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**FY05 ARS Agreement #: New**

**Research Area: VDUN**

**Duration of Award: 1 Year**

**Project Title: Responding to Montana's Head Scab Epidemic.**

### **PROJECT 1 ABSTRACT**

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Agriculture is the single largest source of income for Montana with small grains representing 37% of all agricultural income which amounted to \$750 million in 2004. Montana's acreage typically yields less than other states and therefore profit margins for producers within the state are heavily tied to premiums paid for wheat quality. Unfortunately, Montana's reputation for quality hard spring wheat is in jeopardy due to *Fusarium graminearum* and head scab which are an increasing problem within the state. First reported on limited irrigated acreage four years ago, today, based on limited surveys and samples submitted to the diagnostic clinic, we estimate impacted acres to be in excess of 250,000 acres with all 150,000 irrigated acres being impacted or potentially impacted. This acreage amounts to approximately \$50 million in wheat production. While only 5-10% of our total acreage, its impacts on Montana's economy could be disproportional if we lose our reputation for premium "clean" wheat.

This project will provide management options for Montana growers already impacted, often catastrophically, by this disease and also to preemptively protect our reputation for premium spring wheat. To accomplish this, we will: 1) Establish a *Fusarium* head scab nursery and evaluated *Fusarium* head scab resistance of Montana's spring wheat varieties along with scab resistant materials released by other states, and 2) Incorporate the Sumai3 scab resistance gene(s) into wheat lines and breeding stock adapted to Montana's growing conditions. By the end of Montana's response to head scab, we will have evaluated existing resistant varieties for Montana's production systems and incorporated Sumai3 scab resistance into Montana adapted varieties.