PI: William Bockus
PI's E-mail: bockus@plantpath.ksu.edu
Project ID: 0506-BO-012
FY04 ARS Agreement #: 59-0790-3-078
Research Area: VDUN
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 1982, 1990, 1993, and 1995. 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. Since 1980, wheat acreage in the eastern one quarter of Kansas has declined by two thirds. A major cause of the decline has been farmer aversion to the risk of scab epidemics. Therefore, the availability of cultivars with resistance to scab is highly desirable for eastern Kansas. Additionally, there are three main reasons that 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). First, there is a trend for increasing cultivation of corn in that part of the state, the main reservoir of inoculum of the scab pathogen. Second, there is a strong trend for decreasing tillage, which allows spore production and release from the residue. Third, the prevalent varieties in central Kansas are very susceptible to scab. Resistant wheat cultivars adapted to this area of Kansas would also be highly desirable. Genetic resistance offers the best hope for economic management of this intractable 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) screen existing local cultivars for resistance, 2) screen advanced breeding lines for resistance, 3) screen exotic germplasm lines for resistance, 4) screen the Uniform Regional Winter Wheat Scab Nursery for resistance, and 5) incorporate new sources of scab resistance into the Kansas wheat breeding program. Screening will be done in misted field nurseries using soil-applied infested corn grain inoculum and in the greenhouse using single floret inoculation. Visual disease evaluation methods will be used to rate the percentage spikelets infected by the pathogen. Data will be disseminated to wheat producers and used by wheat breeders as they make selections for future Kansas cultivars.