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## **Status of resistance towards SDHIs in French populations of *Sclerotinia sclerotiorum* and characterization of resistant strains**

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Populations of fungal pathogens may be subject to many selective pressures in agricultural environments. Among them, fungicides constitute one of the most powerful determinants of population adaptation acting in a short time span. Here, we investigated whether fungicides sprays applied yearly in the Champagne vineyard to control the grey mold causal agent *Botrytis cinerea* could shape population structure and evolution. We carried out a 2-year survey (4 collection dates) on three treated/untreated pairs of plots. We found that fungicides treatments had no or little impact on population subdivision at neutral loci, as well as on diversity or reproduction mode. Nevertheless, we found evidence of stronger genetic drift in some treated plots, consistent with the regular application of fungicides. Moreover, we observed spatial structure in resistance frequency for two loci under contemporary selective pressure, as reflected by cline patterns. At last, using a modeling approach, we estimated fitness costs of resistance to fungicides, responsible for resistance frequency decay during winter. Further work is in progress to estimate parameters of positive selection and migration exerted on *B. cinerea* populations, and disentangle the relative effect of the evolutionary forces at work.

Keywords: *Botrytis cinerea*, population structure, selection, migration, resistance cost, fungicides, diversity, cline, vineyard