



Determination of Fungicide Resistance in *Botrytis Cinerea* on Wine Grapes in California's Central Coast Region

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Introduction

- ❖ *Botrytis* bunch rot (caused by the fungus *Botrytis cinerea*) is a highly destructive disease that affects wine grapes worldwide
- ❖ Infection leads to unmarketable fruit and significant reductions in wine quality (Williamson 2007)
- ❖ *Botrytis* bunch rot on grapes is responsible for 10%-44% annual yield losses (Droby et al. 2007)
- ❖ Disease management is heavily dependent on multiple fungicide applications throughout a growing season
- ❖ Repetitive use of fungicides with the same mode of action (FRAC group) leads to resistance accumulation in populations
- ❖ Fungicide resistance profiles of *B. cinerea* populations on wine grapes in Central Coast CA have not been determined

Results

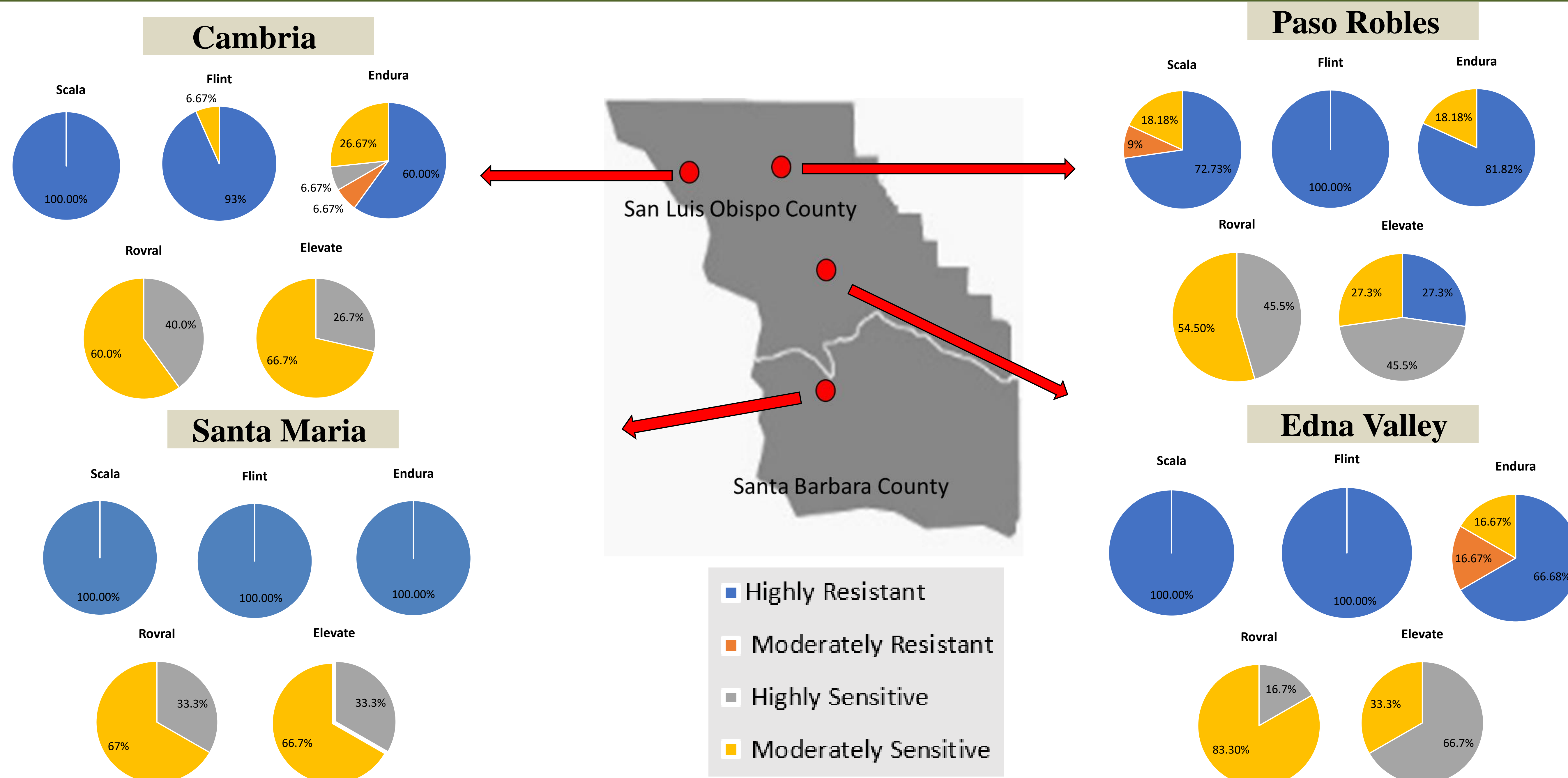
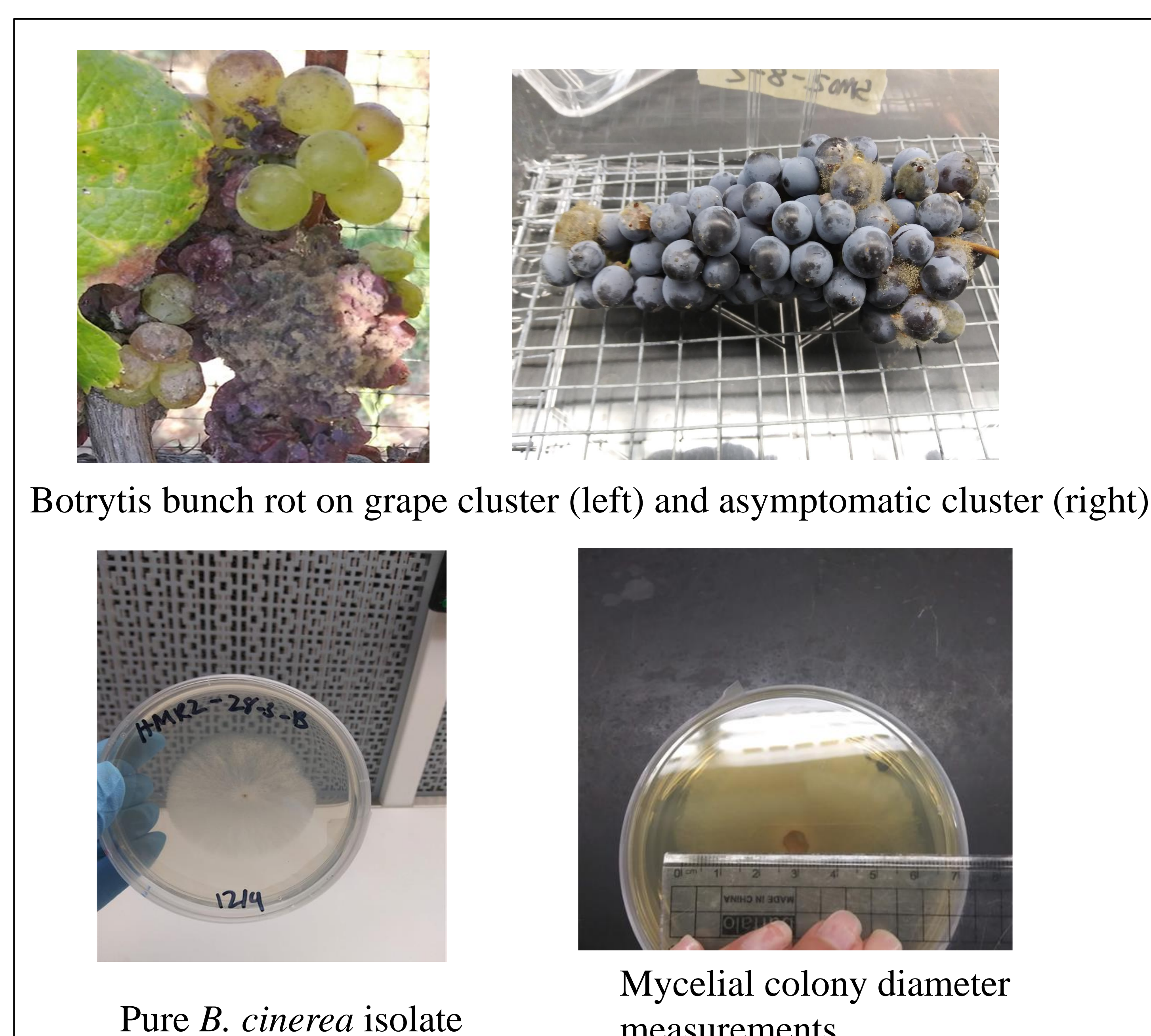


Figure 1: Resistance/sensitivity frequencies of *B. cinerea* populations from Central Coast vineyards to fungicides of 5 different modes of action (FRAC 9, 11, 7, 17, 2)

Material and Methods

- ❖ Symptomatic clusters collected from Santa Maria, Edna Valley, Cambria, and Paso Robles during 2020 pre-harvest
- ❖ Asymptomatic clusters incubated in moist chambers to induce sporulation
- ❖ 35 *B. cinerea* isolates obtained from samples
- ❖ Isolates screened for fungicide resistance against Scala (FRAC 9), Flint (11), Endura (7), Rovral (2), and Elevate (17)
- ❖ Media amended with fungicides at two discriminatory concentrations (Saito et al. 2019): 9 & 11 (0-control, 0.1, 10 µg/ml), 7 & 17 (0-control, 1, 50 µg/ml), 2 (0-control, 5, 50 µg/ml)
- ❖ Mycelial colony diameter of isolates measured
- ❖ Isolates profiled based on percent relative growth values: Highly resistant, Moderately resistant, Highly sensitive, Moderately sensitive (Pokorny et al. 2016)



- ❖ *B. cinerea* populations in all 4 locations exhibited high resistance to Scala (9) and Flint (11)
- ❖ Higher sensitive frequencies against Elevate (17) in Santa Maria, Edna Valley, and Cambria
- ❖ Moderate sensitivity against Rovral (2) was increased in all locations

Conclusions

- ❖ FRAC 2 and FRAC 17 have high efficacy whereas FRAC 9 and FRAC 11 have reduced efficacy in Central Coast vineyards
- ❖ It is highly recommended for growers to: (1) reduce applications of FRAC 9 & 11 in their chemical spray programs, (2) wisely alternate FRAC 2 & 17 to reduce resistance accumulation