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ARS Agreement #: 59-0200-6-018

Research Category: GDER

Duration of Award: 1 Year

Project Title: Over-expression and Allele Mining for *Fhb1* in Wheat.

PROJECT 1 ABSTRACT

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- **Overall project goals:**

Fhb1 is the most consistently reported source of Type 2 resistance to the devastating Fusarium Head Blight (FHB) disease of wheat. The *Fhb1* QTL has been recently cloned in our Lab and validated using TILLING and RNAi. The overall goal of the proposed research is to over-express the *Fhb1* QTL from Sumai3 in wheat. The long term applications will be to deploy *Fhb1* in popular wheat and barley cultivars to minimize losses due to FHB.

- **Project Objectives and Expected Outcomes:**

Constructs for over-expressing *Fhb1* gene will be developed in suitable vectors. Transformation of amenable wheat cultivars Bobwhite and Fielder will be done using particle bombardment method. The transformants will be analyzed for difference in resistance levels (percentage diseased spikelets and Fusarium damaged kernels) and DON content. The expected outcome is enhanced level of FHB resistance in the transformed lines.

- **Plans to accomplish project goal(s) within proposed period:**

The proposed experiments and studies are planned to be completed within 2 years (May 2016-Apr 2018).

- **Statement of Mutual Interest:**

The proposal aims to develop effective FHB resistance and reduced DON accumulation through transgenic strategies which is one of the action plan goals of USWBSI. Also the function and mode of action of *Fhb1* will be investigated so that in the long run the findings of the project can be applied to multiple crops.