**USDA-ARS/**
**U.S. Wheat and Barley Scab Initiative**
**FY10 Final Performance Report**
**July 15, 2011**

# Cover Page

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| **Fiscal Year:** | FY10 |
| **USDA-ARS Agreement ID:** | 59-0790-8-069 |
| **USDA-ARS Agreement Title:** | Developing Managing Strategies to Reduce Effects of FHB in the Great Plains. |
| **FY10 USDA-ARS Award Amount:** | $ 4,366 |

**USWBSI Individual Project(s)**

| USWBSI Research Category* | Project Title | ARS Award Amount |
|---|---|---|
| MGMT | Uniform Fungicide Biocontrol Tests for Fusarium Head Blight Management. | $ 4,366 |
| | **Total ARS Award Amount** | **$ 4,366** |

Principal Investigator Date

* 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:** *Uniform Fungicide Biocontrol Tests for Fusarium Head Blight Management.*

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

   Hard red spring wheat yield loss and deoxynivalenol concentration in the grain continue to economically affect grower's income and grain quality for consumers, livestock producers and most end product users.

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:** Studies conducted at Langdon have shown beneficial effect of biological fungicide application as both a complementary treatment with fungicide, as tank mix, and as an integrated management strategy, application of biological 5-7 days after fungicide application. Sequential applications of biological fungicide, Taegro (Bacillus subtilis var. amyloliquefacians Strain FZB24 – Novozymes Biologicals, Inc., Salem VA) and proprietary double yeast strains (David Schisler USDA-ARS Peoria Illinois) with 6.5 fl. oz. per acre Prosaro fungicide increased yield and reduced deoxynivalenol accumulation in grain by 4.5 bu./acre and 0.29 ppm and 6.0 bu./acre and 0.3 ppm respectively. In addition a tank mix of proprietary strain B. subtilis (1BA and 1D3 Bruce Bleakley – South Dakota State University Brookings, SD.) and Prosaro fungicide increased yield and reduced deoxynivalenol accumulation in grain over single application of Prosaro fungicide by 4.7 bu./acre and 0.3ppm, respectively. The trials were conducted on the hard red spring wheat cultivar Howard.

   **Impact:** The direct impact of integrating management strategies has been demonstrated. The potential to include a biological fungicide in these strategies has been shown and needs to be tested. The availability of the biological fungicides on a commercial level continues to be a short term limitation.

**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.**

Yuen, G., Jochum, C., Halley, S., Sweets, L., Kirk, W., and D. Schisler. 2010. 2010 uniform biological control trials – preliminary results. Proceedings of the 2010 National Fusarium Head Blight Forum. U.S. Wheat and Barley Scab Initiative. Milwaukee, Wisconsin. p. 112.