

Barley Coordinated Agricultural Project Work Plan FY06 (3/1/06 – 2/29/07)
Kevin P. Smith, University of Minnesota

1) Describe the research, education, and outreach activities you are planning for the next year (3/1/06 – 2/29/07)

Research We will identify the UM 96 CAP breeding lines for 2006 per the requirements outlined in the CAP Participants Guide. We will plant these lines in our preliminary yield trials at 3 locations (Saint Paul, Morris, Crookston, MN) in 2-row (3m long) plots with two replicates per location, including the CAP common checks Robust, Harrington, and Baronesse. We will collect data on heading date, height, lodging, yield, plump grain, test weight, and grain protein concentration.

We will also participate in a collaborative FHB trial with the four Midwest breeding programs (384 entries). We will send seed from our 96 entries to North Dakota. We will plant two misted and inoculated FHB nurseries (Crookston and Saint Paul, MN) in single row plots (1.5 m long), 2 replicates per location in a RCB design including the checks Robust, Stander, MNBrite, Chevron, CI 4196. We will collect data on heading date, FHB severity, and DON. All data collected from the above trials will be sent to Jennifer Kling in spreadsheets designed in collaboration with Jennifer.

We will send breeders source seed of our 96 CAP lines seed to Brian Steffenson (5 g), Blake Cooper (10g), Tom Blake (10 g) for evaluation of other traits.

We will also conduct the DNA source grow out for all 960 CAP lines. We will plant 4 seeds per pot (from breeders source seed) in the greenhouse. Winter lines will vernalized for 6 weeks at 6 degrees. We will thin to one plant per line, harvest leaf tissue from each plant and ship to Shiaoman, Chao for SNP genotyping. We will harvest all the seed from each individual plant and ship to Blake Cooper for DNA source seed multiplication.

Education I have one PhD student that will be working on malting quality traits. She will be involved in the yield trials described above.

Outreach I will make a presentation at the American Society of Brewing Chemists (ASBC) in June about the Barley CAP. I will also include a slide about the Barley CAP at the Prairie Grains Conference in December. I will provide input and feedback to Peggy Lemaux in the design of brochures, posters, and powerpoint presentations.

2) 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.

- Send breeders seed to collaborators (Cooper, Steffenson, Blake) by April 1
- Preliminary yield trials and FHB collaborative trials planted in April or early May.
- ASBC presentation in June
- Plant out seed for DNA source in August.
- Send FHB data (severity and HD) to Jennifer Kling in August

3) 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.

- Submit grain samples from PYT to USDA-CCRU for malting quality analysis in October.
- Submit grain samples from FHB trial for DON analysis in October.
- Send yield trial data to Jennifer King in October.
- Send leaf tissue from 960 CAP lines to Chao in October.
- Prairie Grains Conference presentation in December
- Harvest CAP DNA source seed and send to Cooper in January

Barley Coordinated Agricultural Project Biannual Progress Report
FY06 (4/1/06 – 9/30/06)
Kevin P. Smith, University of Minnesota

1) Describe the research, education, and outreach activities you completed in the first half of the FY06 (4/1/06 – 9/30/06)

Research We identified the UM 96 CAP breeding lines for 2006 per the requirements outlined in the CAP Participants Guide. We planted these lines in our preliminary yield trials at 3 locations (Saint Paul, Morris, Crookston, MN) in 2-row (3m long) plots with two replicates per location, including the CAP common checks Robust, Harrington, and Baronesse. We collected data on heading date, height, yield, and test weight. There was no lodging at any of our locations so no lodging scores were taken. Plump grain and protein concentration data will come from malting quality analysis of grain samples through the USDA CCRU and expected in the 2nd half of the FY.

We participated in a collaborative FHB trial with the four Midwest breeding programs (384 entries). We planted two misted and inoculated FHB nurseries (Morris and Crookston, MN) in single row plots, two replicates per location in a RCB design including the checks Robust, Stander, MNBrite, Chevron, CI 4196. The Morris nursery was lost due to flooding shortly after planting followed by extreme drought. In the Crookston nursery, we collected data on heading date and FHB severity. The data is being assembled and will be sent to Jennifer Kling in September. All plots were harvested for DON analysis.

We have collected the seed for the DNA source grow out for all 960 CAP lines. The grow out will commence later in September.

Education Two graduate students are now working on the project. One PhD student, Carol Powers, is studying malting quality. MS student, Jon Massman, started in June and is working on FHB. Both students are involved in carrying out field trials and collecting data. One undergraduate student, Magan Friskop, is working on collecting morphological data that was originally proposed by Jerry Frankowiak who has left the BarleyCAP. The following traits (peduncle length, flag leaf width and length, awn length, rachis length, rachis internode length, and kernels per spike) are being measured on plant samples from plots planted by Brian Steffenson for Spot Blotch evaluation on the St., Paul campus.

Outreach I made a poster presentation at the American Society of Brewing Chemists (ASBC) in June about the Barley CAP and reported on it in the BarleyCAP September newsletter. I also included a short description of the BarleyCAP in my presentations to grower audiences at two field days this summer. I participated in a meeting of the Institute for Barley Malt Sciences where collaborative outreach efforts with BarleyCAP were discussed. I have provided input and feedback to Peggy Lemaux and Barbara Alonso on preparation of BarleyCAP posters, logo, and brochure as well as submitted material for the BarleyCAP newsletters.

2) List specific outcomes and deliverables accomplished in the first half of FY06 (4/1 – 9/30).

- Sent breeders seed to collaborators (Cooper, Steffenson, Blake) by April 1
- Planted preliminary yield trials and FHB collaborative trials planted in April or early May.
- Collected breeder trait data from preliminary yield trials and heading date and severity data from collaborative FHB trial at Crookston.
- ASBC presentation in June
- Planting seed for DNA source in September.
- Sent FHB data (severity and HD) to Jennifer Kling in September