PI: Ohm, Herbert **PI's E-mail: hohm@purdue.edu**

Project ID: FY06-OH-010 **FY05 ARS Agreement #: 59-0790-4-118**

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

Project Title: Introgression of Fusarium Head Blight Resistance of Thinopyrum into Wheat.

PROJECT 1 ABSTRACT

(1 Page Limit)

Fusarium head blight (FHB) is a devastating disease of wheat in Indiana and adjacent regions. Few FHB resistance genes with large effect have been identified in common wheat. Novel resistance identified in wild species that are related to wheat must be transferred into wheat germplasm lines that are useful as parent lines to develop wheat cultivars with pyramided FHB resistance. We propose to carry out prebreeding to develop wheat lines that have the novel FHB resistance on chromosome $7el_2$ that has a large effect on reducing spread of the disease after infection, and that are at least partially improved for other important plant traits, including having other FHB resistance QTL.

The objectives of this research are: 1) carry out two cycles of marker-assisted backcrossing to transfer the $7el_2$ FHB resistance into adapted winter wheat lines that have type II resistance/low-incidence to FHB and register the resulting improved wheat lines in Crop Science, 2) determine augmentation of FHB resistance between the QTL derived from this shortened $7el_2$L segment and QTL from other sources.

We will transfer the $7el_2$ resistance into three high-yielding winter wheat lines adapted to Indiana with diverse genetic backgrounds and FHB resistance, and the spring wheat cultivar, Alsen, that is adapted to the upper Midwest region and has *Qfhs.ndsu-3BS*. Two backcrosses will recover approximately 87% of the recurrent parent genome. The resulting selected F_2-derived lines will be submitted to the NUWWSN and to Performance trials, and will be made available to wheat breeders nationwide as germplasm with unique FHB resistance.