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Project ID: FY14-WE-002

ARS Agreement #: New

Research Category: WES-CP

Duration of Award: 1 Year

Project Title: Developing FHB Resistant Wheat Cultivars for Idaho and the Western US.

PROJECT 1 ABSTRACT

(1 Page Limit)

This project addresses a disease of importance nationally and internationally which is likely to become an increasing problem for growers in Idaho and some areas in Pacific Northwest (PNW) because of the increasing corn production, reduced tillage, and changing climate. Currently, most virtually grown cultivars in Idaho and PNW are susceptible to FHB and often produced high levels of DON toxin in past two years. Developing FHB resistance in Idaho and PNW wheat cultivars will reduce or eliminate future costs of disease control using fungicides, and help growers and industry reduce yield and quality losses when epidemic occurs.

The overall goal of this project is to develop FHB resistant spring cultivars that have high grain yield and good end-use quality and resistance to other predominant diseases and insects. The specific objectives are: 1) Validate and characterize FHB resistance in greenhouse and field nurseries being established in spring wheat cultivars and elite lines pyramided *Fhb1* with resistance genes to stripe rust, Hessian Fly, and end-use quality; 2) Complete QTL mapping of FHB resistance in a soft white spring wheat cultivar 'UI Stone' and assess the effect of FHB resistance QTL (3BS and 5AS) on yield and other agronomic traits; 3) Advance FHB-related populations pyramided FHB resistance with resistance to stripe rust, stem rust, cereal cyst nematodes, and end-use quality via MAS and field testing.

All information and data being produced from this project will be presented at local field days, grower schools, Western Wheat Workers meeting, the FHB forum, professional meetings, and published in breeding program webpages and various peer-reviewed journals.