<table>
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<tr>
<th>USWBSI Research Category</th>
<th>Project Title</th>
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<td>VDHR-SPR</td>
<td>Determination of the Relationship between FHB and Spring Wheat Quality.</td>
<td>$ 16,882</td>
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**Total ARS Award Amount**  
$ 16,882

* MGMT – FHB Management  
FSTU – Food Safety, Toxicology, & Utilization of Mycotoxin-contaminated Grain  
GDER – Gene Discovery & Engineering Resistance  
PBG – Pathogen Biology & Genetics  
BAR-CP – Barley Coordinated Project  
DUR-CP – Durum Coordinated Project  
HWW-CP – Hard Winter Wheat Coordinated Project  
VDHR – Variety Development & Uniform Nurseries – Sub categories are below:  
  SPR – Spring Wheat Region  
  NWW – Northern Soft Winter Wheat Region  
  SWW – Southern Soft Red Winter Wheat Region
Project 1: Determination of the Relationship between FHB and Spring Wheat Quality.

1. What major problem or issue is being resolved relevant to Fusarium head blight (scab) and how are you resolving it?

The effect of Deoxynivalenol (DON) on quality characteristics of a hard red spring wheat cultivar was investigated in this study. DON levels were controlled by using various fungicidal treatments on wheat.

2. List the most important accomplishment and its impact (i.e. how is it being used) to minimize the threat of Fusarium head blight or to reduce mycotoxins. Complete both sections (repeat sections for each major accomplishment):

   **Accomplishment:**

   Test weight showed a negative correlation with DON. Protein content of flour showed a positive correlation and flour color (L value) showed a negative correlation. *Fusarium* damage had a significant impact on gluten quality that is evident from lower gluten index. Extensigraph curves showed that *Fusarium* decreased the resistance to extension and area under the curve and increased the extensibility. Alveograph curves also exhibited similar trend. Baking characteristics such as mixing time and dough handling also showed negative correlations with DON. These observations suggest that proteases from *Fusarium* act on gluten proteins especially the fractions responsible for dough strength thereby reducing the overall dough quality.

   **Impact:**

   Studies have shown the detrimental effect of Fusarium head blight on various qualities using different wheat varieties. However, it is important to gain thorough understanding of how the disease and its associated mycotoxin DON impacts a single wheat variety from one location so that the genetic and environmental differences are eliminated. The objective of this research is to determine how different levels of DON impacts the yield, kernel parameters, rheological properties and bread baking quality of a hard red spring wheat cultivar.
Include below a list of the publications, presentations, peer-reviewed articles, and non-peer reviewed articles written about your work that resulted from all of the projects included in the grant. Please reference each item using an accepted journal format. If you need more space, continue the list on the next page.
