<table>
<thead>
<tr>
<th>USWBSI Research Category*</th>
<th>Project Title</th>
<th>ARS Adjusted Award Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBG</td>
<td>Use of Airulent Strains for Protection against Head Scab and for Increased Yield.</td>
<td>$ 37,073</td>
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<td><strong>Total Award Amount</strong></td>
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* 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 Winter Wheat Region
   SWW – Southern Sinter Wheat Region
Project 1: Use of Airulent Strains for Protection against Head Scab and for Increased Yield.

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

   New strategies to eliminate or reduce DON in grain are essential as we only have tools that are partially effective and none that are completely effective. We investigate the use of avirulent strains of *F. graminearum* to act as protective endophytes to reduce toxin and increase yields.

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:** We have shown that resistant cultivar Alsen has higher capacity to harbor avirulent endophytic strains of *Fusarium graminearum* than either of the susceptible cultivars Wheaten or Bobwhite. Furthermore, the three avirulent strains we tested appear to have different abilities to colonize each of the cultivars. We are in the process of identifying the genes associated with the avirulence phenotypes.

   **Impact:** This work has two impacts. First, if the presence of specific endophytes can affect disease impact, as has been shown in many other systems, then it should be used as another tool in the fight against scab. Second, since *F. graminearum* has evolved an intimate relationship with wheat, use of an attenuated strain as an endophyte may have some benefits for survival and colonization of the endophytic strain.
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.

Peer-reviewed publications (this year) funded by USWBSI:


Reviews and presentations:

