

Barley Coordinated Agricultural Project Work Plan for Year 4 (4/1/2009-3/30-2010)
Peter Bradbury, USDA-ARS, Ithaca, NY

1) Describe the research, education, and outreach activities you are planning for Year 4 (4/1/2009-3/30-2010)

Research

I plan to identify and compare methods that can be used to predict phenotypes using the phenotype and marker data collected by the Barley CAP project. Cross validation will be used for method and model selection for phenotype prediction. Demonstrating that markers can be used to improve selection efficiency will have substantial value for the barley breeding community.

Education

Outreach

If sufficient data is loaded to THT, I will complete work on the GDPC adapter that will allow users to import THT data into TASSEL software for association analysis. Software that can be used to combine marker and phenotype data to predict phenotypes will be developed.

2) List specific outcomes and deliverables that will be accomplished in the first 6 months. These will be used as benchmarks for your bi-annual progress report.

Submit publication comparing methods of QTL detection in Barley CAP germplasm.

3) List specific outcomes and deliverables will be accomplished in the second 6 months. These will be used as benchmarks for the bi-annual progress report.

Submit publication comparing methods of phenotype prediction in Barley CAP germplasm. Develop software implementing methods of phenotype prediction.

Barley Coordinated Agricultural Project Six-Month Progress Report
(4/1/08 – 9/30/08)

Peter Bradbury, USDA-ARS, Ithaca, NY

1) Describe the research, education, and outreach activities you completed (4/1/08 to 9/30/08)

Research

Haplotype block analysis – An analysis of the haplotype block structure Barley CAP germplasm has been completed and a manuscript is in preparation.

Evaluate LD structure of core germplasm and first year lines – An analysis of the population and LD structure of Barley CAP germplasm is nearly complete. A manuscript combining this with the study of haplotype structure is in preparation.

Simulate Marker Assisted Selection – Two approaches using simulated QTL are in progress. One approach looks at the ability to detect and locate specific QTL. The other simulates QTL and evaluates the ability of methods to predict the resulting phenotypes.

Education

An open post-doc position was filled.

Outreach

A prototype GDPC adapter was written and distributed as part of the GDPC and TASSEL software releases.

2) List specific outcomes and deliverables accomplished (4/1/08 to 9/30/08)

A second post-doc position was filled. The individual started on 9/3/08.

A prototype GDPC adapter was written that can eventually provide the ability to move data from THT (the Hordeum Toolbox) to TASSEL, software for association analysis.