

**PI: Murphy, J. Paul**

**PI's E-mail: Paul\_Murphy@ncsu.edu**

**Project ID: FY07-MU-040**

**FY06 ARS Agreement #: 59-0790-4-117**

**Research Area: HGR**

**Duration of Award: 1 Year**

**Project Title: Introgression of FHB Resistance from Hexaploid and Intergeneric Hybrids into Soft Red Winter Wheat.**

### **PROJECT 1 ABSTRACT**

(1 Page Limit)

The goal of this research is to generate parental germplasm adapted to the southeastern U.S. with unique resistance to Fusarium head blight (FHB). This is an integral component of the long-term goals of my project which include the development of small grain varieties with superior agronomic characteristics and end-use quality. FHB resistant donor parents include: 1) hexaploid wheat lines with novel haplotypes at *Fhb1*, 2) winter-type accessions of the Sando intergeneric hybrid germplasm collection, 3) NC triticale breeding lines, and 4) an A genome diploid *T. monococcum* accession. The recurrent parents are FHB susceptible lines adapted to the southeastern U.S. During the 2006-07 and 2007-08 seasons BC<sub>1</sub>- and BC<sub>2</sub>- derived materials in 1) above will be undergo backcrossing and Type II evaluation in the greenhouse and field inoculated nurseries. BC<sub>1</sub>-, BC<sub>2</sub>-, and BC<sub>3</sub>-derived materials in 2), 3), and 4) above will undergo both greenhouse and field evaluations to identify homogeneous lines with superior FHB resistance in comparisons with their recurrent parents. The research outlined in this proposal is directed to the overall USWBSI goal of developing, as quickly as possible, effective control measures that minimize the threat of FHB in the wheat community. The research outlined in this proposal is directed to the specific HGR Research Priority for FY07 of generating unique and adapted parental material (pre-breeding). Pre-breeding activities outlined in this proposal are essential if new sources of resistance are to be widely utilized in cultivar development in the southeastern U.S.