Evaluation of two screening methods for resistance of apricot, plum and peach to *Monilinia laxa*

T. Pascal, A. Levigneron, J. Kervella & C. Nguyen-The

1 Station de Recherches Fruitières méditerranéennes, INRA, Domaine St Paul, F-84143 Montfavet cedex, France; 2 Station de Technologie des Produits végétaux, INRA, Domaine St Paul, F-84143 Montfavet cedex, France

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*Monilinia laxa* causes important pre- and post-harvest losses in stonefruit. In order to initiate a breeding programme for increased resistance to *M. laxa*, two screening tests were used. In the “uninjured fruit inoculation” test, 30 mature fruits of each variety were inoculated on their surface by depositing 20 μl of conidial suspension. In the “artificially injured fruit inoculation” test, 10 mature fruits were inoculated on both sides by injecting 20 μl of conidial suspension. Genotypic differences were found in both tests, within the three species studied. Marked differences were observed in the uninjured fruit inoculation test. Differences between genotypes were slighter in the artificially injured fruit inoculation test. Within each species, the rankings of the genotypes according to the two tests were not correlated. Both testing procedures would be usefully applied in a breeding programme to obtain genotypes with combined resistance to *Monilinia laxa*.

Introduction

Brown rot, caused by *Monilinia laxa* (Aderh. and Ruhl.) Honey, is the main storage fungal disease of peaches in Europe (Nguyen-The et al, 1989). It is also responsible for apricot and plum post-harvest fruit losses. These post-harvest losses are serious, especially for prolonged storage of fruit. They may reach 25% and chemical applications at this stage are not recommended. Fruits become increasingly susceptible to *M. laxa* as they ripen. This encourages early harvest, which is detrimental to fruit quality (Arnoux, 1986). Peaches, apricots and plums may also be infected by *M. laxa* in the orchard, in wet conditions.

Feliciano et al. (1987) proposed screening techniques in breeding peaches resistant to *Monilinia fructicola* (Wint.) Honey, which causes similar brown rot damages in Southern Brazil. To start a breeding programme for increasing resistance to *M. laxa*, we tested 7 apricot, 7 plum and 12 peach genotypes with two fruit inoculation techniques. We used higher spore concentrations than Feliciano et al. Spore concentrations were similar to those noted as optimum by Fourie & Holtz (1985) in artificial inoculation studies with *M. laxa*.

Material and methods

Testing procedure

*Inoculum.* The same strain of *M. laxa*, isolated from a decaying fruit and maintained on Potato Dextrose Agar-PDA (Biomérieux) was used in all tests. This strain was cultured on fruit to provide conidia. Just before inoculation, a conidial suspension was prepared with sterile distilled water and adjusted to 10⁶ conidia per millimeter with a hemacytometer.

Two inoculation methods were used. In the “uninjured fruit inoculation” test, 30 uninjured fruit are inoculated by depositing 20 μl on the fruit surface. These fruit were then placed in a hermetic box to ensure high relative humidity and avoid the evaporation of the suspension. Fruit with a rot diameter exceeding 10mm are considered as infected. The number of infected fruit is recorded every 10 to 14 h for 10 days.

In the “injured fruit inoculation” test, 10 fruit were inoculated on both sides by injecting 20 μl of conidial suspension with a Pipetman to a depth of 4 mm. The diameter of rot was recorded every 10 to 14 h for 5
In the “injured fruit inoculation” test, 10 fruit were inoculated on both sides by injecting 20 μl of conidial suspension with a Pipetman to a depth of 4 mm. The diameter of rot was recorded every 10 to 14 h for 5 days. Fruit were kept at 23 °C after inoculation for both tests.

**Fruit material**

The fruit were “commercially” mature. They came from experimental orchards and had not received fungicide applications for three weeks before harvest. Among the *Prunus persica* genotypes studied, 3 (F032, F054 and ‘Supercrimson’) were nectarines, the oth-