward the end of the season, dark brown to purplish black cankers form where pruning, insect, and other wounds occurred on young canes. The cankers enlarge and encircle the cane causing the lateral shoots to wilt and die. On second-year canes, the side branches may suddenly wilt and die, usually between blossom time and fruit ripening. Close examination reveals the presence of cankers on the branches or the main cane where insect injury, pruning wound, or other type of wound has occurred. Infected canes commonly become cracked and brittle, and break easily. Numerous black specks (pycnidia), the reproductive bodies of the fungus, develop in the cankers. In wet weather, large numbers of microscopic, olive-colored spores (conidia) ooze from the pycnidia, giving the bark a characteristic dark gray, smudgy appearance.

Disease Cycle

The pathogen survives over winter on infected or dead canes. The following spring, conidia, formed in pycnidia, ooze out during wet periods. These spores are rain splashed, blown, and carried by insects to nearby canes. Under moist conditions these conidia will quickly germinate and penetrate any type of wound, rapidly killing cane tissue. Infection occurs at almost any time of the growing season. Pycnidia are formed in the dead portions of the older cankers. Dead canes continue to produce conidia and remain a source of infection for several years.

Control of Spur Blight and Cane Blight

These blights are not difficult to control if the following suggestions are followed.

1. **Select a sunny planting location with good soil drainage and air circulation.** Avoid shady areas. The longer the canes and foliage remain wet from dew, rain, etc., the greater the chance for spur blight and cane blight development.

2. **Plant certified, No. 1 grade, one-year-old, substantially virus-free stock.** When setting out new plants in the early spring, cut off the "handles" (old cane stubs) at ground level and destroy them. **Before** new shoots appear, remove and destroy all dead and winter-injured canes from established plantings. Also remove all wild or neglected raspberries and blackberries in the area.

3. **Fertilize raspberries to maintain plant vigor, but avoid using an excessive amount of fertilizer.**

4. **Keep the fruit-planting and surrounding region free of weeds and cultivate carefully to reduce root injury.** Keep the rows about 12 to 18 inches (30 to 46 cm) wide for air circulation, to allow penetration of sunlight, and to improve spray coverage.

5. **Remove and destroy all old fruit canes immediately after harvest.** Thin the new canes to about 6 for staked-hill plantings, or 4 to 6 inches (10 to 15 cm) apart for hedgerow plantings. Remove all weak, short, spindly, and injured canes.

6. **Topping canes and other pruning to reduce excess growth should be done in dry, clear weather so the wounds will have a chance to heal before rain is expected.** Weak, broken, or infected lateral branches on fruiting canes should be cut back to healthy wood.

7. Follow the spray schedule outlined in "Illinois Commercial Small Fruit and Grape Spray Guide") website: http://www.ag.ohio-state.edu/~ohioline/b861/ndex.html), and "Illinois Homeowners' Guide to Pest Management" (website: http://www.hort.purdue.edu/hort/ext/sfg/). Thorough coverage of all canes and foliage with each application is essential for blight control and for successful fruit production. If possible, apply the sprays a day or two before rain is predicted.

   In the spring, spray when the buds show no more than 3\8 inch (1 cm) of green at the tips. For this spray **only**, use liquid lime-sulfur or copper hydroxide 50 WP. Copper hydroxide is available for use on raspberries as Blueshield 50 WP or Kocide 50 WP. Both products have a 48 hour reentry interval. This spray also helps control anthracnose, certain insects, and mites. Delaying this spray after more than 3/4 inch of growth of new shoots will burn exposed foliage.

   Where disease has been severe, spray with Captan or Benlate according to label recommendations. Spray when the new canes are 6 to 8 inches (15 to 20 cm) tall; when shoots are 12 to 15 inches high (30 to 38 cm) 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. The first two sprays of Benlate or Captan may not be needed where these blights and anthracnose are not severe and the liquid lime-sulfur has been properly applied.

8. **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.**

Most suggested insecticides and miticides, except for liquid lime-sulfur, may be safely mixed and applied at the same time. Follow all the manufacturer's directions.

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