

0203-VA-018 Accelerating the Development of FHB-Resistant Soft Red Winter Wheat Varieties.

PI: Van Sanford, David; E-mail: dvs@uky.edu

University of Kentucky, Department of Agronomy, Lexington, KY 40546-0091

Grant #: 59-0790-9-073; \$39,071; 1 Year

Research Area: VDUN

PROJECT ABSTRACT

(1 Page Limit)

The overall goal is to release FHB-resistant SRW wheat varieties to reduce economic risk for farmers whose crop is at risk for FHB infection, and for millers, bakers, and consumers who require a safe supply of wheat. The supporting objectives are to: (1) identify new sources of resistance through extensive screening of a diverse set of breeding lines; (2) incorporate resistance through recurrent selection into populations in which genetic parameters have been estimated; (3) to estimate genetic parameters in populations comprising adapted germplasm some of which are segregating for the Sumai 3 resistance, and to advance resistant plants and families through selection into the variety development process; and (4) investigate the utility of certain morphological markers in identifying resistant genotypes. The plans to accomplish the project goals are to: 1) conduct extensive field screening in misted nurseries at two locations using scabby corn as inoculum and extensive greenhouse screening using single floret inoculation; 2) screen a number of populations in misted field nurseries for severity of FHB infection and harvest seed from the most resistant individuals and families; 3) screen F₂ diallel progeny (through single floret inoculation) and F_{2:4} lines in three populations (using scabby corn as inoculum) in the field to estimate genetic variation for FHB resistance in these populations; resistant progeny will be advanced to the variety development program; and (4) measure several morphological traits and their relationship to FHB resistance in F_{3:4} lines from a population previously screened in the greenhouse. The relevance of this project to the U.S. Wheat and Barley Scab Initiative is clear: genetic solutions to FHB appear to be the most likely avenue of success in our effort to eliminate FHB as a significant disease of wheat and barley.