

## Apple Branch Canker Disease

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Apple branch canker is caused by several fungal pathogens including *Diplodia bulgarica*, *D. seriata*, *D. mutila*, and *Neonectria major*. Common symptoms are brown lesions on branches and branch dieback. Wood tissue underneath these lesions appears reddish-brown and water-soaked. Lesions are elliptical and sunken, sometimes forming a callus in older wood. Over time, lesions grow into cankers, causing a series of concentric calluses and sunken bark layers.

Once the pathogen causes the canker, they produce their overwintering fruiting bodies (pycnidia and perithecia) on dead branches and become a source of inoculum. Most of the canker pathogens disseminate their spores during precipitation (rain, dew, fog, etc.) which usually coincides with dormant pruning. Once the fungal spores land on exposed plant tissue, such as fresh leaf scars, pruning wounds, and broken branches they can colonize and cause disease. Fruits can also be infected, causing bull's-eye-rot at the lenticels and eye rot on the calyx end.

Branch canker diseases can be significant in regions with high rainfall, including coastal regions. Apple branch canker diseases in California are prevalent in the Sebastopol area of Sonoma County and worsened by high fall rains.

### Management Recommendations:

→ Prune and remove disease material and reduce pathogen spread.

- Scout for dark lesions and cankers on branches regularly.
- Prune out cankers and any visible diseased tissue in the early summer. At this time, symptoms are easy to see, and the spread of the fungus is least likely due to dry weather.
- Remove dead branches a few inches below the canker tissue during dormant pruning.
- Sanitize pruning tools with either 70% isopropyl alcohol or 70% ethanol between each cut or tree. Alternatively, a 5% bleach solution can be used for sanitizing pruners, but it may cause degradation on pruning tools.
- Ensure pruning cuts are flush against the remaining branch.
- Apply three-cut method to promote faster sealing (callusing) on primary branches. <https://ucanr.edu/sites/eskalenlab/files/380090.pdf>
- Remove pruning debris from the orchard immediately to prevent spore dissemination of pathogens from infected branches.
- Use pruning wound protectants to prevent new infections.

- Promote strong plant health throughout the season.
- Use appropriate water and nutrient applications to promote optimal plant functioning.
  - Use drip irrigation (rather than sprinklers) which can help increase plant water use efficiency and reduce canopy humidity.
- Pruning wound protection options.
- Organic protectant fungicide options: Bordeaux mixture, other fixed copper materials.
  - Biological (Trichoderma-based products)



Photos of apple branch canker in an apple orchard near Sebastopol, California.

#### References and Related Resources

[UC IPM: European Canker](#)

[UC IPM: Apple](#)

[UC IPM: General Properties of Fungicides Used in Apples](#)

[Pacific Northwest Pest Management Handbook: Apple \(\*Malus\* spp.\)-Nectria Canker \(European Canker\)](#)