

Guidelines for Control of Bull's-Eye Rot in Apples

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The Pathogen and Disease Symptoms

Neofabraea perennans is the major species responsible for Bull's-Eye Rot of apples in eastern Washington. *Cryptosporiopsis kienholzii* (the asexual state of a *Neofabraea* spp.) and *Neofabraea alba* are other species causing bull's-eye rot on apple in the region. A Bull's-Eye Rot lesion is circular, flat to slightly sunken and appears light brown to dark brown with a lighter brown to tan center. Decayed tissue is firm. Cream-colored spore masses may appear in the older decayed areas. Bull's-Eye Rot commonly originates from infected lenticels on the fruit skin (Fig. 1), but stem-end Bull's-Eye Rot is also commonly seen (Fig. 2).



Figure 1. Bull's-Eye Rot lesion on the side of a Red Delicious apple originating from infected lenticels.

Sources of Pathogen Inoculum

The Bull's-Eye Rot inoculum is present in affected apple orchards where it may cause perennial canker on apple trees, typified by overlapping concentric rings of woody tissue (Fig. 3), or survive on the dead bark of trees. Fruit may become infected by Bull's-Eye Rot any time between petal fall and harvest, but the fungi remains latent. Symptoms of Bull's-Eye Rot may appear only after a few months in storage. Fruit become more susceptible to infection by the pathogens as the growing season approaches harvest. This disease is more common on fruit from orchards with over-tree irrigation or evaporative cooling, or in years or areas with frequent rains near or during harvest.



Figure 2. Stem-end Bull's-Eye Rot symptom on a Red Delicious apple.

Disease Control Recommendations

Water spreads the fungal inoculum and creates conditions conducive for fruit infection. Therefore, it is recommended that overhead irrigation be avoided and that over-tree cooling be limited in duration to only the amount needed for sunburn prevention.

Preharvest fungicides such as Topsin M, Pristine or Ziram applied near harvest as a ground application reduce Bull's-Eye Rot on fruit after harvest. Good coverage is important to the effectiveness of preharvest fungicide spray.

A postharvest fungicide drench with Penbotec (pyrimethanil), Mertect (thiabendazole), or Scholar Max (fludioxonil+thiabendazole) is effective for control of Bull's-Eye Rot on apple fruit.



Figure 3. Perennial Canker.

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