# Aerobiology : Botrytis cinerea conida production and dispersal

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KEYNOTE 2.3. ORAL PRESENTATION

# AEROBIOLOGY: *Botrytis cinerea* CONIDIA PRODUCTION AND DISPERSAL

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Despite the importance of Botrytis-induced diseases, little is known about conidia production and dispersal which limits our capacity to develop efficient management practices. Hence, the influence of environmental conditions, growing media and different grapevine host organs (including grape bunch trash and mature berries) on sporulation of 10 *B. cinerea* strains of different transposon genotypes was studied. Mathematical models were developed to describe i) the effect of T° and RH on production of conidia, including a prediction interval which accounts for strain variability; ii) the length of latent period as a function of the degree-days accumulated after inoculation. Optimal conditions for sporulation were: T° between 15 and 20°C, RH>65.5% and medium water activity aw=0.971. Conidia produced on bunch trash and mature berries were significantly correlated with those on artificial media. The relationship between sporulation intensity at the fruit surface and structural, morphological and biochemical changes during grape berry development after veraison was investigated. Sigmoidal increase in fruit susceptibility was observed. After sporulation, Botrytis conidia are dispersed by air currents, splashing water droplets and by insects. In order to improve monitoring of airborne inoculum as an aid to manage Botrytis diseases, dispersal of airborne conidia and incidence of Botrytis fruit rot were monitored at two raspberry plantings, in sprayed (dispersal) and unsprayed field plots, respectively, during three successive years together with meteorological data. The concentrations of conidia were monitored using a Burkard volumetric sampler and rotating-arms samplers. The number of *B. cinerea* conidia in air samples was determined with a real-time qPCR assay. Dispersal of airborne conidia was assessed at 0.5, 1.0, 1.5, 2.0, 4, and 8 m from a point source inoculum with samplers placed at 0.45, 0.90, and 1.35 m from the ground. The coefficient of correlation between the volumetric and rotating-arms samplers placed at 45, 90, and 135 cm from the ground was significant; and a diurnal pattern of conidial release was observed. During the pre-bloom and bloom period, conidia dispersal gradient (log conidia/$m^3$ vs distance in m) showed significant flattering at a distance of more than 2 m from the inoculum source. However, near or at harvest no significant dispersal gradients were observed. Correlation between fruit rot incidence and weekly mean airborne conidia concentration was significant and positive. The impact of these findings on Botrytis rot epidemiology and aerobiology and potential for weather-, host- and inoculum-based disease risk indicators to improve disease management will be discussed.