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► **To cite this version:**

Leandro de Oliveira-Lino, Michel M. Génard, Bénédicte Quilot-Turion. Host factors for brown rot resistance in peach fruit. Innovation in Integrated & Organic Horticulture, INNOHORT 2015, International Society for Horticultural Science (ISHS). INT., Jun 2015, Avignon, France. 56 p. hal-02738605

HAL Id: hal-02738605

<https://hal.inrae.fr/hal-02738605>

Submitted on 2 Jun 2020

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Host factors for brown rot resistance in peach fruit

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Keywords : *Monilinia laxa*, *Prunus persica* L. Batsch, disease resistance, cuticular conductance, stomata density, microscopy

Abstract

Brown rot in peach fruits caused by the fungi *Monilinia* sp. is a common disease that can provoke as much as 30 to 40% losses of crop. Little is known on the fruit resistance factors and the infection process. The aim of this study is to investigate the factors of resistance of the fruit and their genetic control. This would provide a tool to rationalize genotype x cultural practices combinations in order to reduce brown rot incidence. Physical and biochemical characteristics of fruits (skin conductance, stomatal density, cracks, surface compounds, epidermis phenolics) potentially linked to *Monilinia* resistance were investigated in cultivars contrasted for their susceptibility. Two segregating populations were phenotyped by infection tests in order to detect QTL controlling brown rot resistance. Fruit cuticular conductance was characterized for one of the populations. Fruit infection was observed by microscopy. Preliminary results in contrasting genotypes for resistance to brown rot show significant differences of number of fruit stomata and variations of surface compounds and their levels. In the microscopy analyses, high number of cases of germination and penetration of fungi through stomata and microcracks were observed. The knowledge gained from these experiments will be integrated into an existing ecophysiological model in order to optimize concurrently fruit characteristics and cultural practices to reduce infection risks.