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Project Title: Survival of Fusarium graminearum in Crop Debris and the Role of Protective Antimicrobials.

PROJECT 2 ABSTRACT

(1 Page Limit)

The airborne ascospores of *Gibberella zeae* (anamorph *Fusarium graminearum*) are the primary inoculum of the head blight disease, infecting flowers and subsequently colonizing the developing seed. As the season progresses, the fungus colonizes the vegetative tissue prior to senescence, eventually forming perithecium initials in the substomatal cavities of the stalk. Both field data and gene expression analyses support the view that *G. zeae* depends on this preharvest colonization to sequester lipid resources, as it is a poor saprotroph in comparison with other *Fusarium* species. Perithecium initials form conidia and hyphae or perithecia, depending on conditions in the field. If the fungus acquires resources and stores them long-term in the crop residue for use in producing perithecia, then it must protect its resources from other microbes. We have preliminary evidence that secondary metabolites may serve this function.

The goals of this proposal are to better understand the function of crop residue as a point of control for the scab pathogen. Our specific objectives are:

1. *To test the role of secondary metabolites in inhibiting saprotrophic fungal growth on debris.*
2. *To identify genes that determine dormancy and competence to form perithecia.*

The information obtained from the completion of these objectives will be useful in monitoring inoculum potential, and in developing more effective biological control agents.