

Brown rot *Monilinia fructigena*

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Background

Monilinia fructigena is one of three *Monilinia* fungal species responsible for brown rot, which affects stone and pome fruits and causes considerable economic losses worldwide.

The three species of *Monilinia* (*M. laxa*, *M. fructicola* and *M. fructigena*) are very similar and these members are all virulent pathogens which produce the same type of symptoms on blossoms, leaves and fruits.



Brown rot infection on apple showing fungal tufts forming in concentric bands.

Distribution

Monilinia fructigena is found throughout western and southern Europe and extends into the Scandinavian countries, Eastern Europe, the former Soviet Union, the Middle and Far East, India and North Africa.

Monilinia fructigena is predominantly a disease of pome fruit and is not present in Australia. The pathogen has been detected numerous times on illegally imported fruit intercepted by the Australian Quarantine Inspection Service (AQIS). *M. fructicola* and *M. laxa* do occur in Western Australia.

Potential impact

The economic impact of *M. fructigena* is considered to be high, although the severity of the disease varies from year to year depending on environmental conditions. In

Europe, *M. fructigena* causes serious losses of apples, pears and plums, particularly in hot summers. Fruit losses resulting from infection by *M. fructigena* can range from 5% up to 35%. *M. fructicola* and *M. laxa* already cause serious economic problems on stone fruit in Australia. If *M. fructigena* is introduced to Australia, it is likely to cause serious losses to apple and pear production and aggravate the brown rot problem on stone fruits.

Hosts

The main commercial crops that are hosts to *M. fructigena* include apple, pear, quince, plum, sweet cherry, peach, nectarine and apricot.

Under suitable environmental conditions, *M. fructigena* will also infect many members of the Rosaceae family.

Other hosts include hazelnut, capsicum, tomato, persimmon, loquat, fig, guava, *Azalea*, grapevines and berry fruit including strawberry, blackberry, raspberry and blueberry.



Advanced brown rot (*Monilinia fructigena*) infection on an apple confiscated at the Perth international airport.

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Spread

The fungus overwinters mainly in or on diseased mummified fruit either attached to the tree or on the ground. Other infected tissues on trees such as twigs, peduncles and cankers on twigs or branches could also serve as primary inocula. The mummified fruit sporulate when day-length, moisture and temperatures are ideal. The spores are transported by wind, rain or insects to young fruit. Initial infection is always via wounds, usually scab lesions or sites of insect damage, but subsequent spread by contact between adjacent fruit is possible. Any infected tissue in which the moisture content is sufficient for sporulation may serve as a source of inoculum for secondary infection.



Mummified apples infected with brown rot.

Symptoms

Fruit rot is the most common symptom of brown rot of apple and pear. Superficial, circular, brown spots, which are often associated with wounds, grow and expand outwards on the surface of the fruit. The result is a soft decay of the flesh. Tufts of grey fungus also appear in concentric bands on the surface of lesions.

In susceptible cultivars, infection spreads into young twigs causing local cankers and wilt of extension shoots. Losses continue postharvest but decline with increasing periods of storage. Brown rot on ripening or mature fruit typically develops as a rapidly spreading, firm, brown decay. Disease fruits tend to remain attached to the tree and decaying tissue cause shoot dieback.

The disease also results in characteristic blighting of spurs and blossoms. Floral plant parts wilt, turn brown and collapse. The outer bark of infected spurs is discoloured and the underlying tissues are necrotic. Cankers may develop on shoots and small branches. Tufts of grey mycelium may be produced on the surface of active lesions.

Report suspect sightings to Pest and Disease Information Service on 1800 084 881.

Suspect samples of leaves, twigs or fruit can be sent for testing to AGWEST Plant Laboratories and clearly marked as 'suspect Apple Brown Rot' and the appropriate HortGuard box ticked.