

Barley Coordinated Agricultural Project Work Plan FY07 (4/1/07 – 3/31/08)
Tom Blake, Montana State University

1. Describe the research, education, and outreach activities you are planning for the next year (4/1/07 – 3/31/08)

In the 2006-2007 Barley CAP program, the MSU barley project provided the backup site for seed production for spring barley lines, provided initial agronomic data on these lines and provided grain from the 768 spring barley lines to the barley food quality group at WSU. We provided 96 breeding lines for evaluation, entered these lines in our 2-location Preliminary Yield Trial and submitted the grain from this set of lines for malt quality evaluation. We also performed replicated yield trials under irrigated and dryland conditions on the MSU subset of lines as a 'dry run' for the much larger experiment we will perform in 2007-2008.

In the 2007-2008 Barley CAP project, MSU will utilize the seed we harvested from the 768 entry 2006-2007 seed production experiment in a 2-location 2-rep/location yield trial experiment. One of these locations will be irrigated, the other will be produced at our driest location at our Southern Agricultural Research Center near Huntley, MT. We will measure agronomic performance and grain quality at each location. These two datasets will enable development of indices of dryland adaptation for each of the 768 entries in the trial.

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.

Yield trials will be planted, data gathered and entered. We will provide a photographic record of differential performance that we will make available to the Barley CAP coordinator. The dataset will be made available to the Barley CAP coordinator by 9/30/07.

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

Data will be analyzed, and association analysis performed utilizing QTLMiner and the BarleyOPA1 dataset on each of the traits that show significant entry effects, including drought tolerance index.

Barley Coordinated Agricultural Project Biannual Progress Report
FY06 (4/1/06 – 3/31/07)
Thomas K. Blake, Professor, Montana State University

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 2 locations (Bozeman and Huntley Montana) in 4-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.

MSU was one of the two sites that propagated all of the spring barley lines selected for the 2006 barley CAP program. We harvested all 768 entries and shipped them to our WSU collaborator for food quality analysis.

Education One graduate student, Jeremy Jewell, and four undergraduates worked on the project this summer. Our focus is on drought tolerance, and we will compare the data from our hot and dry site at Huntley, MT, with our dataset from Bozeman. This will provide the basis for a Finlay/Wilkenson analysis.

Outreach: I discussed the barley CAP at three fielddays (Huntley, Sidney and Havre) with approximately 400 Montana farmers.

List specific outcomes and deliverables accomplished in the first half of FY06 (4/1 – 3/31/07).

- Planted and harvested both the 100 entry MSU CAP nursery at two locations and the 768 entry CAP spring barley single row nursery.
- Presented CAP report to farmers at MSU field days
- Provided grain for food quality analysis
- Analyzed data from CAP nurseries and the single row trial