

Project Abstract

Project Title:	Accelerating the Development of FHB-Resistant Soft Red Winter Wheat Varieties	
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The UK wheat breeding project focuses on releasing scab resistant SRW wheat varieties adapted to KY and the mid-south, where the wheat crop follows corn and is always at risk for scab. In years with heavy FHB pressure millers are unable to locate low DON grain and farmers have been severely discounted on the grain taken to the elevator. We know that resistant varieties reduce economic risk for farmers, millers and bakers, and consumers benefit by having a safe food supply. The proposed research comprises Project Objectives, each of which has a set of sub-objectives (1) Approach: Crossing and selection - identifying superior agronomic parents to cross with FHB-resistant parents, select progeny based on phenotype as well as marker genotype, and confirm selections by repeated multi-location testing in scab nurseries and yield trials. Native quantitative resistance along with exotic QTL are both used extensively in the breeding program, as is genomic selection; expect to create resistant populations. (2) Approach: Screening - rigorous, repeated phenotyping of advanced breeding lines and existing cultivars is carried out in the inoculated, irrigated nursery at Lexington, while advanced breeding lines and wheat varieties are tested with and without fungicide in inoculated nurseries at two locations to provide farmers with information they need – expect to identify resistant lines; (3) Collaboration – Approach: growing and screening collaborative nurseries to facilitate germplasm exchange; expect to broaden diversity of resistance sources and provide excellent pre-release multi-location data for candidate varieties. (4) Outreach – Approach: through collaboration with our grains extension specialist and extension plant pathologist, we communicate results from fungicide x variety trials (inoculated) to growers, extension agents, consultants and others in the wheat community. This data is ported directly to the Scab Smart website, presented at winter meetings and field days and is available from our breeding project website; expect to educate stakeholders.