

Barley Coordinated Agricultural Project Work Plan FY06 (3/1/07 – 2/29/08)
Brian J. Steffenson, University of Minnesota

1. Describe the research, education, and outreach activities you are planning for the next year (3/1/07 – 2/29/08)

Research We will evaluate the 2007 Barley CAP germplasm as per the requirements outlined in the CAP Participants Guide. This includes the evaluation of spring germplasm for resistance to spot blotch at St. Paul where the lines and controls will be planted as short rows in two replicates. We will collect data on disease severity and infection response according to our standard laboratory protocols. Additionally, we will evaluate all of the 2007 Barley CAP germplasm for resistance to Septoria speckled leaf blotch. These evaluations will be conducted at the seedling stage in the greenhouse and will include two replicates. Plants will be scored for their infection responses according to our standard laboratory protocols. Finally, we also will participate in collaborative FHB trials conducted at Crookston and St. Paul, MN and Hangzhou, China. We will assist in collecting data on heading date, FHB severity, and DON. If we receive additional funding, we will evaluate 2006 Barley CAP germplasm for resistance to stem rust race TTKS (Ug99) in collaboration with Dr. Yue Jin. All data collected from the above evaluation tests will be sent to Jennifer Kling in spreadsheets customized for her database manipulations.

Education I will be hiring one Ph.D. student who will be working on association mapping of disease resistance in the Barley CAP germplasm. This student will be working with other CAP members to perform these analyses.

Outreach I will hire an extension evaluator for the Barley CAP. At suitable venues where I am invited to speak, I will talk about Barley CAP activities. Also, I will coordinate outreach activities with Peggy Lemaux and other members of Barley CAP and assist the extension evaluator in the assessment of these activities. We will develop a podcast on stem rust screening of Barley CAP germplasm for race TTKS resistance.

List specific outcomes and deliverables that will be accomplished in the first 6 months (3/1 – 8/31). These will be used as benchmarks for your bi-annual progress report.

- Spot blotch, Septoria, and stem rust evaluations will be completed, and we will assist in the evaluation of FHB collaborative trials.
- We will hire an extension evaluator and a Ph.D. student.
- We will work on the development of new outreach materials and the refinement of established ones.

2. List specific outcomes and deliverables that will be accomplished in the second 6 months (9/1 – 2/29). These will be used as benchmarks for the bi-annual progress report.

- Summarized spot blotch, Septoria, and stem rust phenotypic data will be sent to Jennifer
- We will work with extension evaluator to make assessments of our outreach outcomes and impacts.
- A summary of outreach activities will be completed and prepared for the 2008 Barley CAP meeting.

**Barley Coordinated Agricultural Project Year End Progress Report
FY06 (4/1/06 – 3/31/07)
Brian J. Steffenson, University of Minnesota**

1) Describe the research, education, and outreach activities you completed during the past year FY06 (4/1/06 – 3/31/07)

Research We evaluated the 2006 Barley CAP breeding germplasm for adult plant resistance to spot blotch in the field (minus winter breeding germplasm), seedling resistance to spot blotch in the greenhouse, seedling resistance to Septoria speckled leaf blotch in the greenhouse, and seedling resistance to stem rust (race TTKS or Ug99) in the greenhouse all at St. Paul. Data on disease severity and/or infection response were collated and sent to Jennifer Kling. Additionally, we participated in the collaborative FHB trials conducted at Crookston and St. Paul by assisting in the threshing and preparation of samples for DON analysis. Evaluations for seedling spot blotch resistance and stem rust resistance were additional objectives that were not part of our original FY06-07 goals.

Education A Ph.D. student will be hired soon to work on the association mapping of disease resistance in the Barley CAP germplasm. In the meantime, I assigned my current Ph.D. student Ben Alsop to conduct the spot blotch disease evaluations in 2006 and prepare the data for Jennifer Kling. Our two replicate planting of CAP germplasm at St. Paul provided the sample material for morphological trait analysis by Magan Friskop, an undergraduate student working in Kevin Smith's laboratory.

Outreach I secured the Internet domain name of "barleycap.org" for the project and hired Sue White as a 30% time extension evaluator. I developed two questionnaires for surveying producers and users on how they obtain their information on barley. The survey for the users is complete, and the results will be summarized. The survey for the producers was conducted at a more comprehensive scale than first anticipated and was ultimately done by the Institute for Barley Malt Sciences. I gave a brief overview of the Barley CAP to the 3rd International Workshop on Barley Leaf Blights in Edmonton, Canada on July 27, the USWBSI Alien Introgression Workshop in Fargo, ND on August 14, and University of Saskatchewan in Saskatoon, Canada on October 5. I submitted an article for the CAP newsletter on our spot blotch evaluations and have provided input and feedback to Peggy Lemaux and Barbara Alonso on preparation of BarleyCAP outreach materials such as the poster, brochure, logo, PowerPoint presentation, and card. Together with Peggy Lemaux, I gave a presentation about outreach and education activities at the annual Barley CAP meeting in San Diego in January 2007.

List specific outcomes and deliverables accomplished in FY06 (4/1/06-3/31/07).

- Completed spot blotch (both seedling and adult), Septoria, and stem rust evaluations of Barley CAP germplasm
- Assisted in the FHB trials of Barley CAP germplasm
- Completed questionnaire surveys for producers and users at part of Barley CAP outreach
- Conducted outreach talks on the Barley CAP at three different venues
- Hired Sue White as an extension evaluator