

PI: Frances Trail

PI's E-mail: trail@msu.edu

Project ID: FY10-BA-010

FY10 ARS Agreement #: 59-0790-6-068

Research Category: BAR-CP

Duration of Award: 1 Year

Project Title: Understanding Colonization Leading to DON Accumulation in Barley.

PROJECT 1 ABSTRACT

(1 Page Limit)

In barley and wheat, the lemma and palea have been shown to be highly susceptible, and among the first tissues colonized during initial infection. Thus, their fate is important both to DON levels in grain and to inoculum/hyphae associated with grain at harvest. In wheat, it is known that the glumes harbor much higher DON levels than the kernels do at harvest. In covered barley, where the glumes fuse to the grains during development, an additional DON load may be contributed by these tissues, which remain attached to the grain, but equally as important, these highly colonized tissues may present additional storage problems. This proposal will address the process of colonization of florets that leads to perithecia formation on barley grains.

This project will interface with Projects examining new sources of resistance to DON as we will understand better where and when DON is produced and the host features that are important for DON production. This will allow us to better prioritize candidate genes that could be exploited in traditional breeding and transgenic approaches. In addition, our work will identify critical host tissue and timing windows that can be used to target transgene expression. This work will impact fungicide applications, as timing of application with colonization and DON production is critical.