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Project ID: FY08-BO-085

FY07 ARS Agreement #: 59-0790-6-058

Research Category: HWW-CP/VDHR

Duration of Award: 1 Year

Project Title: Development of Scab Resistant Wheat Cultivars for Kansas.

PROJECT 1 ABSTRACT

(1 Page Limit)

Serious scab (*Fusarium* head blight) epidemics occurred in Kansas in the past and annual losses total about \$2.7 million (Appel et al. 2006). Approximately one million acres of wheat in the eastern part of Kansas are annually at risk from scab where rainfall is higher during heading and corn residue is more prevalent. Additionally, scab has the potential to become much more prevalent in central Kansas where wheat is the traditional dominant crop (about 5 million additional wheat acres). There is a trend for increasing cultivation of corn (the main inoculum reservoir), in that part of the state, there is a strong trend for decreasing tillage (increasing spore production), and the prevalent varieties in central Kansas are susceptible to scab. Resistant wheat cultivars adapted to Kansas would be highly desirable and offers the best hope for economic management of this disease. The long-term goal of this research is to develop hard red and hard white winter wheat cultivars adapted for Kansas with improved resistance to scab. Short term objectives are to: 1) test existing local cultivars for resistance, 2) test advanced breeding lines, 3) test exotic germplasm lines, 4) test the Northern Uniform Winter Wheat Scab Nursery and the Northern Hard Winter Wheat (Kansas, Nebraska, South Dakota) Scab Nurseries for reaction to scab, and 5) incorporate new sources of scab resistance into the Kansas wheat breeding programs. Testing will be done in misted field nurseries using soil-applied infested corn grain inoculum and in the greenhouse using floret inoculations. Visual disease evaluation methods will be used and harvested grain will be assessed for percentage *Fusarium*-damaged kernels and DON. Data will be disseminated to wheat producers and used by wheat breeders as they make selections for future Kansas cultivars.