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Project ID: 0304-KE-074
ARS Agreement #: NEW
Research Area: EDM
Duration of Award: 1 Year

Project Title: Role of dioxygenases in *Fusarium graminearum* sporulation

PROJECT 1 ABSTRACT
(1 Page Limit)

Gibberella zeae (anamorph *Fusarium graminearum)* is the causal agent of scab of wheat, barley and other small grains. This fungus not only destroys host tissue but also produces mycotoxins such as deoxynivalenol and zearalenone in infected seed thus causing considerable monetary and health loss. This fungus produces two spores, asexual conidia and sexually derived ascospores, both of which are important for disease development. Impediments to spore production would be useful in controlling this disease. Biochemical and genetic studies suggest that oxylipins, oxygenated derivatives of unsaturated fatty acids, are conserved signaling and structural molecules modulating fungal sporulation. Our goal is to test this hypothesis by cloning and then disrupting the *F. graminearum ppo* genes which encode dioxygenases required for oxylipin production. We will examine *Dppo* strains of *F. graminearum* for asexual and sexual spore production, pathogenicity and mycotoxin biosynthesis. Preliminary data of putative *Fusarium Dppo* strains indicate that asexual reproduction is severely decreased in comparison to wild type. Abberations in spore production or virulence of the *Dppo* strains will suggest that *ppo* genes and/or their products could be targeted for control strategies. These efforts will help in developing efficient control measures to minimize scab outbreaks and spread in the USA and other affected countries.