

## Plant Pathology Fact Sheet

# Frogeye Leaf Spot, Black Rot and Canker of Apple

By John Hartman

Frogeye leaf spot is often observed in apple trees, but it is just one stage of an apple disease that also causes black rot of the fruit and a canker disease of twigs and branches. In some parts of eastern Kentucky, frogeye leaf spot disease is a more important foliar disease than scab.



FROGEYE LEAF SPOT

## Cause

Frogeye leaf spot/black rot/canker is caused by a fungus called *Botryosphaeria obtusa*. This fungus is capable of attacking over 100 different kinds of trees and shrubs in Kentucky, so inoculum is quite widespread. Early infections on the leaves usually originate from cankers (former fire blight cankers invaded by the frogeye fungus last year) on dead twigs and branches in the tree. Often a cone-shaped area of affected leaves will appear just beneath such a canker.

## Symptoms

### FROGEYE LEAF SPOT

Leaf spot appears on leaves as small (1/8 - 1/4 inch) circular, brown spots. The center portion of the spot may become tan

colored, while the outer edge remains dark brown, giving it a frogeye appearance.

Occasionally, tiny black fungal reproductive structures (pycnidia) of the causal fungus develop in the center of the spot. These pycnidia can be examined with the aid of a hand lens. The pycnidia will appear as tiny black “pimples” when viewed through the magnifier. These structures contain thousands of spores that are the source of continued infections. As leaf spots become more numerous and coalesce, leaves yellow and fall.

### BLACK ROT

Fruit infection and black rot may follow frogeye leaf spot disease. Infections



BLACK ROT WITH MUMMY (INSET)

usually begin in the blossom end of the developing fruit. As the fruits enlarge, a brown decayed area appears. The decay is often characterized by a series of concentric rings alternating from black to brown on the fruit surface. Pycnidia are scattered over the surface of the decayed fruit. Eventually, the rotted fruits dry out and mummify, sometimes hanging on the tree until the next season.

#### CANKER

Branch cankers initially appear as slight sunken reddish-brown areas on the bark. Fire blight cankers and winter-injured tissue are frequent sites for black rot canker initiation. Cankers can expand to several feet in length and girdle limbs. Branches are weakened and sometimes killed.

#### Disease Management

1. Prune out and destroy all dead twigs and branches.
2. Thin out branches to promote good air movement.
3. When pruning, promote rapid wound closing by not leaving stubs or making flush cuts.
4. Remove mummified fruit (infected the previous year).
5. Protect the fruits from injury caused by insects or harsh spray materials.
6. Promote optimum robust growth.
7. Fungicides used to control scab are generally effective against frog-eye leaf spot.

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