

# Characterization of *Botrytis* spp. From Chilean kiwifruit populations and pre-harvest prediction of risk of grey mould in long-term storage

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Grey mould is caused by at least two species of the genus *Botrytis*, *Botrytis cinerea* and *Botrytis pseudocinerea*, and is the main post-harvest kiwifruit disease in Chile. The commercial strategy promoted by the Chilean Kiwifruit Committee in recent years considers extension of the export period to avoid exceeding demand. This strategy means stocking a large volume of fruits for a long period; this increases the risk of losses due to decay. The aim of this research was to analyse the *Botrytis* spp. populations from kiwifruits, related to fungicide sensitivity and frequencies of *Botrytis* species, in order to design specific control strategies, also considering adjustments of a qualitative method that allows the early prediction of grey mould in long-term cold storage of kiwifruit batches and hence assists in segregation. It was tested over three seasons, from six different orchards of Chile's Central Valley. A total of 10 isolates from orchard and season were tested for fungicide sensitivity (fludioxonil, iprodione and fenhexamid) through mycelial growth testing and later EC50 calculation. In general terms, the isolates showed high to moderate levels of sensitivity to the tested fungicides. The same isolates were analysed through a qPCR-HRM technique to identify the species, using polymorphism detection on one nucleotide located in the 1090 Bc-hch gene. Absolute dominance of *B. cinerea* was recorded in every studied case. Predictive methodology

consisted of the sowing of sepals and receptacles of fruits, sampled 100 days after full bloom, in Petri dishes containing potato dextrose agar amended with a minimal dose of captan, and recording the incidence of *Botrytis* colonization. Receptacle colonization frequencies during the three studied seasons were a better predictor of grey mould decay frequencies, after 90 days of storage at 0°C and modified atmosphere, than those collected from sepals ( $R^2=0.72$  and  $r=0.56$ , respectively). In conclusion, the studied *Botrytis* populations have not been selected for the tested activities and they are not under *B. pseudocinerea* dominance, which is a fenhexamid-resistant species, allowing its extended use in field control. Furthermore, our predictive technique through receptacle colonization identification might prove to be a powerful tool to generate minimal-risk long-term cold storage. © International Society for Horticultural Science. All rights reserved.

Bc-hch gene

*Botrytis cinerea*

*Botrytis pseudocinerea*

Fungicide sensitivity

QPCR-HRM