

Factors Affecting Spore Germination and infection of *Botrytis cinerea*

Abstract

Botrytis cinerea is a necrotrophic fungal plant pathogen distributed worldwide. The early stages of epidemiology namely spore germination is a topic of great interest among researchers. The objective of this study was to investigate the effect of various factors affecting germination of *B. cinerea* conidia *in vitro*. Potato dextrose agar amended with bean leaves extract improved significantly growth and spore production of *B. cinerea* without significant variation between isolates. Results indicated that there was no particular influence of spore age (5-14 days) on germination in 10mM fructose. In addition, germination-self-inhibition was found to be associated with increased spore concentrations (above 4.5×10^5 conidia/ml) without significant differences between isolates. Furthermore, the effect of temperature (5, 10, 15, 20, 25 and 30 °C) on conidial germination was studied *in vitro*; germination started at 10°C, peaked at 20 °C (93%), and completely inhibited at 30 °C. Disease severity followed the same trend where the highest disease was also obtained at 20-25 °C. In the absence of external source of nutrients, conidial germination was efficiently induced (88-96%) by contact with rigid hydrophobic surfaces. In addition, germination was impaired by extreme pH values (below 6 and above 8). Germination of *Botrytis cinerea* was strongly induced (>90% after 24hours) in the presence of sugars at concentrations above 100mM while the cations (Ca^{2+} , Mg^{2+} , K^+ , and Fe^{2+}) had no influence on conidial germination at a wide range of concentrations (0.001-1mM). In the presence of inorganic nitrogen forms, conidial germination responded similarly with no particular influence on germination, whilst germ tube

growth and elongation responded positively with increasing concentrations of both N-forms.