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Project ID: FY10-NW-007

FY10 ARS Agreement #: 59-0206-9-072

Research Category: VDHR-NWW

Duration of Award: 1 Year

Project Title: Breeding FHB Resistant Wheat for Ohio.

PROJECT 1 ABSTRACT

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Fusarium Head Blight (FHB) causes extensive yield and quality losses. In 2006, high DON levels in Ohio forced some mills to import non-FHB infested grain. Scab and excessive DON were also problems in 2010 in Ohio. The deployment of high-yielding FHB resistant varieties is a critical component of effective economic control. Breeding for FHB resistance is difficult due to low heritability and complex genetics. Breeding resistance requires screening many lines to combine FHB resistance with the other traits required in an economically viable cultivar. The OSU program has built a genetic base that has good levels of FHB resistance. This includes an array of backcross-derived breeding lines with FHB1 and strong native resistance. We have designed objectives that exploit that base and that complement the Multi-Institutional projects of the NWW-CP. We will generate new populations of inbred lines from parents chosen to facilitate recombination of genes from elite and exotic sources for yield, adaptation to Ohio, and resistance to FHB and other diseases. We will utilize parents generated by MAS to pyramid QTL for FHB resistance and to initiate backcross and recurrent selection populations. The core of the program is phenotypic screening where we inoculate and phenotype 1,200+ new lines each year in a replicated nursery and an additional 8,000 in head rows.