



Figure 1



Figure 2

(Photos J. King, WSU)

Biology

Apple anthracnose, also called bull's-eye rot, is severe in the high-rainfall apple-growing areas west of the Cascades and coastal British Columbia. Apple anthracnose is most commonly caused by the fungus *Cryptosporiopsis curvispora* (sexual: *Neofabraea malicorticis*), while *N. alba* and *C. kienholzii* have also been found in western Washington. The fungus causes cankers on twigs and branches and a fruit rot commonly known as "bull's-eye rot." Fall rains spread fungal spores from limb cankers to maturing fruit and to young limbs and twigs. Initial infection by the fungus usually occurs in the fall. Old infected orchards can be sources of this disease. All apple cultivars are susceptible; 'Spartan,' 'Gala,' 'Melrose,' and 'Akane' are highly susceptible.

Small injuries may facilitate penetration, but the fungus can penetrate uninjured bark. Young cankers appear as small reddish-brown areas on the bark (Figure 1) which enlarge the following spring. Cankers are elongate, reaching their full size (1-10" long) by midsummer. Small branches are often girdled. The bark usually splits away around the sunken cankered area (Figure 2). Fungal fruiting bodies may appear as pustules in the center of the canker. The dead tissue sloughs off leaving "fiddle strings" across the canker. The spores mature in late summer/early fall. The canker grows actively only 1 year; however, the fungus continues to live 2 or 3 years in the dead canker tissue and produces large numbers of spores.

Management Options

Aggressive scouting for and removal of cankers is the key to long term control. Scout new orchards for the disease, because early detection will aid in overall control. Establish new plantings with clean stock free of visible cankers, and locate new orchards as far as possible from older orchards that may have existing cankers.

- Prune out and burn affected twigs and branches. This is best done in dry weather before fall rains.

- On larger limbs and branches, use a sharp knife to remove cankers that are less than half the branch width. Cut out a pointed oval oriented along the axis of the branch and cauterize edges of infected areas (Figures 3 and 4).
- Apply pesticide products after harvest and prior to fall rains. **Applications may not be effective if not done in conjunction with canker removal.**
- If the fruit rot stage (bull's-eye rot) is a problem, make applications pre-harvest according to label instructions.



Figure 3



Figure 4

(Photos J. King, WSU)

The DVD by WSU and WWFRF, “Control of Apple Anthracnose,” (\$12.00, 2009), shows how to control cankers by cutting, torching, pruning and fungicide applications (proceeds go to WWFRF). <http://www.raintreenursery.com/Control-of-Apple-Anthracnose-DVD.html>

Chemical control must be combined with canker removal to be effective. Relying on chemical control alone has not been successful in most cases. **If you choose to use a pesticide, some examples of products are listed below. Always read and follow all label directions.**

- Bonide Copper Spray or Dust RTU/Organic Gardening
- Bonide Liquid Copper Fungicide Conc/Organic Gardening
- Dexol Bordeaux Powder
- Hi-Yield Bordeaux Mix Fungicide
- Lilly Miller Kop-R-Spray Concentrate
- Lilly Miller Microcop Fungicide
- Monterey Liqui-Cop Copper Fungicidal Garden Spray. Use after harvest only.
- Soap-Shield Flowable Liquid Copper Fungicide

See also Pacific Northwest Plant Disease Handbook (Oregon State University) online <http://pnwhandbooks.org/plantdisease/host-disease-descriptions/apple-malus-sp-anthracnose-bulls-eye-rot>

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