PI: Dowell, Floyd **PI's E-mail: floyd.dowell@gmprc.ksu.edu**

Project ID: FY07-DO-073 **FY06 ARS Agreement #: New**

Research Area: VDUN **Duration of Award: 1 Year**

Project Title: Single Kernel Sorting Technology for Enhancing Scab Resistance and Grain Quality.

PROJECT 1 ABSTRACT

(1 Page Limit)

The goal of this research is to support breeding programs in the development of wheat cultivars that are resistant to Fusarium head blight by selecting specific kernels with traits that may be related to scab resistance from within breeding lines. The specific objective is to use automated visible and near-infrared (NIR) spectroscopy instrumentation to select kernels with specific traits to enhance the development of scab resistant hard and soft wheat varieties. The technology should result in reducing mycotoxins by exploiting this emerging technology to help breeders enhance and accelerate their breeding programs by selecting individual seeds with scab resistance while maintaining good agronomic and end-use quality potential. This will be an integrated and interdisciplinary approach involving engineers and breeders from public and private institutions from various growing regions.

We will sort 500 to 1000 samples that range in size from to 100 to 1000g. We will sort samples that have been subjected to scab infection to select asymptomatic kernels and identify infected lines.

This project relates directly to the Variety Development and Uniform Nurseries (VDUN) research priorities to aid in the breeding and release of FHB-resistant wheat and barley varieties, minimize the time to delivery of FHB resistant varieties, and enhance the accuracy and consistency of FHB resistance phenotyping. This technology will also help breeders develop scab-resistant lines.