



Damage caused by *Monilinia fructicola* in Peach Crops in Brazil

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Submission: February 28, 2025; **Published:** March 7, 2025

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Keywords: *Monilinia fructicola*; Peach crops; fungal disease; brown rot; mummification

Introduction

Peach trees are considered a temperate crop that has been cultivated in places with low cold accumulation, such as the subtropical regions of Brazil. This expansion has led to an increase in the incidence of some diseases [1]. Among these, brown rot *Monilinia fructicola* (Wint) Honey] stands out, which is considered the most important disease of the crop in the country [1]. The disease attacks branches, flowers and fruits, with rapid dissemination in orchards and cold storage [2,3].

Cycle and Etiology

The disease begins its infection cycle during spring, during full bloom, and the pathogen can cause the death of the flower and form cankers on the branch. It can also remain latent in the fruit in formation, by infecting the flower or the fruit itself, developing only during the ripening phase of the fruit [1]. The fungal conidia penetrate the cuticle or through wounds in the fruit, causing the dehydration and mummification of the fruit, which remains attached to the plant or falls to the ground. The fungus survives from one harvest to the next in mummies, peduncles, wilted flowers attached to branches and cankers [4]. The *M. fructicola* inocula, produced in conditions of high spring humidity, are dispersed by the wind, infecting flowers, young branches and causing cankers on the branches of other plants [4,2]. Humidity plays an important role in the fungal infection pathway. During periods of high humidity (over 15 hours), more than 80% of the fruits are infected by the pathogen [1,4]. After infection, more conidia will be produced and will infect other fruits and plants [2]. Temperature is another important factor that influences infection. The optimum temperature is 25°C and the infection period requires a minimum of 18 hours at 10°C and 5 hours at

25°C. In addition, temperatures above 15°C favor the formation of larger conidia with greater infection capacity [2]

Symptoms and Control

In spring, infected flower buds turn brown and die quickly, which can become covered by the fungal fruiting. With high humidity, the fungus advances through the flower to the peduncle and penetrates the branch, resulting in the development of branch canker. As the infection progresses, the canker can ring the branch or twig, causing wilting and death of the terminal part [3]. The attack on fruits occurs close to ripening, when small brown spots appear and, later, waterlogging of the neighboring tissues. The spot grows rapidly, occupying the entire fruit, which becomes covered by the pathogen's fruiting. The fruit undergoes violent dehydration and becomes mummified [2]. Since the disease is caused by a fungus that can overwinter in affected organs, one of the control measures consists of winter pruning, with the elimination of diseased branches, flower buds and mummified fruits, which should be burned [1,2]. Chemical treatment should be started when the sepals are becoming visible. The next spraying should be done when the petals fall [3]. The number of these treatments is reduced whenever the weather conditions are not favorable to the occurrence of brown rot. Since the stigma is the part of the flower most susceptible to infection, spraying should be done when most of the stigmas are newly exposed [2]. In post-harvest handling, the spread of the fungus to healthy fruit should be avoided by using new and/or sanitized containers for harvesting, in addition to washing and treating previously used boxes with sodium hypochlorite. The areas where the fruit is handled should be sanitized and the fruits should be cooled immediately after harvesting [2].

Final Considerations

Brown rot caused by *M. fructicola* has a major economic impact on peach production in Brazil. The use of appropriate management, both during production and during the storage period, allows for a considerable reduction in this impact on this important economic activity.

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DOI: [10.19080/JOJHA.2025.04.555660](https://doi.org/10.19080/JOJHA.2025.04.555660)

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