

**Barley Coordinated Agricultural Project Work Plan FY06 (3/1/06 – 2/29/07)**  
**Jean-Luc Jannink, Iowa State University**

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

Research My program is not funded by the Barley CAP for the first year of funding. Nevertheless, I plan on the following research projects.

- a) Continued literature review and method development for determining population structure in the barley programs. A current weakness of approaches to determine structure is that there are not clearly statistically supported rules for determining the number of subpopulations among the total set of lines. This determination will be both complicated and important for the Barley CAP, given that lines will come from 10 programs between which there are variable levels of germplasm exchange. In addition to population structure, I will conduct literature review and method development for determining additive genetic relationships between individual lines. In the current Barley CAP proposal, we consider using known pedigrees to determine these relationships. The relationships can also be estimated using putatively neutral DNA markers, a possibility that may have some advantages.
- b) Literature review and method development to determine “tagging” SNP that capture a maximum amount of information within haplotype blocks. Tagging SNP allow association mapping using minimal genotyping.
- c) Coordination on the QTL Miner software being coded by Rex Bernardo. There will be interest in the Barley CAP to extend the association mapping methods from single-marker to multiple haplotype methods, coding haplotypes as random effects.

Education I hope to attract a Ph.D. student to work with me on these aspects of Associative Genetics. At the moment I have two good prospects but no definite student signed on.

Outreach I have made one presentation that included information about the Barley CAP in France to researcher at the INRA experiment station at Le Moulon. In particular Alain Charcosset and Laurence Moreau attended. They are among the most experienced public sector researchers in marker assisted selection. In July I will be part of a panel of oat researchers presenting ideas about how the oat community can make progress in MAS. As part of that panel I will also present ideas emerging from the Barley CAP.

**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.**

- Deliver specific plan for method implementation by 8/31.
- Develop coordination agreement with Rex Bernardo on integration into QTL Miner.

**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.**

- Report on subpopulation structure within first 960 Barley CAP lines.

**Barley Coordinated Agricultural Project Biannual Progress Report**  
**FY06 (4/1/06 – 9/30/06)**  
**Jean-Luc Jannink, Iowa 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 I am not yet funded through the Barley CAP (funding starts in year 2). Research has been limited to literature review on efforts in association genetics in human. That literature review has led to some questions and exchange with Robbie Waugh on the issue of ensuring adequate genome coverage with the 3000 SNP that we have available. Peter Bradbury and I have begun coordinating on what we should do with the SNP data once it starts pouring in.

Education One graduate student has been hired who will be working on the project. Cristina Andreescu will start working with me in May.

Outreach I gave a talk at the 2006 American Oat Worker's Conference in Fargo, ND that discussed the Barley CAP as a possible model for efforts in oat.

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

- AOWC presentation in July.