

## Quantification of Conidia of *Diplodia* spp. Extracted from Red and Jack Pine Cones

Isabel A. MUNCK<sup>a\*</sup> – Denise R. SMITH<sup>a</sup> – Glen STANOSZ<sup>ab</sup>

<sup>a</sup>Department of Plant Pathology, University of Wisconsin-Madison, Madison, WI, USA

<sup>b</sup>Department of Forest Ecology and Management, University of Wisconsin-Madison, Madison, WI, USA

**Abstract** – Jack (*Pinus banksiana*) and red pine (*P. resinous*) are economically and ecologically important conifer species that are hosts of the pathogenic fungi *Diplodia pinea* and *D. scrobiculata*. In Wisconsin, *Diplodia* spp. cause shoot blight and death of understory red and jack pine seedlings. *Diplodia pinea* has been associated with red pine cones, but there is little information about the association of *D. pinea* with jack pine cones or *D. scrobiculata* with either host. Presumably, the inoculum that infects understory seedlings comes from colonized host tissues, including cones, in the overstory. This prompted us to develop a survey method to quantify inoculum in mature pine cones of both jack and red pine. During two consecutive summers, cones were collected from both the ground and the canopy from three sites in Adams Co and Jackson Co respectively. A total of six stands where mature red and jack pines co-occurred in the overstory were sampled. In the laboratory, cones were systematically washed to extract conidia and spore counts were estimated. A PCR assay was conducted to identify *Diplodia* to species level. *Diplodia* spp. were found every year, at each site, in every tree. More conidia were extracted from cones harvested from the canopy than from cones harvested from the ground. More conidia were extracted from red pine than jack pine cones. At least 60% of the conidia extracted from cones germinated in controlled laboratory conditions. *D. pinea* was more frequently isolated than *D. scrobiculata* from both jack and red pine cones although *D. scrobiculata* occurs more frequently in jack pine cones. Both cones harvested from the canopy and the ground can be used to detect the *Diplodia* spp. present at a site. Cones harvested from the canopy can be utilized to detect site differences in the amount of inoculum produced by *Diplodia* spp.

*Sphaeropsis sapinea*

---

\* Corresponding author: iam@plantpath.wisc.edu; 1630 Linden Drive, Madison, WI 53706, USA