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**Project ID: FY15-WE-001**

**ARS Agreement #: New**

**Research Category: WES-CP**

**Duration of Award: 1 Year**

**Project Title: Fusarium Head Blight Resistance for Montana Spring Wheat**

### **PROJECT 1 ABSTRACT**

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Fusarium head blight has been a long-standing problem on irrigated wheat acreage in Montana. Shifting rainfall patterns have helped grain yields on dryland acreage, but have also increased the occurrence of FHB in dryland areas. Thus, while a primary objective of the spring wheat breeding effort is to develop FHB-resistant varieties suitable for production in high-yield, irrigated systems, varieties for dryland areas are becoming increasingly important. The spring wheat breeding program has relied upon a traditional crossing program to incorporate FHB resistance. Two sources of resistant material have been used. First, we grow the Uniform Regional Hard Red Spring Wheat Nursery in Bozeman. We have selected lines from this nursery over the past decade to be used as parental material for our own breeding program. Crosses have included currently released lines such as Glenn, Forefront, Sabin, and RB07. In addition, we grown a large panel of elite lines under the auspices of the USDA-funded T-CAP program, and have selected several FHB-resistant lines for our crossing program. As a result, we have lines with a resistant parent at some frequency at all stages of development. The lines have not been characterized for FHB resistance. Funding requested in this proposal will be used make additional crosses using FHB resistant lines from both the Uniform Regional Nursery and the elite T-CAP nursery. Advanced lines currently in the program will be screened under FHB pressure. Additionally, we will use markers developed for the known sources of resistance to develop a baseline data base for the presence of resistance genes in our current germplasm. Previous screening with markers for the Sumai-3 allele conducted several years ago showed an absence of this gene in our advanced lines. The expectation is that recent crosses have resulted in a level of occurrence of resistance genes in current germplasm.