



HAL
open science

Resistance to fungicides and genetic diversity among *Botrytis cinerea* populations. Abstract

Anne Sophie A. S. Walker, Johann J. Confais, Pierre P. Leroux, Laurence L. Bill, Véronique Decognet, Marc Fermaud, Alexandre Bout, Elisabeth E. Fournier

► To cite this version:

Anne Sophie A. S. Walker, Johann J. Confais, Pierre P. Leroux, Laurence L. Bill, Véronique Decognet, et al.. Resistance to fungicides and genetic diversity among *Botrytis cinerea* populations. Abstract. 14. International Botrytis Symposium, Oct 2007, Cape Town, South Africa. hal-02757498

HAL Id: hal-02757498

<https://hal.inrae.fr/hal-02757498>

Submitted on 4 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - ShareAlike 4.0 International License

Resistance to fungicides and genetic diversity among *Botrytis cinerea* populations

Anne-Sophie Walker¹, Johann Confais¹, Pierre Leroux¹, Laurence Bill¹, Véronique Decognet², Marc Fermaud³, Alexandre Bout⁴ and Elisabeth Fournier¹

¹UMR BIOGER-CPP, INRA, Route de St Cyr, F-78026 Versailles cedex ; walker@versailles.inra.fr

²UR Pathologie végétale, INRA, BP94, Domaine St Maurice, F-84140 Montfavet

³UMR Santé Végétale, ISVV, INRA, F-33883 Villenave d'Ornon

⁴URIH, INRA, 400, route de Chappes, BP167, F-06903 Sophia Antipolis cedex

Botrytis cinerea is responsible for grey mould and induce quantitative and qualitative losses on various crops, such as grapevine and tomato. In many cropping systems, control against *Botrytis* is mainly achieved by the use of chemical fungicides, which can enable the selection of a wide range of resistances, either specific to one fungicide (e.g. benzimidazoles, phenylcarbamates, dicarboximides, anilino-pyrimidines, hydroxyanilides) or multiple to several unrelated modes of action (MDR : multidrug resistance). Global evolution of the *Botrytis* populations, assessed by population genetics methods, may help to understand the evolution and distribution of resistances to fungicides in natural populations.

Isolates of *Botrytis* were collected in France in 2005 and 2006 from homogeneous treated/untreated grapevine plots in Champagne and Bordeaux areas, and from untreated plots in Provence and in the French Riviera areas. Additional samples were collected from brambles and litter in these vineyards, and from treated tomato glasshouses in the four regions. These isolates were all characterized for their microsatellite profile (8) and resistance profiles to the main botryticides were assessed with *in-vitro* tests for part of them.

Phenotype analysis showed a large variety of resistance profiles, highly representing the fungicide selective pressures applied locally. For example, in Champagne, glasshouses isolates showed mainly specific resistance to benzimidazoles, phenylcarbamates and dicarboximides, whereas in the vineyard, MDR strains represent at least half of the populations. Frequencies of resistances, maximal at vintage, tend to decrease after winter but are still detectable at spring time. More generally, resistant isolates are issued from untreated grapevine plots as well as untreated substrates (brambles, litter), maybe suggesting migrations between the various hosts.

Genic and genotypic diversity indexes within these populations showed a possible effect of recombination and migration. At last, pairwise F_{ST} s, Factorial Analysis of Correspondances and Molecular Analysis of Variance enabled to estimate the genetic differentiation between (1) treated and untreated plots, at several geographical scales and (2) between the main resistant phenotypes, MDR for example, showing regularly significant but low levels of differentiation.

Comment citer ce document :

Walker, A. S., Confais, J., Leroux, P., Bill, L., Decognet, V., Fermaud, M., Bout, A., Fournier, E. (2007). Resistance to fungicides and genetic diversity among *Botrytis cinerea* populations. Abstract. In: Abstract book (p. 31). Presented at 14. International Botrytis Symposium, Cape Town, ZAF (2007-10-21 - 2007-10-26).