

**Barley Coordinated Agricultural Project Work Plan FY06 (3/1/06 – 2/29/07)**  
**Stephen Neate, North Dakota State University**

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

**Research** We will organize delivery of the set of 96 lines that is being used to develop the pilot OPAs for the CAP. Lines will be accepted from Cooper in Colorado, Franckowiak and Horsley in North Dakota, Blake in Montana, Roche in Utah, Obert in Idaho and Ullrich in Washington. To test these lines for common root rot resistance we will initiate a collaboration with staff at the Langdon Research and Extension Center and negotiate access to land on which cereals have been grown continuously for at least 2 years so that common root rot inoculum is present. As well the land needs to be relatively weed free and light and friable to ensure we get the necessary seeding depth. We will negotiate for the Extension Center staff to cultivate and harrow several times to ensure a soft, deep seedbed. We will plant the Common Root Rot lines at Langdon in a single trial with 8 replications and 4ft x 8ft plots. At mid to late dough stage we will harvest subcrown internodes from at least 20 plants per plot and they will be returned the laboratory for disease assessment.

We will also participate in a collaborative FHB trial with the four Midwest breeding programs (384 entries). We will plant two misted and inoculated FHB nurseries (Fargo and Langdon, ND) in single row plots (1.5 m long), 2 replicates per location in an augmented block 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.

**Education** I have one PhD student, Sanjay Gyawali, that will be working on common root rot disease of barley. He will be involved in the common root rot disease screening trials described above. We will employ a summer vacation student from May to August and they will spend time working on the common root rot experiments and will learn about the disease and the aims of the CAP project.

**Outreach** I will include details about the CAP project in my presentation at the 62<sup>nd</sup> Annual ND State Bareley Show at Osnabrock ND in March 2006. I will include details about the CAP project at ND Research and extension centre Farmer meetings in July 2006.

**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.**

- Co-ordinate shipping, accept and catalogue breeders seed sent from collaborators (Smith, Cooper) by April 1
- FHB collaborative trials planted in April or early May.
- Common root rot trial planted in April or early May.
- 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.**

- Send FHB data (severity, DON and incidence) to Jennifer Kling in January
- Submit grain samples from FHB trial for DON analysis in September.

**Barley Coordinated Agricultural Project Biannual Progress Report**  
**FY06 (4/1/06 – 9/30/06)**  
**Stephen M. Neate North Dakota 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 organized and took receipt of the subset of OPAH2 lines available in sufficient quantities (about 500g) for large scale field trials for testing of disease reaction to common root rot caused by the plant pathogen *Cochliobolus sativus*. We planted these lines in 4'x10' plots in Langdon on unirrigated and uninoculated plots with 8 replications. The field site was chosen for its wheat-wheat rotation and history of common root rot. At hard dough stage plants were randomly pulled from each plot until we had at least 20 sub-crown internodes 1-2cm long from each plot. Sub-crown internodes are being stripped of their papery covering prior to disease assessment. Approximately 9000 plants were pulled. At maturity plots were harvested and seed retained for quality assessment.

We participated in a collaborative FHB trial with the four Midwest breeding programs (384 entries). We planted two misted and inoculated FHB nurseries (Fargo and Langdon ND) in single row plots, two replicates per location in an augmented block design including the checks Robust, Stander, MNBrite, Chevron. Due to extremely hot dry conditions at maturity causing premature ripening only one replicate was able to be assessed for disease at each site however data on DON toxin levels, heading date and harvest was able to be undertaken on both replicates at both sites. The disease data is being tabulated and will be sent to Jennifer Kling in October. The DON toxin level data will be sent when the routine analytical service has analysed the samples which is anticipated to be before January.

Education One graduate student was recruited and is now working on the project. Sanjaya Gyawali a PhD student, is working on common root rot disease. Gyawali is involved in the design, planting, maintenance, agronomic assessment and disease assessment of the common root rot field trials, as well as data tabulation.

Outreach No presentations in this period. I have reviewed and commented on poster and extension Barley CAP material being produced by Alonso and Lemaux.

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

- Organised and took receipt of breeders seed for field trials by April 1
- Planted common root rot and FHB collaborative trials planted in early May.
- Collected heading date and disease severity data from collaborative FHB trial at Fargo and Langdon ND.
- Sub-sampled and submitted seed from FHB collaborative trials for DON analysis
- One third completed cleaning of sub-crown internodes as a prelude to common root rot disease assessment