Barley Coordinated Agricultural Project Work Plan FY06 (3/1/06 – 2/29/07)
Tom Blake, Montana State University

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

Research The 96 lines that the MSU barley CAP program is submitting derive from our replicated EYT and Intrastate yield trials, and are tested at between 6 and 11 locations around Montana. Our lines will encounter drought stress, heat stress, scald, net blotch and a wide range of relative productivities.

We will grow all 960 first-year lines in a non-replicated single row/entry trial primarily to provide seed to the rest of the CAP participants in year 2, but also to provide initial data on relative height, flowering date and grain characteristics.

Our most reliable drought testing location, the Southern Agricultural Research Center near Huntley, MT is not equipped to plant single row trials. We will remedy this problem before the spring of 2007. If sufficient seed (160g) is provided, we will plant the initial 96 lines that are being used as haplotype references in 2-rep RCB trials at Bozeman and Huntley to provide an initial assessment of the relationships between drought adaptation and haplotype.

Education: We appear to have successfully recruited our CAP PhD student, and currently have 2 PhD and 1 MS students in the MSU barley genetics research group. These students all contribute to the overall objectives of the barley CAP, and our newly recruited student will concentrate on discerning and testing relationships between haplotype and phenotype.

Outreach The MSU Barley genetics program presents research updates at farmer field days, at local, regional, national and international conferences devoted to barley production, utilization and research.

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.

- Plant 960 single rows and (if seed is provided) replicated yield trials of 96 lines at Bozeman and Huntley, MT
- Assess plant height, heading date, test weight, percent plump and grain protein percentage for all lines grown for the CAP at Bozeman and Huntley
- Assess drought adaptation for lines grown at both Bozeman and Huntley
- Discuss CAP at farmer field days and at regional malting meetings

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.
- Send data from yield trials to CAP database (Nov. 1)

Barley Coordinated Agricultural Project Biannual Progress Report
FY06 (4/1/06 – 9/30/06)

Thomas K. Blake, Professor, Montana State University

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 propatated 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 – 9/30).

- 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