FY20 USWBSI Project Abstract

PI: Santiago Mideros
PI's E-mail: smideros@illinois.edu
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Project Title: Determinants of Aggressiveness in Fusarium graminearum

PROJECT 1 ABSTRACT
(1 Page Limit)

The levels of aggressiveness of strains of *F. graminearum* varies dramatically and the factors that determine this diversity are unknown. One possibility is that the variability on wheat resistance levels has an effect on the pathogen populations. The goal of this project is to identify genes that modulate the aggressiveness of *F. graminearum* to wheat. We will identify them by phenotyping and genotyping a population of *F. graminearum*. To achieve this, we will conduct greenhouse aggressiveness assays with a population of isolates collected from wheat lines with different levels of resistance. These isolates will be genotyped using a whole-genome re-sequencing approach. Multiple population genetic analysis will be conducted to identify genes that are under selection. Our expected outcome is the confirmation of the involvement of candidate fungal genes in the aggressiveness of *F. graminearum*. This research will identify the genetic determinants of aggressiveness in *F. graminearum*. With our results, we will be able to generate more informed recommendations for cultural practices to manage FHB. Identification of gene variants involved in aggressiveness along with the evaluation of the effect of wheat resistance levels on the pathogen will allow predictions on the durability of resistance to *F. graminearum.*