

## A REEVALUATION OF MYCELIOGENIC GERMINATION OF SCLEROTIA FOR *SCLEROTINIA SCLEROTIUM* STRAIN SUN-87

*Michael FOLEY*<sup>1</sup>, *Munevver DOGRAMACI*<sup>1</sup>, *William UNDERWOOD*<sup>1</sup>

<sup>1</sup> USDA-ARS Sunflower And Plant Biology Research Unit, Fargo, ND, US

*william.underwood@ars.usda.gov*

### ABSTRACT

Basal stalk rot of sunflower is an economically important and rather unique disease among crops that are susceptible to *Sclerotinia sclerotiorum*. This disease is the result of myceliogenic germination of sclerotia whereby the vegetative hyphae infect the sunflower below the soil level. In contrast, sunflower head rot and similar diseases of susceptible crops result from carpogenic germination to produce airborne ascospores that infect above ground senescent or wounded tissues. We initiated research on several factors reported to affect sclerotia germination as a prelude to comparing transcriptomes associated with myceliogenic and carpogenic germination. Specifically, we reevaluated the effects of inoculum development temperature, sclerotia development temperature, conditioning temperature, conditioning of hydrated and desiccated sclerotia, and the duration of sclerotia desiccation on germination of Sun-87 sclerotia, largely as outlined by Huang (1991), Huang and Kozub (1993), and Huang et al. (1998). We were not able to use conditioning temperature to clearly differentiate myceliogenic and carpogenic germination (-20 vs.  $\geq 0.5^{\circ}\text{C}$ ), as reported by Huang (1991), using either hydrated or desiccated Sun-87 sclerotia. Additionally, we were not able to verify that a low inoculum production temperature was the main factor affecting carpogenic germination of Sun-87. Rather, a low temperature during inoculum and/or sclerotia production enhanced germination. Finally, we were not able to verify that myceliogenic germination of Sun-87 occurred most readily when sclerotia formed at 20-25 $^{\circ}\text{C}$  were desiccated prior to germination. Desiccation almost always resulted in carpogenic germination, albeit at a low level relative to germination of hydrated sclerotia. Additional experiments are in progress to discover a reliable and non-confounded method that clearly differentiates myceliogenic and carpogenic germination.

**Key Words** : *Sclerotinia sclerotiorum*; white mold; stalk rot; head rot; myceliogenic germination; carpogenic germination; disease; pathology