

THE MCKNIGHT FOUNDATION

Collaborative Crop Research Program

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Quarterly Update for Program Participants
January-March 2003

Important note: *In order to follow many of the external links, you will need to be logged into the CCRP site. Please take this opportunity to go to [this page](#) and log in using your assigned user name and password. Once you have this web page open, do not close it; otherwise, you will have to log in again and re-click the links. If you receive an error message, simply try clicking the link on this report again. If you do not have a username and password yet, email Kelly Lindsay.*

News

- In December, The McKnight Foundation moved its offices from the TCF Tower to Second Street in Minneapolis. Their new address is:

The McKnight Foundation
710 Second Street South
Suite 400
Minneapolis, MN 55401

- Jim Lorenzen has been developing a small collaboration with a group in Nepal, in an effort to extend the benefits of the Chile/Brazil potato project to farmers in S. Asia.
- Site visits to the wheat and soybean projects have been postponed due to elevated concern over the SARS epidemic in China.
- Dates and location have been chosen for the 2004 grantee conference (see “Upcoming events” below)
- Congratulations to Bob Goodman and Debbie Aks, who will be married at Granlibakken in May of this year.

Workshops, Conferences, Meetings, and Site Visits

January

27-31 The National Research Review meeting for the coming cropping season was held and all planned activities of the tef project were approved

February

23-25 Uganda sweetpotato project site visit, Entebbe, Uganda
Rebecca Nelson visited the Uganda sweetpotato project. Photos from her trip can be found [here](#).

25-27 Kenya sweetpotato project site visit, Nairobi, Kenya
Rebecca Nelson and Robert Mwangi visited the Kenya sweetpotato project. Photos from her trip can be found [here](#).

March

22-29 The quinoa project was visited by Dr. E. Jellen, M. Stevens, J. Maughan and C. Coleman from Brigham Young University.

28-29 UNSAAC-CRIBA and FAO-MIP held a workshop entitled “Experiencias en al manejo de plagas y enfermedades de los tuberculos Andinos” (Experiences in the Integrated Management of Pests and Diseases of Andean Tuber Crops) in Cusco, Peru.

Upcoming Events

2003

April

22-23 Andean tubers project site visit, Cusco, Peru
Almiro Blumenschein and consultant Sieglinde Snapp will visit the [Andean tubers](#) project.

24-25 Quinoa project site visit, La Paz, Bolivia
Almiro Blumenschein and consultant Sieglinde Snapp will visit the [quinoa](#) project.

May

7-8 Meeting with Legumes project members
Rebecca Nelson will travel to Ghana to visit Dr. Felix Dakora and the [legumes](#) project team.

22-23 Rice project site visit, Chiang Mai, Thailand
Agnes Rola and Daowen Wang will visit the [rice](#) project.

August

26-27 Maize/sorghum project site visit, Sete Lagoas, Brazil
Almiro Blumenschein and Rebecca Nelson will visit the [maize/sorghum](#) project.

October

12-15 Workshop: Improving Food Security in the Andes: Lessons Learned and Ways Forward, Cochabamba, Bolivia. This workshop will serve as a broad-based consultation with scientists, government, NGOs and community groups for the design of a focused call for proposals relating to achieving food security for resource-poor farmers in the Andes.

November

11-12 Finger millet project site visit, Bangalore, India
Roz Naylor and consultant Brigitte Courtois will visit the [finger millet](#) project.

13-14 Chickpea project site visit, Pune, India
Roz Naylor and consultant Brigitte Courtois will visit the [chickpea](#) project.

2004

Workshop: Millet and Sorghum-Based Systems in West Africa: Current Knowledge and Enhancing Linkages to Improve Food Security. This event, which is aimed at development of a request for proposals relating to sorghum- and millet-based cropping systems in W. Africa, was originally proposed for August. It is being rescheduled for January-February 2004.

April

Tef project site visit, Debre Zeit, Ethiopia
Agnes Rola and Charity Kabutha will visit the [tef](#) project.

July

Legumes project site visit
Theresa Sengooba and Usha Vijayraghavan will visit the [legumes](#) project.

November

6-10 2004 Grantee conference, The Netherlands
The biennial grantee conference is scheduled for November 6-10 in the Netherlands. The meeting will tentatively be held at the Kasteel Vaalbroek resort.

CCRP Web

The [CCRP web](#) continues to become more and more useful through regular content updates and the development of new features. Over the past few months, the CCRP web has offered improved services to both program affiliates and the public in the form of:

- A regularly updated calendar
- Event and site visit planning pages for OC members
- New slide shows and trip reports
- Improved reports pages for grantees and OC members

Our next round of site developments include:

- *Improving the document database.* Kelly Lindsay has sifted through hundreds of documents to find the final versions of original and year 1 proposals, workplans, budgets, and other documents. She will update the document database with these versions using a more user-friendly, easy to read format developed by Jon Corson-Rikert at Mann Library.
- *“Due dates” page.* Kelly will create a due dates page that will list grant periods, progress report due dates, and other deadlines for each project.
- *Topics and literature lists.* Kelly will update the literature database with thousands of new references obtained through BIOSIS literature searches. These references will be used in creating new sets of references using keywords relevant to each project. The lists will be available in HTML format and as a text document, linked from the appropriate topic and project page.
- *People database.* We are currently working on updating information in the people database.
- *Keyword hierarchy.* Our next task involves refining the existing keyword hierarchy. The hierarchy will play a key role in searching for literature on the CCRP web.

CCRP Web Statistics Report

We are currently looking into a web statistics program that will generate reports on site usage. We are hoping to use a program that will interpret log files, dating back to the first release day of the website, and generate a report that can be accessed on the site itself.

Literature Service

The CCRP literature service has seen quite a bit of activity from grantees since the beginning of the year. Though the literature database is still in its primary phases, it is now searchable by title, author, journal, keywords, and more for the 6,000 currently uploaded references. We encourage program affiliates to experiment with it so that we can determine its strengths and weaknesses; as well as letting us know if we need to refine or add keywords for better results.

As there is still no word on the Mann Direct copyright clearance system, we will continue to use the Copyright Clearance Center for this purpose. Their services have proven to be a very fast and convenient. We have slightly modified the process of using the allotted funds for literature service purposes. Each project has access to a devoted amount of funds per year in the sum of \$625.00. Our fiscal year runs July-June; therefore, we split the time into two semesters. Projects will have \$312.50 for each semester (January-June, July-December). In June and December, we will pool the total amount of unused funds and encourage the projects to use the remainder.

We would like to give thanks to all of the projects that used our literature service last quarter, especially Bob Schaffert and Hailu Tefera, who ordered several articles since the last report. All project members (not only principal investigators) are encouraged to use this service.

Updates from the CCRP Projects

We appreciate the efforts of those projects who submitted these updates! The text below is published as received; no edits were made on the material we received. Updates should consist of three fairly detailed bullet points. The next round of updates, covering April-June 2003, and are due in early July.

Chickpea Project (India):

- Mahatma Phule Krishi Vidyapeeth (Agricultural University) (MPKV), Rahuri, and National Chemical Laboratory (NCL), Pune, India. Participatory program: Trials of chickpea promising lines, developed under this program on the farms of nineteen farmers, selected from three different districts of Maharashtra state, India were successful and we are getting positive feedback from the farmers.
- NCL, MPKV and Assam Agricultural University (AAU), Jorhat, India. Efforts for the development of insect resistant chickpea: All the above mentioned Institutes are taking strong steps towards developing transgenic insect resistant chickpea using potent insect proteinase inhibitor genes, identified and isolated earlier in this program.
- NCL, MPKV and Washington State University, Pullman, USA. Tagging the pathogen resistance in chickpea: Identification of DNA markers in chickpea for Fusarium-wilt resistance using new crosses is in progress whereas at WSU characterization of chickpea BAC clones is underway.

Indigenous Vegetables Project (Uganda):

- The first draft of the final report was written and submitted to Dr. Rebecca Nelson for comments. She found it fit for submission to the McKnight Foundation.
- Dr. Rebecca Nelson visited us in Uganda briefly. All members of the project except two attended her seminar, and she had time to visit the Biotechnology Lab at Makerere University.
- The final report was written, taking into account comments from all collaborators and is due to be dispatched to the Foundation.

Quinoa Project (Bolivia):

- A total of 25 phenotypic traits were evaluated in the germplasm accessions including qualitative and quantitative characteristics. In addition, leaf samples were collected from each germplasm accession and are stored in a freezer. The leaves will be used to standardize DNA extraction methods and for molecular characterization of the quinoa germplasm accessions. On March 22 through 29, we had a visit of Dr. E. Jellen, M. Stevens, J. Maughan and C. Coleman from Brigham Young University. The professors are members of the BYU team of the Quinoa Project and they visited the Southern, Central and Northern Altiplano to get a detailed knowledge of the genetic diversity of quinoa grown in the Bolivian and Peruvian Altiplano.
- Case studies are being conducted in three geographic sub-areas of the Southern Altiplano where farmers grow Quinoa Real landraces. Two farmers from each sub-area were included in the study, one family grows many different landraces and the other family grows only two or three landraces. In addition, six families per sub area are being interviewed to complement the case study. The study will allow us to determine the cultural, social and economic aspects that influence genetic erosion of quinoa genetic resources.
- Mildew has been evaluated in different generations of genetic material (F2 through F4 and selected lines). A participatory evaluation of 65 mildew resistant lines was performed with participants from the Farmers Field School of Villa Ariendo, a rural community. Also diseased leaf samples were collected from the Northern and Central Altiplano to determine variation of *Peronospora farinosa*, a fungus. Regarding quinoa insect pests, we have observed disease in 80 to 90% of the “ticona complex” larvae (*Copitarsia*, *Feltia*, *Eliotis* genus) in farmer’s fields of the community of Jalsuri, and collected larvae are being evaluated.

Rice Project (Thailand):

- We have found, through crossing experiments, that crop rice and wild rice in Thailand are highly interfertile. 'Wild traits' have also been found among farmers' seed lots of HYVs (Supan 1 and Chainat 1), strongly suggesting geneflow from the wild population. Sunisa Niruntrayagul, a Royal Golden Jubilee PhD student on the project, is getting ready to travel to St Louis, Mo. In Barbara Schaal's lab at Washington University, Sunisa will be working on molecular aspects of geneflow between wild and crop rice.

- Survey work in 2002 found distinct wild rice populations in all three of Thailand's major rice growing regions: north, northeast and central. Plants and seeds were transferred to Chiang Mai University of comparative morphological and physiological studies in the 2003 season. Tonapha Pusadee, another project's researcher, will spend 6 months working in Barbara Schaal's lab at Washington University on molecular aspects of diversity among these wild rice populations from different regions.
- Chanakarn Prom-u-thai, another RGJ PhD student on the project, has found some very high grain iron concentration among local Thai rice germplasm. However, she has also found that high iron concentration is usually associated with greater concentration of 'phytin like bodies'. Phytin and phytate are associated with low bioavailability of iron (and also phosphorus). This coming summer, Chanakarn will be working with Ross Welch in Ray Glahn's lab, at USDA/ARS, U.S. Plant, Soil and Nutrition Laboratory, Ithaca, to determine bioavailability in rice with a range of grain iron concentration and also to determine their phytate content.

Soybean Project (China):

- In January 2003, a new field site was found in Yingde County of Guangdong Province. Yingde is the third field site in addition to the two existing ones in Boluo County of Guangdong Province and Nanning City of Guangxi Province.
- New screening and conventional breeding works have been implemented in the above three field sites with contrasting germplasm materials identified from last year. A new nursery for soybean breeding has also been established in the university farm of SCAU.
- Ms Qingping Xu, a M.S. graduate student supervised by Dr. Xiaolong Yan of SCAU, has completed her 6-month training in Dr. Jonathan Lynch's lab at PSU and returned to SCAU on February 26, 2003. Ms Xu conducted experiments on P uptake kinetics using the P imager technique during her stay at PSU.
- A set of minirhizotrons have recently installed in the new Rhizotron-phytotron Complex at SCAU for *in situ* observation and quantification of root growth and development.

Sweetpotato Project (Kenya):

- Germplasm Collection and Participatory Rural Appraisals (PRAs). Sweetpotato germplasm collection in Kenya started in November 2002 and continued through March 2003. The accessions were collected in target agro-ecologies identified by the local extension staff. Collection methodology involved both random sampling of sweetpotato growing farmers and collections made during focused PRAs. Passport data containing information on the site of collection, name of the farmer, advantages and weaknesses of the selected accessions were taken. Information was also collected on the skin and flesh colour of the roots. Each collection was given a coded identification number. A total of 169 accessions were collected in western Kenya, 150 in South Nyanza, 42 in Eastern and 42 in Central Kenya. Characterisation and evaluation of these accessions commences this long rains season. PRAs focused on sweetpotato production, utilization and marketing were conducted in a total of 18 communities in four important sweetpotato production regions in Kenya. Tools utilized during the PRAs included, Community sketch map, Trend lines, Seasonal calendar, Institutional analysis, Gender daily calendar, Livelihood mapping, transect walks and problems and

opportunities identification. The PRA also focused on issues pertaining to sweetpotato germplasm.

- Introduction and multiplication of high dry matter, high beta-carotene content clones from Lima. Up to 20 high dry matter and β -carotene sweet potato clones have been received in-vitro form from Lima Peru in 4 different counties in the SSA region. In Kenya 16 clones have survived and are being multiplied in the screen house at PQS Muguga so as to be ready for planting during short rains this year. In Uganda, 19 clones survived and are being multiplied in the laboratory and are planned for field adaptability tests during March – April rains.
- Sweetpotato Website and a GIS viewer. A publicly accessible website www.viazitamu.org has been established to support the project, enable online access of accession records, as well as share information with site visitors. A publicly available, license-and royalty-free, web based GIS viewer for use on the web site has been adapted. A preview version can be accessed via the “objectives” link on the main menu.

Sweetpotato Project (Uganda):

- The Department for International Development (DFID) in the UK has approved about 90,000 British pounds (for two years) to fund a coalition of 12 partners on a project aimed at improving the livelihoods of small-scale sweetpotato farmers in Central Uganda through a crop post harvest-based innovation system. On February 18, 2003 an official from the Horticultural Exporters Association of Uganda (HORTEXA), one the coalition partners, invited a team other partners composed members from the Sweetpotato Program of the National Agricultural Research Organization (NARO), the International Potato Center (CIP), the regional East and Central Africa Potato and Sweetpotato Network (PRAPACE) and BUCADEF, a local NGO, to visit contractors Nkozi and Masaka who grow and export sweetpotato to the European market. The purpose was to plan activities aimed at increasing the quantity of sweetpotato export via air and sea. Of the four exported sweetpotato varieties exported three have been released by NARO with partial funding by the McKnight Foundation.
- On April 4, 2003 Mr. Silver Tumwegamire of CIP, Mr. John Nsumba of PRAPACE and Dr. Robert Mwangi of NARO were invited by the Uganda Parliamentarians’ Forum on Food Security, Population and Development to have discussions on exploiting potato and sweetpotato to alleviate hunger and poverty in the country. Orange-fleshed sweetpotato (OFSP) generated a lot of discussion. About forty members of parliament volunteered to establish their own fields of sweetpotato as an example to the public. The MPs suggested writing a proposal and seek funds to carry out potato and sweetpotato research activities in selected districts. This kind interest in potato and sweetpotato had never been witnessed among politicians before.
- Dr. Rebecca Nelson had a mid-term marathon evaluation of the McKnight sweetpotato project in Uganda, 23-25 February 2003. She had discussions with the Director of Namulonge Agricultural Research Institute (NAARI), and the sweetpotato staff, visited laboratories, screenhouses, field trials, farmers, presented a seminar on application of genomics to the cereals at Makerere University, and had discussions with the Director General of NARO just before her flight to Nairobi with Dr. Robert Mwangi, to Dr. Simon Gichuki the PI of the second sweetpotato project in East Africa. The focus of the discussions aims at looking for ways exploiting synergy of the two sweetpotato projects and other related sweetpotato projects in the region.

Tef Project (Ethiopia):

- From last (July 2002-January 2003) season's yield-performance evaluations, a number of promising genotypes derived from targeted crosses have been identified for the final nationwide variety tests. The National Research Review meeting for the coming cropping season was held from January 27-31, 2003, and all the planned activities of the tef project were approved. Included for the first time was Participatory Plant Breeding approaches in the areas surrounding the five cooperating research Centers of the project.
- A paper entitled 'Heritability and genetic advance in recombinant inbred lines of tef (*Eragrostis tef*)', Hailu Tefera et al., is accepted for publication in the journal Euphytica. The main conclusions from the results include (1) the availability of genetic variance for some useful traits for exploitation through selection, 2) the existence of significant genotype x environment interactions that indicated the need to test inbred populations in more environments, and 3) the availability of superior inbred lines for further breeding work.
- Mr. Fisseha Worede an M.Sc student at the Alemaya University (Ethiopia) completed his M.Sc study. His research work on tef recombinant inbred lines was supported by the project.