



Fig. 1. l-r: Brown rot of nectarine (Robert Holmes), brown rot of cherry (Karen Barry), mummified fruit causing a twig infection (Robert Holmes)

Common Name: Brown rot

Disease: Brown rot of stone fruit

Classification: K: Fungi, D: Ascomycota C: Leotiomyces, O: Helotiales, F: Sclerotiniaceae

Monilinia fructicola (G. Winter) Honey is a widespread necrotrophic, airborne pathogen of stone fruit. Crop losses due to disease can occur pre- or post-harvest. The disease overwinters as mycelium in rotten fruit (mummies) in the tree or orchard floor, or twig cankers. In spring, conidia are formed from mummies in the tree or cankers, while mummified fruit on the orchard floor may produce ascospores via apothecial fruit bodies. While apothecia are frequently part of the life cycle in brown rot of many stone fruit, they have not been observed in surveys of Australian orchards. Secondary inoculum may infect developing fruit via wounds during the season.

Host Range:

M. fructicola can cause disease in stone fruits (peach, nectarine, cherry, plum, apricot), almonds and occasionally some pome fruit (apple and pear). Some reports on strawberries and grapes exist.

Impact:

M. fructicola (and closely related *M. laxa*) can cause symptoms on leaves, shoots, blossom and fruit. Blossom blight reduces fruit set and blossom infection can be an entry point for infection of developing fruit. The pathogen can remain latent and impact may not be seen until the last weeks of fruit development when sugars increase and phenolic compounds decrease. Weather (wet hours and temperature) that is conducive for spore release and infection leads to greater disease incidence. Brown rot has had serious regional impacts in the past 10 years for stone fruit in various areas of WA, SA, VIC, NSW and TAS and the 2010-2011 season was particularly high in incidence, leading to some cherry orchards deciding not to harvest whole blocks.

Key Distinguishing Features:

A number of fungi are associated with brown rot symptoms and are superficially difficult to distinguish. *Monilinia* species have elliptical, hyaline conidia produced in chains. *M. fructicola* and *M. laxa* are both grey in culture but *M. laxa* has a lobed margin. The apothecia, if observed are typically 5-20 mm in size.

Control:

Integrated control relies on various measures, starting with variety selection, orchard design and crop load management. Reduction of inoculum in the orchard at the end of harvest and over winter (primarily mummies) is important, as well as removal of infected material (blossoms, twigs) in the growing season. Protective fungicide applications are recommended from bloom when disease risk is high (prediction via weather based risk models), with consideration of resistance management. Postharvest fungicide dips and appropriate storage and handling can reduce development of rot after harvest.

Further Reading:

Hetherington, S. 2010. Integrated pest and disease management for Australian summerfruit. Summerfruit Australia. Lane, C.R. 2002. A synoptic key for differentiation of *Monilinia fructicola*, *M. fructigena* and *M. laxa*, based on examination of cultural characters. OEPP/EPPO Bulletin **32**, 489–493.
Holmes, R. et al. 2012. Through chain management of brown rot in stone fruit. Horticulture Australia Limited Final Report. <http://www.hin.com.au>

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